



Brazilian environmental agency rejects Tapajós River mega-dam,

citing likely major impacts on Amazon's indigenous people and the environment by Sue Branford, originally published August 4th, 2016 at MongaBay

- Ibama, Brazil's environmental agency has denied an environmental license for the proposed 8,000-megawatt São Luiz do Tapajós dam on the Tapajós River in the Amazon — a decision seen as a victory by the Munduruku Indians and environmentalists.
- The Amazon mega-dam would have required the flooding of Munduruku territory known as the Sawré Muybu — a land claim first recognized by Funai, the federal indigenous affairs agency, in April of this year. The Brazilian constitution forbids such uses of indigenous lands.
- The decision will not likely end controversy in the region. The Brazilian government has major development plans for the Tapajós river basin, including 43 dams on the Tapajós River and its tributaries, ten of which are considered priority, to be completed by 2022.

The Tapajós River flows undammed for hundreds of miles through the heart of the Amazon. Photo by Edinilson Barrozo Ramos licensed under the Creative Commons Attribution-Share Alike 4.0 International license

Brazil's environmental agency, Ibama, has decided not to give an environmental license to the São Luiz do Tapajós hydroelectric dam, the first of a series of dams planned for the Tapajós river basin. The project's rejection is seen as a significant victory by the Munduruku indigenous people — whose livelihoods and lands would have been impacted, and by environmentalists.

If it had gone ahead, the 8,000-megawatt São Luiz do Tapajós dam would have been the country's second largest hydroelectric power station, after the controversial Belo Monte dam, which became operational earlier this year. It would have also been one of the largest hydroelectric dams in the world.

The decision took into consideration reports from the federal attorney's office (Advocacia-Geral da União, AGU), the indigenous agency Funai and Ibama itself, all of which advised against authorization. The ruling now has to be endorsed by Suely Araujo, the president of Ibama. However, as she is a member of the licensing commission, which voted unanimously against authorization, she is expected to ratify the decision shortly.

While the decision was welcomed by environmentalists and indigenous groups, it is not being well received by others. Luiz Barreto, president of EPE, Brazil's Energy Research Company, which draws up the country's energy studies, told the Folha de S. Paulo newspaper (which broke the story on Wednesday) that the dam's cancellation could increase energy costs: "To do without São Luiz do Tapajós necessarily implies finding other sources of supply, with different costs".

The São Luiz do Tapajós dam was heavily opposed by the Munduruku Indians, who were alarmed by the impact of the Belo Monte dam on indigenous groups who live beside the Xingu river — the large Amazon tributary to the east of the Tapajós. They've lobbied vigorously and effectively against the Tapajós dam. Recently, international NGOs, including Greenpeace, rallied to their campaign.

Google Earth image showing the site for the São Luiz do Tapajós dam.

The construction of São Luiz do Tapajós would have meant the flooding of Munduruku territory known as the Sawré Muybu, where some Indians live. According to the Brazilian constitution, such an action is not permitted. Brent Millikan, the Amazon program director from the NGO International Rivers, is clear on the topic: "Indigenous land can only be exploited in very unusual circumstances, and then only after approval by Congress".

In the past, the federal government has argued that it was not required to give this protection to the 170,000 hectares (656 square miles) of Sawré Muybu land, as it was not formally recognized as indigenous territory.

However, a turning point occurred in April of this year when Funai finally published a long awaited initial report that recognized the Sawré Muybu lands as indigenous. This came after the Indians themselves, frustrated by extensive delays, had marked out their own land boundaries.

The federal government could overrule the constitution by resorting to special powers, created during the military dictatorship. Indeed, it used these powers to push through the construction of the Belo Monte dam, but experts say that it seems unlikely that the government will invoke that authority now, given the degree of strong organized opposition to the São Luiz do Tapajós dam.

The decision does not mean that the federal government has given up its development plans for the Tapajós river basin. It intends to build 43 "big" dams throughout the basin, of which ten are considered priority, to be completed by 2022.

At the same time, the transport ministry has developed plans to convert the Tapajós and its tributaries, the Teles Pires and the Juruna rivers, into industrial waterways to transport soybeans from Brazil's interior — especially the state of Mato Grosso — to ports along the Amazon River, and then to the Atlantic Ocean for export.

The industrial waterways plan, known as the Tapajós Complex, is also likely to stir up controversy. It will only be viable if the series of dams is completed, including the Chacorão dam, which would flood 18,700 hectares (72 square miles) of Munduruku land.

While environmentalists and indigenous groups have reason to celebrate the São Luiz do Tapajós decision, the conflicts concerning the future of the Tapajós river basin are likely far from over.

The São Luiz do Tapajós dam's reservoir would have encompassed 72,225 hectares (278 square miles), part of it flooding Munduruku territory. Brazil still has plans to build 43 "big" dams in the Tapajós basin, to be completed by 2022. The Chacorão dam, if built, would flood 18,700 hectares (72 square miles) of Munduruku land. Map by Kmusser licensed under the Creative Commons Attribution-Share Alike 3.0 Unported license.

via MongaBay under Creative Commons License

View the original story at: <https://news.mongabay.com/2016/08/environmental-licence-for-sao-luiz-do-tapajos-hydroelectric-dam-denied/>

Read our earlier coverage of this issue from April, 2016 – Rio Tapajós Damming: Belo Monte's Sequel?

Further Reading & How to Help: AMAZON WATCH – Tapajos

<http://amazonwatch.org/news/2015/0410-a-journey-with-the-munduruku-into-the-tapajos>



Two new species can be added to the bioluminescent deep-sea fish family *Opisthoproctidae*, or "barreleyes" -- named for the fishes'

tubular eyes -- according to a study published August 10, 2016 in the open-access journal PLOS ONE by Jan Yde Poulsen from the Australian Museum, Sydney, and colleagues.

Owing to the rareness and fragility of specimens, barreleye fish are not well described, though previous work suggested the family included 19 species. Some species have organs called "soles" along their bellies, covered with pigmented scales that control the light emitted from an internal organ. Poulsen and colleagues compared sole pigment patterns and mitochondrial genomes of four specimens of a sole-bearing barreleye fish caught on recent research cruises near American Samoa and New Zealand with long-preserved specimens caught near the mid-Atlantic ridge and Australia. Examination of fresh material compared to preserved material was pivotal for this study as long-time preservation may obscure the pigment patterns that show variation between species.

The researchers found three different pigment patterns on the light-controlling organs of the fishes studied, suggesting that they were three distinct species. Differences in mitochondrial DNA supported this conclusion and the establishment of two new species in the resurrected genus *Monacoa*. Specimens of the two new species, *M. niger* and *M. griseus*, were found only in the Pacific while those of the long-standing species were found only in the Atlantic.

Most sole-bearing barreleye fish are caught at depths where some sunlight penetrates, and the researchers suggest that light emitted via the sole may be used for counter-illumination to camouflage the fish against the slightly sunlit water, as well as for communication. The new communication system observed in sole-bearing tube eyes shows these fishes are masters in controlling light emission on multiple levels.

"This new study on the deep-sea has shown unknown biodiversity in a group of fishes previously considered teratological variations of other species," said Jan Poulsen. "The different species of mirrorbelly-tube eyes can only be distinguished on pigmentation patterns that also constitutes a newly discovered communication system in deep-sea fishes."

Story Source:

The above post is reprinted from materials provided by PLOS. Note: Content may be edited for style and length.

Journal Reference:

1. Jan Yde Poulsen, Tetsuya Sado, Christoph Hahn, Ingvar Byrkjedal, Masatoshi Moku, Masaki Miya. Preservation Obscures Pelagic Deep-Sea Fish Diversity: Doubling the Number of Sole-Bearing Opisthoproctids and Resurrection of the Genus *Monacoa* (Opisthoproctidae, Argentiniformes). PLOS ONE, 2016; 11 (8): e0159762 DOI: 10.1371/journal.pone.0159762

PLOS. "Morphological analysis of a light-controlling organ suggests two new deep-sea fish species: Bioluminescent fish species distinguished by pigment patterns, mitochondrial genomes." ScienceDaily. ScienceDaily, 10 August 2016. <www.sciencedaily.com/releases/2016/08/160810180650.htm>.



Fish die after fire at The Deep in Hull

FIRE: Six tropical fish have died after a fire at The Deep in Hull on Wednesday

SIX tropical fish died after a **fire at The Deep**, it has been confirmed.

The tourist attraction remains closed after Wednesday's blaze inside a cupboard next to the penguin enclosure.

The fish, which were contained in a coral tank behind the cupboard, died when it was damaged by the fire.

One male member of staff had to be taken to Hull Royal Infirmary after suffering smoke inhalation.

Manager Colin Brown said: "I'd like to say that the staff dealt with the fire extremely well. Everybody kept very calm and got everyone out safely.

"We did lose half a dozen fish unfortunately from the tank behind where the fire was, though we did manage to rescue about 85 per cent of the coral.

"This part won't be open to the public when we reopen.

"One member of staff was taken to hospital yesterday after he showed symptoms of smoke inhalation. He didn't want to go but we insisted. He had tried to fight the fire with a fire extinguisher.

"He was discharged a couple of hours later and he's OK today."

The aquarium has confirmed it will reopen to the public on Friday, in line with its usual opening hours of 10am to 6pm.

Visitors who were at the aquarium when the fire broke out were told the cost of their tickets will be refunded.

It is not clear what exactly started the fire, but it is not being treated as suspicious, as the cupboard was locked at the time the fire broke out.

Central station manager Dave Bristow, of Humberside Fire and Rescue Service, told the Mail: "We responded to a report of

an automatic fire alarm at The Deep. This was quickly confirmed as a fire so we mobilised three engines to the scene as is standard procedure.

"As we arrived members of the public had been evacuated to a place of safety. The fire which was in a small cupboard was quickly put out, but smoke did spread.

"We worked with the curator and vets to move the penguins from the adjacent enclosure to a place of safety. They are being attended to by specialists."

Read more at <http://www.hulldailymail.co.uk/staff-praised-over-handling-of-fire-at-the-deep/story-29609957-detail/story.html#0jhefRamittiMa06.99>



Longest-lived vertebrate is Greenland shark: Lifespan of 400 years

Summary:

Greenland sharks live at least as long as 400 years, and they reach sexual maturity at the age of about 150, a new study reports.

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FULL STORY

A Greenland shark slowly swimming away from the zodiac, returning to the deep and cold waters of the Uummannaq Fjord in northwestern Greenland. The sharks were part of a tag-and-release program in Norway and Greenland.

Credit: Julius Nielsen Greenland sharks live at least as long as 400 years, and they reach sexual maturity at the age of about 150, a new study reports. The results place Greenland sharks as the longest-lived vertebrates on Earth.

The Greenland shark (*Somniosus microcephalus*) is widely distributed across the North Atlantic, with adults reaching lengths of 400 to 500 centimeters (13 to 16 feet).

The biology of the Greenland shark is poorly understood, yet their extremely slow growth rates, at about 1 cm per year, hint that these fish benefit from exceptional longevity.

Traditional methods for determining the age of a species involve analyzing calcified tissue, a feature that's sparse in Greenland sharks. Therefore, to determine the average age of this species, Julius Nielsen et al. applied radiocarbon dating techniques to the eye lenses of 28 females caught as by-catch.

Their analysis suggests an average lifespan of at least 272 years.

The two largest sharks in this study, at 493 cm and 502 cm in length, were estimated to be roughly 335 and 392 years old, respectively.

What's more, since previous reports suggest that females of this species reach sexual maturity at lengths greater than 400 cm, the corresponding age would be at least 156 years old, the authors say.

Based on these results, the Greenland shark is now the oldest-known vertebrate to roam the Earth.

Story Source:

The above post is reprinted from materials provided by American Association for the Advancement of Science. Note: Content may be edited for style and length.

Journal Reference:

1. J. Nielsen, R. B. Hedeholm, J. Heinemeier, P. G. Bushnell, J. S. Christiansen, J. Olsen, C. B. Ramsey, R. W. Brill, M. Simon, K. F. Steffensen, J. F. Steffensen. Eye lens radiocarbon reveals centuries of longevity in the Greenland shark (*Somniosus microcephalus*). *Science*, 2016; 353 (6300): 702 DOI: [10.1126/science.aaf1703](https://doi.org/10.1126/science.aaf1703)

American Association for the Advancement of Science. "Longest-lived vertebrate is Greenland shark: Lifespan of 400 years." *ScienceDaily*. ScienceDaily, 11 August 2016. <www.sciencedaily.com/releases/2016/08/160811143218.htm>.

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US grants for zebrafish studies on the rise Analysis from US National Institutes of Health charts shift in model-organism trends.

A zebrafish facility at the US National Institutes of Health in Bethesda, Maryland.

Zebrafish are the rising stars of model-organism research, an analysis of grants from the US National Institutes of Health (NIH) shows.

A team at the NIH Office of Portfolio Analysis **assessed trends** in the agency's funding of model-organism research between 2008 and 2015, through its R01 awards, the largest NIH grant programme for individual investigators. Using a text-mining algorithm and manual searches, they studied grant data for four animal models: fruit flies (*Drosophila melanogaster*), nematode worms (*Caenorhabditis elegans*), zebrafish (*Danio rerio*) and *Xenopus laevis* frogs. Together these organisms were mentioned in more than 9,500 successful grant applications.

The analysis revealed that grants for zebrafish studies accounted for 0.8% of all R01 awards in 2008, but for 1.27% in 2015 — a rise of almost 60%. And the proportion of *C. elegans* studies rose from 0.87% to 0.98%, a more modest overall increase of about 36%. By contrast, awards for research with *Xenopus* frogs dropped by some 30%, from 0.83% to 0.57%.

The shifts are broadly representative of the numbers of applications received, the team says, indicating a shift in model-organism trends.



British Killifish Association

Autumn Auction

11 September at 10:00–17:00

The Scout Hall, next to St Peter's Church, St Peter's Road,
West Molesey, Surrey KT8 2QE

[Details](#)

The auction will be split into three sections

2 for Killifish (Red and Blue) starting at 12 pm

Followed by one for other fish - This included a number of rare and interesting species Last Time

Sellers are welcome to enter lots on day only 10% commission for sellers

Sales Table of other fish and aquatic equipment (also 10% commission) usually lots of small tanks etc

Entrance Fee is only £2 on the door including refreshments



A New Species of Snakehead (Teleostei: Channidae) from Mizoram, north-eastern India

Channa aurantipectoralis

van Lalhlimpaia, Lalronunga & Lalramliana, 2016

DOI: 10.11646/zootaxa.4147.3.7

Abstract

Channa aurantipectoralis, a new species of snakehead of the *C. gachua* species group, is described from Karnaphuli drainage of Mizoram, India. The species is immediately distinguished from all other snakehead species by its unique coloration in life, specifically its brightly-coloured orange pectoral fins, which lack any spots or stripes; and by the presence of a dark V-shaped blotch on the dorsal surface of the head. It can be further distinguished from all other species of the genus by the combination of the following characters: presence of pelvic fins, a large scale on the ventral surface of the lower jaw, 51–64 lateral-line scales, 34–37 dorsal-fin rays, 23–25 anal-fin rays, 13–14 pectoral-fin rays, $5\frac{1}{2}$ – $6\frac{1}{2}$ / 1 / $7\frac{1}{2}$ – $8\frac{1}{2}$ transverse scale rows, and the absence of scales on the gular region.

Keywords: Pisces, Bangladesh, Barak River drainage, Dampa Tiger Reserve, species distribution, Kaladan River drainage

FIGURE 2. *Channa aurantipectoralis*, (specimen not preserved), 154 mm SL (approx.); showing coloration in life; lateral and dorsal views.

Distribution. Presently known only from Seling and Keisalam Rivers (small tributaries of Karnaphuli River) of Dampa Tiger Reserve, Mizoram, India (Fig. 3). The Karnaphuli River, originating from the hills of Mizoram-Tripura border, flows southwest along the Mizoram-Bangladesh border and then through the Chittagong Hill tract of Bangladesh and finally empties into the Bay of Bengal.

Etymology. The species name, *aurantipectoralis*, is a Latin adjective referring to the conspicuous, orange-coloured pectoral fins of this fish.

Denise van Lalhlimpuia, Samuel Lalronunga and Lalramliana Lalramliana. 2016. *Channa aurantipectoralis*, A New Species of Snakehead from Mizoram, north-eastern India (Teleostei: Channidae). *Zootaxa*. 4147(3): 343. DOI:

10.11646/zootaxa.4147.3.7

ResearchGate.net/publication/305822296_Channa_aurantipectoralis_a_new_species_of_snakehead_from_Mizoram_north-eastern_India_Teleostei_Channidae



A Global Revision of the Seahorses *Hippocampus Rafinesque* 1810 (Actinopterygii: Syngnathiformes): Taxonomy and Biogeography with Recommendations for Further Research

Hippocampus comes Cantor, 1849

DOI: 10.11646/zootaxa.4146.1.1

Abstract

Nomenclatural clarity is vital for the collection, dissemination, and retrieval of natural history information, which itself is necessary for effective conservation and management of species. Seahorses (genus *Hippocampus*) are small marine fishes that in many cases are heavily exploited and suffering severe population declines worldwide, leading to conservation concern and action. Here we provide a brief history of seahorse taxonomy, and attempt to clarify seahorse nomenclature by reducing redundancy and exposing areas of disagreement in need of further study. We provide an annotated list of the 41 species we currently recognize as valid, and describe their geographical distributions to offer a solid foundation for future research and conservation efforts. We base our conclusions on available morphological, genetic and distributional data, re-examination of the relevant literature, previous examination of almost all original type specimens, familiarity with many thousands of other live and dead specimens, and photographs of seahorses. This work should lead to greater taxonomic clarity by highlighting known research gaps and by ensuring that each species designation is justified by robust and defensible taxonomic protocols. Such clarity should facilitate greater efficacy in management and conservation.

Sara A. Lourie, Riley Pollom and Sarah Foster. 2016. A Global Revision of the Seahorses *Hippocampus* Rafinesque 1810 (Actinopterygii: Syngnathiformes): Taxonomy and Biogeography with Recommendations for Further Research. *Zootaxa*. 4146(1); 1–66. DOI: 10.11646/zootaxa.4146.1.1



Skeletal remains of Loch Ness Monster ‘wash ashore,’ have Scots buzzing

The humorous remains of Loch Ness Monster on the shore of Loch Ness. Photo: Courtesy of Help2RehomeSomeone walking their dog along the shore of Loch Ness in Scotland took photos of what is purported to be the skeletal remains of the Loch Ness Monster.

“Has Nessie been found?” the Facebook post from Help2Rehome Scotland asked. “Or someone playing a fascinating prank?” The images of the alleged skeleton with the animal’s organs intact show police tape surrounding the mysterious creature that supposedly washed ashore Wednesday, prompting all sorts of reactions, as anything related to a Loch Ness Monster sighting usually does:

“The guts wouldn’t be there if it was real! It would just be bones the rest would be eaten away.”

“Nessie didn’t agree with the Brexit and tried to escape to Europe.”

“So fake ... hahah ... the bones is all what’s left and no inner organs look that fresh ... come on people.”

And this one, our favorite: “I love how proud some seem to point out this is a hoax. It’s a mythical creature. Of course it’s a hoax!”

But that doesn’t stop people from looking for it.

Gary Campbell, keeper of the Official Loch Ness Monster Sightings Register, told the Daily Mail that he has received five eyewitness reports of sightings of Nessie in 2016, already the most in a single year in the past 13 years.

The Scots are fascinated by the mysterious creature, as is the world. Tourists visit the area in an attempt to spot Nessie, adding an estimated \$40 million to the local economy as a result.

And it seems anything related to the Loch Ness Monster gets media attention in the UK.

“Is the Loch Ness Monster dead? Picture of skeletal remains on shoreline stuns tourists,” the headline in the Mirror said.

“Could this be what’s left of Nessie?” the Daily Mail headline said.

Well, as if anyone really needed reassurance that it was a prank, Snopes.com has an official report about the “skeletal remains of the Loch Ness Monster.” Its verdict: “False.”

What’s behind the hoax? The animal charity Help2Rehome Scotland admitted the scene was for an upcoming TV documentary.



Corydoras zawadzki • A New Long-snouted Species of Corydoras Lacépède, 1803 (Siluriformes: Callichthyidae) from the rio Madeira basin, Brazil

Corydoras zawadzki

Tencatt & Ohara, 2016

DOI: 10.11646/zootaxa.4144.3.9

Abstract

A new species of *Corydoras* is described from the rio Aripuanã, rio Madeira basin, Mato Grosso State, Brazil. The new species can be distinguished from its congeners by the presence of the following features: long mesethmoid, with anterior tip well developed, conspicuously larger than 50% of bone length; posterior margin of dorsal-fin spine with serrations directed towards tip of spine; one to two longitudinal black stripes on flanks; absence of a black blotch across the eyes (mask); absence of a large black blotch on dorsal fin; and transversal black bars on caudal fin. Comments on endemism in interfluvial region between Madeira and Tapajós rivers are briefly discussed.

Luiz Fernando Caserta Tencatt and Willian Massaharu Ohara. 2016. A New Long-snouted Species of *Corydoras* Lacépède, 1803 (Siluriformes: Callichthyidae) from the rio Madeira basin. *Zootaxa*. 4144 (3): 430-442. DOI: 10.11646/zootaxa.4144.3.9
facebook.com/233680374671/photos/10154580572459672
facebook.com/israqarium/photos/1129470437119554





Captive Bred Mandarin Goby from Biota Aquariums U.S.A.

The mandarin goby is one of the most popular marine aquarium fish, unfortunately it is not the easiest fish to keep, and definitely not recommended for beginners. One way to make the iconic dragonet more accessible is to offer them as captive bred, which ORA has done in the past, and which Biota Aquariums is offering now.

Biota Aquariums is a mainland offshoot of Biota Palau, a company headed by Thomas Bowline who is a skilled aquaculturist, having bred everything from giant clams to threadfin snappers and bumphead parrotfish. More recently Bowline and Biota have set their sights on **more ornamental species of fish** which are more suitable for home aquariums, and their captive bred mandarins are the stars of their new lineup.

In a random convergence of events, we just happened to set up a new reef tank mere weeks before Biota Aquariums started shipping small ornamental fish, and while Tom Bowline was traveling in our home town on other business. Tom arranged to have a shipment sent to us so he could personally inspect the quality of the fish shipped from the Biota Aquarium facility in Florida.

The first pair of captive bred mandarin gobies from Palau came in pretty small, especially compared to the wild fish we usually see freshly imported from the wild. At about 1.25 inches long, or a hair over 3cm, the fish were still somewhat pale and hadn't fully developed their colors yet.

After such a long trip from Palau, to Florida, to Denver Colorado, the fish had managed to lose a little bit of weight during their journey. Thankfully, these being captive bred fish it was quite easy to offer them a variety of small foods and they quickly fattened up within about two weeks.

It's been almost two months now since the pair of mandarins have been in our tank and they are beautiful, fat little gems. You might think (or hope) that being captive bred, these fish would eat pellets and flake foods but the mandarin gobies still retain some of their predisposition for 'good' foods.

We've been able to feed the mandarin just about every kind of small frozen meaty foods including baby brine shrimp, copepods, finely chopped mysis shrimp and calanus. The calanus is still just a touch too big for their small pointed mouths but here shortly we should be able to start trying them on more dry foods like freeze-dried Calan-Eeze, once it's been rehydrated of course.

What is exceptional about Biota Aquariums' captive bred mandarin gobies is that they really are very eager feeders. Whereas a wild mandarin goby might be only slightly enticed to peck at small meaty foods, these captive bred specimens really have a strong feeding urge.

Being still just a hair over 1.5 inches long now, our mandarins are still a bit shy, but they do not cower away from targeted clouds of the frozen foods we offer them. We suspect that over time these fish will actually come to associate us with the dinner bell, and will eventually come to beg for food like most normal aquarium fish.

Of course what we truly love about these little gems is how perfect they have turned out. We've been critical of captive bred fish for defects and lack of culling before, but it seems that captive breeding artifacts are very minor or absent in captive bred dragonets, from what we can tell so far.

We have one male and one female captive bred mandarin goby from Biota Aquariums, and while they are not even halfway to fully grown, their coloration, finnage, and the shape of their face and markings are all on track to be every bit as beautiful as what we expect from wild *Synchiropus splendidus*.

Sustainable harvest of mandarin gobies in the wild is definitely not a concern, but wild fish can have diseases or parasites, and most onerous of all, they will be a lifelong picky eater and may take years to eat frozen foods. Having seen, fed and

grown Biota Aquariums captive bred mandarins for most of the summer, we feel that these fish will not only be easier to keep for most people, but that they will also be more robust and better thrive in a home aquarium environment. With Biota Aquariums expected to launch their all-in-one, vertically integrated starter aquarium in the next month or so, we expect the availability of several of their captive bred marine fish species to become available to resellers as well. Having had great success with our own pair of captive bred mandarin gobies, we are very confident in recommending them to any aquarists interested in getting this fish for a tank of their own.

Found on reefbuilders



Investigation launched after over 700 fish found dead in Cork's River Lee after sewage spillage.

The fish were seen on Saturday morning after reports of discolouration in the river on Friday night

- The river Lee cuts through the centre of Cork. More than 700 fish were found dead in Cork's River Lee after pollution leaked from a sewage works.

On Friday reports of discolouration at the Curraheen River were made to the Inland Fisheries Ireland.

Samples of the water were taken but dead fish were not discovered until Saturday.

Speaking on RTE's Morning Ireland, Director of the South West River Basin District at Inland Fisheries Ireland Sean Long said: "On investigation of the report we did find traces of discolouration and followed it back to an outflow pipe.

"We took water samples at that point above the river and those samples have been sent off for analysis."

On Saturday morning hundreds of dead fish were spotted in the river.

Mr Long said: "We couldn't be sure that anything would happen over night, it is likely that the fish were killed overnight by a drop in the oxygen level caused by some form of pollution.

"We went back to the river on Saturday and unfortunately we found over 700 dead fish over a 2km stretch.

"We deployed a team immediately on Saturday morning to take the fish out of the water, it was a distressing sight for the locals and particularly all the children, we spent six hours cleaning the river on Saturday morning."

There have been numerous incidences like this over the past few years.

Independent Cork city councillor Mick Finn said there were plenty of children around wondering what had happened to the fish.

He said: "When I arrived I went to the stretch of river in question and there were hundreds of fish upturned in the river which obviously indicated that some sort of a poisoning issue occurred.



Cobitis takenoi • A New Spined Loach (Cypriniformes, Cobitidae) from Honshu Island, Japan

Cobitis takenoi

Nakajima, 2016

DOI: [10.3897/zookeys.568.7733](https://doi.org/10.3897/zookeys.568.7733)

Abstract

A new species of spined loach, *Cobitis takenoi* sp. n., is described based on the holotype and ten paratypes collected from Tango District, Honshu Island, Japan. The new species is distinguished by a combination of the following character states: 1) the lamina circularis at the base of the pectoral fin in adult male having a simple roundish plate form; 2) a narrowing of the upper segments of the first branched ray of the pectoral fin; 3) a short maxillary barbel whose length equals diameter of the

eye; 4) 14 prepelvic myotomes, and 5) L3 and L5 well developed, forming longitudinal obvious stripes in males during the spawning season.

Remarks

Till date, *Cobitis takenoi* has only been found in one small river system, and the habitat is under threat from river improvement. In addition, some threatened freshwater fishes are captured and sold illegally in Japan (e.g. *Parabotia curtus*, Watanabe et al. 2015), and this new species is similarly at the risk of being commercially overfished for the ornamental fish market (Takeno et al. 2010). Therefore, the species is ranked as a critically endangered species (CR) – as *Cobitis* sp. – in the Japanese Red List (Kitagawa 2015). The distribution pattern, suitable habitat and life history of this species are not well-known. Basic biological investigations are required for its effective conservation.

Jun Nakajima. 2016. *Cobitis takenoi* sp. n. (Cypriniformes, Cobitidae): A New Spined Loach from Honshu Island, Japan. *ZooKeys*. 568: 119-128. DOI: 10.3897/zookeys.568.7733



Fish Behavior Affected by Parasite

A common infection might be skewing experimental data on zebrafish.

Zebrafish swimming behavior, used to assess stress and anxiety, is impacted by the presence of a common parasite, researchers reported in the *Journal of Fish Diseases* last month (July 11). As *Nature News* reported, the infection could be confounding study results.

“The paper is great, as it raises some doubts about the way behavior may be used to study brain function in zebrafish,” Robert Gerlai, a behavioral geneticist from the University of Toronto Mississauga, told *Nature*. He added that the new study is not conclusive, and the techniques used to measure the swimming behavior are not as precise as continuous tracking. In their report, the authors stated that in 2006, the Zebrafish International Resource Center found 75 percent of labs that submitted fish for a diagnostic service had contamination with the parasite *Pseudoloma neurophilia*.

In a 2015 study, the researchers found *P. neurophilia* could affect the animals’ startle response. In their latest study, infection was associated with fish swimming closer to other fish, or shoaling. “Increased shoaling is thought to be an indicator of stress, which, along with the findings of our tap test study, could indicate that neural microsporidiosis causes the development of a high stress or anxious behavioural phenotype,” the authors wrote.

Study coauthor Sean Spagnoli of Oregon State University in Corvallis told *Nature* the results raise a red flag. “I haven’t seen

a single paper that stated that ‘fish used were certified pathogen-free for P. neurophilia,’” Spanoli said



Gobius salamansa • A New Species of Goby (Gobiidae) from the Cape Verde Islands supported by A Unique Cephalic Lateral Line System and DNA Barcoding

Gobius salamansa

Iglésias, Frotté & Sellos, 2016

DOI: 10.1007/s10228-015-0505-4

Abstract

Gobius salamansa sp. nov., a new species of tropical eastern Atlantic goby (Teleostei: Gobiidae: Gobiinae) is described from the island of São Vicente in the Republic of Cabo Verde. With adults measuring less than 35 mm TL (total length) it is the smallest species among *Gobius*. It is easily distinguishable from its Atlantico-Mediterranean congeners thanks to a unique character: an additional posterior ocular head pore, newly named α' , part of the anterior oculoscapular canal and connected to pore α by a suborbital branch. The new species also possesses a rare character among gobiids: a continuous oculoscapular canal, undivided into anterior and posterior parts. The species is distinguishable from its relatives thanks to its distinctive multi-colored (white, red, black, yellow and brown) eyespot, located on the first dorsal fin; by a low number of soft rays on the second dorsal fin (11) and anal fin (9); by row r not divided into two sections; by a divided row d. The two type of specimens were collected at 0.2–0.6 m depth, at the entrance of cracks in compact volcanic boulders forming a rocky islet submerged at high tide. DNA barcoding based on COI of the species compared with sympatric gobiids and species of Atlantico-Mediterranean *Gobius* reveals a high nucleotide sequence divergence [Kimura's (1980) two parameter distances of 16.5 %], with *Gobius ateriformis* identified as its closest species. A dichotomous key for *Gobius*–*Mauligobius* from tropical eastern Atlantic is provided. It is the eleventh gobiid species, and the fourth endemic species, to be described in Cape Verde.

Keywords: Gobiinae, New species, Eastern Atlantic, Republic of Cabo Verde, Head pore

Diagnosis. The new species is characterized by a unique character among the gobiids: (1) an additional posterior ocular head pore, newly named α' , and connected to pore α by a suborbital branch of the anterior oculoscapular canal; (2) a distinctive multi-colored (white, red, black, yellow and brown) eyespot, located on the first dorsal fin. The new species is also characterised by the combination of the following characters: (1) the possession of pores on the oculoscapular (σ , λ , κ , ω , α , β , ρ , ρ_1 , ρ_2), and preopercular (γ , δ , ϵ) head canals; (2) a canal section between pore ρ and ρ_1 connecting the anterior and the posterior oculoscapular canals; (3) a divided row d; (4) row r not being split into two sections; (5) row x1 ending anteriorly behind pore β ; (6) six transverse infraorbital rows of sensory papillae (1–6), with five anterior to the hyomandibular row b but only one above, and with the inferior sections of rows five and six well developed below row b; (7) row g ending behind row o; (8) six well developed upper free pectoral rays; (9) anterior nostril with a digitate process; (10) predorsal area and nape scaled; (11) 11 soft rays on the second dorsal, 9 soft rays on the anal fin; (12) 36–37 scales on LL; (13) a scaleless cheek and opercle. The new species also differs from close *Gobius*–*Mauligobius* relatives by the combination of the following characters: a white breast; a thin caudal peduncle, with a depth 45–50 % of caudal peduncle length; a long pectoral fin, 29–30 % of standard length; a long pelvic fin, 23–25 % of standard length; large eyes, 38–39 % of head length; a short snout, 25–26 % of head length, short interorbital width, 7.5–8.5 % of eye diameter.

Distribution and habitat. — Known presently only in the Bay of Salamansa at São Vicente, Cape Verde Islands, 16.909545° N, -24.938012° W. The specimens were observed in a subtidal area at the entrance of cracks in compact volcanic boulders forming a rocky islet submerged at high tide about one hundred meters from the beach. The basaltic rocks were covered with short seaweeds and coralline algae. The habitat was largely colonized by the subtidal blenniids *Ophioblennius atlanticus* (Valenciennes in Cuvier and Valenciennes 1836) and *Scartella caboverdiana* Bath 1990. The rocky islet was surrounded by sand, rock and coral bottom, 1–3 m depth, where individuals of *G. ateriformis* were common under rocks. The sea temperature was 24 C at the point of collection.

Etymology.-- The epithet *salamansa* refers to the village of Salamansa, on the north of the island of São Vicente, Republic of Cabo Verde, which marks the location where the only two known specimens were collected. The specific name *salamansa* is proposed as a noun in apposition.

Samuel P. Iglésias, Lou Frotté and Daniel Y. Sello. 2016. *Gobius salamansa*, A New Species of Goby (Gobiidae) from the Cape Verde Islands supported by A Unique Cephalic Lateral Line System and DNA Barcoding. *Ichthyological Research*. 63(3); 356–369. DOI: 10.1007/s10228-015-0505-4



Fish can be trained to recognise faces, study finds

We know that our pet dogs and cats can recognize our faces, but our pet fish? That's too far-fetched to believe, right? Not according to a team of scientists from the UK and Australia, who have discovered a species of tropical fish capable of distinguishing human faces!

The research, which was carried out by a team from the University of Oxford in England and the University of Queensland in Australia and published Tuesday in the journal *Scientific Reports*, found that archerfish were able to learn and recognize faces with a high degree of accuracy – a task which the authors noted requires highly-developed visual recognition capabilities.

This marks the first time that a species of fish has demonstrated such an ability, lead author Dr. Cait Newport, a research fellow in the Oxford Department of Zoology, and her colleagues said in a statement. Such abilities have been previously demonstrated in birds, but unlike fish, they have been proven to possess structures similar to the neocortex (the highly developed part of the brain that is associated with seeing and hearing in humans), the researchers added.

“Being able to distinguish between a large number of human faces is a surprisingly difficult task,” Dr. Newport said, “mainly due to the fact that all human faces share the same basic features. All faces have two eyes above a nose and mouth, therefore to tell people apart we must be able to identify subtle differences in their features. If you consider the similarities in appearance between some family members, this task can be very difficult indeed.”

Study shows that complex brains aren't necessary for facial recognition. In fact, she explained, the task is so difficult that some had hypothesized that only primates were capable of doing so, due to their large and complex brains. However, as previously mentioned, a previous study found that birds possessed similar capabilities, and Dr. Newport's team wanted to see if other creatures with smaller, simpler brains could recognize human faces.

They discovered that fish, despite having no evolutionary need to do so and despite lacking any type of brain structure similar to the primate's visual cortex, were able to recognize one familiar face out of a group of up to 44 never-before-seen ones.

Their findings indicate that fish, despite their lack of a neocortex, nonetheless are capable of impressive feats of visual discrimination.

During their experiments, Dr. Newport and her colleagues presented archerfish with two images of human faces, and trained them to choose one using their ability to spit jets of water in order to knock down airborne prey. Next, the fish were presented with the familiar face and several that were unfamiliar, and were able to correctly pick the one that they had been trained to recognize, even when features such as head shape and color were removed from the selected pictures.

In the first experiment, the archerfish were tasked with picking the previously learned face from a group of 44 new ones, which they did with 81 percent accuracy. In the second, they were asked to choose in a scenario where facial features such as brightness and color had been standardized, and they proved to be 86 percent successful at this task.

“Fish have a simpler brain than humans and entirely lack the section of the brain that humans use for recognizing faces.

Despite this, many fish demonstrate impressive visual behaviors and therefore make the perfect subjects to test whether simple brains can complete complicated tasks,” Dr. Newport said. “Once the fish had learned to recognize a face, we then showed them the same face, as well as a series of new ones.”

“In all cases, the fish continued to spit at the face they had been trained to recognize, proving that they were capable of telling the two apart. Even when we did this with faces that were potentially more difficult because they were in black and

white and the head shape was standardized, the fish were still capable of finding the face they were trained to recognize," she added. "The fact that archerfish can learn this task suggests that complicated brains are not necessarily needed to recognize human faces."

Read more at <http://www.redorbit.com/news/science/1113414442/fish-recognize-faces-060716/#Ysmw4vmPmhxFsDG1.99>



The Hallucinogenic Fish That Can Give You LSD-Esque Nightmares It gives new meaning to a "fishing trip."

On rare occasions, people have gotten high using not pills, but gills—by eating the fish *Sarpa salpa*.

Recognisable by gold stripes running along its side, the fish, known by its common name salema porgy, is an otherwise unremarkable inhabitant of temperate and tropical areas, from the Atlantic coast of Africa and up throughout the Mediterranean Sea. But don't let its seemingly harmless exterior fool you—salema porgy can function as a hallucinogen, and a rather terrifying one at that.

Because of its properties—it's known in Arabic as "the fish that makes dreams"—this sea bream was supposedly consumed as a recreational drug in the Roman Empire and used among Polynesians for ceremonial purposes. Today reports of actual trips from eating the fish are few and far between, but two recent case studies published in 2006 in an [article](#) in the journal *Clinical Toxicology* paint a picture of just how psychedelic this ocean dweller truly is.

According to the article, in 1994, a 40-year-old man felt nauseated about two hours after enjoying fresh baked *Sarpa salpa* on his vacation on the French Riviera. With symptoms like blurred vision, muscle weakness and vomiting persisting and worsening throughout the next day, he cut his vacation short and hopped in the car, only to realise mid-journey that he couldn't drive with all the screaming animals distracting him. These giant arthropods—mere hallucinations, of course—were the last straw. The man directed himself to a hospital, where he recovered completely after 36 hours. He couldn't recall a thing.

That wasn't the only case. The next reported incident came in 2002, when after purchasing, cleaning and eating the fish in Saint Tropez, also on the French Riviera, a 90-year-old man started to experience hallucinations of screaming humans and squawking birds. For two nights he had horrifying nightmares, but he didn't let anyone know, thinking he was developing a mental illness. Fortunately for him, the effects of the fish subsided after a couple days.

These often demonic hallucinations, both auditory and visual, characterize the phenomenon known as ichthyallyeinotism, a rare poisoning following the ingestion of certain fish. Catherine Jadot, a marine biologist at the Reef Ball Foundation whose doctoral research focused on the fish, says such poisoning can trigger nervous system disturbances and cause effects

similar to those of LSD.

Why do some people eat sea bream with no apparent side effects while others are transported to a world of utter chaos of nightmarish proportions? If everyone could take the trip of a lifetime, why wouldn't there be more stories of Mediterranean meals gone wrong, of a black market of sea bream?

Figuring out what exactly makes this fish so trippy isn't so easy. A study published in *In Vitro Cellular and Developmental Biology* in 2012, however, linked the fish's consumption of phytoplankton that grow on the seagrass *Posidonia oceanica*, one of the main components of its diet, with higher levels of toxicity in the fish's organs. This elevated toxicity could be a reason why certain *Sarpa salpa* take a toll on humans' physical and mental wellbeing.

Posidonia oceanica, the seagrass home of phytoplankton eaten by *Sarpa salpa*. (Photo: Yoruno/CC BY-SA 3.0) It's not clear, though, which toxins are responsible for such a vivid response in the eater. They could be alkaloids of the indole group, compounds occurring naturally in certain algae and phytoplankton the fish eat and which are chemically similar in structure to LSD. Or a hallucinogen called dimethyltryptamine (DMT), the same compound found in the spiritual healing brew ayahuasca, might be responsible.

Jadot says there's not enough research yet about the agents that might cause ichthyotoxicity or the specific effects the fish has on those who consume it.

For one, it's hard to pinpoint exactly when this fish can and can't poison you. Apparently, certain body parts, including the fish's head, contain these trippy toxins, whereas others are hallucinogen-free. And the season during which the fish is caught plays a role, too; the same 2012 study cited autumn as the time of year when toxicity was highest in the fish. But the most reports of poisoning, the 2006 report says, are from late spring and summer.

The odds are that you won't find yourself accidentally tripping on *Sarpa salpa*. But in the unlikely event you order sea bream on the French Riviera and experience 36 hours of soul-wrenching terror, at least you'll know the cause.



The newest weapon in the Asian carp fight:

Alligator Gar (*Atractosteus spatula*)

Some biologists say it's a win-win: Introduce an ugly fish that went extinct in the Midwest last century, and it might eat the otherwise unstoppable Asian carp. But others aren't sure it will work.

The alligator gar is a tough fish to love. The long snout, two rows of teeth, and scales so sharp Native Americans used them as arrowheads, all make the decision by several Midwestern states to reintroduce the "river monster" difficult to understand.

Yet reintroduction of the ugly alligator fish to the upper Midwest represents not only the return of a native species once declared extinct in several states, but also a path forward in an ever-more creative fight against a more feared enemy: the Asian carp.

“What else is going to be able to eat **those monster carp**?” Allyse Ferrara, who studies alligator gar at Nicholls State University in Louisiana, told the Associated Press. “We haven’t found any other way to control them.”

Recommended: **Uffda! How well do you know the Midwest? Take our quiz!**The Asian carp is a hefty bottom-dweller known for injuring fisherman when it leaps suddenly out of the water. Originally introduced in the 1970s to help with catfish farms in Arkansas, the large **fish swam north** and now infests the waters of the Mississippi River. Their expansion alarms both biologists and commercial fisherman, who fear the rapidly reproducing "garbage fish" will enter the Great Lakes and destroy a unique ecosystem – and a \$7 billion fishing industry.

Efforts to stop this have been numerous and varied. Over President Obama's objections, Congress **allotted \$300 million to a Great Lakes Restoration Initiative**, a fund started in 2010 over concerns about the Asian carp. This money contributes to catching and netting efforts, an electric fence in the Illinois River near Chicago, and the ongoing building of a "lock and dam" system by the US Army Corps.

In May, a coalition of federal, state, and local officials, companies, and nonprofits **completed the first-ever fish wall** in Indiana. The 7.5-foot earthen wall separates rivers that Asian carp may traverse from a watershed that biologists called "a back door to Lake Erie," The Christian Science Monitor reported.

But officials would ultimately like to stop the Asian carp, not just contain it. The alligator gar can grow as long as an African elephant is tall, making it a potential match for the carp. They have demonstrated a taste for young carp in particular, and unlike Asian carp, they **pose no threat to humans**, National Geographic reported, although their eyes and eggs are poisonous.

Several Midwestern states have launched reintroduction programs for the alligator gar, and Illinois lawmakers passed a resolution earlier in July promising to protect the gar species already present in the state, the AP reported.

Some biologists urge caution in seeing the alligator gar as the "silver bullet" against the Asian carp. But it could offer biologists one more tool to use in containing the invasive fish, while reintroducing a native species that will excite trophy fishermen.

It would not be the first time biologists have used the promise of a predator's diet to drum up support for an endangered, but unwanted, animal. The Lake Erie Water Snake, another species native to the Midwest, recovered and left the Endangered Species list after it began eating the invasive round goby fish, says Richard King, a conservation biologist at Northern Illinois University.

"That's what I tell people who don't like snakes," Dr. King tells the Monitor, speaking of conservation work with the water snake. "I say, 'It eats the invasive round goby.' "

If the alligator gar can prove themselves equally useful, they, too, could lose their colloquial designation of "river monster."





Corydoras knaacki • A New Species of Corydoras Lacépède, 1803 (Siluriformes: Callichthyidae) from the río Madre de Dios Basin, Peru

Corydoras knaacki

Tencatt & Evers, 2016

DOI: 10.1590/1982-0224-20150019

ABSTRACT

A new species of *Corydoras* is described from the río Madre de Dios basin, Peru. The new species can be distinguished from its congeners by presenting the following features: a longitudinal black stripe along midline of flank; mesethmoid short, with anterior portion poorly developed; serrations on posterior margin of pectoral spine directed towards the tip of the spine; dorsal fin with the region of the first branched ray, including membrane, with concentration of black pigmentation, the remaining areas with irregular black blotches; absence of a vertically elongated black blotch across the eyes; conspicuously rounded moderately-developed black spots on the snout; and ventral expansion of infraorbital 1 moderately developed.

Diagnosis. *Corydoras knaacki* can be distinguished from its congeners, with exception of *C. acrensis*, *C. baderi*, *C. bifasciatus* Nijssen, 1972, *C. boesemani*, *C. bondi*, *C. copenamensis*, *C. gomezi*, *C. habrosus*, *C. haraldschultzi*, *C. incolicana* Burgess, 1993, *C. isbrueckeri*, *C. julii*, *C. leopardus*, *C. nattereri*, *C. noelkempffi*, *C. ornatus*, *C. orphnopterus*, *C. pinheiroi* Dinkelmeyer, 1995, *C. pulcher*, *C. robineae* Burgess, 1983, *C. robustus*, *C. sipaliwini*, *C. sterbai* and *C. trilineatus*, by the presence of a longitudinal black stripe along midline of flank (vs. midline of flank unspotted; with spots; not forming a conspicuous stripe); from *C. bifasciatus*, *C. gomezi*, *C. haraldschultzi*, *C. incolicana*, *C. isbrueckeri*, *C. leopardus*, *C. noelkempffi*, *C. ornatus*, *C. orphnopterus*, *C. pinheiroi*, *C. pulcher*, *C. robineae*, and *C. robustus* by the presence of a short mesethmoid, with anterior portion smaller than 50% of the bone length (vs. long, equal or larger than 50% of the bone length); and serrations on posterior margin of the pectoral spine directed towards the tip of the spine (vs. directed towards the origin of the spine); from *C. acrensis*, *C. baderi*, *C. habrosus*, *C. julii*, *C. nattereri*, *C. sterbai* and *C. trilineatus* by the presence of black pigmentation on the first branched ray, including membrane, the remaining areas with irregular black blotches (vs. anterodorsal portion of dorsal fin with a large black blotch, the remaining areas with irregular black spots in *C. acrensis*, *C. julii* and *C. trilineatus*; dorsal fin entirely hyaline in *C. baderi*; dorsal fin covered by black spots in *C. habrosus* and *C. sterbai*; dorsal fin brownish, without blotches; membranes covered by black chromatophores, more concentrated on its anteriormost portion in *C. nattereri*). Additionally, *C. knaacki* can be distinguished from *C. boesemani* by the absence of a vertically elongated black blotch across the eyes (vs. presence); from *C. bondi* and *C. sipaliwini* by the presence of conspicuously rounded moderately-developed black spots on the snout (vs. irregular small black spots; or scattered black chromatophores, in *C. bondi*; larger irregular black spots in *C. sipaliwini*); from *C. copenamensis* by the presence of ventral expansion of infraorbital 1 moderately developed (vs. well developed).

Type-locality of *Corydoras knaacki*, showing the swampy area in the vicinity of the town of Santa Rita, draining into the río Inambari, río Madre de Dios basin, Santa Rita, Madre de Dios, Peru.

Ecological notes. *Corydoras knaacki* was captured in a swampy area with brownish "tea-colored" stagnant and very clear water. Some congeners, like *Corydoras* aff. *aeneus*, *Corydoras* cf. *elegans* and *Corydoras* cf. *stenocephalus*, were observed in the type-locality of *C. knaacki*. Additionally, some Characiformes were also observed in syntopy, like *Aphyocharax* sp., *Hoplias* aff. *malabaricus* (Bloch, 1794), *Hyphessobrycon* sp. and *Pyrrhulina vittata*, Regan, 1912.

Juveniles of *Corydoras knaacki*, between 8 up to 15 mm SL, are abundant in the shallow swampy area, forming bigger shoals. Specimens of *Corydoras* aff. *aeneus* with similar size to the specimens of *C. knaacki* were observed mixing in the same shoal with the new species, which is more abundant. Adult specimens of *C. knaacki*, up to 38 mm SL, can be found in small groups only in the deeper parts of the creeks, generally shaded by trees and palms. The adults do not form mixed shoals with *Corydoras* aff. *aeneus*.

Etymology. *Corydoras knaacki* is named after Dr. Joachim Knaack (2 January 1933 - 5 December 2012), German physician and biologist. He was an amateur ichthyologist and aquarist who devoted more than 60 years of his life for the study of South American catfishes, especially *Corydoras*. A genitive noun.

Luiz Fernando Caserta Tencatt and Hans-Georg Evers. 2016. A New Species of *Corydoras* Lacépède, 1803 (Siluriformes: Callichthyidae) from the río Madre de Dios Basin, Peru.

Neotrop. ichthyol. 14(1); DOI: 10.1590/1982-0224-20150019

http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1679-62252016000100212



Eucyclogobius kristinae • A New Species of the Bay Goby
Genus Eucyclogobius, Endemic to Southern California:

Evolution, Conservation, and Decline

Eucyclogobius kristinae

Swift, Spies, Ellingson & Jacobs, 2016

Southern Tidewater Goby | DOI: [10.1371/journal.pone.0158543](https://doi.org/10.1371/journal.pone.0158543)

Abstract

A geographically isolated set of southern localities of the formerly monotypic goby genus *Eucyclogobius* is known to be reciprocally monophyletic and substantially divergent in mitochondrial sequence and nuclear microsatellite-based phylogenies relative to populations to the north along the California coast. To clarify taxonomic and conservation status, we conducted a suite of analyses on a comprehensive set of morphological counts and measures from across the range of *Eucyclogobius* and describe the southern populations as a new species, the Southern Tidewater Goby, *Eucyclogobius kristinae*, now separate from the Northern Tidewater Goby *Eucyclogobius newberryi* (Girard 1856). In addition to molecular distinction, adults of *E. kristinae* are diagnosed by: 1) loss of the anterior supratemporal lateral-line canals resulting in higher neuromast counts, 2) lower pectoral and branched caudal ray counts, and 3) sets of measurements identified via discriminant analysis. These differences suggest ecological distinction of the two species. Previous studies estimated lineage separation at 2–4 million years ago, and mitochondrial sequence divergence exceeds that of other recognized fish species. Fish from Santa Monica Artesian Springs (Los Angeles County) northward belong to *E. newberryi*; those from Aliso Creek (Orange County) southward constitute *E. kristinae*. The lagoonal habitat of *Eucyclogobius* has been diminished or degraded, leading to special conservation status at state and federal levels beginning in 1980. Habitat of the newly described species has been impacted by a range of anthropogenic activities, including the conversion of closing lagoons to open tidal systems in the name of restoration. In the last 30 years, *E. kristinae* has only been observed in nine intermittently occupied lagoonal systems in northern San Diego County; it currently persists in only three sites. Thus, the new species is in imminent danger of extinction and will require ongoing active management.

Eucyclogobius kristinae Southern Tidewater Goby has been found in only a few lagoons in San Diego County, making the newly described species critically endangered.

Brenton Spies DOI: [10.1371/journal.pone.0158543](https://doi.org/10.1371/journal.pone.0158543)

Eucyclogobius kristinae new species, Swift, Spies, Ellingson and Jacobs

Southern Tidewater Goby.

Eucyclogobius kristinae, Swift, Spies, Ellingson, and Jacobs, new species
urn:lsid:zoobank.org:act:CC641CE5-7DAE-466E-BA3F-D23994068F2B.

Gillichthys mirabilis, Metz 1912:41, misidentification, record from Aliso Creek, Laguna Beach, Orange County.

Eucyclogobius newberryi, Miller 1939, 1943, records from San Juan Creek, Orange County; Swift et al. 1989: 1–19, in part,

biology, distribution, illustration; Earl et al. 2010: 103–114, phylogeography, distinctness of southern population; Ruber and Agoretta 2011: 31–41, in part, reanalysis of gobiid molecular phylogeny; Van Tassell 2011: 143, in part, list of Gobiiformes of the Americas.

Eucyclogobius (S), Ellingson et al. 2014: 472, convergence with western Pacific species.

Holotype: LACM 57334–2, female, 29.3 mm SL (Fig 5), California, San Diego County, coastal lagoon at mouth of Las Flores Canyon (Las Pulgas Canyon on some maps), about 15 km northwest of Oceanside

Fig 5. A, Photograph of holotype of *Eucyclogobius kristinae*, n. sp., LACM 57334–2, 29.3 mm Standard Length from Las Flores Canyon lagoon on Marine Corps Base Camp Pendleton on 29 July 2011. See text for other data. B, Illustration of pigment patterns and some neuromast lines on the head and body of *Eucyclogobius kristinae* n. sp., LACM 42639–1, 33 mm SL, Aliso Creek, Orange County, CA.

DOI: 10.1371/journal.pone.0158543

Diagnosis: *Eucyclogobius kristinae* is distinguished morphologically from the only other species in the genus, *E. newberryi*, by reduction (in fish over about 25 mm SL) of the anterior supraorbital canal and concomitant increase in number of exposed neuromasts (see analyses above), 8–12 in adult *E. kristinae* vs. 5–8 in *E. newberryi* (Fig 4B). The Southern Tidewater Goby averages about one fewer pectoral fin ray (18–19 vs. 19–21) and branched caudal rays 10–11 (9–12) vs. 12–13 (11–14) due to reduction in this count on the lower half of the caudal fin (Fig 3B). Morphologic measures proved efficiently diagnostic in combination (Fig 1B–1F). These include a longer anal spine and measures that contribute to greater girth, more anterior placement of pelvic fins and a more upturned mouth in *E. kristinae*, while *E. newberryi* has a more elongate snout with a more terminal mouth, longer pectoral fins and somewhat more elongate dorsal, anal, and caudal fins. Numerous fixed molecular characters have been identified between the two species, both in mitochondrial sequence, as well as in dramatic length difference and amplification of microsatellite loci. Thus, there are many means of efficient molecular diagnosis via PCR amplification assay.

Etymology: The species name is feminine in honor of Kristina D. Y. Louie whose untimely death in 2004 cut short a promising career dedicated to conservation genetics. Her Ph.D. dissertation and associated work contributed greatly to our studies of eastern Pacific phylogeography, as well as to a novel re-interpretation of the placement of Wallace's Line across the islands of Indonesia.

Conclusions:

The Southern Tidewater Goby, *Eucyclogobius kristinae*, has a history of genetic isolation (≥ 1 million years) from its sister, *E. newberryi*, from which it is separated by a geographic break across the Los Angeles Basin. It can be reliably diagnosed on the basis of meristics —e.g. exposed anterior supraorbital neuromasts on adults (Fig 4, neuromast row no. 1) and higher pectoral fin-ray counts in *E. newberryi* —as well as morphometric characters as identified by discriminant function analyses. Sequencing of mitochondrial control region or cytochrome b or amplification of any of the suite of microsatellite markers can also provide easy diagnosis, and simple PCR assays for species determination can be easily devised. Morphological distinctions suggest adaptations to a more benthic mode of life in *E. kristinae*. Sexual dimorphism associated with an enlarged jaw in adult males is presumptively used in mating burrow construction. Further work to better establish ecological distinction, sexual dimorphism, and/or behavioral differences between the two species is merited. *E. kristinae* is

critically endangered as it appears to persist in only three sites based on the most recent surveys. Thus, immediate action is needed to prevent extinction of the species during California's current and persistent drought. All management units of *E. newberryi* and *E. kristinae* should maintain state and federal endangered status until recovery has been demonstrated.

Camm C. Swift, Brenton Spies, Ryan A. Ellingson and David K. Jacobs. 2016. A New Species of the Bay Goby Genus *Eucyclogobius*, Endemic to Southern California: Evolution, Conservation, and Decline. *PLoS ONE*. 11(7); e0158543. DOI: 10.1371/journal.pone.0158543



List of invasive species of EU wide concern published

The EU has now published its list of species of EU wide concern and it will come into force on 3 August 2016. The list contains 37 species of animals and plants, some of which are sold and are important in our industry.

We recommend everyone reads the UK Governments FAQ's on the list. It's essential that everyone who trades in live animals or plants reads the note in full. It contains information on which species are on the list and the controls including the SALES BANS that will be applied to them.

Plants These plants are on the list:

American skunk cabbage *Lysichiton americanus*

Curly waterweed *Lagarosiphon major* (often inaccurately called *Elodea crispata*)

Cabomba *Cabomba caroliniana*

Water hyacinth *Eichhornia crassipes* Over the last year OATA has been presented with a lot of evidence that the American Skunk Cabbage is invading and causing problems in some areas of the UK, therefore we would suggest members think very carefully before continuing to trade in this species even if legally permitted to do so for the next 12 months or so.

Please remember there are sales bans on 5 species already in place and these will remain in place. These are:

Water Fern (Fairy Fern) *Azolla filiculoides*

Parrot's Feather

Brazilian Watermilfoil *Myriophyllum aquaticum*

Myriophyllum brasiliense*

Myriophyllum proserpinacoides

Enydria aquatic

Floating PennywortHydrocotyle ranunculoides

Floating Water Primrose

Water Primrose

Water PrimroseLudwigia peploides

Ludwigia grandiflora

Ludwigia uruguayensis

Australian Swamp Stonecrop

New Zealand PigmyweedCrassula helmsii

Tillaea aquatica, Tillaea recurve(*OATA note – we believe the red stemmed low growing frost sensitive plants sometimes sold under this name are a different species and may be traded – to avoid confusion this should only be under the Myriophyllum ‘Red Stem’ name).

AnimalsOf most importance to our sector is the listing of the Red eared slider/terrapin Trachemys scripta elegans.

There are several crayfish on the list. Members are reminded trade in only one species Cherax quadricarinatus is permitted.

No live crayfish may be sold in Scotland.

Should members be offered any other crayfish species you must notify the Fish Health Inspectorate fhi@cefas.co.uk ,

Telephone: 01305 206700, Fish Health Inspectorate, Barrack Road, The Nothe, Weymouth, Dorset, DT4 8UB.

Of particular concern is the marbled crayfish as this is hardy and can reproduce asexually – one released specimen could start an invasion.

Be Plant WiseWe urge members to actively promote the message that nothing from an aquarium or garden pond should ever be released or allowed to escape into the wild by promoting widely the Be Plant Wise campaign, using OATA fish bags and care sheets and incorporating no release messages on your own product packaging or by displaying. We'd also urge you to promote the OATA/REPTA Code on invasive pets.



THOUSANDS of fish wash up DEAD from UK river for second time in 12 months

THE Environment Agency is investigating the death of thousands of fish in the same stretch of river for the second time in a

year.

Thousands of fish have died in the same river for the second time in a year. Investigators were called after the fish were seen floating on the surface of the River Leadon, a tributary of the Severn, near Dymock in Gloucestershire.

One eyewitness said: "There are thousands of dead fish. I have seen salmon and lamprey."

Chris Bainger, an Environment Agency Fisheries Technical Specialist, said the fish including carp, trout and eels, had died due to pollution.

He added that the source of the pollution was known and under investigation and believed to be compost digestate.

On Friday 22 July we received a report of pollution on Preston Brook in Dymock, Gloucestershire

Spokesman Stuart Gamble

A similar incident happened in August last year when a number of fish died in the same river near Dymock after pollution caused by heavy rainfall.

A local farmer said he saw around fifty dead fish on the surface, including a small salmon.

The Environment Agency is monitoring the latest incident.

Spokesman Stuart Gamble said: "On Friday 22 July we received a report of pollution on Preston Brook in Dymock, Gloucestershire, which is a tributary of the river Leadon.

"Our officers attended the site to assess the situation and quickly identified the source of the pollution, which has now been stopped.

The agency received a report of pollution on Preston Brook in Dymock, Gloucestershire

SHOCKING: An eyewitness said 'There are thousands of dead fish. I have seen salmon and lamprey' "They have been out monitoring and sampling the river over the weekend to try and reduce the environmental impact.

"Unfortunately, as a result of the pollution a large number of fish have been killed and we anticipate more fish are likely to be impacted as the pollutant travels along the Leadon.

"We will continue to monitor the situation to reduce any further impact to the environment over the coming days."



Washington Scientist Launches Effort to Digitize All Fish

University of Washington biology professor Adam Summers no longer has to coax hospital staff to use their CT scanners so he can visualize the inner structures of stingray and other fish.

Last autumn, he installed a small computed tomography, or CT, scanner at the UW's Friday Harbor Laboratories on San Juan Island in Washington state and launched an ambitious project to scan and digitize all of more than 25,000 species in the world.

The idea is to have one clearinghouse of CT scan data freely available to researchers anywhere to analyze the morphology,

or structure, of particular species.

So far, he and others have digitized images of more than 500 species, from poachers to sculpins, from museum collections around the globe. He plans to add thousands more and has invited other scientists to use the CT scanner, or add their own scans to the open-access database.

"We have folks coming from all over the world to use this machine," said Summers, who advised Pixar on how fish move for its hit animated films "Finding Nemo" and "Finding Dory" and is dubbed "fabulous fish guy" on the credits for "Nemo."

He raised \$340,000 to buy the CT scanner in November. Like those used in hospitals, the CT scanner takes X-ray images from various angles and combines them to create three-dimensional images of the fish.

With each CT scan he posted to the Open Science Framework, a sharing website, people would ask him, "What are you going to scan next?" He would respond: "I want to scan them all. I want to scan all fish."

Then he developed techniques, such as scanning multiple specimens, that made the goal within reach, he said, and suddenly a project that easily could have taken 50 years boiled down to just a few years.

"It wasn't just a joke anymore. We could actually say it and have a hope of actually getting every fish scanned," he said.

Scans typically cost \$500 to \$2,000 each, but Summers' project provides free access to scans. Summers recalled how as a graduate student 17 years ago he bribed a hospital technician with Snickers bars to scan large stingrays in its CT scanner. At the time, he wanted to know how an animal with a skeleton composed of cartilage could do such "a crazy thing" as crush hard prey, such as snails and mussels. The medical CT scan helped offer an answer: the **sting** ray had mineralized tissue in its cartilage.

So began his fascination with CT scans as a way to uncover other puzzles: What's the structure of a sting ray's wing? How does one scale in armored fish overlap with another and what are the implications for movement?

"It's been a long road from getting them for free, paying some money for them, using hospital facilities in the middle of the night," Summers said.

The scanner, about the size of two dorm refrigerators, is housed at the UW's marine lab on Friday Harbor, 80 miles north of Seattle.

He is also known for his fish photographs — stunning images of fish that have been stained with red and blue dyes to highlight cartilage and bone — which were shown at the Seattle Aquarium.

The scanner can handle smaller fish; about two grapefruits stacked on top of each other. The average fish is about a foot long, so he said he can cover half the world's fish. He's hoping to scan large fish using industrial scanners elsewhere, including at the University of Washington.

Malorie Hayes, a graduate student at Auburn University, took Summers up on his offer to use the scanner after hearing him talk about the project at a recent conference. In two weeks, she'll fly to the lab to scan over 200 species of African barb, a small freshwater fish.

Such fish are rare and difficult to obtain, she said. To look at their skeleton, you typically would have to destroy the specimen.

CT scans offer a non-destructive way to study those bones. "Instead of having to cut them open, I can visualize the skeletons," she said. "There are lots of questions that can be answered just by looking at their skeletons."

Summers has been fascinated with how researchers are using the scans. Some are making computer graphics models and animating the fish. Another group colorized the skulls to show what bones were what.

"The reason this can happen is, it's free an open access," he said.



A new species of *Hemigrammus* Gill 1858 from the western Amazon basin in Peru and Colombia

Flávio C. T. Lima, Vanessa Correa and Rafaela P. Ota: A new species of *Hemigrammus* Gill 1858 (Characiformes: Characidae) from the western Amazon basin in Peru and Colombia, pp. 123-132

Abstract

Hemigrammus aguaruna, new species, is described from tributaries of the Río Marañón, Departamento Loreto, Peru, and is also recorded from Leticia, Departamento Amazonas, Colombia. The new species belongs to the *Hemigrammus ocellifer* species group, sharing with the remaining species of the group the presence of two humeral blotches, a caudal peduncle blotch, the upper margin of the eye red in living specimens, and the presence in adult males of a single middle-sized hook on the last unbranched and anteriormost branched anal-fin rays. *Hemigrammus aguaruna* can be readily distinguished from the remaining congeners of the *Hemigrammus ocellifer* species group, with exception of *H. yinyang*, by presenting a very conspicuous, intensely dark, roughly oval, horizontally elongated second blotch (vs. second humeral blotch less developed than the first humeral blotch, vertically elongated and very narrow). Comments on the recent revalidation of *Hemigrammus falsus* are presented.

PDF (158 KB)



Trimma tevegae and *T. caudomaculatum* revisited and
redescribed (Acanthopterygii, Gobiidae), with Descriptions of Three New similar

Species from the western Pacific; *Trimma burridgeae*, *T. hollemani* & *T. corerefum*

Trimma corerefum

Winterbottom, 2016 DOI: 10.11646/zootaxa.4144.1.1

Abstract

A redescription and diagnosis of *Trimma tevegae*, based on 50 additional specimens from the type locality at Rabaul, New Britain is provided, and contrasted with the redescription and diagnosis of *T. caudomaculatum*, based on the type material and an additional 22 specimens from various western Pacific localities. *Trimma tevegae* may most easily be recognized by the lack of a blue stripe (dark in preservative) in the dorsal midline of the snout, and a short second spine in the first dorsal fin, reaching posteriorly to the origin or first few ray bases of the second dorsal fin. *Trimma caudomaculatum* can be identified by the blue stripe from the snout along the dorsal midline, the blue spots and stripes in front of the eye, on the opercle and beneath the eye (dark in preserved material), and the very elongate second dorsal spine, usually extending to beyond the end of the second dorsal fin. Three similar-looking new species are described. *Trimma burridgeae* and *T. hollemani* are morphologically very close to each other, differing mainly in the length of the second dorsal spine (to the posterior base of the second dorsal fin or beyond in *T. burridgeae*; to the anterior base of that fin in *T. hollemani*). These two species differ by over 9% of the bases of the COI gene. *Trimma corerefum* is the most distinctive of the species, differing in lacking a blue stripe on the dorsal surface of the snout, in the pigment pattern around the eye, in having fewer cephalic sensory papillae (free neuromasts) in rows d', ea, ep, f, r and ot, and in a shorter fifth pelvic fin ray (34–45% length of fourth pelvic ray). The morphological differences between the species are reinforced by the results of a barcode analysis of the COI gene, based on 105 specimens.

Richard Winterbottom. 2016. *Trimma tevegae* and *T. caudomaculatum* revisited and redescribed (Acanthopterygii, Gobiidae), with Descriptions of Three New similar Species from the western Pacific. *Zootaxa*. 4144(1); DOI: 10.11646/zootaxa.4144.1.1



Tometes kranponhah & T. ancylorhynchus • Two New Phytophagous Serrasalms (Characiformes: Serrasalmidae), and the First Tometes species described from the Brazilian Shield

Tometes kranponhah & T. ancylorhynchus

DOI: 10.1111/jfb.12868

Abstract

Two new species of Tometes from the Brazilian Shield rapids are described. Tometes kranponhah is endemic to the Xingu River basin, whereas Tometes ancylorhynchus occurs both in the Xingu and the Tocantins–Araguaia River basins. The two species are sympatric in the Xingu drainages and have many similarities in morphology and colouration. Major diagnostic differences are the dark pigmentation on the opercle of T. kranponhah and its distinct snout shape and arrangement of premaxillary teeth. In addition, T. kranponhah is a large fish that is abundant in the Xingu River, whereas T. ancylorhynchus is a medium-sized fish for which there are few records.

M. C. Andrade, M. Jégu and T. Giarrizzo. 2016. Tometes kranponhah and Tometes ancylorhynchus (Characiformes: Serrasalmidae), Two New Phytophagous Serrasalms, and the First Tometes species described from the Brazilian Shield. *Journal of Fish Biology*. 89; 467–494. DOI: 10.1111/jfb.12868



Child Killer Beaten To Death With Fish Tank Rock

inmate was attacked during a workshop as prisoners began their daily routines after breakfast.

A second prisoner has been arrested on suspicion of murder

A prisoner has been battered to death at one of the UK's maximum security jails.

The victim was attacked in one of Long Lartin prison's workshops at about 9am as inmates began their daily routines after breakfast.

He is believed to be convicted child killer Sidonio Teixeira, who was jailed for life in 2007 for killing his three-year-old daughter and trying to kill his son, aged nine.

He suffered severe head injuries during the attack at the jail near Evesham, Worcestershire. A prison source said he was attacked with a rock taken from a fish tank and hidden inside a sock.

It is thought the victim was pronounced dead as prison staff awaited the arrival of paramedics.

Another inmate, a man in his 60s, has been arrested on suspicion of murder and is in police custody.

He is believed to be Victor Castigador, who is originally from the Philippines.

Detective Inspector Paul Hardman, who is leading the investigation, said: "A thorough and robust investigation has been launched.

"These enquiries are in the early stages so we are unable to provide more information at this time."

Long Lartin has 600 prisoners, many of them category A inmates who are serving sentences of at least four years.

It also houses prisoners on remand awaiting trial.

A prisoner was arrested by West Mercia police and was being questioned on suspicion of murder.



Odontanthias cauoh is a new anthias species from Brazil

Odontanthias cauoh is a new species of deepwater anthias hailing from the São Pedro and São Paulo archipelago of Brazil. *Odontanthias cauoh* is the second member of this genus to be described from the Tropical Atlantic Ocean, bringing the total number of described *Odontanthias* species to 16.

Up until a few years ago this illustrious group of showy anthias was believed to be restricted to the Indo-Pacific Ocean. However with the discovery and description of *Odontanthias hensleyi* from Puerto Rico, and now with the publication of *Odontanthias cauoh*, it is likely that there may be a handful of species from this genus living in the deep waters of the Atlantic Ocean.

Odontanthias hensleyi from Puerto Rico

Strangely enough, we don't know anything about the habitat where *Odontanthias cauoh* lives because the only specimen was collected at the surface. The basis for the description of *Odontanthias cauoh* rests solely on a single individual that was collected with a dipnet.

The condition of the fish was not too great because it was a dying specimen that was suffering from unknown causes, and had been nibbled on by opportunistic fish on its way up. Surely this fish lives in the same kind of deep waters and habitats as its congeners but how deep we cannot say.

Due to the condition of the type specimen it is also hard to know how this species looked when it was healthy and colorful. It has a generally red overall appearance, especially in the dorsal and anal fins, with a few yellow stripes on the face similar to the Puerto Rican *Odontanthias hensleyi*. The caudal fin is in really poor shape but we can see that the pelvic fins are not nearly as pronounced as in *O. hensleyi*.

Hopefully the discovery of *Odontanthias cauoh* will spur more deep diving exploration in this part of Brazil as we'd love to learn more about this fish alive, and the natural habitat where it is found. *Odontanthias cauoh* is described by Carvalho-Filho, Macena & Nunes in the latest volume of *ZooTaxa*.



Sueviota bryozophila • A New Species of Coral-Reef Goby (Teleostei: Gobiidae) from Indonesia

Sueviota bryozophila

Allen, Erdmann & Cahyani, 2016

Abstract

A new species of gobiid fish, *Sueviota bryozophila*, is described from Indonesia, at Ambon, Molucca Islands and Lembeh Strait, North Sulawesi, on the basis of six specimens, 9.9–13.2 mm SL. The new species differs from the other four members of the Indo-Pacific genus by having reduced sensory pores on the dorsal surface of the head, with only paired pores at the mid-interorbital, and by having four pelvic-fin rays unbranched and a single branching of the fifth ray. Moreover, the new species is unique among both *Sueviota* and *Eviota* in having a complete membrane linking the two pelvic fins to form a disk. Other diagnostic features include 8–9 dorsal-fin soft rays, 7–8 anal-fin soft rays, 16 pectoral-fin rays, no pelvic frenum, and enlarged nostrils. The head and body is generally whitish to pale pink with scattered red spots. Unlike other members of the genus, there are no internal dark bars. The new species is only found associated with small pale bryozoan colonies, in which they are well camouflaged.

Gerald R. Allen, Mark V. Erdmann and N. K. Dita Cahyani. 2016. *Sueviota bryozophila*, A New Species of Coral-Reef Goby from Indonesia (Teleostei: Gobiidae). *Journal of the Ocean Science Foundation*. 20, 76–82. <http://www.oceansciencefoundation.org/josf/josf20c.pdf>



Betta mahachaiensis

Betta mahachaiensis | Mahachai Fighting fish • a new species of bubble-nesting fighting fish (Teleostei: Osphronemidae) from Samut Sakhon Province, Thailand

Betta mahachaiensis

Kowasupat, Panijpan, Ruenwongsa & Sriwattanarothai. 2012

Mahachai Fighting fish

Abstract

Betta mahachaiensis, a new species of fighting fish belonging to the *Betta splendens* group, is described. The fish inhabits specifically sites with brackish water and nipa palms in the Samut Sakhon Province, Thailand. It is distinguishable from other members of the *B. splendens* group in having an iridescent green/bluish-green appearance on the brown-to-black body background. The opercular membrane has brown-to-black colour without red streaks or patches. The opercle has two parallel iridescent green or bluish-green vertical bars. Its dorsal, caudal, and anal fin rays are brown to black, contrasting with the iridescent green or bluish-green of the interradiation membrane. Black transverse bars are present on at least the proximal two-thirds of the dorsal fin, but not on the caudal fin. The colour of the pelvic fins is brown to black with an iridescent green/bluish-green front margin and a white tip. Females possess similar characters but are less colourful than males.

Kowasupat, C., Panijpan B., Ruenwongsa, R. & Sriwattanaarothai, N. 2012. *Betta mahachaiensis*, a new species of bubble-nesting fighting fish (Teleostei: Osphronemidae) from Samut Sakhon Province, Thailand. *Zootaxa*. (3522): 49–60.

<http://www.mapress.com/zootaxa/list/2012/3522.html>



New Species of deepwater scorpionfish, *Scorpaenodes barrybrowni*

Scorpaenodes barrybrowni is a new pretty little species of scorpionfish from the deepwaters of the Caribbean Sea. Discovered in Dominica by the Curasub, the newly described *Scorpaenodes barrybrowni* is named in honor of Barry Brown, a member of team Curasub and the primary photographer of many of the new species that the team has discovered over the last several years.

The new deepwater scorpionfish is small and attractive, with a beautiful delicate red base coloration with complimentary yellow ornamentation to the pectoral fins. *Scorpaenodes barrybrowni* is closely related to two other species of dwarf scorpionfish of *Scorpaenodes*, also from deepwaters of the Western Atlantic.

Scorpaenodes tredecimspinosus has a more pronounced and deeper red coloration over much of its body, punctuated by few small white patches. Meanwhile *Scorpaenodes caribeaus* is more of an olive green overall, also with yellow colored

pectoral fins but with much more of a spotted pattern over much of its body.

A comparison of the three species of dwarf scorpionfish from the deepwaters of the West Atlantic, from top to bottom: The newly described *Scorpaenodes barrybrowni*, photo Barry Brown, *S. tredecimspinosus*, photo Ellen Muller and *S. carribbaeus*, photo Brian Mayes.

The deep living *Scorpaenodes barrybrowni* has a definite 'Plectranthias' look to it, but as pretty as this species is, since it was caught at depths of 95 to 160 meters (311 to 525 feet), there's going to be very few specimens of this species that are ever brought to the surface.

The newest species of reef fish to be officially minted is described by Baldwin, Pitassy & Robertson in the July 2016 volume of ZooKeys.

from ReefBuilders



Southern Aquatics & Pets

Ok so this week we have had another big theft this time an fx6 aquarium filter worth £232, anyone know who he is please send me a pm. lets see if we can catch who ever took this. you guys did so well last time we had a tank stolen.

thanks wes www.facebook.com/Southern Aquatics & Pets





Rhynchorhina mauritaniensis • A New Genus and Species of Wedgefish (Elasmobranchii:Batoidea: Rhinidae) from the eastern central Atlantic

Rhynchorhina mauritaniensis

Séret & Naylor, 2016 DOI: 10.11646/zootaxa.4138.2.4

Abstract

A new wedgefish, *Rhynchorhina mauritaniensis* gen. et sp. nov., is described from three specimens collected in the shallow waters of the shoal “Banc d’Arguin”, off Mauritania (Eastern Central Atlantic). The new genus is mainly distinguished from its close relatives, members of the genus *Rhynchobatus*, by its snout shape, more broadly rounded like that of the shark-ray *Rhina ancylostoma*, instead of being typically wedge-shaped as in *Rhynchobatus* species. The new species resembles the common West African wedgefish, *Rhynchobatus lubberti*, in having a similar colour pattern, but differs in snout shape. The new genus is supported as genetically distinct by comparative analysis of the mitochondrial NADH2 gene.

facebook.com/SharkReferences/photos1164664746886961

B. Séret and G.J.P. Naylor. 2016. *Rhynchorhina mauritaniensis*, A New Genus and Species of Wedgefish from the eastern central Atlantic (Elasmobranchii: Batoidea: Rhinidae). *Zootaxa*. 4138(2); 291-308. DOI: 10.11646/zootaxa.4138.2.4

ToDropScience.tumblr.com/post/147596621212/this-strange-false-shark-ray-rhynchorhina

facebook.com/SharkReferences/photos1164664746886961



60 fish killed at Coast Aquatics in 'act of sabotage'

Tanks at Coast Aquatics. The owner thinks fish were deliberately targeted.

A HAVERFORDWEST, Wales fish centre has been subject to sabotage resulting in the death of more than £1,500 worth of fish, according to the owner.

Ben Vaughan of Coast Aquatics believes that someone put chemicals in one of the tanks, causing 60 fish to die.

"It's an absolute disaster," said Mr Vaughan who thinks the incident happened within the past week during opening hours.

With the marine fish in a centralised system, the contaminated water affected numerous tanks holding saltwater fish.

All fish have now been removed from the system to prevent further loss of life.

With 16 CCTV cameras in the shop, Mr Vaughan will go through footage from the last two weeks in the hope of finding the culprit.

On its Facebook page, Coast Aquatics said: "It is a criminal matter and as soon as we find out who it is, the footage will be handed over to the police."

With no insurance covering the fish, Mr Vaughan is devastated following the incident.

Mr Vaughan added: "It's unreal that someone would target the fish. Their cost is somewhere between £1,500 and £2,000."

Previously based in Milford Haven, Coast Aquatics moved to a new premises in Haverfordwest in May.



Open Show & Auction 2016 Fair City Aquarist Society- 25th September 2016

Glossolepis incisus – the red rainbowfish

The Fair City Aquarist Society will hold their Open Show and Auction this year on Sunday 25th September 2016 at t

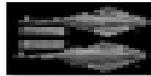
The Moncreiffe Church Hall, Glenbruar Crescent, Perth PH2 0AJ.

Judges this year will again be provided by The Federation of Scottish Aquarist Societies to whom we are grateful.



fcas-show-schedule-20163.pdf

Download File



Squatina david • A New Southern Caribbean Species of Angel Shark (Chondrichthyes, Squaliformes, Squatinidae), Including Phylogeny and Tempo of Diversification of American Species

Squatina david

Acero, Tavera, Anguila & Hernández, 2016

DOI: 10.1643/CI-15-292

A new species of Squatina, *S. david*, is described from the Colombian Caribbean. The new species differs from all the western North Atlantic angel sharks by lacking a mid-dorsal line of thorns or enlarged dermal denticles, by having an eye-spiracle distance larger than 1.5 times eye diameter, and each nasal flap with two rod-like barbels. Coloration is grayish to brownish yellow, males are dark-spotted, females have abundant whitish spots. *Squatina david* is nested within the American clade of angel sharks, being the sister species to the Brazilian species.

Arturo Acero P., José J. Tavera, Rafael Anguila and Luis Hernández. 2016. A New Southern Caribbean Species of Angel Shark (Chondrichthyes, Squaliformes, Squatinidae), Including Phylogeny and Tempo of Diversification of American Species. *Copeia*. 104(2):577-585. DOI: 10.1643/CI-15-292

facebook.com/294682373885900/photos/1230129260341202





Abyssobrotula hadropercularis • A New Species of Abyssobrotula (Ophidiiformes, Ophidiidae) from the Kuril- Kamchatka Trench

Abyssobrotula hadropercularis

Ohashi & Nielsen, 2016 DOI: 10.11646/zootaxa.4132.4.7

Abstract

A new abyssal ophidiid fish, *Abyssobrotula hadropercularis*, is described on the basis of two specimens caught at two stations at ca. 5000 meters of depth in the Kuril-Kamchatka Trench. The genus *Abyssobrotula* Nielsen, 1977 was previously known from the type species, *A. galathea* Nielsen, 1977 of which 40–50 specimens now are reported from all oceans at depths greater than 2000 m. One of the specimens from the Puerto Rico Trench captured at 8370 m is still the deepest record for fishes. The new species differs from *A. galathea* in having great number of pectoral-fin rays 14–15 (vs 10–11); greater eye diameter (1.2–1.3% SL vs 0.7–0.9% SL); larger prepelvic 14.0–14.5% SL (vs 10.5–12.5% SL) and preanal lengths 42.5% SL (vs 33.0–41.5% SL); opercular spine strongly developed (vs poorly developed); gill rakers on anterior arch robust and close-set (vs rakers thin and well separated). The description of *A. hadropercularis* makes it necessary to slightly modify the generic diagnosis.

Distribution.— Known from two abyssal (5179–5223 meters) locations in the Kuril-Kamchatka Trench, Western North Pacific Ocean.

Etymology.— The specific name, *hadropercularis*, derives from *hadros* (bulky) and *opercularis* (gill cover) in reference to the robust opercle.

Shinpei Ohashi & Jørgen G. Nielsen. 2016. A New Species of *Abyssobrotula* (Ophidiiformes, Ophidiidae) from the Kuril-Kamchatka Trench. *Zootaxa*. 4132(4): 559–566. DOI: 10.11646/zootaxa.4132.4.7
facebook.com/photo.php?fbid=1056187294431061



Verulux solmaculata• A New Cardinalfish (Perciformes: Apogonidae) from Papua New Guinea and Australia

[upper] Verulux solmaculata Yoshida & Motomura, 2016

[lower] Verulux cypselurus (M. C. W. Weber, 1909)

Abstract

Verulux solmaculata sp. nov., a new cardinalfish based on 88 specimens collected from Papua New Guinea and Australia, differs from *V. cypselurus*, the only other known member of the genus, by the following characters: higher modal numbers of pectoral fin-rays (16 vs. 15 in the latter) and developed gill rakers (14 vs. 13), a broader black band extending over 3–5 (mode 4) rays on each lobe of the caudal fin (vs. 1–3, mode 2), and a black blotch on the caudal-fin base (vs. blotch absent).

Diagnosis. A species of *Verulux* with the following combination of characters: pectoral-fin rays 16 (rarely 15 or 17); developed gill rakers 13–16 (modally 14); gill rakers including rudiments 17–20 (modally 18); distinct black blotch on caudal-fin base; black pigments on 3–5 (modally 4) rays on each caudal fin lobe.

Distribution. *Verulux solmaculata* sp. nov. is currently known only from Papua New Guinea and northern Western Australia (Fig. 3), at depths of 18–20 m.

Etymology. The specific name “solmaculata” is derived from Latin, meaning “sunspot”, in reference to the distinct blotch on the caudal-fin base.

Papua New Guinea and Australia.

Ichthyological Research. DOI: 10.1007/s10228-016-0539-2



Chaetostoma joropo • Description of A New Species of the Genus Chaetostoma (Siluriformes: Loricariidae) from the Orinoco River Drainage

with Comments on *Chaetostoma milesi* Fowler, 1941

Chaetostoma joropo Ballen, Urbano-Bonilla & Maldonado-Ocampo, 2016

DOI: 10.11646/zootaxa.4105.2.6

Abstract

Chaetostoma joropo n. sp. is described from the piedmont of the Orinoco River drainage in Colombia. The new species has been long confused with *Chaetostoma milesi*, a species with similar overall morphology and color pattern that is restricted to the Magdalena-Cauca River Basin. We diagnose the new species on the basis of morphology as well as a precise description of the color pattern. *Chaetostoma joropo* n. sp. is also easily distinguished from *C. formosae* the most similar species and other species inhabiting the Orinoco River drainage in Colombia. Data on ontogenetic variation and sexual dimorphism are provided, as well as natural history notes and remarks on the usage of the name *Chaetostoma milesi* for specimens from both the Orinoco and Magdalena-Cauca drainages. A discussion on the usage of the name *Chaetostoma platyrhynchus* is also provided given its current instability in the literature.

Gustavo A. Ballen, Alexander Urbano-Bonilla and Javier Maldonado-Ocampo. 2016. Description of A New Species of the Genus *Chaetostoma* from the Orinoco River Drainage with Comments on *Chaetostoma milesi* Fowler, 1941 (Siluriformes: Loricariidae). *Zootaxa*. 4105(2); DOI: 10.11646/zootaxa.4105.2.6

[ResearchGate.net/publication/301512112_Description_of_a_new_species_of_the_genus_Chaetostoma_from_the_Orinoco_drainage_with_comments_on_Chaetostoma_milesi_Fowler_Siluriformes_Loricariidae](https://www.researchgate.net/publication/301512112_Description_of_a_new_species_of_the_genus_Chaetostoma_from_the_Orinoco_drainage_with_comments_on_Chaetostoma_milesi_Fowler_Siluriformes_Loricariidae)



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Lutjanus sapphirolineatus • Validity of A Blue Stripe Snapper, *Lutjanus octolineatus*(Cuvier 1828) and A Related Species, *L. bengalensis* (Bloch 1790) with A New Species (Pisces; Lutjanidae) from the Arabian Sea

Lutjanus sapphirolineatus a new species

Iwatsuki, Al-Mamry & Heemstra, 2016

DOI: 10.11646/zootaxa.4098.3.5

Abstract

Lutjanus octolineatus (Cuvier 1828), previously considered a junior synonym of *Lutjanus bengalensis* (Bloch 1790), is shown to be a valid species and lectotypes are designated. Both species are redescribed. The two species have overlapping distributions in the Indian Ocean, but are clearly separable by different dorsal-fin spine counts, blue-striped pattern on the body and the presence or absence of a subocular extension of cheek scales. *Lutjanus octovittata* (Valenciennes 1830), formerly assigned to synonymy of *L. bengalensis*, is considered a junior synonym of *L. octolineatus* based on examination of the holotype. *Lutjanus sapphirolineatus* n. sp., a species formerly misidentified as *L. bengalensis*, is described based on 10 specimens from Oman and Somalia. The new species differs from the three species above by a combination of different characters. Analysis of the mitochondrial cytochrome c oxidase subunit 1 (CO1, 603 bp) genetic marker, also strongly supports the validity of each species of the blue-striped snapper complex as distinct.

Yukio Iwatsuki, Juma M. Al-Mamry and Phillip C. Heemstra. 2016. Validity of A Blue Stripe Snapper, *Lutjanus octolineatus* (Cuvier 1828) and A Related Species, *L. bengalensis* (Bloch 1790) with A New Species (Pisces; Lutjanidae) from the Arabian Sea. *Zootaxa*. 4098(3)

DOI: 10.11646/zootaxa.4098.3.5





Mulloidichthys flavolineatus flavicaudus • A New Subspecies of Goatfish (Perciformes, Mullidae) from the Red Sea and Arabian Sea

Mulloidichthys flavolineatus flavicaudus

Fernandez-Silva & Randall, 2016

DOI: 10.3897/zookeys.605.8060

Abstract

The number of goatfish species has increased recently, thanks in part to the application of molecular approaches to the taxonomy of a family with conservative morphology and widespread intraspecific color variation. A new subspecies *Mulloidichthys flavolineatus flavicaudus* Fernandez-Silva & Randall is described from the Red Sea and Arabian Sea, including Socotra and Gulf of Oman. It is characterized by a yellow caudal fin, 25–28 gill rakers, and 37–38 lateral-line scales and it is differentiated from nominal subspecies *M. flavolineatus flavolineatus* by 1.7% sequence divergence at the mitochondrial cytochrome b gene. The morphometric examination of specimens of *M. f. flavolineatus* revealed variation in head length, eye diameter, and barbel length, in western direction from the Hawaiian Islands, South Pacific, Micronesia, and the East Indies to the Indian Ocean. The population of *Mulloidichthys f. flavicaudus* subsp. n. in the Gulf of Aqaba differs from that of the remaining Red Sea by shorter barbels, smaller eyes, shorter head, and shorter pelvic fins. We present a list of 26 endemic fishes from the Gulf of Aqaba and discuss the probable basis for the endemism in the light of the geological history of this region.

Diagnosis: Body elongate, the depth at first dorsal-fin origin 4.1–4.5 in SL; head moderately compressed, the length 3.0–3.3 in SL; snout long, slightly blunt. Barbels usually not reaching a vertical at posterior margin of preopercle, their length 4.1–5.0 in SL. Eye diameter 10.3–13.5 in SL. Pectoral-fin rays 16–18. Gill-raker counts 25–28 (usually 26 or 27); lateral-line scales 37–38. Caudal fin yellowish to yellow. [Diagnosis based on the Red Sea proper population, i.e. excluding the Gulf of Aqaba, see remarks].

Etymology: *Mulloidichthys f. flavicaudus* subsp. n. is named in reference to the yellow color of the caudal fin, in contrast to the whitish gray color of the caudal fin of *M. f. flavolineatus*.

Distribution: *Mulloidichthys f. flavicaudus* subsp. n. is restricted to the NW Indian Ocean biogeographic province, where it ranges from various locations in the Red Sea (including the Gulf of Aqaba), the Gulf of Tadjoura, the Gulf of Aden, and Socotra (Fig. 9). *M. f. flavicaudus* subsp. n. has extended its range to Oman (Fig. 11) and probably to the Maldives (Fig. 12),

where it has encountered the western distribution of *M. f. flavolineatus*. Underwater photographs of fish with yellow and gray caudal fins suggest overlap and interbreeding by the two subspecies. Carpenter et al. (1997) included *M. flavolineatus* in their catalog of fishes of the Arabian Gulf. They did not cite any voucher specimens, and the photo they used is from Mauritius.

Iria Fernandez-Silva, John E. Randall, Daniel Golani and Sergey V. Bogorodsky. 2016. *Mulloidichthys flavolineatus flavicaudus* Fernandez-Silva & Randall (Perciformes, Mullidae), A New Subspecies of Goatfish from the Red Sea and Arabian Sea. *ZooKeys*. 605: 131-157. DOI: 10.3897/zookeys.605.8060

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Garra incisorbis • A New Species of Labeonine (Teleostei: Cyprinidae) from Pearl River Basin in Guangxi, China

Garra incisorbis
Zheng, Yang & Chen, 2016

Garra incisorbis, new species, is described from the Pearl River drainage, Guangxi, China.

It has a median notch on posterior edge of the oral sucking disc shared only with *G. micropulvinus*. *Garra incisorbis* is distinguished by having 2-4 fleshy buds on each side of the central fleshy pad, a fan-shaped central fleshy pad, prominent papillae densely set over the central pad, and 14 circumpeduncular scale rows.

Distribution. *Garra incisorbis* is presently known only from the Sanchahe River, a small tributary of Zuojiang River, in Napo County, Guangxi Province, China, draining into the Pearl River (Fig. 4).

Etymology. From the Latin *incisus* (notched) and *orbis* (circle, disk), an allusion to posterior edge of the oral sucking disc with a median notch. A noun in apposition.

Lan-Ping Zheng, Jun-Xing Yang and Xiao-Yong Chen. 2016. *Garra incisorbis*, A New Species of Labeonine from Pearl River Basin in Guangxi, China (Teleostei: Cyprinidae). *Ichthyol. Explor. Freshwaters*. 26(4); 299-303
http://www.pfeil-verlag.de/04biol/pdf/ief26_4_02.pdf



Hypselobarbus keralaensis • A New Species of Hypselobarbus (Cypriniformes: Cyprinidae) from Kerala region of Western Ghats, India

Hypselobarbus keralaensis

Arunachalam, Chinnaraja & Mayden, 2016

IJichthyol.org

Abstract

Hypselobarbus kurali (Menon & Rema Devi, 1995) consists of multiple species with similarity in the colour pattern of the tip of their caudal fins being orange and black. This complex of species possesses two pairs of barbels. Inspection of collections of *H. kurali* from the senior author's samples from various streams/rivers of Western Ghats covering the Indian states of Tamil Nadu, Kerala and Karnataka revealed that an additional species has gone unrecognized. This new species, *Hypselobarbus keralaensis*, is diagnosed from its likely closest relative *H. kurali* by having fewer transverse breast scale rows (16 vs. 21-23) and fewer pre-anal scale rows (38-39 vs. 43-46).

Fig.1. *Hypselobarbus keralaensis* Arunachalam, Chinnaraja & Mayden, 2016

(A) *Hypselobarbus keralaensis* sp. n. MSUMNH 95, Holotype, 176.65 mm SL, Thodaiyar stream, Karamana River basin, collected by M. Arunachalam and team, 10 November, 2001, (B) *Hypselobarbus keralaensis* sp. n. showing the anal fin structure and (C) gill-raker of *Hypselobarbus keralaensis* sp. n.

IJIchthyol.org

Diagnosis: *Hypselobarbus keralaensis* sp. n. is distinguished from *H. curmuca* by two pairs of barbels (vs. one pair), fewer upper transverse scale rows (8.5 vs. 9.5-10), fewer circumferential scale rows (32-33 vs. 39-40), fewer circumpeduncular scale rows (18 vs. 20-21), more transverse breast scale rows (16 vs. 10-11), a shorter upper jaw length (26.31-31.51 vs. 38.85-43.05 %HL) and longer prenasal length (33.60-44.58 vs. 26.57-31.48 %HL). It is distinguished from *H. kolus* in having two pairs of barbels (vs. one pair), fewer upper transverse scale rows (8.5 vs. 9.5-10), fewer lower transverse scale rows (6.5 vs. 7.5-9), fewer circumpeduncular scale rows (18 vs. 20-21), more transverse breast scale rows (16 vs. 12-14), longer snout (46.51-53.89 vs. 34.3-42.76 %HL), longer pre-nasal length (33.60- 44.58 vs. 22.61-33.18 %HL) and presence of orange and black on caudal tip (vs. absence of color pattern). It is distinguished from *H. dubius* in having a weaker dorsal spine (vs. strong), fewer lateral line scale rows (41 vs. 42-45) and more transverse breast scale rows (16 vs. 9-11). The species is distinguished from *H. micropogon* in having a weaker dorsal spine (vs. strong), more transverse breast scale rows (16 vs. 8-12), and more circumferential scale rows (32-33 vs. 26-29). It is distinguished from *H. nilgiriensis* in having a weaker dorsal spine (vs. strong), fewer pre anal scale rows (38-39 vs. 41-45) and fewer circumferential scale rows (32-33 vs. 34-35). It is distinguished from *H. periyarensis* in having fewer lateral line scale rows (41 vs. 43-44), fewer predorsal scale rows (13-14 vs. 17-18), more transverse breast scale rows (16 vs. 10-13), and the morphometric features of having a shorter distance between occiput and dorsal fin origin (23.74-25.13 vs. 30.12-34.75 %SL), shorter dorsal origin to pectoral insertion (25.54-27.63 vs. 33.25-37.45 %SL) and longer snout (46.51-53.89 vs. 35.45-38.34 %HL).

Coloration: Dorsal half of body greyish, lighter on the sides and venter; deep black bar behind opening of operculum. Base of the scales above and below the lateral line with dark spots. Tips of caudal tinged black (Figs.1 and 2).

Distribution: This species is currently known from three rivers in Kerala.

Etymology: The new species is named after the state of Kerala as specimens were collected from south and north Kerala.

Muthukumarasamy ARUNACHALAM, Sivadosh CHINNARAJA AND Richard Lee MAYDEN. 2016. Description of A New Species of *Hypselobarbus* from Kerala region of Western Ghats, peninsular India (Cypriniformes: Cyprinidae). Iranian Journal of Ichthyology. 3(2): 73–81. <http://IJIchthyol.org/index.php/iji/article/view/3-2-1>
[facebook.com/israqarium/photos/1118126571587274](https://www.facebook.com/israqarium/photos/1118126571587274)



Hypostomus leucophaeus • A New Species of Hypostomus Lacépède, 1803 (Siluriformes: Loricariidae) from rio Itapicuru basin, Bahia State, Brazil

Hypostomus leucophaeus

Zanata & Pitanga, 2016

DOI: 10.11646/zootaxa.4137.2.4

Abstract

A small-bodied new species of Hypostomus is described from the rio Itapicuru basin, Bahia, Brazil. The new species is distinguished from most congeners mainly by having the lower caudal-fin lobe distinctly longer than the upper lobe and absence of conspicuous dark spots on posterior half of body. It differs particularly from congeners occurring in northeastern coastal Brazilian drainages and the rio São Francisco basin by having the anterior portion of the abdomen completely plated and the posterior portion plated only on a narrow median line, leaving large lateral areas naked, dark spots on anterior portion of trunk similar in size or slightly larger than those on head, absence of conspicuous spots on posterior half of trunk and caudal fin, and absence of keels on head and trunk.



Male Fish Growing Female Eggs in Chicago-Area River

Male largemouth bass (*Micropterus salmoides*) are the focus of a newly published study from the Illinois Natural History Survey.

Female eggs are appearing in the testes of some male fish in Illinois, a new study shows.

Scientists at the Illinois Natural History Survey dissected 51 male largemouth bass, a common game fish, in the spring of 2014 and found that 21 – some 41 percent – had grown oocytes, or female eggs, in their testicular tissue.

The fish were collected from the lower region of the Des Plaines River near Joliet, about 25 miles downstream from Chicago. This part of the river isn't exactly pristine: the Chicago Sanitary and Ship Canal, where treated sewage is carried out of the city, joins with the Des Plaines River north of this point. In its 2016 water quality report, the Illinois Environmental Protection Agency found 12 out of the 14 segments of the river it tested were impaired by contaminants such as fecal bacteria and toxic industrial chemicals.

Yet the region is still a popular one for recreational fishing of largemouth bass and other fish for anglers to reel in, according to the study's co-author and former INHS scientist, Mark Fritts.

He also said the wild population of largemouth bass they examined don't appear to be negatively affected by such feminization.

"This is an emerging field of research. We're kind of on the tip of the iceberg. There are still a lot more questions than answers."

–Fish Biologist Mark Fritts

Scientists describe these fish as intersex, and say their disrupted hormonal systems could be caused by hormone-based pollutants in the water called endocrine disrupting chemicals (EDCs). These can be found in birth control pills, pesticides and other consumer, industrial and agricultural products.

Similar findings have been made elsewhere in the country, but this study is believed to be the first to measure the intersex condition of wild fish within Illinois' waterways.

"Long-term surveys conducted by the INHS in this region have shown big increases in largemouth bass over the past 40 years since the implementation of the Clean Water Act," Fritts said. "It's a dichotomy here because we're seeing a population that has increased dramatically, but we're also seeing this potential problem rising."

While it's not one of the five longest rivers in Illinois, the Des Plaines River is the longest stream in the Chicago area, flowing 133 miles from south Wisconsin to form the Illinois River, which feeds into the Mississippi River.

Fritts, who's now a U.S. Fish and Wildlife Service fish biologist in La Crosse, Wisconsin, spoke to "Chicago Tonight" about the study's results, which were published in the July 2016 edition of the scientific journal *The American Midland Naturalist*.

Chicago Tonight: Were you surprised that almost half of the male largemouth bass you collected in this river had grown female eggs?

MF: Not really. Given the environmental history of the Chicago area and the results of recent studies that have documented the presence of high concentrations of EDCs in the Chicago region's water bodies, we assumed that fish in this downstream location would probably be affected in some way or another.

A microscopic view of eggs in the testicular tissue of an intersex male largemouth bass. (Mark Fritts)

CT: What factors could be causing this?

MF: We can't say anything directly from our study because we didn't measure the concentrations of any chemicals within the water. But previous researchers have found really high concentrations of estrogenic compounds coming out of the wastewater treatment plants in Chicago. And, I mean, they were really significant concentrations coming out into the streams that eventually find their way into the Des Plaines River. Those are older studies, but they illustrate that these EDCs are present in Chicago area water bodies and they naturally flow downstream.

CT: What exactly are EDCs, and can you give us some examples?

MF: EDCs are any natural or synthetic chemical compounds that can disrupt the endocrine development pathways of an organism. Our growth and our reproductive development are all tied to our endocrine system. These chemicals can affect the way these systems develop. There are literally thousands of compounds classified as EDCs around the world.

Environmental estrogen is associated with birth control pills, things like that. Whenever a person takes medicine and goes to the bathroom, a very large amount of that medicine goes through their body and goes into the wastewater treatment where it's not always picked up and finds its way back in the river. Another example is the very common drug Metformin, which is used to treat diabetes. It's very, very widespread and pervasive especially around the American Midwest and laboratory studies have shown it causes feminization in male fishes.

BPA (Bisphenol A.) is another one. It's in children's bottles and toys and known to cause intersex in fishes as well. And a lot of flame retardants are known to cause these problems. But this is not an exhaustive list – there's more out there.

"Largemouth bass appear to be susceptible to intersex condition and it's a very important recreational species," Fritts said.

"There are a lot of people that go out and pursue that fish." (Thephpdude / Wikimedia Commons)

CT: Do you know if people actively fish in the area where you found intersex fish?

MF: Yes. When I was with the INHS, we were involved in research-based fishing in that region for a very long time. I do know it was very common to see recreational fishermen pursuing bass in that area. A couple years ago there was a paper about how the Des Plaines River was the hidden bass fisherman's haven in suburban Chicago. People are aware that this is a good sport fishing area.

CT: Would an intersex largemouth bass be dangerous for humans to eat?

MF: That's another question that we have, too. That's a future area of research. We don't really understand the models or have one in place for understanding how a lot of these contaminants get transferred to humans. These are highly complex molecules. Understanding how they get transferred between pieces of the food chain is very difficult. We just don't know that. We don't have really good research studies to answer those questions. This is an emerging field of research. We're kind of on the tip of the iceberg. There are still a lot more questions than answers.

CT: Are you worried about potential negative effects on humans?

MF: That's my biggest concern. The fish are a biomarker, they're an indicator that there's a problem, but my primary concern is making sure that people who use the resources don't get sick either.





Cave-dwelling fish could provide clues to staying healthy with diabetes

Researchers identify genes involved in cavefish adaption to extreme environmentDate:

July 13, 2016

Source:

Genetics Society of America

Summary:

New findings reveal the genetic basis of how cavefish have adapted to their extreme environment, information that might one day lead to new kinds of treatments for diabetes and other diseases.

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FULL STORY

The cave-dwelling form of *Astyanax mexicanus*, known as cavefish (bottom image), has lost traits such as vision and pigmentation and has acquired other traits that help them survive in dark caves with minimal food supply. Fish of the same species can also be found in surface rivers near the caves (top image).

Credit: Photo courtesy of Nicolas Rohner of the Stowers Institute for Medical ResearchCavefish that live in dark caves with only sporadic access to food show symptoms similar to diabetes, but don't appear to experience any health problems. New findings presented at The Allied Genetics Conference (TAGC) 2016, a meeting hosted by the Genetics Society of America, reveal the genetic basis of how cavefish have adapted to their extreme environment, information that might one day lead to new kinds of treatments for diabetes and other diseases.

"We found that cavefish have very high body fat levels, are very starvation resistant and have symptoms reminiscent of human diseases such as diabetes and nonalcoholic fatty liver disease," said lead author Nicolas Rohner, Ph.D., of the Stowers Institute for Medical Research. "However, the fish remain healthy and don't have any obvious health problems like we see in humans. Untangling the molecular mechanisms or genetics responsible for these adaptations could potentially lead to new insights into human diseases."

Rohner's research team is studying the fish species *Astyanax mexicanus* that is native to certain areas of Mexico. One form of these fish, known as cavefish, lives in completely dark limestone caves while another form of the same fish lives in surface rivers near the caves. Through evolution, the cavefish have lost traits they don't need in the dark such as vision and pigmentation and have acquired other traits that help them survive in these dark caves with little food supply.

Rohner's research focuses on changes in cavefish metabolism that let them survive extremely long periods without food. The researchers think that about once a year flooding brings food to the caves. When food is present, the cavefish eat a lot and greatly increase their fat levels. They then draw on these fat stores for energy until they can eat again.

The team previously showed that when cavefish and surface fish were fed the same amount every day in the laboratory, the cavefish accumulated 10 times as much body fat as their surface fish counterparts. The cavefish also retained more fat than

the surface fish did during periods without food.

In their most recent study, the team discovered that the livers of cavefish contain high levels of fat, a condition similar to a human disease called non-alcoholic fatty liver disease. While in humans this condition can lead to tissue scarring, inflammation, cell death, and eventually liver failure, the cavefish with fatty livers didn't show any of these problems. The researchers also found that the cavefish exhibit very high blood glucose levels just after eating and very low levels when food isn't available. These swings in blood glucose are similar to those experienced by people with untreated type 2 diabetes, though they appear to cause no negative effects in the cavefish.

"We think that like hibernating animals that acquire extra body fat in the fall to survive the winter, the cavefish become insulin resistant as part of their strategy to acquire high body fat levels," said Rohner. "Similarly they likely use higher body fat levels to be more starvation resistant during periods when food isn't available."

The researchers identified a genetic mutation as the source of the cavefish's insulin resistance. "It is not a regulatory or seasonal mechanism like in hibernating animals," said Rohner. "The cavefish are constantly insulin resistant, and that makes the argument even stronger that this is a strategy they are using to gain higher body fat levels. The fish must have also acquired compensatory mechanisms that allow them to stay healthy despite these high fat levels."

New approaches such as Rohner's could help yield new insights on diabetes, a complex disease that likely involves many genes and many biological pathways.

"Our approach, which is known as comparative physiology or evolutionary medicine, takes advantage of the fact that many organisms have adapted to very specific environments," said Rohner. "This is a new and emerging approach aimed at trying to use natural variation as an alternative way to discover novel molecular pathways that might be missed in other types of studies."

Rohner points out that this research is likely decades away from leading to a specific treatment for patients. "However, we can point towards candidate genes and pathways that cavefish use to stay healthy," he said. "This is a unique strategy that evolution has come up with and something that we couldn't invent. Once we identify the genes and pathways and understand them, then potentially researchers can develop drugs that might help patients."

Rohner will present "Cavefish evolution as a natural model for metabolic diseases" during The Allied Genetics Conference at 9:15 AM on Friday, July 15, in Grand Ballroom 7B at the Orlando World Center Marriott in Orlando, Florida.

This project was supported by the Stowers Institute for Medical Research in Kansas City, Missouri.

Story Source:

The above post is reprinted from materials provided by Genetics Society of America. Note: Materials may be edited for content and length.

Genetics Society of America. "Cave-dwelling fish could provide clues to staying healthy with diabetes: Researchers identify genes involved in cavefish adaption to extreme environment." ScienceDaily. ScienceDaily, 13 July 2016.

<www.sciencedaily.com/releases/2016/07/160713101215.htm>.



Underwater microscope catches incredible coral images on the reef

Scientists have developed a new microscope that allows them to get up close and personal with corals in their natural environment without having to remove them from the reef. The high-powered digital microscope was developed by a team at UC San Diego and unveiled in Nature Communications the other day.

The underwater world is still a mystery and tools like this will be helpful for the scientific community to closely study life on the sea floor, while providing us some pretty cool images of a variety of marine organisms.

So how does it work? The microscope can capture images to a resolution of nearly one micrometer thanks to a combination of a camera to record images and video and a computer to focus the lens and store the images. To make sure the camera can see what it's pointed at, there is a ring of LEDs to provide illumination.

Both are contained in separate submersible aluminum containers and the unit is mounted to a tripod to allow the team to position it on the ocean floor. In fact, you can see each image that is taken, giving you immediate feedback on the quality of each shot.

Although we have learned a lot about coral from observing it in our aquariums, getting a closer look in their natural environment is incredibly valuable. "If you take coral and bring it back to the lab, you can precisely study it, but you're totally removing it from its natural conditions," said study lead author Andrew Mullen, a graduate student in ocean engineering at UC San Diego.

According to the LA Times, Mullen and his colleagues used the new microscope to observe corals on reefs off the coast of Maui and the Israeli city of Eilat. Where traditional microscopes require you to get pretty close to the subject, this digital benthic microscope is positioned about 2 inches above the coral and the computer goes to work to bring the coral into focus. found on Reefbuilders



Fish get arthritis, too

The condition is more widespread in the animal kingdom than scientists suspected, USC study finds

Source:

University of Southern California

Summary:

The very first bony fish on Earth was susceptible to arthritis, according to a new discovery that may fast-track therapeutic research in preventing or easing the nation's most common cause of disability. The finding contradicts the widely held belief that lubricated joints enabling mobility -- called synovial joints -- evolved as vertebrates ventured onto land.

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FULL STORY

Key to photo An adult zebrafish skeleton is stained for bone (purple) and cartilage (blue).

Credit: USC/Gage Crump LabThe very first bony fish on Earth was susceptible to arthritis, according to a USC-led discovery that may fast-track therapeutic research in preventing or easing the nation's most common cause of disability.

The finding contradicts the widely held belief that lubricated joints enabling mobility -- called synovial joints -- evolved as vertebrates ventured onto land. For example, human knees and hips have synovial joints, which are highly susceptible to osteoarthritis.

Pixar's Dory, zebrafish and other ray-finned fish have synovial joints that can get creaky. Thus, these fish are susceptible to arthritis.

"Developing the first arthritis model in the zebrafish -- an emerging regenerative model for medical research -- opens up fundamentally new approaches toward finding a cure for arthritis," said Gage Crump, senior author and an associate professor of stem cell biology and regenerative medicine at the Keck School of Medicine of USC. "While arthritis is the leading cause of disability in the United States, there are no treatments beyond artificial joint replacement. Our research offers new hope for finding a biological cure."

Amjad Askary and Joanna Smeeton from Crump's laboratory have found that certain joints in the zebrafish jaw and fins have features that resemble the synovial joints found in mammals. The similarity makes sense because water resistance places considerable strain on joints. The study will be published in the journal eLife on July 19.

Arthritis affects more than 52 million people or about 23 percent of adults, according to the Centers for Disease Control and Prevention. Aging baby boomers will spike that number to 78 million -- or about 26 percent of adults -- by the year 2040.

How zebrafish are like us

Four-limbed bony vertebrates such as humans evolved from lobe-finned fish. However, a good laboratory model for this group does not exist, so instead the researchers focused their inquiry on zebrafish, a member of the more evolutionarily distant ray-finned fish.

Using CT scans and genetic tools, the scientists noted that two other ray-finned fish -- the three-spined stickleback and the spotted gar -- also have synovial joints that produce a protein very similar to what lubricates joints in humans. It is aptly named Lubricin.

Previous research showed that humans and mice lacking Lubricin have poor joint lubrication and develop early onset arthritis. Askary, Smeeton and their colleagues found that removing the Lubricin gene from the zebrafish genome causes the same early onset arthritis in their jaws and fins.

Given that fish and humans diverged hundreds of millions of years ago, when bony vertebrates first evolved, this similarity in arthritis susceptibility reveals that synovial joints are at least as ancient as bone itself.

"Creating the first genetic osteoarthritis model in a fish is exciting," Crump said. "Going forward, it will be fascinating to explore whether the zebrafish, which is well known for its regenerative abilities, can also naturally repair its damaged joints."

Story Source:

The above post is reprinted from materials provided by University of Southern California. The original item was written by Cristy Lytal. Note: Materials may be edited for content and length.

University of Southern California. "Fish get arthritis, too: The condition is more widespread in the animal kingdom than scientists suspected, USC study finds." ScienceDaily. ScienceDaily, 14 July 2016.

<www.sciencedaily.com/releases/2016/07/160714100149.htm>.



[koi_herpesvirus_disease_outbreak_confirmed_in_greater_london_-_press_releases_-_gov.uk.html](#)

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The Greenhouse Water Gardens mentioned in this Defra news release is not The Greenhouse Water Gardens in Chase Cross Road, Romford, RM6 3RP it is Maidenhead Aquatics – Wembley, The Greenhouse, Chilcot Nursery, Birchen grove, Greater London.





Glowing Orange Suezichthys Wrasse collected in deep waters of Japan

July 11 2016, Jake Adams –

Suezichthys is a genus of slender wrasses which is hardly known in home aquariums, but we've got details about a second possible new species discovered in under a month. A few weeks ago we told you about the colorfully adorned new species of slender wrasse collected by the deep diving supergroup of Pyle & Greene, and now we've got another Suezichthys looker coming to us from another location in the Northwest Pacific Ocean.

Deep Sea Challengers is a deep fish collecting outfit out of Japan which has given us close encounters with many of Japan's craziest deepwater fish, not the least of which is the Tattoo Jawfish, a supermale of true pintail fairy wrasse, and a sometimes it's a huge assortment of fish they show off all at once. This past week they brought up a glowing orange slender wrasse which is almost certainly an undescribed species, but it's possible that it may have been spotted by Japanese divers before. New species of Suezichthys slender wrasse recently collected from the deep waters of Izena Island Japan by Deep Sea Challengers.

This specimen of Suezichthys was collected off of Izena Island, Japan at the abyssal depth of 240 meters, or 787 feet deep. The prominent orange coloration of this wrasse is reminiscent of Suezichthys arquatus from the Southwest Pacific Ocean, but its golden yellow bars is more akin to Suezichthys gracilis which is well known from all around Japan.

However it's the pattern of spots on the head which sets this species of slender wrasse apart, virtually clinching its status as an undescribed species which is new to science. The pinkish orange coloration of this individual also hint that it is probably a female and that the mature male coloration for this fish could be even more stunning.

from ReefBuilders



- Anger as dumped piece of foam leads to fish deaths in Hartlepool wildlife pond

The foam that was found dumped in a wildlife pond at Summerhill Country Park and Visitor Centre.

Staff at a council-run public park have told of their anger after fish died when a large piece of foam was dumped in a wildlife pond.

Staff at Summerhill Country Park and Visitor Centre, off Catcote Road, Hartlepool, were shocked to make their discovery. Several fish and tadpoles died after becoming tangled in the net around the foam, which required five members of staff to remove.

The 100-acre site, run by Hartlepool Borough Council, offers a number of play and leisure facilities, and staff there have hit out at the "selfish" behaviour of those responsible.

Adam Reah, from Summerhill Country Park and Visitor Centre, said: "We work hard to provide a beautiful space for local people to enjoy, and we were really shocked and disappointed that someone felt the need to damage the natural environment like this.

"This type of selfish behaviour doesn't just affect the wildlife in the pond; it also adversely affects the enjoyment of the park for everyone else in Hartlepool.

"Thankfully, the vast majority of people visiting Summerhill Country Park and Visitor Centre respect the site, and we hope this was an isolated incident.

"It would appear that this incident is not going to have a long-term affect on the pond, but the foam could easily have contained nasty chemicals which could have had a lasting impact on the water quality.

"Summerhill is a unique country park that's both a local nature reserve and an outdoor activity centre, and there is nothing we prefer more than seeing people using the site in a safe and responsible manner."



Gambusia holbrooki

Invasive success of the mosquitofish is due to its genetic variability

Source:

Plataforma SINC

Summary:

The mosquitofish is one of the world's 100 most invasive species. To understand its expansion across Europe from Spain -- where it was introduced in the 1920s -- a group of researchers has analyzed, for the first time, the evolutionary changes of

this animal through its genes. According to the study, genetic variability has allowed this fish to adapt and spread throughout its new environment.

FULL STORY

The Eastern gambusia (*Gambusia holbrooki*), also known as the mosquitofish, is one of the world's 100 most invasive species. To understand its expansion across Europe from Spain -where it was introduced in the 1920s- a group of Spanish researchers has analysed, for the first time, the evolutionary changes of this animal through its genes. According to the study, genetic variability has allowed this fish to adapt and spread throughout its new environment.

Havoc can be wreaked on native ecosystems when a species that is introduced into a habitat different from its own is able to become acclimated and expand. Biological invasions are one of the main global threats to biodiversity and, for that reason, the subject of careful study.

The Eastern gambusia (*Gambusia holbrooki*), also known as the mosquitofish, was taken from the United States to Spain in the 1920s as a way to naturally control disease-carrying mosquitoes, such as the ones carrying malaria.

This animal, however, has had an enormous environmental impact on local fauna, thus becoming one of the world's 100 most harmful invasive exotic species, according to the International Union for Conservation of Nature (IUCN).

To understand the evolutionary changes this species has undergone while adapting to European waters, a group of Spanish researchers, led by Manel Vera and José Luis García-Martín from the University of Girona, has compared the genomes of the fish in both ecosystems.

"This is the first genomic study that demonstrates the role played by genetic drift and selection in invasive processes in freshwater fish," asserts Vera -a professor in the Biology Department.

The study, published in the journal 'Molecular Ecology', confirmed that levels of genetic diversity in Spanish mosquitofish populations are significantly reduced. This is due to the fact that few specimens were used to introduce the species to Spain. But the experts detected that there was indeed variability (variation of genetic material within the species) in the genes associated with the survival of individuals. "When the variability in these genes is important to the survival of specimens, maintaining it becomes especially important in invasive processes," comments the chief researcher of the study. "It is clear that the first thing that individuals arriving to a new environment must do is survive," adds Vera.

Effects in colonised ecosystems During the invasion, the conservation of genetic polymorphism in mosquitofish favours their survival and has implications in the habitats they spread throughout.

"Typically, an introduced species is expected to adapt worse than those that are found there naturally, as the latter possess local adaptations to this environment," points out Manel Vera. "Problems arise when the introduced species is better than the native species," he acknowledges.

Since their arrival to Spanish waters, these fish have proved to adapt quickly, spreading to the lower reaches of rivers and marshlands on the Iberian Peninsula and in other European countries. "These fish are a real danger to native species," declares Vera.

The mosquitofish displaces the rest of the animals, competes for the same food and even preys on them. "Since native species are very well adapted to their environments, the variations that strengthen them in that habitat can be useless in the areas they are displaced to," concludes the researcher. Some of the native fish threatened by the mosquitofish include the Valencia toothcarp (*Valencia hispanica*) and the Spanish toothcarp (*Aphanius iberus*).

Story Source:

The above post is reprinted from materials provided by Plataforma SINC. Note: Materials may be edited for content and length.

Journal Reference:

1. Manuel Vera, David Díez-del-Molino, José-Luis García-Marín. Genomic survey provides insights into the evolutionary changes that occurred during European expansion of the invasive mosquitofish (*Gambusia holbrooki*). *Molecular Ecology*, 2016; 25 (5): 1089 DOI:10.1111/mec.13545



The fish that swap gender 20 times a day: Frequent sex changes of chalk bass (*Serranus tortugarum*) are the secret behind their lifelong relationships

- Chalk bass species of fish spend lives in monogamous relationships
- Swaps gender up to 20 times a day to help reproduction, new study says
- When one partner is not producing enough eggs, other will step in
- Each matches number of eggs other produces, to encourage reproduction

Some say relationships are all about give and take, and this is certainly true for a tiny species of fish that lives on the coral reefs of Panama.

The chalk bass, a fish found on the reefs of the Caribbean, owes much of its evolutionary success to the fact it can switch genders up to twenty times a day so that both partners can contribute eggs.

But a new study has found that this frequent changes in sex could allow the creatures to remain in monogamous relationships for life.

THE CHALK BASS MATING RITUAL For their entire adult lives, the fish mating partners come together for two hours each day before dusk in their refuge area, or spawning territory.

They chase away other fish before beginning a half-hour foreplay ritual of nipping and hovering around each other, during which they decide which partner will become the female in the first of many spawning rounds.

Finding a new mate every evening is time-consuming and risky for a fish that only lives for about a year.

Having a safe partner may help ensure that individuals get to fertilize a similar number of eggs as they produce, rather than risk ending up with a partner with fewer eggs.

When one partner is not producing enough eggs, the other will switch and make up the numbers, the new study found. Researchers, led by Professor Mary Hart from the University of Florida, studied the hermaphrodite fish to discover which neurological patterns lie behind their strange reproductive habits.

They found the fish have generally the same partners for their one-year life span, and the duos can swap genders. The strategy allows individuals to fertilize about as many eggs as they produce, giving the neon-blue fish a reproductive edge, Professor Hart said.

Each half of the duo motivates the other to contribute eggs to the relationship because if one partner lacks eggs, the other will match whatever it produces.

'The fish also match each other's egg production. So if one fish wants its partner to produce more, the only way to do that is to increase the number of eggs it produces itself,' Professor Hart said.

The only way for a partner to convince its mate to produce more eggs is to pick up the slack and generate more itself, she said.

'Our study indicates that animals in long-term partnerships are paying attention to whether their partner is contributing to the relationship fairly - something many humans may identify with from their own long-term relationships,' said Professor Hart, lead author and professor in the university's biology department.

For six months Professor Hart, along with her husband Dr Andrew Kratter, studied the fish's mating ritual. For their entire adult lives, the fish mating partners come together for two hours each day before dusk in their refuge area, or spawning territory.

'Our study indicates that animals in long-term partnerships are paying attention to whether their partner is contributing to the relationship fairly - something many humans may identify with from their own long-term relationships,' she said.

'I think the "get what you give" in egg resources exchanged within pairs result, along with the potential for both positive and negative feedback within partnerships were very insightful,' she said.

'Not even one of the original pairs that I observed switched mates while its partner was still alive.

'That strong matching between partners and the investment into the partnership was surprising.'

For six months Professor Hart, along with her husband Dr Andrew Kratter, studied the fish's mating ritual.

For their entire adult lives, the fish mating partners come together for two hours each day before dusk in their refuge area, or spawning territory.

In a half-hour foreplay ritual of nipping and hovering around each other, they decide which partner will become the female in the first of many spawning rounds.

Mary said: 'Then they swim up and release sperm and eggs. They go back and forth, back and forth, changing their sex role each time. But always with the same partner.

'It's extraordinary. I don't know of anything else like it.'

With only 3 to 5 percent of animals known to live monogamously, this is a rare find, and one of the first for a fish living in a high-density social group, Dr Kratter said.

The only time one of the fish changed partner was when its original mate did not reappear.

As the chalk bass only has a one-year lifespan, Professor Hart thinks it is probable the fish she noticed with new partners had suffered the loss of their first love.

By the end, this had happened to a large number of the study group.



Halichoeres gurrobyi, a new cool-looking wrasse species from Mauritius

- Halichoeres gurrobyi, a new cool-looking wrasse species from Mauritius. This new labrid fish species is found in the southwestern Indian Ocean and features bright yellow horizontal striped on its body and a signature black spot at the caudal-fin base leading to its common name Blacksaddle Wrasse.

Recently documented and described in the Journal of the Ocean Science Foundation by Benjamin Victor, *H. gurrobyi* is part of the yellow-striped initial-phase species complex of Halichoeres, comprising several species found in the Indo-Pacific, including the type species for the genus Halichoeres Rüppell.

Named for Chabiraj (Yam) Gurroby, in recognition of his 35 years of efforts in observing and collecting the fishes of Mauritius. He operates Ornamental Marine World Ltd. with his children Mohesh and Meneeka Gurroby. You might remember Meneeka from MACNA 2014 in Denver who gave a great presentation on her family-run fish collecting business in Mauritius.

Halichoeres gurrobyi has been seen from time-to-time in the aquarium trade thanks to Ornamental Marine World. However, it still is a bit of a mystery as there isn't much information available regarding its habitat and lifestyle. From the description, the fish documented came from Grand Bay in Mauritius, and were collected around 12–22 meters deep.

The research article notes that two of the closest relatives of Halichoeres gurrobyi also are found in Mauritius the *H. zeylonicus* and the rare deep-reef *H. pelicierii*. It also noted the initial-phases of these species are similar and have been confused, but the DNA barcoding completed for this research shows three distinct DNA lineages. But the research also notes the terminal-phase male of *H. gurrobyi* is unknown at this time.



Records of deep-sea anglerfishes (Lophiiformes: Ceratioidei) from Indonesia, with descriptions of three new species

HSUAN-CHING HO

Abstract

An examination of the ceratioid anglerfishes collected on the Indian Ocean side of Indonesia during surveys in 2004–2005 have revealed 18 species in 9 genera and 6 families, including three new species: *Cryptopsaras couesii* (Ceratiidae); *Melanocetus johnsonii* (Melanocetidae); *Diceratias trilobus*, *Bufoцератias microcephalus* sp. nov., *B. thele*, *B. shaoi*, *B. cf. wedli* (Diceratiidae); *Himantolophus danae*, *H. sagamius*, *H. nigricornis*, *H. macroceratoides* (Himantolophidae); *Oneirodes quadrinema* sp. nov., *O. amaokai* sp. nov., *O. carlsbergi*, *O. cristatus*, *Dermatias platynogaster*, *Chaenophryne cf. melanorhabdus* (Oneirodidae); and *Linophryne parini* (Linophrynidae). Of these, specimens of *B. shaoi*, *H. macroceratoides*, *O. cristatus* and *L. parini* represent the second records since the species were described. A specimen of *H. nigricornis* represents the third record and a specimen of *Dermatias platynogaster* represents the fourth record. Descriptive data and notes on the geographical distribution and morphological variation are provided for each species.

Full Text:

PDF (18MB)





Mystus catapogon, a new catfish (Siluriformes: Bagridae) species from Kerala, India

ABSTRACT: *Mystus catapogon*, a new fish species, is distinguished from its congeners by the following combination of characters: maxillary barbels reach beyond caudal fin base; outer mandibulars reach to base of ventral fin and inner mandibular barbels to middle of pectoral fin; Snout shorter; cephalic groove long, shallow and divided into two fontanels and reaching occipital process; occipital process does not reach basal bone of dorsal fin; adipose fin located fairly behind the rayed dorsal fin; body without any mid lateral stripe. The new fish is described and compared with its congeners.



Melanorivulus polychromus, a new species of killifish from the rio São José dos Dourados drainage...

Dalton Tavares Bressane Nielsen, Pedro Alvaro Barbosa Aguiar Neves, Eric Venturini Ywamoto and Michel de Aguiar Passos: *Melanorivulus polychromus*, a new species of killifish from the rio São José dos Dourados drainage, middle rio Paraná basin, southwestern Brazil, with a redescription of *Melanorivulus apiamici* (Cyprinodontiformes: Rivulidae), pp. 79-88
Abstract

A new species of *Melanorivulus* is described from the middle rio Paraná basin, São Paulo state, Brazil. *Melanorivulus polychromus*, new species, is found in a tributary of the left bank of the rio Paraná basin, the rio São José dos Dourados. It differs from all congeners by the combination of a metallic green to light green ground colour in males, with 6-8 oblique red bars forming chevronlike rows, the chevron tips along the midline of the body pointing toward the head, and irregular narrow red lines and incomplete red bars along the lower half of the body. *Melanorivulus apiamici*, also endemic from the middle rio Paraná basin, is redescribed.

PDF (439 KB)



Hyphessobrycon vanzolinii, a new species from rio Tapajós, Amazon basin, Brazil...

Flávio. C. T. Lima and Nelson Flausino Junior: *Hyphessobrycon vanzolinii*, a new species from rio Tapajós, Amazon basin, Brazil (Characiformes: Characidae), pp. 89-95

Abstract

Hyphessobrycon vanzolinii, new species, is described from the rio Tapajós, Amazon basin, Pará state, Brazil. The new species can be diagnosed from all its congeners by its unique colour pattern, consisting of a longitudinal, broad, diffuse dark midlateral stripe extending from the snout through the orbit to the base of the middle caudal fin rays, dark pigmentation on the last unbranched ray and first to second branched rays of the dorsal fin, a distal dark stripe along the margin of the anal fin, and the presence of dark pigmentation along the distal margin of the caudal fin. Remarks on the putative relationships of the new species, as well as about the threat posed by a large dam to be build exactly at the only site from where *Hyphessobrycon vanzolinii* is so far known, are presented.

PDF (363 KB)



Aquarian is recalling its Tropical Flake Food and Goldfish Flake Food products with various 'best before' dates.

The company has taken the action as a precautionary measure because the products may contain Salmonella.

The Food Standards Agency issued the product recall notice because they are responsible for animal feed regulations and the enforcement of pet food labelling through local authorities.

It does not impact the health of fish, and only the products mentioned with the date codes are affected. This recall is limited to the UK only.

Salmonella poisoning could be caught by people feeding their fish who handle the food.

The FSA says there is a risk to consumers handling the products due to the possible presence of Salmonella in the products listed below. Symptoms caused by Salmonella usually include fever, diarrhoea and abdominal cramps.

The following products with 'best before' dates are being recalled from consumers.

Product: Aquarian Goldfish Flake 25g

Item no: AL396

Batch code: 623E1THO10

Best before date: 10 June 2019

Product: Aquarian Goldfish Flake 50g

Item no: AL403

Batch code: 624A1THO10

Best before date: 13 June 2019

Product: Aquarian Goldfish Flake 50g

Item no: AL403

Batch code: 624B1THO10

Best before date: 14 June 2019

Product: Aquarian Goldfish Flake 50g

Item no: AL403

Batch code: 625A1THO10

Best before date: 20 June 2019

Product: Aquarian Tropical Fish Flake 50g

Item no: AL388

Batch code: 624B1THO10

Best before date: 14 June 2019

Product: Aquarian Tropical Fish Flake 50g

Item no: AL388

Batch code: 624C1THO10

Best before date: 15 June 2019

Product: Aquarian Tropical Fish Flake 50g

Item no: AL388

Batch code: 625A1THO10

Best before date: 20 June 2019

Consumers who have one of the above products are requested not to use it and to contact the Aquarian Consumer Care team using the following details: Telephone: 0800 952 0083

Read more at <http://www.somersetlive.co.uk/salmonella-fears-sees-fish-food-manufacturer-in-urgent-product-recall/story-29485174-detail/story.html#q1t37GG6vuwDGxqx.99>



Eviota erdmanni • A New Dwarfgoby (Teleostei: Gobiidae) from the Savu Sea, Flores, Indonesia

Abstract

A uniquely colored dwarfgoby, *Eviota erdmanni* n. sp., with a cup-like urogenital papilla in males, a cephalic sensory-canal pore system lacking only the IT pore (pattern 2), some branched pectoral-fin rays, and a dorsal/anal fin-ray formula of 9/8 is described from south Flores, Indonesia. We use molecular data from both mitochondrial and nuclear genes to infer the

phylogenetic relationship of the new species with respect to its congeners, with specific emphasis on species with uniquely shaped urogenital papillae.

Luke Tornabene and David W Greenfield. 2016. *Eviota erdmanni* (Teleostei: Gobiidae), A New Dwarfgoby from the Savu Sea, Flores, Indonesia. *Journal of the Ocean Science Foundation*. 22, 1–9. DOI: 10.5281/zenodo.56572
<http://www.oceansciencefoundation.org/josf/josf22a.pdf>



Diplodus levantinus • A New Species of Sea Bream (Teleostei: Sparidae) from the southeastern Mediterranean Sea of Israel, with A Checklist and A Key to the Species of the Diplodus sargus Species Group

Photo 2 Generalised body colour patterns of the species of the *Diplodus sargus* group

Diplodus levantinus

Fricke, Golani & Appelbaum-Golani, 2016

SciMar.icm.CSIC.es/SciMar

The sea bream *Diplodus levantinus* n. sp. is described from off the coasts of Israel in the eastern Mediterranean Sea, where it replaces *Diplodus sargus* (Linnaeus, 1758). The new species is characterized by 11-12 spines and 10-16 soft rays in the dorsal fin, 3 spines and 11-13 soft rays in the anal fin, 15-17 pectoral fin rays, 6-9 + 8-12 gill rakers on the first gill arch, upper and lower jaws with a single row of 4 incisors on each side, followed by a total of 16-19 molariform teeth in the upper jaw and 12-14 molariform teeth in the lower jaw, with the molariforms of the upper jaw separated from the incisors by a wide, toothless gap, and the sides of the body in adults with 8 vertical bars of equal width which are present even in large adults,

followed by a broad bar on the caudal peduncle which usually nearly reaches the ventral margin of the caudal peduncle. An updated checklist of the species of the genus *Diplodus*, and a key to species of the *Diplodus sargus* species group from the eastern Atlantic and Mediterranean Sea, are presented.

Sargus Rondeletii (non Valenciennes in Cuvier and Valenciennes, 1830): Steinitz 1927: 338 (Haifa, Israel).

Sargus sargus (non Linnaeus, 1758): Liebman 1934: 323 (Palestine/ Israel; most frequent and abundant species).

Diplodus sargus (non Linnaeus, 1758): Hornell 1935: 83 (Palestine/ Israel). Bodenheimer 1937: 273 (Palestine/Israel). Ben-Tuvia 1953a: 23 (Israel, common along the shores). Ben-Tuvia 1953b: 439 (off Caesarea, Israel). Ben-Tuvia 1971: 32 (Israel). Golani 1996: 39 (Israel). Golani 2005: 43 (Israel). Golani 2006: 182- 183 (Israel). Golani et al. 2006: 163.

Sargus rondeletti (non Valenciennes in Cuvier and Valenciennes, 1830): Bodenheimer 1935: 462 (Palestine/Israel).

Diplodus X (probably a hybrid of *Diplodus annularis* × *Diplodus sargus*): Paz et al. 1974: 126. Paz 1975: 57-61 (Tantura Bay, Israel).

Diplodus sargus sargus (non Linnaeus, 1758): Whitehead et al. 1986: 894-895 (part: Israel).

Holotype: HUJ 20535, 184.1 mm SL, eastern Mediterranean Sea, Israel, off Jaffa, ca. 32°03'N 34°45'E, collected by local fishermen, 30 Oct. 2015.

Diagnosis. A species of *Diplodus* Rafinesque 1810 with 11-12 spines and 10-16 soft rays in the dorsal fin, 3 spines and 11-13 soft rays in the anal fin, 15-17 pectoral fin rays, 6-9 + 8-12 gill rakers on the first gill arch, upper and lower jaws with a single row of 4 incisors on each side, followed by a total of 16-19 molariform teeth in the upper jaw and 12-14 molariform teeth in the lower jaw, with the molariforms of the upper jaw separated from the incisors by a wide gap, and the sides of the body in adults with 8 vertical bars of equal width, which are present even in large adults, followed by a broad bar on caudal peduncle, which usually nearly reaches the ventral margin of the caudal peduncle.

Etymology. The name of the new species, *levantinus*, refers to the Levant, a historical name for the coasts of the eastern Mediterranean.

Distribution and habitat. Known only from the coast of Israel, eastern Mediterranean Sea, between Haifa and Jaffa (Fig. 5). The species is found from shallow water to 50 m depth, usually on sand bottom near rocks; juveniles are found above sandy substrate near rocks at depths of 0.2-2 m.

Diplodus capensis: D, MNHN A-8096 (315 mm SL), South Africa, Cape Province. E, MRAC 97894 (215 mm SL), South Africa, Elephant Bay. F, SAIAB 1638 (109 mm SL), South Africa, Cape Province.

Diplodus cadenati: G, BMNH 1895.5.28.24 (310 mm SL), Madeira. H, BMNH 1858.8.3.7-8 (182 mm SL), Canary Islands. I, IFAN 867 (89 mm SL), Senegal, Dakar.

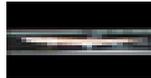
Diplodus levantinus n. sp.: J, HUJ 7462 (281 mm SL, paratype), Israel, Caesarea, 12 Aug. 1959. K, HUJ 2134 (176.3 mm SL, paratype), Israel, Wadi Hadera, 24 Oct. 1955. L, HUJ 20257 (spec. 1, 95 mm SL, paratype), Israel, Sdot Yam, 21 Jan. 2014.

Diplodus lineatus: M, HUJ 20368 (spec. 1, 222 mm SL), Cape Verde Islands, Boa Vista, 9 Sept. 2014. N, HUJ 20369 (spec. 2, 177 mm SL), Cape Verde Islands, Boa Vista, 9 Sept. 2014. O, MNHN 1971-0002 (98 mm SL), Cape Verde Islands. This figure follows Paz (1975: 47), but is corrected and updated; figures A-I and O based on Paz (1975: Fig. 23).

Scales indicate 20 mm. | SciMar.icm.CSIC.es/SciMar

Ronald Fricke, Daniel Golani and Brenda Appelbaum-Golani. 2016. *Diplodus levantinus* (Teleostei: Sparidae), A New Species

of Sea Bream from the southeastern Mediterranean Sea of Israel, with A Checklist and A Key to the Species of the *Diplodus sargus* Species Group. SCIENTIA MARINA. 80(3); DOI: 10.3989/scimar.04414.22B
<http://SciMar.icm.CSIC.es/SciMar/index.php/seclD/6/IdArt/4370/>
[facebook.com/israqarium/photos/1112069745526290](https://www.facebook.com/israqarium/photos/1112069745526290)



Oreonectes shuilongensis • A New Species of the Genus *Oreonectes* (Cypriniformes: Nemacheilidae) from Guizhou, China

Oreonectes shuilongensis

Deng, Xiao, Hou & Zhou, 2016

DOI: 10.11646/zootaxa.4132.1.13

Abstract

This study examined the morphological and phylogenetic characteristics of *Oreonectes shuilongensis* sp. nov. The genus *Oreonectes* is distributed only in southwestern China and northern Vietnam. Sixteen specimens of cavefish were captured in the Shuilong Township in Guizhou Province of China and identified as a new species of *Oreonectes* (Cypriniformes: Nemacheilidae). Maximum likelihood was used to construct phylogenetic trees based on data for Nemacheilidae species accessible on GenBank. Molecular phylogenetic analyses showed that *O. shuilongensis* is closely related to *O. platycephalus* from which it is distinguished by having 6 vs. 5 branched anal rays, ratio of body length to body height 7.0–7.9 vs. 5.6–7.0, ratio of head length to distance between eyes 3.5–4.9 vs. 2.0–2.4, naked vs. scaly body, densely distributed fine black stains except on abdomen, and semitransparent body. *Oreonectes shuilongensis* is the only species of the genus not distributed in Guangxi Province. This study has contributed to the overall knowledge about the distribution of *Oreonectes*.

Habitat. The species inhabits an underground river flowing in a cave. The cave, which opens near a hilltop, is approximately

150–200 m in length. The underground river is near the bottom of the cave and is approximately 15m long and 0.15–0.85 m wide. Its flow is gentle and clear, and the average depth of the water is 0.40 m. This new species was observed at depths of 0.01–0.40 m. In the underground river, the only other aquatic organisms found were small shrimps.

Etymology. The specific epithet is based on the Chinese name “Shuilong,” which is the name of the township where the specimens were collected.

Discussion:

Sequences for *cytb* were analyzed for several genera and species of nemacheilids using Mage 5.05 to elucidate relationships. The result showed *Oreonectes* to be genetically distant from all other genera (Fig. 4). The genetic distance between *O. shuilongensis* and *O. platycephalus* was 0.789, and the difference in the *cytb* sequences between *O. shuilongensis* and *O. platycephalus* was 15%, which was much higher than the genetic distance between several species (0.02–0.16) of *Schistura*. The results are consistent with the morphological data supporting *O. shuilongensis* as a separate species.

The genus *Oreonectes* is distributed in subterranean rivers in the karst land of the southwestern region of China. *Oreonectes platycephalus* is distributed across a wide area, mainly in Hong Kong, Guangdong, which belongs to the Pearl River system; and Guangxi, northern Vietnam, which belongs to the Red River system. The other 15 species are all distributed in the karst areas of Guangxi. *O. shuilongensis* is distributed only in Guizhou Province and is the first species of the genus *Oreonectes* not distributed in Guangxi. The present findings contribute to the overall knowledge about the distribution of *Oreonectes*.

H. Deng, N. Xiao, X. Hou and J. Zhou. 2016. A New Species of the Genus *Oreonectes* (Cypriniformes: Nemacheilidae) from Guizhou, China. *Zootaxa*. 4132(1); 143–150. DOI: 10.11646/zootaxa.4132.1.13

[ResearchGate.net/publication/304128976_A_new_species_of_the_genus_Oreonectes_Cypriniformes_Nemacheilidae_from_Guizhou_China](https://www.researchgate.net/publication/304128976_A_new_species_of_the_genus_Oreonectes_Cypriniformes_Nemacheilidae_from_Guizhou_China)



Teleocichla preta • A New Species of Cichlid (Teleostei: Cichlidae) from the Rio Xingu Basin in Brazil

Teleocichla preta

Varella, Zuanon, Kullander & López-Fernández, 2016

DOI: 10.1111/jfb.13053

Abstract

Teleocichla preta nov. sp. inhabits the rapids along the Rio Xingu and lower portion of the Rio Iriri. It is the largest species in the genus, reaching 121·3 mm standard length (LS) while others do not reach more than 87·8 mm LS. Teleocichla preta is distinguished from all other species of Teleocichla by the unique blackish (in live specimens) or dark brown (preserved specimens) overall colouration of the body, which masks the faint vertical bars or zig-zag pattern of blotches on the flanks. Teleocichla preta also has a deeper body and a deep laterally compressed caudal peduncle, unlike any other congener, as well as a stout lower pharyngeal tooth plate bearing molariform teeth on its median area.

Teleocichla preta nov. sp.

Teleocichla PR Zuanon, 1999: 48 (diagnosis, schematic illustration and aspects of natural history of the species).

Teleocichla sp. Xingu II (or Schwarzel Teleocichla) Stawikowski & Werner, 2004: 247 (comments on distinctive characteristics and ecology of the species, photographs of live specimens).

Teleocichla sp. preta Arbour & López-Fernández, 2013: 4. Arbour & López-Fernández, 2014: 7 (inclusion of the species in biomechanical analyses in the context of the Crenicichla clade and of other Neotropical lineages of Cichlidae, respectively).

Distribution: Teleocichla preta is known from the Rio Xingu between Cachoeira Chadasinho upstream of São Félix do Xingu and Cachoeira do Jericoá at Volta Grande do Xingu downstream of Altamira, Pará State. The species is also known from the lower portion of the Rio Iriri, the largest tributary of the Rio Xingu (Fig. 4).

Typical moderate to fast, shallow rapids at Cachoeira Grande in the Rio Iriri, Rio Xingu basin in which Teleocichla preta is found.

DOI: 10.1111/jfb.13053

Habitat and natural history: In the region of Volta Grande do Xingu and the lower Rio Iriri, specimens of *T. preta* were collected in moderate to fast, shallow rapids, with clear water and the riverbed composed mainly of large rocks and little accumulated sediment [Fig. 5(e), (f)]. During underwater exploration by snorkelling, individuals of *T. preta* were observed performing short excursions out of their rocky hideouts, moving alone amidst small rocks and in crevices of large rocks (J. Zuanon, and H. R. Varella, pers. obs).

Etymology: The specific epithet *preta*, an adjective of the Portuguese language that means black, refers to the diagnostic dark overall colouration of the body and to the previous denominations for the species in the scientific and aquarium literature, as well as among fishermen of the Rio Xingu. Noun in apposition.

H. R. Varella, J. Zuanon, S. O. Kullander and H. López-Fernández. 2016. *Teleocichla preta*, A New Species of Cichlid from the Rio Xingu Basin in Brazil (Teleostei: Cichlidae). *Journal of Fish Biology*. DOI: [10.1111/jfb.13053](https://doi.org/10.1111/jfb.13053)



Varicus lacerta • A New Species of Goby (Gobiidae, Gobiosomatini, Nes Subgroup) from A Mesophotic Reef in the southern Caribbean

Varicus lacerta

Tornabene, Robertson & Baldwin, 2016

DOI: [10.3897/zookeys.596.8217](https://doi.org/10.3897/zookeys.596.8217)

Abstract

We describe a new species of goby, *Varicus lacerta* sp. n., which was collected from a mesophotic reef at Curacao, southern Caribbean. The new species is the tenth species of *Varicus*, all of which occur below traditional SCUBA depths in the wider Caribbean area. Its placement in the genus *Varicus* is supported by a molecular phylogenetic analysis of three nuclear genes and the mitochondrial gene cytochrome b. In addition, the new species has one anal-fin pterygiophore inserted anterior to the first haemal spine, which distinguishes *Varicus* species from most species in the closely related and morphologically similar

genus *Psilotris*. *Varicus lacerta* sp. n. is distinguished from all other named species of *Varicus* by the absence of scales, having highly branched, feather-like pelvic-fin rays, and in its live coloration. We provide the cytochrome c oxidase I DNA barcode of the holotype and compare color patterns of all species of *Varicus* and *Psilotris* for which color photographs or illustrations are available. This study is one of several recent studies demonstrating the utility of manned submersibles in exploring the diversity of poorly studied but species-rich deep-reef habitats.

Diagnosis: Second dorsal fin I,9; anal fin I,7; pectoral fin 18; no scales; cephalic papillae rows 5s and 5i connected, forming a single row; pelvic rays 1-4 highly branched and feather-like; one anal-fin pterygiophore inserted anterior to first haemal spine; body with five broad, indistinct, dark vertical bands washed with bright yellow in life; pelvic, pectoral and anal fins yellow-orange in life, dorsal, anal, and caudal fins yellow with faint orange tint.

Habitat: The only known specimen was collected at 129–143 m. Quinaldine was dispersed around a yellow sponge (~20 cm tall) tentatively identified from videos by Allen Collins (National Marine Fisheries Service) as *Dactylocalyx pumiceus*, situated on a rocky outcropping along the deep-reef slope. After approximately 20 seconds the stunned fish emerged from a space in the rocky substrate at the base of the sponge and was captured. It is unclear whether the fish was originally in direct association with the sponge itself or was instead sheltering in spaces within the rock. Video of the capture taken from a high-definition video camera mounted on the outside of the Curasub is available online (youtu.be/UvxJEi-vER0). Subsequent collections targeting similar sponges and rocky substrates within this depth range at the type locality have not yielded additional specimens.

Distribution: Known only from the type location in Curaçao.

Etymology: The specific epithet 'lacerta' (Latin for 'lizard') is in reference to the reptilian or saurian appearance of this species, as indicated by its bright yellow and orange coloration, green eyes, disproportionately large head possessing raised ridges of papilla, and multiple rows of recurved canine teeth in each jaw. The common name Godzilla goby (gobio Godzilla in Spanish) refers to the radioactive reptilian monster from the sea that appeared in Japanese science-fiction films as Gojira, renamed Godzilla in subsequent English-language films.



Rypticus carpenteri • A New Species of Soapfish (Serranidae:Rypticus),

Slope Soapfish | *Rypticus carpenteri*

Baldwin & Weigt, 2012 DOI: 10.1643/CG-11-035

A new species of *Rypticus* is described from the Bahamas, Bermuda, Florida, and the Caribbean Sea. The species previously has been confused with the spotted soapfish, *R. subbifrenatus* Gill 1861, with which it shares a similar pattern of dark spotting on the body. The new species differs from *R. subbifrenatus* in having yellow pigment on the pectoral fin and distal portions of the soft dorsal, caudal, and anal fins in life (pale in preservative); a different configuration of dark spots on the head; usually dark spots on the belly and caudal fin; almost always four dorsal-fin spines; and modally 25 total dorsal-fin elements, 15 pectoral-fin rays, and 23 total caudal-fin rays. The lower jaw typically extends further anteriorly beyond the upper jaw in the new species than in *R. subbifrenatus*, and the caudal peduncle is usually narrower. The new *Rypticus* typically inhabits deeper waters than *R. subbifrenatus*, and is commonly found on vertical slopes and walls vs. shallow, flat areas. The new species likely would have continued to go unnoticed without examination of genetic data, as there was little reason to look further at *R. subbifrenatus* until DNA barcoding revealed two distinct genetic lineages within the species. The value of DNA barcoding data in systematic studies and the need for increased support of taxonomy are highlighted. A neotype for *Rypticus subbifrenatus* is designated.



Stiphodon niraikanaiensis • A New Species of Sicydiine Goby (Gobiidae: Sicydiinae) from Okinawa Island, Japan

Abstract

A new goby species, *Stiphodon niraikanaiensis*, is described on the basis of three specimens (two females and one male) collected from a freshwater stream in Okinawa Island, Japan. This species can be distinguished from its congeners by nine soft rays in the second dorsal fin, 16 rays in the pectoral fin, a pointed first dorsal fin in male, the premaxilla with 46–50 tricuspid teeth in 27–36 mm SL; no white patch behind the pectoral-fin base in male, the nape and posterior half of the occipital region covered by cycloid scales, broad black band along the distal margin of the second dorsal fin in male, 11 or 12 dusky transverse bars laterally on the trunk and tail of female intersecting with the mid-lateral longitudinal band, several conspicuous black spots on each spine and soft ray on the first and second dorsal fins of female, the anal fin of female lacking remarkable marking, and the pectoral-fin rays with 2–5 and 1–4 black spots, respectively, for male and female. The

new species is known only from the type locality.

Ken Maeda. 2013. *Stiphodon niraikanaiensis*, A New Species of Sicydiine Goby from Okinawa Island (Gobiidae: Sicydiinae). *Ichthyological Research*. 61(2); 99–107. DOI 10.1007/s10228-013-0379-2



Moenkhausia mutum • A New Species of Moenkhausia Eigenmann (Characiformes: Characidae) from the rio Arinos Basin, Brazil

Moenkhausia mutum

Dagosta & Marinho, 2016

DOI: 10.1590/1982-0224-20150052

ABSTRACT

A new species of *Moenkhausia* is described from the rio Arinos drainage, rio Tapajós basin, Mato Grosso, Brazil. The new species is diagnosed from all congeners, except *M. hemigrammoides*, *M. nigromarginata*, and *Moenkhausia rubra* by having intense diffuse dark pigmentation on the dorsal and anal fin-rays. The new species can be distinguished from the above mentioned species by the combination of 20-23 branched anal-fin rays, presence of a vertically elongate roughly rectangular humeral spot surpassing the lateral line ventrally, absence of a well-defined black spot on the distal portion of the dorsal fin and lack of a series of longitudinal dark zigzag stripes on body. The new species is herein described along with a report and discussion of a possible connection between the rio Tapajós and rio Paraguay basins, near Diamantino Municipality, Mato Grosso.

Fernando C. P. Dagosta and Manoela M. F. Marinho. 2016. A New Species of Moenkhausia Eigenmann (Characiformes: Characidae) from the rio Arinos Basin, Brazil. **Neotrop. ichthyol.** 14(2); DOI: 10.1590/1982-0224-20150052



Mysterious 'ghost fish' discovered 8,200 feet under the sea in the world's deepest trench

- The newly-seen fish was filmed by the NOAA Ship Okeanos Explorer
- It is the first time a fish in the Aphyonidae family has been spotted alive
- Also provides answers to question of what kind of feeders the fish are
- Pale, yellow-eyed fish measured about 0.3 feet (10 centimetres) long

The deepest parts of the ocean are so different to the surface that they are home to a host of unusual and mysterious creatures.

One of these alien-like creatures has come to light recently, in a video filmed by the National Oceanic and Atmospheric Administration.

A 'ghost' fish has been caught on camera, marking the first time a fish in the Aphyonidae family has been seen alive.

Scroll down for video

A 'ghost' fish has been caught on camera, marking the first time a fish in the Aphyonidae family has been seen alive. Video of the fish was captured during an expedition on NOAA Ship Okeanos Explorer to explore the unknown and poorly known areas deep waters of the Mariana Trench

THE WORLD'S DEEPEST TRENCHThe Mariana Trench is the deepest part of the world's oceans located in the western Pacific Ocean, to the east of the Mariana Islands.

The trench is 1,580 miles (2,550 km) long but has an average width of only 43 miles (69 km).

The distance between the surface of the ocean and the trench's deepest point, the Challenger Deep is nearly 7 miles (11

km).

Director James Cameron became the first solo diver to reach the bottom of Challenger Deep in 2012.

The video of the fish was captured during an expedition on NOAA Ship Okeanos Explorer to explore the unknown and poorly known areas deep waters of the Mariana Trench.

The Mariana Trench is the deepest part of the world's oceans.

In an average person's home or office, the atmospheric pressure is about 14.7 pounds per square inch (101 kPa) but at the bottom of the Mariana Trench, it is more than 16,000 PSI (110,000 kPa).

The pale fish looks almost like an alien creature with its yellow eyes.

'This is the first time a fish in this family has ever been seen alive,' said Bruce Mundy, fishery biologist with the NOAA National Marine Fisheries Service. 'This is really an unusual sighting.'

Seen while exploring a ridge feature at a depth of around 8,200 feet (2,500 metres), the fish measured about 0.3 feet (10 centimetres) long.

It is in the same order (Ophidiiformes) as cusk eels, but belongs to a distinct family (Aphyonidae).

According to the experts, this is the first time that a fish in the family Aphyonidae has ever been seen alive.

Seen while exploring a ridge feature at a depth of around 8,200 feet (2,500 metres), the fish measured about 0.3 feet (10 centimetres) long. The alien-like fish reminded some workers at the NOAA of a character from fantasy films

LIFE IN THE TRENCHES Ocean trenches are some of the most hostile habitats on earth.

Pressure is more than 1,000 times that on the surface, and the water temperature is just above freezing.

No sunlight penetrates the deepest ocean trenches, making photosynthesis impossible.

Organisms that live in ocean trenches have evolved with unusual adaptations to thrive in these cold, dark canyons.

In general, life in dark ocean trenches is isolated and slow-moving.

In December 2014 a new record was set for the deepest fish ever seen in the world, at an incredible depth of 26,722ft (8,145 metres).

The snailfish was found at the bottom of the Mariana Trench, and broke the previous record by almost 1,640ft (500 metres).

The sighting was not only exciting because it was the first time the fish has been seen alive, but also because it provides the first evidence this family of fish is a bottom-feeding family, the researchers said.

This means the animal feeds on or near the bottom of a body of water.

Whether or not this family is bottom-feeding has been a source of argument in past.

'Some of us working with fish have wish lists, you know, a sort of bucket list of what we might want to see,' Mr Mundy added.

'And a fish in this family was probably first on those lists for a lot of us.'

The alien-like fish reminded some workers at the NOAA of a character from fantasy films.

'Our interns think that the fish looks like Falkor, the dragon from the Neverending Story,' one of the video's narrators, a NOAA scientist, says.

The Neverending Story was a German fantasy novel by Michael Ende that was first published in 1979, then subsequently made into several films.

Some viewers noted it seemed like a fish version of the ghost octopus seen during an expedition this February.

The Mariana Trench is the deepest part of the world's oceans. It is located in the western Pacific Ocean, to the east of the Mariana Islands. The trench is about 1,580 miles (2,550 km) long but has an average width of just 43 miles (69 km)



Caecieleotris morrissi • A New Genus and Species of Blind Sleeper (Teleostei: Eleotridae) from Oaxaca, Mexico: First Obligate Cave Gobiiform in the Western Hemisphere

Oaxaca Cave Sleeper | *Caecieleotris morrissi*
Walsh & Chakrabarty, 2016

DOI: 10.1643/CI-15-275

Caecieleotris morrissi, new genus and species of sleeper (family Eleotridae), is described from a submerged freshwater cave in a karst region of the northern portion of the State of Oaxaca, Mexico, Río Papaloapan drainage, Gulf of Mexico basin. The new species represents the first cave-adapted sleeper known from the Western Hemisphere and is one of only 13 stygobitic gobiiforms known worldwide, with all others limited in distribution to the Indo-Pacific region. The new taxon represents a third independent evolution of a hypogean lifestyle in sleepers, the others being two species of *Oxyeleotris* (*O. caeca* and *O. colasi*) from New Guinea and a single species, *Bostrychus microphthalmus*, from Sulawesi. *Caecieleotris morrissi*, new species, is distinguished from epigeal eleotrids of the Western Atlantic in lacking functional eyes and body pigmentation, as well as having other troglomorphic features. It shares convergent aspects of morphology with cave-dwelling species of *Oxyeleotris* and *B. microphthalmus* but differs from those taxa in lacking cephalic pores and head squamation, among other characters. Description of *C. morrissi*, new species, brings the total number of eleotrid species known from Mexico to 12. Seven of these, including the new species, occur on the Atlantic Slope.

Stephen J. Walsh and Prosanta Chakrabarty. 2016. A New Genus and Species of Blind Sleeper (Teleostei: Eleotridae) from Oaxaca, Mexico: First Obligate Cave Gobiiform in the Western Hemisphere. *Copeia*. 104(2); 506-517. DOI: 10.1643/CI-15-275

[ResearchGate.net/publication/303981113_A_New_Genus_and_Species_of_Blind_Sleeper_Teleostei_Eleotridae_from_Oaxaca_Mexico_First_Obligate_Cave_Gobiiform_in_the_Western_Hemisphere](https://www.researchgate.net/publication/303981113_A_New_Genus_and_Species_of_Blind_Sleeper_Teleostei_Eleotridae_from_Oaxaca_Mexico_First_Obligate_Cave_Gobiiform_in_the_Western_Hemisphere)

Cavefish from Mexico Identified as First of its Kind in Western Hemisphere <https://www.usgs.gov/news/cavefish-mexico-identified-first-its-kind-western-hemisphere>

Cavefish from Mexico Identified as First of its Kind in Western Hemisphere <https://www.usgs.gov/news/cavefish-mexico-identified-first-its-kind-western-hemisphere>



A new Orange Strain of the Japanese Rice Fish or Medaka (*Oryzias latipes*)

“When Japanese talk about their domestic ricefish, they usually call them Medaka. This name is used for wild and farmed forms alike and can be roughly translated as “with bright eyes,” which refers to the big metallic eyes characteristic of ricefishes. Exactly when these little fish managed to conquer the hearts of the Japanese can no longer be pinpointed. We do know that they, along with Goldfish, were kept by all classes of people in the Edo period (the reign of Tokugawa shoguns from 1603 to 1868).

“Because of their small size they fit quite well in the ceramic vessels that were made at the time, although more stylized pictures from that period show them in ponds. Even today Japanese people commonly keep these fish in ceramic bowls and pots, often with a small pond lily or water lily or the popular *Eichhornia crassipes* (Water Hyacinth). The fish use the dense root system as spawning medium. In Japan, where living spaces tend to be small, this allows many people to keep a piece of nature at home. Because Medakas chase mosquito larvae of any size, they are welcome in small gardens and on terraces and balconies.”

Fancy Ricefish, *Oryzias latipes*. Yokihi Medaka is the common Japanese name for all orange varieties; Yang Guifei (Chinese) is often used as an alternative. Deep orange strains were being developed by Yukio Ooba as early as 2004. This normal-finned strain is distributed as “Y-30.” Photo: F. Mori

From AMAZONAS Magazine



Leopard Multibar Angelfish is now in the best of hands

June 29 2016, Jake Adams –

From where we're standing, the Leopard Multibar Angelfish that was collected in Vanuatu about a month ago is just about one of the most sensational aberrant marine angelfish we've ever seen. This one of a kind fish could have gone to any number of private rare and exotic fish collectors but luckily for us, long time friend of Reef Builders **Jimmy Ma** is the new steward of the Leopard Multibar Angelfish.

Mr. Ma has a particular penchant for rare, unusual and otherwise unique angelfish, especially pygmy angelfish and over the years he's shared many of his fine specimens with us. It's because of Jimmy that we have some of the first concrete evidence to support that some of the orange coral beauty angelfishes can actually hold their unusual color for a great deal of time.

Being the first of its kind, we still don't have a good explanation of how this *Paracentropyge multifasciata* became so stunningly patterned. We don't expect that the Leopard Multibar Angelfish will experience any shift of color or pattern, but being a small specimen there's still some room for it to grow and further develop its unique morse-code of dots and dashes. The Leopard Multibar Angelfish on the right compared to a normal multibar angelfish on the left.

Jimmy Ma is currently conditioning his new piscine treasure in a dedicated fish box to make sure it eats and is well adjusted before it is added to the main display aquarium. We hope that this is the first set of images of the unbelievable Leopard Multibar Angelfish and that the future holds many more updates on this exquisite *Paracentropyge multifasciata*.

found on ReefBuilder



Clayhall, Ilford pond fish rescued from torrential rain-flooded road by caring duo

Kate Wilson and neighbour Paulina Masalskaite, 11 rescued fish from their road, Ravensbourne Gardens, after they were swept from the flooded pond after last weeks torrential rain

A woman and a schoolgirl saved the lives of fish that had been swept from the pond in Claybury Woods and Park into the road during last week's torrential rain.

Kate Wilson and neighbour Paulina Masalskaite, 11 rescued fish from their road, Ravensbourne Gardens, after they were swept from the flooded pond after last weeks torrential rain. Kate Wilson, 61, of Ravensbourne Gardens, Clayhall, and Paulina Masalskaite, 11, who attends Gilbert Colvin Primary School, Strafford Avenue, Clayhall, noticed the park's pond fish flopping in the road.

With broom in hand, Kate swept the road to try and clear the drains holes, so water could escape.

"That was when I noticed the fish," she said.

"I saw the fish coming through the hedges and going into the road."

Paulina had also noticed the fish.

She said: "I ran outside. My mum filled a bucket of water and we put them in."

The two walked to the end of the road, went back into the park and put the fish into the side of the pond that had not burst its banks.

Kate, a semi-retired payments and benefits council worker, continued: "Some went down the drain holes."

Jacqueline Mercer, who saw the two rescuers, at work said: "I was impressed that they worked so hard to save the local wildlife and a youngster and a pensioner working together."

The pond in the park is home to a number of different types of fish including carp, perch and roach.

A spokesman for the council said the rescued fish should now be fully recovered from their ordeal.

He said: "We would like to thank those who took the time from their day to help rescue the fish and place them safely back in the water.

"We should point out that you should never move fish from one pond or lake to another to prevent the spread of fatal diseases like Koi Herpes Virus.

"Clearly In this case it was obvious where the fish had originally come from and we are thankful for the swift action to rescue them."



New Species Of Sea Bass Identified Based On Larval, Adult Specimen

Thanks to a lot of hard work and a little luck – two scientists from the National Museum of Natural History at the Smithsonian Institution have identified a mysterious larval fish and the same fish in its adult stage as a new species of sea bass.

Most fish that live in the ocean have a pelagic larval stage that floats inside the surface or near-surface currents, an ecosystem very distinct from the one they occupy as adults. Two distinct environments often call for two distinct physiques and appearances to maximize the odds of survival, leading to larvae that appear very different from the adults of the same species.

The newly identified fish, described in a new report published on Tuesday in the journal PLOS ONE, first came to the attention of researchers via a photograph in a previous study. It was identified as a member of the sea bass family Serranidae, but its seven very elongated dorsal-fin spines made it a very unique looking specimen.

"This feature isn't known in any Atlantic sea bass larvae, but it is similar to one species of Indo-Pacific sea bass," said study author David Johnson, a zoologist at the Smithsonian museum. "We initially thought the larva must have been caught in the Indo-Pacific Ocean, but we were wrong."

However, the fish larva in the photo was identified as being captured in the Florida Straits -- the body of water located between Florida and Cuba.

To properly identify the fish, the study team obtained the mysterious larva for further review. They found that the DNA from the specimen did not match up with any recognized fish in their database. Only then did the researchers begin considering the larva as a new species in spite of not having an adult specimen.

Meanwhile, Smithsonian scientists investigating deep-reef fish off Curacao inside the southern Caribbean gathered several "golden bass," which the team recognized as *Liopropoma aberrans*. However, genetic analyses revealed more than one species had been collected. Incorporating this new genetic data with available DNA barcoding information for all known western Atlantic sea bass produced an unforeseen discovery: The larva from the Florida Straits is the same novel species of *Liopropoma*. The sea bass was ultimately named *Liopropoma olneyi*, after a deceased colleague, John E. Olney.

"This was one of those cases where all the stars were properly aligned," said study author Carole Baldwin, a zoologist at Smithsonian's National Museum of Natural History. "We discover a new species of sea bass on Curacao deep reefs that just happens to be the missing adult stage of a larval fish from Florida, which we only knew existed because it was included as 'decoration' in a scientific publication. What a great little fish story!"

She added that the reefs where the adult fish live are remote and underexplored ecosystems.

"You can't access them using traditional SCUBA gear, and if you're paying a lot of money for a deep-diving submersible that

goes to Titanic depths, you're not stopping at 300 or 800 feet to look for fishes," Baldwin said. "Science has largely missed the deep-reef zone, and it appears to be home to a lot of life that we didn't know about."

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Read more at <http://www.redorbit.com/news/science/1113146153/new-sea-bass-species-identified-larval-adult-stage-051414/#hQkJUtG40t4cDYxv.99>



Underwater World Singapore closes!

Visitors taking snaps and selfies in the attraction's underwater tunnel. ST PHOTOS: KUA CHEE SIONG

Thousands pack veteran attraction on its last day to take advantage of low entry fees or just to say goodbye Melissa Lin

As the strains of Auld Lang Syne played over the speakers at Underwater World Singapore, thousands of people braved the crowds to take their last selfies and videos with the marine life at the oceanarium before it closed for good yesterday.

Around 8,500 residents and tourists thronged the 25-year-old attraction in Sentosa yesterday, which is more than five times the average daily visitorship, said Haw Par Corporation, which runs Underwater World.

Some came to bid adieu to a place that held fond memories from their younger days, while others took advantage of the slashed admission prices to visit the facility for the first - and last - time.

"It's been almost 16 years since I last came here. I used to visit at least once a year," said Madam Christina Lim, 53, a bus captain who was riding the traveller that snaked through Underwater World's iconic 83m underwater tunnel.

Pointing at the giant groupers and sharks swimming overhead, she said: "I would watch the fish grow bigger and bigger. When I heard it's closing, I thought, I must visit it one last time."

At the touch pools, children and adults alike squeezed their way to the edges for a chance to stroke the fish, starfishes and stingrays.

Malaysian housewife Vivian Tsang was with her son, 22, and daughter, 11. "My daughter was two when we last visited. We took photos with two kissing crabs then, and she remembers them," said the 44-year-old from Sabah. "Sadly, we couldn't see the dolphins today."

Earlier this month, Haw Par announced that it was closing the attraction as the lease on its premises expires in less than two years. The early closure is to facilitate the transfer of the animals to their new homes.

The attraction's pink dolphins, fur seals and otters have been moved to Chimelong Ocean Kingdom in Zhuhai, China, one of the largest marine parks in the world.

As for the rest, a spokesman said: "After the closure, 10 of our staff will stay on to operate and maintain the aquarium's life support system and to care for the animals till suitable homes are found for them."

When Underwater World opened in May 1991, it was the largest tropical fish oceanarium in Asia. Built at a cost of more than \$20 million, it was a big draw for tourists.

But in recent years, it faced competition from newer attractions on the resort island, such as the Marine Life Park and Universal Studios theme park.

In its last month, the oceanarium lowered ticket prices to its 1991 opening prices - \$9 per adult and \$5 per child - against the usual prices of \$29.90 for adults and \$20.90 for children.

This prompted Mr Gary Lim, 50, to make a trip down for the first time yesterday with his wife and two children. "It was very expensive previously," said Mr Lim, a cost controller.

While he found the underwater tunnel interesting, he said: "It was very crowded, so I didn't have the chance to just stand there and watch the fish."



Man brings live Siamese fighting fish into New Zealand

The five fish in plastic bags were seized at Auckland Airport. Photo / Supplied via MPIA passenger from Vietnam arrived in New Zealand with live Siamese fighting fish.

The five fish in plastic bags were seized at Auckland Airport by biosecurity staff after the man declared "wet fish" on arrival forms.

"The traveller's English wasn't very fluent and we initially thought he was carrying frozen or dried fish," said David Sims, Ministry of primary Industries manager, Auckland Airport.

"It was a surprise when he pulled out the plastic bags."

The fish were "humanely euthanised", MPI said.

"We're pleased the passenger knew to declare the fish," Mr Sims said.

"They came from an unknown source so may have been carrying diseases that could devastate local freshwater fish populations.

"It appears the message is getting through to international air passengers that they need to declare any biosecurity risk items when they arrive in New Zealand."

Mr Sims said the interception was very unusual, although it was not the first time MPI staff had seized live fish at the airport.

In 2013, MPI prosecuted an air passenger after he was caught smuggling live tropical fish in his trouser pockets.

Siamese fighting fish are popular aquarium fish and are native to Mekong basin of Laos, Cambodia, Vietnam and Thailand.

- NZ Herald



Harmful algae kills more than 100 fish in Smallgains Lake, off Smallgains Avenue, Canvey. Harmful algae kills more than 100 fish

MORE than 100 fish have died because of harmful algae taking over a lake.

Dog walker John Lashmar, 62, spotted the fish, believed to be carp, floating on the surface of the water as he went for a walk around Smallgains Lake, off Smallgains Avenue, **Canvey**.

The lake contains blue-green algae, which starves the water of oxygen, causing fish to die of suffocation.

It is also poisonous to humans and animals, such as dogs.

Mr Lashmar said: "The fish were all swimming close to the surface and gasping for air the day before, so I thought there might be something wrong.

"Then yesterday I went back and all the little ones were dead on the surface of the pond.

"The council should have been looking after them better. They should have installed an oxygen system to prevent this from happening."

Mr Lashmar, who passes the lake most days, added: "It really is terrible and quite upsetting these fish have died.

"It is not very nice for the people who have walked past and seen them.

"The lake is very popular and it will be distressing for people to see this."

The Echo previously reported that 100 fish died after they were moved from Canvey Lake, in Denham Road- where fishing isn't allowed- to Smallgains Lake.

In 2013, fishing restrictions were also put on Smallgains.

A spokesman for Castle Point Council said: "We have removed 109 fish from the lake and water samples have been taken.

"The fish are illegal stock that have been put in the lake.

"We will continue to remove the dead fish."

The algae can cause rashes if it touches skin, illness if swallowed, and can kill dogs.

An Environment Agency spokesman said: "We had a report of dead fish at Smallgains Lake on Canvey. "Environment Agency officers have been out to investigate and have confirmed in excess of 100 fish have died. "On visual inspection, the most likely cause is blue green algae, but this will be confirmed with further tests.

"We will monitor the lake and support Castle Point Council, who will give advice to the public."



Small brain, astounding performance: How elephantnose fish switch between electrical, visual sense

Date:

June 24, 2016

Source:

University of Bonn

Summary:

The elephantnose fish explores objects in its surroundings by using its eyes or its electrical sense -- sometimes both together. Zoologists have now found out how complex the processing of these sensory impressions is. With its tiny brain, the fish achieves performance comparable to that of humans or mammals.

FULL STORY

Gerhard von der Emde and Sarah Schumacher are from the Institute of Zoology at University of Bonn.

The elephantnose fish explores objects in its surroundings by using its eyes or its electrical sense -- sometimes both together. Zoologists at the University of Bonn and a colleague from Oxford have now found out how complex the processing of these sensory impressions is. With its tiny brain, the fish achieves performance comparable to that of humans or

mammals. The advance results have been published online in the Proceedings of the National Academy of Sciences.

The elephantnose fish (*Gnathonemus petersii*) is widespread in the flowing waters of West Africa and hunts insect larva at dawn and dusk. It is helped by an electrical organ in its tail, which emits electrical impulses. The skin contains numerous sensor organs that perceive objects in the water by means of the changed electrical field. "This is a case of active electrolocation, in principle the same as the active echolocation of bats, which use ultrasound to perceive a three-dimensional image of their environment," says Professor Dr. Gerhard von der Emde at the Institute of Zoology at the University of Bonn. Furthermore, the elephantnose fish can also orient using its eyes.

Professor von der Emde, along with his doctoral candidate Sarah Schumacher and Dr. Theresa Burt de Perera of Oxford University, have now investigated how the unusual fish processes the information from the various sensory channels. Ms. Schumacher summarizes the results: "The animals normally use both senses. If necessary, for example because one of the two senses provides no information or the information of the two senses differs greatly, however, the fish can switch back and forth between their visual and electrical senses." The scientists were surprised by the manner in which the fish use these two senses to get the best perception of their environment: When the animals became familiar with an object in the aquarium, for example with the visual sense, they were also able to recognize it again using the electrical sense, although they had never perceived it electrically before.

Fish give precedence to the most reliable sensory information

In addition, the fish demonstrated a previously unexpected ability: Their brain gave more weight to the information it thought was more reliable. When the two senses delivered different information in the close range of up to two centimeters, the fish trusted only the electrical information and were then "blind" to the visual stimuli. In contrast, for more distant objects, the animals relied above all on their eyes. They perceived the environment best by using their visual and electrical senses in combination. "A transfer between the different senses was previously known only for certain highly developed mammals, such as monkeys, dolphins, rats, and humans," says Professor von der Emde. An example: In a dark, unfamiliar apartment, people feel their way forward to avoid stumbling. When the light goes on, the obstacles felt are recognized by the eye without any problem. Mammals process such information with their cerebral cortex. The elephantnose fish, however, has just a relatively small brain and no cerebral cortex at all -- but nevertheless switches back and forth between the senses.

Clever experimental setup

The scientists came up with a very clever test setup: The elephantnose fish was in an aquarium. Separated from it were two different chambers, between which the animal could choose. Behind openings to the chambers there were differently shaped objects: a sphere or a cuboid. The fish learned to steer toward one of these objects by being rewarded with insect larvae. Subsequently, it searched for this object again, to obtain the reward again.

When does the fish use a particular sense? In order to answer this question, the researchers repeated the experiments in absolute darkness. Now the fish could rely only on its electrical sense. As shown by images taken with an infrared camera, it was able to recognize the object only at short distances. With the light on the fish was most successful, because it was able to use its eyes and the electrical sense for the different distances. In order to find out when the fish used its eyes alone, the researchers made the objects invisible to the electrical sense. Now, the sphere and cuboid to be discriminated had the same electrical characteristics as the water.

Many repetitions of the individual experiments were necessary in order to apply statistical analyses to reach conclusions about the sensory processing of the elephantnose fish. The scientists worked with a total of ten animals, working more or less in shifts. "The behavior of the different individuals was nearly identical," says Professor von der Emde. For that reason the scientists are certain that this enormous sensory performance is achieved not only by a particularly talented specimen but by all elephantnose fish.

Story Source:

The above post is reprinted from materials provided by University of Bonn. Note: Materials may be edited for content and

length.

Journal Reference:

1. Sarah Schumacher, Theresa Burt de Perera, Johanna Thenert, Gerhard von der Emde. Cross-modal object recognition and dynamic weighting of sensory inputs in a fish. Proceedings of the National Academy of Sciences, 2016; 201603120
DOI:10.1073/pnas.1603120113

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Bulldog and fish caught repeatedly smooching in the koi pond

IMAGE: CARRIE BREDY/YOUTUBE

Whether you swim or you bark, love is love.

An eight-year-old French Bulldog named Daisy has her very own FWB (fish with benefits.) She is frequently caught kissing a fish named Frank who resides in her owner's koi pond.

Their owner, Carrie Bredy, has documented their love affair on [Instagram](#) and [YouTube](#) for all to see.

SEE ALSO: [Socially awkward dog is just chillin' at this doggy pool party](#)

Though Bredy has two other dogs — Tomato and Walter — according to her [Instagram](#) page, since Bredy built her koi pond back in 2015, it seems as though Daisy is the only dog who enjoys visiting it.

Though Daisy and Frank's rendezvous take place at the koi pond, there is nothing coy about the relationships. Daisy heads over to the pond, lowers her head and waits for Frank to swim up — then the public make-out sesh begins.

It's clear that the two share a very special bond, and Bredy can't get enough. She captioned [one of her YouTube videos](#), "My French Bulldog (Daisy) and my koi fish (Frank) have had a year-long love affair. I never get tired of watching their affection toward each other."

Bredy also shared on [Instagram](#) that "When Daisy isn't busy kissing Frank, she enjoys lounging in the shade next to the pond," so at least they're always close by.



Woman Is Fighting To Save Fish From Alleged Cruelty At Walmart

More people are starting to think of fish when they think about animal welfare.

When Sharanya Prasad saw a photo of a small betta fish languishing in a cup full of dirty water at a Walmart store, she knew she couldn't stay silent.

Prasad's friend Julie Janovksy took the photo in 2014 at a store in Woodstock, Virginia, but a quick Google search reveals several news articles and [numerous complaints](#) over the past few years about the condition of the fish at various Walmart locations across the country, citing filthy water, too-small tanks or containers and diseased or dead fish on the shelves.

JULIE JANOVSKY/CARE2 Prasad, manager of campaign strategy at social networking site Care2, launched a petition asking Walmart to "immediately improve the living conditions of pet fish in all Walmart stores." Specifically, the petition demands "full tanks with filters and proper care" for the animals.

Walmart said in a statement to The Huffington Post that if customers feel something seems wrong with the fish at any store, they should bring it to the attention of the manager:

"We recognize and appreciate our obligation in the care and feeding of our live fish. We have processes in our stores that allow for the proper care of all betta fish by our associates. Like anything else in our store, if something doesn't meet our customers' expectation, we hope they'll bring it to the attention of store management. When we are made aware of such an issue, we take immediate action."

As of early Friday afternoon, the petition was nearing its goal of 160,000 signatures, but Prasad says she's seen no evidence that anything has changed since 2014.

When people think of animal welfare, they often overlook fish, and Prasad says that's a huge mistake.

"A lot of people don't think the same way about fish they do about puppies and kittens," Prasad told HuffPost. "But they are sentient animals that feel pain."

Jonathon Balcombe, author of the recently published *What A Fish Knows*, a book on the cognitive abilities of fish, agrees.

"We still labor under the delusion that [fish] don't feel pain," he told HuffPost. "We don't relate to them, so we think they don't matter."

An oft-cited 2013 study claimed fish likely don't feel pain "as humans do," but that study received numerous rebuttals from other scientists who disagree.

If people paid attention to the growing body of research about fishes' mental capabilities, their feelings about fish might change, Balcombe said.

"Each one is a unique individual," he said. "They recognize each other, they can recognize our faces ... They matter, they count, and we need to reflect harder on our interactions with fishes and adjust those accordingly."

Fish sold as pets, and betta fish in particular, suffer from people simply not understanding them.

Though people often think of fish as mentally vacant, experts say captive fish benefit greatly from mental stimulation and enrichment.

"The perfect example of that is to think of a goldfish in a fish bowl," Balcombe said. "That's not the ideal situation for the fish because there is nothing in that environment to enrich their experience."

And many betta fish in particular end up relegated to containers far too small for them to thrive, due to persistent myths that all they need are tiny bowls.



A xanthic specimen of the scribbled angelfish, *Chaetodontoplus duboulayi*, was discovered in Mackay, eastern Australia.

The news of this very unusual female scribbled angelfish comes to us from Aqua Lovers in Japan who received this fish and shared an incredible photo spread of this very rare specimen.

Scribbled angelfish were once one of the most highly sought after species of large angelfishes, due to their attractive coloration and sexual differences, making it easy to pair them up. Due to the shift in marine aquariums going mostly towards reef tanks and smaller fish, the scribbled angelfish is much less frequently seen, but gems do show up once in a while.

The striking xanthic scribbled angelfish showing a bright yellow base color and a much wider subdorsal band.

Actually, compared to many other species of angelfish the scribbled angelfish is surprisingly consistent in their look and appearance. Hence, making the discovery of a partially xanthic specimen all that much more surprising. A full xanthic specimen would replace nearly all of its dark coloration with a yellow color, but as you can see from the photos this scribbled angel seems to exhibit only conditional xanthism over its body.

A normally colored female scribbled angelfish showing the typical color and pattern for the species. Photo Pacific Island Aquatics.

A normal scribbled angelfish has body which is mostly dark, with a light reticulated scribbled pattern sandwiched between the dorsal and anal fins. In mature males the scribbling becomes fine metallic blue lines which are less scribbled and more longitudinal from the head to the tail. Furthermore, the yellow dorsal stripe at the base of dorsal fin of juvenile scribbled angels mostly fades away into a fairly thin wedge.

From Darwin, NW Australia

Meanwhile our partially xanthic scribbled angelfish has a very pronounced subdorsal fin which is much wider than it would normally be, even in a juvenile. More importantly, the base coloration has become a darkened orange color, greatly accentuating the scribbled pattern of this fish all over its body. Interestingly this specimen's tail is not quite as bright yellow as in a normal *Chaetodontoplus duboulayi* with the slightest trail of dark color at the edge of the tail.

This is only the second xanthic scribbled angelfish that has ever been documented, the first was a small female which showed the bright yellow base coloration and bold scribbles, but not the exaggerated yellow band. We're not sure what is going on with this fish's partial xanthism, but the result is for a striking fish that could be even more spectacular if it some day develops into a male. [Aqua Lovers]



New Wrasse and Anthias Collected in Papahānaumokuākea, Hawaii

We already know that there's loads of new fish in the mesophotic zone of the ocean so it's always exciting when new fish are discovered down there. It's especially tantalizing when new fish are discovered in a national marine park, like Papahānaumokuākea which was set up particularly as a natural laboratory to study coral reefs.

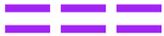
Deep diving trailblazers Rich Pyle and Brian Greene are at it again, with a fresh haul of new species of fish from depths of Kure Atoll which are normally out of range for recreational SCUBA. This time the deep diving team brought up a never before seen species of Anthias and a new wrasse, both of which are very attractive and related to other deep living species of reef fish.

New species of *Suezichthys* collected in deep waters of Hawaii

The wrasse appears to be an unknown species of *Suezichthys* with delicate purple lines along the body, and a series of purple spots at the base of the dorsal fin. The new Anthias seems to be a new species of *Tosanoides*, a small genus of deep living marine fish which currently only has two described species, both of which are incredibly beautiful as adults.

It'll probably a long while until we learn the true identity of these two new fish, whether they are described as new species or

specimens of obscure reef fish that we don't know much about. Either way, it's great to see that new fish are being discovered in well traveled and studied places like Hawaii, makes you wonder what could be found in the deep mesophotic reefs of even more exotic places. [Bishop Museum]



Lion fish armed with killer sting which even scares SHARKS invading Brit holiday spots

A TROPICAL sea monster with poisonous barbs delivering a deadly punch are plaguing the Med.

The menacing lionfish – dubbed the devil firefish – has launched a full scale invasion of the balmy seas off places such as the Costa Del Sol and Greek Islands.

Native to the South Pacific and Indian Ocean, the International Union for the Conservation of Nature is warning the creature is making its new home in the European waters.

The fish had already taken over the seas around the United States and Caribbean – but now has its sights on Mediterranean shores.

Experts warn the fish may have been introduced by boneheaded aquarium keepers who let them loose.

“Its presence could inhibit tourists and divers alike”

Despite their vibrant zebra-pattern and relative small size, the fish are so deadly that even sharks are scared of them.

Without predators the fish is free to wreak havoc on tourist destinations and the native eco-system.

The fish has been spotted in waters around Cyprus, Tunisia and Turkey in the Eastern Mediterranean, but Maria del Mar Otero from IUCN warned they could spread further.

Earlier this year, Brits abroad were warned of a fleet of marauding stinging jellyfish descending on the Costa Del Sol. (link)

Dr Carlos Jimenez, a marine biologist at the Cyprus Institute, said the lionfish's arrival “could have a heavy negative impact on the ecosystems as well as on local economies”.



Bones of Extinct Fish Found in Shipwreck Off Israel's Coast

Geneticists identify bones in 7th-century vessel as belonging to subspecies of tilapia, aka St. Peter's fish, usually a freshwater species.

The wreckage of the 7th-century ship, in which the fish bones were discovered. Steve Breitstein

Divers find 1,600-year-old buried treasure off Israel's coast

Archaeologists solve mystery of 2,700-year-old fortress in Tel Aviv

Why no truly ancient Bible writings have been found

Genetic tests conducted on fish bones found in a shipwrecked vessel off the coast of Israel, south of Haifa, indicate that a now-extinct subspecies of tilapia existed as early as 1,300 years ago in the country.

The seventh-century ship (from the early Islamic period) was found in the Mediterranean Sea about 100 meters away from Dor Beach, at the foot of the Carmel Mountains.

The species of tilapia that still exists in Israel, and popularly called St. Peter's fish (musht, in Hebrew), typically lives in fresh water.

The underwater excavation team that studied the wreck was headed by Prof. Yaacov Kahanov, a University of Haifa marine archaeologist. Among the findings were urns containing thousands of bones of small fish.

The bones were sent to the genetics laboratory of Prof. Micha Ron of the Volcani Center, a government-sponsored agricultural research organization located outside Tel Aviv.

"We sequenced a section of DNA and compared the findings to all the fish that exist today. We found great similarity to tilapia – with the exception of one mutation," says Ron. The mutation appeared again and again in all the bones that were examined, which means that the bones probably belong to a subspecies that can no longer be found in nature.

Bones found inside urns at the underwater archaeological site in the Mediterranean. Tilapia are usually found locally in fresh water. Y. Gottlieb

Besides fresh water sources, the ancient species tilapia apparently lived in the estuaries of rivers flowing to the Mediterranean. It is also possible that at some point, the fish was bred inside special installations, perhaps a type of ancient fish farms. Structures of this type have been discovered at excavations at the Jisr al-Zarqa and Caesarea beaches, which are not far from Dor.

Kahanov emphasizes that the urns in which the fish bones were found were in the bottom part of the ship.

“It’s possible that the sailors wanted to keep them at a low temperature,” he says. “These are very small fish and they may have been used to prepare a fish stock, a kind of sauce we are familiar with from the Roman period. They may have wanted to trade in them or to use them aboard the ship.”

read more: <http://www.haaretz.com/jewish/archaeology/.premium-1.726236>



Pseudojuloides labyrinthus, a new pencil wrasse from Kenya

June 15 2016, Jake Adams –

Pseudojuloides labyrinthus is an exciting new species of pencil wrasse from the Western Indian Ocean. The labyrinth pencil wrasse joins a fresh crop of *Pseudojuloides* wrasses which have been described in recent years, many of them being discovered by a fellow aquarist.

Jason Edward of Greenwich Aquaria has been a pioneer in procuring rare and unusual fish for going on a decade now, being one of the first to bring us such saltwater aquarium hits like *Plectranthias pelicierii*, *P. nanus*, Jocularator angels, Vivienne’s leopard wrasse, Rose Island dottyback, and many more, before they were cool in the hobby.

A gorgeous view of the just-described *Pseudojuloides labyrinthus* pencil wrasse

More recently, Jason has sought out to discover unknown marine fish from obscure parts of the world. His efforts have resulted in the discovery of an unusual species of sleeper goby from Mauritius, and some great pictures of a still undescribed flasher wrasse from Kenya, *Cirrhilabrus* sp. 3. Furthermore, prior to today’s unveiling Jason’s work has resulted in two new species of pencil wrasses that have been described, *Pseudojuloides edwardi* and *Pseudojuloides zeus*.

If you thought of the the double electric lightning stripes of the Zeus pencil wrasse was exciting, the new *Pseudojuloides labyrinthus* is even more exciting. The new labyrinth pencil wrasse has at least three neon blue stripes the length of its body and is contrasted nicely with a yellow-green base body coloration.

Pseudojuloides labyrinthus is most closely related to *P. edwardi*, both of which are found in Kenya in the Western Indian Ocean, and females of both species are mostly pink with a slightly reddish colored head and face and a white upper jaw. The new Labyrinth pencil wrasse is described by Victor & Edward in the most recent volume of the Journal of Ocean Science Foundation. [JOSF]



Keith Davenport awarded the 2016 OFI Award

Newly elected OFI President Shane Willis (picture right) presents 2016 OFI Award to Keith Davenport (left). (Photographer Svein A. Fosså)

via Ornamental Fish International (OFI)

Nuremberg, Germany – May 27, 2016 – Keith Davenport of OATA has been awarded the 2016 OFI Award for his for his immense work for the aquatic industry in the UK and internationally, and his unlimited willingness to share information and cooperate with colleagues across the globe. Keith has been Chief Executive Officer of the UK trade organisation OATA since 1991 and became a true leading light in the community of trade associations working with ornamental aquatic industry issues. He is always the first to share information with others, and is always eager to discuss thoughts and issues, strategies and road map. OFI has maintained a close working relationship with Keith and OATA and hope this continues after his retirement later this year.



Rare, blind catfish never before found in US discovered in national park cave in Texas

Date:

June 17, 2016

Source:

University of Texas at Austin

Summary:

An extremely rare eyeless catfish species previously known to exist only in Mexico has been discovered in Texas, report investigators.

FULL STORY

These Mexican blindcats were discovered in an underwater cave in Texas.

Credit: Danté Fenolio
An extremely rare eyeless catfish species previously known to exist only in Mexico has been discovered in Texas.

Dean Hendrickson, curator of ichthyology at The University of Texas at Austin, identified the live fish, discovered in a deep limestone cave at Amistad National Recreation Area near Del Rio, Texas, as the endangered Mexican blindcat (*Prietella phreatophila*). The pair of small catfish, collected by a team in May, have been relocated to the San Antonio Zoo.

The Mexican blindcat, a species that grows to no more than 3 inches in length, is known to dwell only in areas supported by the Edwards-Trinity Aquifer that underlies the Rio Grande basin in Texas and Coahuila. The new blindcat finding lends additional weight to a theory that water-filled caves below the Rio Grande may connect the Texas and Mexico portions of the aquifer.

"Since the 1960s there have been rumors of sightings of blind, white catfishes in that area, but this is the first confirmation," Hendrickson said. "I've seen more of these things than anybody, and these specimens look just like the ones from Mexico."

Jack Johnson, a caver and National Park Service resource manager at Amistad, first spotted some of the slow-moving, pinkish-white fish with no eyes in April 2015. After several attempts to relocate the species, Johnson and biologist Peter Sprouse of Zara Environmental LLC led the team that found the fish again last month. Mexican blindcats are a pale pink color because their blood can be seen through the translucent skin, and they dwell exclusively in groundwater.

"Cave-dwelling animals are fascinating in that they have lost many of the characteristics we are familiar with in surface animals, such as eyes, pigmentation for camouflage, and speed," Sprouse said. "They have found an ecological niche where none of those things are needed, and in there they have evolved extra-sensory abilities to succeed in total darkness."

The Mexican blindcat was originally described in 1954 when found in wells and springs near Melchor Múzquiz in the northern Mexican state of Coahuila. It was subsequently listed as an endangered species by the Mexican government, and as a foreign endangered species by the U.S. Fish and Wildlife Service. Hendrickson led efforts to locate additional blindcat sites in Mexico and Texas for years but only located them in Mexico on previous expeditions.

"Aquifer systems like the one that supports this rare fish are also the lifeblood of human populations and face threats from contamination and over-pumping of groundwater," Johnson said. "The health of rare and endangered species like this fish at Amistad can help indicate the overall health of the aquifer and water resources upon which many people depend."

The fish are not yet on public display. They will be maintained alive in a special facility designed to accommodate cave and aquifer species at the San Antonio Zoo's Department of Conservation and Research.

"The San Antonio Zoo has a series of labs specially designed to keep subterranean wildlife safe and healthy," said Danté Fenolio, vice president of conservation and research at the San Antonio Zoo. "The fact that the zoo can participate now and house these very special catfish demonstrates the zoo's commitment to the conservation of creatures that live in groundwater."

Others involved in the discovery were Andy Gluesenkamp and Ben Hutchins of Texas Parks and Wildlife, Gary Garrett and Adam Cohen of UT Austin and Jean Krejca of Zara Environmental.

The finding brings the number of blind catfish species within the U.S. to three, all found only in Texas. The two other species of blind catfish in Texas, the toothless blindcat (*Trogloglanis pattersoni*) and the widemouth blindcat (*Satan eurystomus*), live

in part of the Edwards Aquifer complex, the deep Edwards pool below the city of San Antonio.

Story Source:

The above post is reprinted from materials provided by University of Texas at Austin. The original item was written by Christine S Sinatra. Note: Materials may be edited for content and length.

University of Texas at Austin. "Rare, blind catfish never before found in US discovered in national park cave in Texas." ScienceDaily. ScienceDaily, 17 June 2016. <www.sciencedaily.com/releases/2016/06/160617140602.htm>.



Has the Robson Guppy truly disappeared?

16 Jun, 2016

In the year 1937, A. E. Robson of High Gate, London, England, introduced to United Kingdom (UK) members of the Guppy Breeder's Society (GBS) a new strain which would become known among domestic Guppy breeders as the Robson Guppy. A strain produces a visible phenotype (a grouping of multiple traits). The Robson strain incorporated two unique traits in females at the time: first, the phenotypical structure of the dorsal resembled that of males from other early strains, still bred today, including the Speartail, while the caudal structure resembled that of the Roundtail, also still bred today. The primary noted difference with Roundtail was a long tapering dorsal with extension well into the caudal round, as compared to early and modern Roundtails, which possess a much shorter and rectangular dorsal that does not extend into the caudal round. The example below is a Robson-type male.

Robson Guppy, drawn from early standard descriptions based on wild-type color and pattern.

Second, and most importantly, the Robson females expressed color in their finnage. While this may seem inconsequential today, the Robson females are documented as being one of the first captive-bred strains to express either sex-link or autosomal-linked color in finnage (albeit black melanophores and not actual color pigment). The example below is a modern

Black Moscow female with black finnage and extended non-tapering dorsal.

Robson colored female, with non-tapering extended dorsal. Photo courtesy Desmond Koh

Robson male from some years ago, photo courtesy of Stephen Elliot

DESCRIPTION & HISTORY

At the time, scientific research involving *Poecilia reticulata* was still in its infancy. Most notable researchers at the time were O. J. Winge, L. J. Blacher, Johs. Schmidt, C. P. & E. F. Haskins, J. P. Druzba, V. F. & A. I. Natali, and V. S. Kirpichnikov, to name a few of the more notable, who were doing studies nearly exclusively on captive-bred, wild-caught populations. In wild-type, Mother Nature imposes many restrictions, which are best defined as “fitness traits” geared towards the survival of *P. reticulata* despite its role as a prey species. One of these is “color neutral/clear caudal” females. Above the lateral line, female coloration is specifically adapted for camouflage from above; below the lateral line, female coloration is adapted for camouflage from below. Minimal finnage appears clear to the naked eye and in the shape of a genetic roundtail.

The available published research at the time suggested wild-type females possessed little or no color pigment in genotype (XX-link), and thus passed little color or pattern genotype on to male offspring. However, when this information was disseminated to breeders by aquatic authors of the day, it mistakenly assumed that the results applied to wild-type results would also apply to domestic strains being developed. As A. E. Robson showed in 1937, this was not the case. His simple strain, by modern standards, proved that *P. reticulata* females were capable of expressing color in captive-bred domestic strains, extracted from traits existing unexpressed in wild-type. It would also help corroborate later research showing that females were:

1. Capable of naturally possessing color in genotype (XX-link and autosomal)
2. Capable of acquiring color through chromosomal crossover (Y- to X-link) during meiosis
3. Capable of androgen-based expression of color pigments.

By the early 1950's, researchers were showing in captive bred wild-caught populations what breeders had demonstrated in their tanks 15 years prior. That is, in native high-predation locations, much of male color pattern was preserved and passed not by Y-link inheritance, but rather X-link and autosomal. Flashy Y-link males gain benefit via female sexual selection preference in both low- and high-predation locales. Yet, they suffer higher mortality in the latter. Therefore, it is not beneficial for males to pass high degrees of color/pattern and reflective qualities to all sons in the form of Y-link. The stage was set for development of the wide array of domestic Guppy strains we see worldwide today.

It would be nearly another 10 years before the GBS recognized the Robson phenotype in its breeding standards of 1947.

According to Klee, Robson females exhibited “a large round jet-black tail and a black dorsal.” The remainder of body and finnage coloration in Robson females was described as being blue iridophore and yellow Metal Gold (Mg), commonly seen in wild-type, though possibly more pronounced. Males were described by Klee as “lacking the black spots characteristic of the common guppy of the time, but they did have their tails and dorsal fins edged in black.” It should be noted that more recent Robson-type males (tapering dorsal and round caudal) express diversity of type found in color and pattern of modern short-tail strains, while those of earlier breedings were likely limited to “wild-type,” “multi,” or “Vienna” body color and pattern. In the example below is a male of Robson finnage type (tapering dorsal and round caudal) edged in black with modern Saddleback color and pattern.

Robson type male with Saddleback color and pattern. Photo courtesy Gernot Kaden

While breeder lore indicates that creation of the Robson strain involved the use of Cream (double recessive blond (b) + golden (g) females), Klee contradicted this belief, without substantiating, stating that Robson infused “imported females that exhibit much black in their fins” into his gene pool.

While Robson Guppies were to be found in continental Europe, their core support came from breeders in the United Kingdom. The UK Federation of Guppy Breeders Society (FGBS), successor to the GBS, standards defined the Robson in 1955 and 1961 as “Caudal Fin – to be evenly rounded and free from any resemblance of a straight line or point. Dorsal Fin –

to be long, slim, tapering to a point and extending beyond the Caudal peduncle. Standard Grey body only.” This clearly defined Robson as a body style trait and not in regard to color or pattern. The FGBS was geared towards production of Short-tail Guppies.

The Robson Guppy, 1955 UK Federation of Guppy Breeders Society standard.

In 1961, UK Fancy Guppy Association (FGA), successor to the FGBS, failed to recognize in its Standards Handbook the Robson Guppy as either a body type or color class. Instead, they listed “FEMALES, ALL VARIETIES, COLOURS” on fins should be varied and brilliant. Revised 1967 standards had apparently seen the error in previous interpretation of the Robson phenotype by re-classifying prior standards from that of a “body/finnage type” to a “basic body colour.” This stated, “Robson – Permitted only in the grey standard basic body colour. The dorsal and caudal fins must be black and no other colour on the body or fins is allowed.”

However, doing so set the course for continued declining interest and eventual demise of this 30-year-old phenotype. From foundation to demise, the FGA was founded and geared toward production of Broad-tail Guppies. By 1973, the Robson phenotype was no longer included in FGA standards for either color or body.

Asian Black Moscow female of Robson coloration, with tapering dorsal and minimal extension. Photo courtesy 曾皇傑 Tseng Huang Chieh

DISCUSSION & GENETICS

So, what brought about the demise of the Robson phenotype as a strain recognized by formal Guppy Breeder Associations? As late as 1989, The UK Federation of Northern Aquarium Societies, in its publication, “A Simple Guide to Identification; Guppy (Fin Shapes),” listed the Robson Guppy as a body type. The Robson was never formally recognized in North America by the American Guppy Association (AGA) or its successor, the International Fancy Guppy Association (IFGA). Nor was the Robson ever recognized in continental Europe by the Internationales Kuratorium Guppy Hochzucht (IKGH), active since 1981. From its creation in 1937 until the 1970’s, the Robson Guppy strain was primarily bred by breeders in the UK. While the Robson Guppy created quite the stir in its heyday, it could not compete with changing breeder interests and new developments in their tanks. Interest during the 1950-60’s was shifting from Swordtails and Short-tails to colorful new Broadtail strains. A standard limiting females to black coloration in finnage and none in body did not help in bolstering dwindling interest. Trying to locate photos of the Robson is like hunting for a needle in a haystack. Few, if any, seem to have been photographed by breeders in tanks or at shows. None of these breeders are active today. To date, I have located only a single color plate indicative of a Robson male; see Madsen, J. M., (1975) Aquarium Fishes In Color. In the example below is a male of Robson finnage type (tapering dorsal and round caudal) with modern Full Red color and pattern.

Robson-type male with Full Red color & pattern. Photo courtesy Gernot Kaden

Like most modern Domestic Guppy strains, the Robson was likely not the result of a “new mutation,” but rather the product of X-link, Y-link, and autosomal traits hidden in wild-type. More often than not, these traits are in simple non-linked combination passed by males and females, rather than a true linked complex that is passed to offspring in a single event. They are identified in captive-bred populations subject only to selection imposed by breeders and not natural predation or female sexual selection preferences imposed on wild populations. Large-scale mutations are rare and infrequent events, and are almost immeasurable. Small-scale mutations, on the other hand, are being recognized as frequent and commonplace. These occur on both the chromosomes and autosomes in the form of transpositions in small snippets of DNA. While producing new phenotypes, this may also foster instability seen in breeder results within fixed strains.

In the case of the Robson, it is primarily comprised of X-link and/or autosomal:

1. Concentration of black melanophores in finnage, and
2. Tapering dorsal structure with extension.

While modern breeders still commonly associated the term “Robson” with a tapering dorsal in females, it should be remembered for its greatest impact. That is, the first documented expression of color in females as a result of X-link and/or autosomal genotype. This knowledge has allowed for the creation of all expressed female color in modern Domestic Guppy

strains. How much of this is a direct result of Robson females? In all likelihood, not that much. In domestic breeding situations, it is commonplace for similar phenotypes to arise in multiple locations, just as it is in the wild.

It is feasible that the Robson genotype for colored finnage in females was used to further develop new strains. If so, most likely candidates are early European black and purple Veiltails. The genetic foundation of these strains was initially developed in the 1950-60's, using females with X-link and/or autosomal black melanophores in finnage. From these, later Black strains have been produced, as in the example, below, of Asian- and North American-bred females.

Breeders should always keep in mind that regulation of color and pattern is considered generally distinct between body and finnage. Regulation between caudal and dorsal is often distinct between strains, as is extension genetics, which allows for variation in lengths of finnage types through breeder selection.

Tapering dorsal is still very much commonplace in non-black, finned Domestic Guppy strains, to include: Lyretails, Swordtails, Speartails, Pintails, and even Roundtails. Standards worldwide frown on a Roundtail tail guppy with a tapering dorsal, yet this still serves a purpose, in that it further demonstrates that a tapering dorsal and finnage pigmentation was never in a linked complex in the Robson Guppy. It also shows that a tapering dorsal is not linked in complexity to caudal shape, as each can be passed independently of the other.

Swordtail female with Tapering Dorsal ca. 2004.

So, has the Robson Guppy truly disappeared from breeder tanks? As a strain defined by earlier standards, possibly. In contribution to current breedings, not likely, as all components are still found worldwide in many improved strains. Thus, with effort, it could potentially be re-constituted in original form with well-defined breedings.

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CONTRIBUTORS: Stephen Elliot, Kettering, England.

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Related Terms:

- Term: captive-bred
- Term: dorsal
- Term: caudal
- Term: DNA

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About the author

Alan Bias Alan S. Bias is Domestic Guppy breeder & exhibitor of 47 years. Over the last 30+ years he has specialized in strains known to breeders as "Swordtail Guppies". For nearly 20 years he has done cellular level research, combining formulated breeding tests & systematic observation to help breeders understand the complexities of modern Guppy genetics in the strain being produced.

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1. International Betta Congress Convention (OK)
June 23 - June 26
2. Pacific Northwest Koi Clubs Association Convention (ID)
June 24 - June 26
3. Reef-A-Palooza (NY)
June 25 @ 11:00 AM - June 26 @ 5:00 PM
4. Stark County Aqua Life Enthusiasts Society Auction (OH)
June 26
5. North American Discus Association Show (IL)
July 7 - July 10
6. American Cichlid Association Annual Convention 2016
July 7 - July 10
7. Pacific Coast Cichlid Association Mega Auction (CA)
July 9
8. Pioneer Valley Water Garden and Koi Club Pond Tour 2016 (MA)
July 9 - July 10
9. Niagara Frontier Koi & Pond Club 10th Annual Show & Auction (NY)
July 9
10. Champagne Area Fish Exchange, Summer Auction (IL)
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1

Maidenhead Aquatics: Hands Off My Hobby

Maidenhead Aquatics discusses OATA's Hands Off My Hobby campaign

Aquarists around the world may not be aware of growing concern for the aquarium hobby and industry in the United Kingdom.

Fearing crippling new livestock regulations, the trade organization OATA (Ornamental Aquatic Trade Association) is calling on aquarists and industry members to act in their "Hands Off My Hobby" campaign. The latest contribution of support comes from UK-based aquarium retailer Maidenhead Aquatics..

It is in response to the emergence of a number of European groups opposed to the import, sale and keeping of "exotic pets"—including most tropical fish species, freshwater and marine, wild-caught and even **captive-bred**. Some observers warn that the movement to ban many types of pets may also be poised to spread beyond the Euro zone, and North American industry leaders should not consider the trade here off limits to attack.

Hands Off My Hobby: Fishkeeping Under Attack



Australia's Answer to Invasive Carp

Australia has a plan to rid its waterways of a destructive fish species by making the fish their own worst enemies.

The targets are European carp, also known as koi: toothless, mud-sucking, bottom-dwelling fish that breed like crazy, destroy the habitat of other species and go unchecked by native predators. And the weapon is a dose of venereal disease.

The carp got loose accidentally in the 1960s, released from farm dams. Their habit of stirring up tons of silt as they foraged for food turned the once-clear Murray and Darling Rivers murky, cutting the sunlight for aquatic plants and preventing some native fish from spotting prey. These days the rivers seethe with the highly adaptable carp, which make up as much as 90 percent of the fish biomass in the river systems.

Now scientists are turning to a virus, **Cyprinid Herpesvirus 3**, that they hope will kill all the carp but spare other species. The government has allocated \$11 million in grant money to test the idea.

European carp spread herpes when they mate, but not quite the way mammals do. The fish jostle and bump one another in a swirling tight-knit mass as the females lay eggs that are fertilized by males. The skin-grazing frenzy leaves carp susceptible to infection.

Cyprinid Herpesvirus 3 kills the carp by destroying its skin, kidneys and gills, but it does not harm humans, even if they eat infected carp, scientists say. It was discovered among carp in Israel in 1998.

Australia has had some success with biological control agents, and some stunning failures. Two viruses managed to cull around 600 million of Australia's infamous feral rabbits. But officials came to regret the introduction of bony-headed Hawaiian **cane toads** to eat insects that were blighting sugar cane crops.

The toads also eat anything else that fits in their mouths, including birds, frogs, snakes and small mammals, and they do it more greedily than native amphibians do. And when other animals like crocodiles, quolls or goannas eat a Hawaiian cane toad, they soon die from a poison secreted by glands in the toads' shoulders.

Some of the grant money for the anti-carp virus test will go toward cleaning up the mess afterward. There is commercial interest in turning thousands of tons of dead carp into farm fertilizer.



Fish can recognize human faces. Should that change how we think of them?

One of the many astounding things that humans can do is **recognize faces**. Even though most faces we encounter are basically similar — a rough oval shape, two eyes, a nose, a mouth — most of us can pick out subtle differences and distinguish among hundreds of mugs. In an instant. Monkeys and other primates are **similarly adept**.

For a long time, scientists thought this feat required sophisticated brain machinery — a combination of perception and memory. Brain scans show that a part of our neocortex known as the **fusiform gyrus** becomes activated when we look at faces. People with damage to the fusiform gyrus lose their ability to recognize faces, a disorder known as **prosopagnosia**. Surely this was a special talent.

But perhaps not! A fascinating **new paper** in *Scientific Reports* offers evidence that **archerfish** — a tropical fish that spits jets of water to stun prey — can be trained to recognize human faces with surprising accuracy, even though they lack the same complex brain structures. If true, it's yet another piece of evidence that fish are much, much smarter than we think.

How to teach a fish to recognize human faces In the **study**, led by Cait Newport of Oxford University, the researchers trained four archerfish to spit water at an image of a particular human face in order to receive a food prize. They found the archerfish could then distinguish that face from 44 other faces with surprising accuracy (81 percent of the time, at peak).

Here's a **video** from LiveScience below showing them in action:

As always with **animal studies**, it's tough to be 100 percent confident that the fish are actually recognizing faces. We don't have access to their inner lives, only their behavior. But it sure seems like they do. The researchers tried again with a fresh set of four archerfish, standardizing face shape and switching to black and white images. The fish could still reliably distinguish among 18 faces, 86 percent of the time.

Now, fish aren't the only animals that can do this. Pigeons **have also demonstrated** an ability to distinguish between different human faces. But bird brains have **neocortex-like** structures — long thought to be important to cognition — similar to those in human brains. Fish don't have anything like a neocortex. That's what's so surprising.

I asked **Culum Brown**, an Australian biologist who studies fish intelligence but wasn't involved with this study, what he made of these results. He argued that it should make us rethink some of our ideas about the brain:

I think humans are overly wrapped up in the importance of the neocortex with respect to its role in cognition. The human neocortex has taken over many of the functions that take place in other parts of the brain in other animals. This recent work on object/human face recognition in archerfish is just another example. Indeed much of the visual processing that takes place in the optic lobes and cerebellum in fish occurs in the neocortex in humans. This is also true of pain perception.

The result clearly indicate that the neocortex is not the grail of intelligence.

To put this another way: Yes, scientists can see our fusiform gyrus light up in brain scans when we recognize faces. But that doesn't mean this brain structure is absolutely necessary. It might just mean that this is the spot where humans happen to process that information. Other brains have different ways of accomplishing the same task.

This is more evidence that fish are smarter than we think (**Tambako**)

In the wild, groups of French grunt (*Haemulon flavolineatum*) fish have culturally transmitted migration routes. Brown also noted that the facial recognition study jibes with quite a bit with what we've been learning lately about fish intelligence. "Most fish species are social and have the capacity for individual recognition," he wrote. "We have known that for more than 20 years. We also know that fish can use facial features to categorize predator and non predators. Fish are much smarter than people think."

A few years ago, Brown published a review essay called "**Fish intelligence, sentience and ethics**" in which he laid out the

considerable body of research that fish are surprisingly intelligent — no less than, say, pigs or cows. He also expounded on this argument at length in [this Q&A](#) with Joseph Stromberg for Vox.

Fish can learn from each other. They can recognize other fish they've spent time with previously. They know their place within fish social hierarchies. They remember complex spatial maps of their surroundings. (Also it's a myth that goldfish have a three-second memory.)

"Anybody who feeds fish will tell you this," Brown said. "In the morning, at the appropriate time, the fish will gather at the right end of the tank, expecting to be fed. That's called **time-place learning** — they're learning a place and associated it with a time."

If fish really are intelligent, should that change how we think of them? The really provocative question is whether fish intelligence has any big ethical implications. Some people go vegetarian because they think it's morally wrong to kill and eat a sentient cow or pig. But a subset of vegetarians will make an exception for fish — perhaps because they might think of fish as "lesser" creatures. So what if that's wrong?

Similarly, while animal rights groups will often campaign for better living conditions for cows or pigs or chickens, you don't quite see the same activism around the welfare of fish caught in the wild or raised in aquaculture. **Here's** Brown:

[B]ack in the '50s and '60s for terrestrial commercial farms, we started to think about things like moving pigs on the backs of trucks, and whether chickens had access to the real world. That revolution stopped at the water. Every major commercial agricultural system has some ethical laws, except for fish. Nobody's ever asked the questions: "What does a fish want? What does a fish need?"

Part of the problem comes back to the question of whether fish feel pain. But for the last 30 years, the neurophysiologists **have known that they do**, and haven't even argued about it. And from an evolutionary perspective, our pain perception systems — and the systems of all terrestrial vertebrates — come from a fish-like ancestor. Whether they're in the water, or on the land, they all have the same pain receptors. But for some reason, a lot of people refuse to believe that fish can feel pain. ...

I think, ultimately, the revolution will come. But it'll be slow, because the implications are huge. For example, I can't think of a way to possibly catch fish from the open ocean in a massive commercial way to meet demand that would be anyway near our standards for ethics if we think of them like other animals. Currently, you go out, you catch a bunch of fish, you crush most of them to death in a net, you trawl them up from the bottom of the sea — which causes **barotrauma** for most of them — you dump them on a deck, half suffocate to death, the ones you don't want get thrown overboard and die anyway, and the ones you keep go on ice, just to preserve the flesh for market reasons. How do you do that in a way that has the fish's interests involved to any degree? You can't.

So it's not surprising that there is some fierce opposition to this idea. It would mean a massive change in the way we do things.

It's a provocative argument. Obviously not everyone will find it convincing. But it's certainly a challenge to many of our usual notions of animal rights.





EU 'pirates' net our fish: Quotas worth up to £65m are surrendered to trawlers

THE Scottish Government is handing out British fishing quotas worth millions of pounds to Spanish and Dutch-owned trawlers.

The Scottish Government is handing out British fishing quotas worth millions of pounds. Other EU countries already enjoy access to our rich fishing grounds, with Denmark, Holland, France, Spain and Germany taking the lion's share.

The UK divides its annual catch into Fixed Quota Allocation (FQA) units, which are distributed to fishermen throughout the Home Nations and the Isle of Man.

North of the Border, the Marine Scotland quango has given more than 88,000 FQA units to 21 licence holders who are based in either Spain or Holland.

Last night, experts said the quotas allow the fisherman to land almost 9,000 tonnes of fish which could be worth up to £65million at today's market prices.

RELATED ARTICLES Under the current EU rules, foreign-owned trawlers can access the UK quota as long as they sail under the British flag - a practice known as 'quota hopping'.

All of the Spanish fishermen licensed by Marine Scotland are from the north-west Galicia region.

The largest quota belongs to skipper Manuel Otero Eijo, of La Coruna, whose UK-registered trawler Brosme has 14,514 FQA units under two separate licences.

He is entitled to land almost 1,000 tonnes of deep sea shark, along with 220 tonnes of hake, 110 tonnes of ling and smaller catches of around 30 other species.

Other valuable quotas belong to Juan Celso Parado, of La Coruna, owner of the Ayr Queen, and Eugenio Regal-Pino, of Lugo, owner of the Brisca trawler.

Foreign-owned trawlers can access the UK quota as long as they sail under the British flag. So-called 'quota hopping' explains why nine out of 10 fishermen are planning to vote leave

Jim Portus

Two more quotas, for the Inverdale and the Cabo Ortegal trawlers, are co-owned by a La Coruna man named Emilio Arestin Rivas - who describes himself as an "entrepreneur" in documents filed with Companies House.

Three Dutch fishermen from the small fishing town of Urk, on the IJsselmeer north of Amsterdam, also have licences from Marine Scotland.

They are Albert and Louwe De Boer, owners of the trawlers Enterprise and Annegina, and Johannes Romkes, owner of the Quo Vadis boat.

Mr Romkes' quota includes around 730 tonnes of plaice, 50 tonnes of cod and 26 tonnes of turbot and brill.

Other Scottish trawlers in Spanish hands have thousands of FQA units allocated by the Marine Management Organisation, the fisheries administration south of the Border.

They include the O Genita, registered to a company called Sealskill Ltd at Troon Harbour in Ayrshire and owned by the notorious Vidal family of Spanish fishing barons.

Other EU countries already enjoy access to our rich fishing grounds. In 2012, company director Maria Dolores Vidal Marino was among four Vidal associates fined £1.6million by Truro Crown Court in Cornwall, the biggest fine in British maritime history.

Five family members were arrested by Spanish police and Interpol in March on charges of illegally catching Patagonian toothfish, while in 2015 the Spanish authorities imposed fines of £13million on three Galician vessels linked to the Vidals.

Jim Portus, chief executive of the South Western Fish Producer Organisation, said the rule of thumb was 10 FQA units to the tonne - meaning the quotas at current prices could be worth £63million.

He said: "So-called 'quota hopping' explains why nine out of 10 fishermen are planning to vote leave. Spanish fishing boats have been sailing under a British flag of convenience since 1977 and a court ruling in the Eighties extended this right to other EU members.

"Spain and Holland not only have their own quota and their own fishing fleet, they have also got a second fleet masquerading as British which is catching our quota.



This underwater drone lures and photographs your pet fish

Aquarium fish finally get their own camera gadget with a submersible designed to attract their attention for photos and videos. What's next...fish selfies?

Humans take and upload endless photos of their felines to the Internet. Fish need love, too; it's just harder to capture a really great fish picture. Unless you have a **Submariner Camera**, a small remote-controlled submersible with a camera on board. The remote control lets you take videos or just snapshots. It also lets you move the device up, down and around. Built-in headlights light up your aquarium for nighttime photography. The built-in memory totals 256MB, which is enough to hold about five minutes of video or 800 photos, though you won't exactly be getting James Cameron-level film quality.

The Submariner comes from CCP, a division of Bandai, a Japanese maker of toys and games. Most fish aren't going to be too interested in a mechanical interloper strolling around in their tank, and you don't want to just get a bunch of photos of fish butts as they swim away. Don't worry. The Submariner Camera has already solved that potential issue. It has a small arm that extends from the front and holds a capsule that can be filled with fish food. The fish swim toward the snacks and you get to snap their smiling faces.

The Submariner Camera is due out in late April for 9,980 yen, which works out to about \$90, £64 or AU\$120.

There's no word on availability outside of Japan. If you really want one, you might need to enlist a proxy service to help you with the purchase. Or you could get a waterproof case for your GoPro and handle your own fishy glamour photos. You just won't get the satisfaction of being a remote submarine captain.

Video at: <http://www.youtube.com/watch?V=XrBqqnU4h8Q>



Man airlifted to hospital after poisonous weever fish stings his hand

The 70-year-old had difficulties breathing after being stung by the poisonous spines on a weever fish he picked up. A man suffered breathing problems after he was stung by a weever fish. A 70-year-old man who picked up a weever fish has been airlifted to hospital with respiratory problems after he was stung by the poisonous spines on the fish. The man was on the pier in Trefor on the Lleyn Peninsula at around 8.25am on Saturday morning when the incident happened. The fish stung his hand and a coastguard team from Llandwrog was alerted.

A Coastguard spokesman said: "Weever fish have spines going along their backs. It's a small fish but it has a very nasty sting. "The man picked it up and it stung his hand. "It's normally not a life-threatening sting but the man began having respiratory problems." An air ambulance from Caernarfon arrived on the scene and took the man to Ysbyty Gwynedd in Bangor .



North-east fishermen have been urged to vote to leave the EU by UKIP leader Nigel Farage at the Skipper Expo in Aberdeen.

The politician argued the industry could be successful again if the country took control of its territorial waters. Speaking at the launch of the Fishing for Leave group, Mr Farage said the fishing industry had largely been ignored by the pro-European Union camp.

He said: "To date you will notice there has been no national discussion about fishing in the referendum at all. "The truth is our territorial waters under international law should be up to 200 miles and here we are now only catching 20% of the fish by value in British waters.

"We're giving 80% of our fish away – we must be mad. "Here is our chance to get it back."

UK Rural Affairs Minister George Eustice, who joined Mr Farage at the event, said the UK did not have a seat at the table of the North East Atlantic Fisheries Commission, which decides fishing opportunities.

He said: "Norway has a seat at the table, Iceland has a seat at the table, The Faroes has a seat at the table. "Extraordinarily, the UK, the country with the greatest interest in the North Sea, is denied a seat at the table because we are a member of the EU.

"Instead, our technical experts and diplomats are reduced to whispering in the ear of an EU negotiator and hoping they don't mess it up."

Meanwhile, Moray MSP and former Fisheries Minister Richard Lochhead dismissed the claims.

He said: "I have heard Brexit spokespeople, including the current UK Fisheries Minister, George Eustice, claim Brexit would give Scottish ministers a greater role on issues such as fisheries.

"My difficulty with that argument is the UK Government could give Scottish ministers a greater role under the current arrangements, but it has chosen not to do so.

"Therefore, the promises about what would happen post-Brexit ring hollow for me, and they should ring hollow for all our fishing communities."



Videos taken at our Open Show on the 21st of

May 2016 are now available on youtube

The prize giving is

at:- [https://www.youtu.be.com/watch?](https://www.youtu.be.com/watch?v=SCJSWJw93X9)

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The Raffle winners is

at:- <https://www.youtube.com/watch?v=HI0-5hQ4afY>

The People and fishes on

show is at:- [https://www.youtube.com/watch?](https://www.youtube.com/watch?v=93BspXL5Qvc)

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School-Bus-Size Giant Squid May Be Lurking Deep in the Sea

On Oct. 1, 2013, a 30-foot-long giant squid washed ashore in the Spanish community of Cantabria.

Credit: Enrique Talledo, www.enriquetalledo.com Steeped in mystery, the elusive, deep-sea-dwelling giant squid, with eyes

the size of basketballs, may be larger than it has gotten credit for. In fact, the monster cephalopod may grow to be longer than a school bus, researchers say.

Specimens recognizable as **giant squid** (*Architeuthis dux*) have been found washed up onshore since at least 1639. However, these sea monsters — which some people say inspired the **legend of the giant kraken**, though not all scientists agree — are so elusive that they were largely thought to be mythical until they were first photographed alive in their natural environment in 2004.

Ever since giant squid were discovered, there has been considerable speculation as to how large they can get. In a previous analysis of more than 130 specimens, scientists said that none exceeded 42 feet (13 meters) in length. Suggesting that giant squid could grow larger was "a disservice to science," they said. [Release the Kraken! See Photos of Giant Squid]

In 1954, two men in Norway inspected a 30.2-foot-long (9.2 meters) giant squid.

Credit: NTNU Museum of Natural History and Archeology, via Wikimedia CommonsStill, prior studies estimated that hundreds of thousands of giant squid may live in the ocean, which would suggest that there are plenty of chances for giant squid to grow larger than previously suggested, said Charles Paxton, a fisheries ecologist and statistician at the University of St Andrews in Scotland.

Now, a statistical analysis from Paxton suggests that giant squid may plausibly reach 65 feet (20 m) in total length. This new study extrapolated the maximum sizes this species might reach by both examining a variety of categories of data and examining as much data taken directly from specimens of the creature as was available.

"I've been interested in the last few years about investigating the hard science behind sea monsters," Paxton said.

The data Paxton analyzed included 164 measures of mantle (body) length; 39 measures of standard length, which included the lengths of their bodies as well as the lengths of the longest of their arms; and 47 measures of total length, which included the lengths of their bodies as well as the lengths of the tentacles. (Tentacles are squid limbs that often end in teeth and hooks, and are usually significantly longer than squid arms.)

Paxton also examined 46 instances where beak, or mouth, size was measured along with mantle length. He found that beak size could help predict mantle length, confirming previous studies.

All in all, Paxton found that it was statistically plausible that giant squid could have mantle lengths of about 10 feet (3 m) and total lengths of 65 feet, "and that's a conservative analysis," he said.

"I am extrapolating here, and extrapolation can sometimes be a bit sketchy," Paxton said. "But I think these are fairly safe extrapolations. I genuinely think that giant-squid size has been underestimated."

Paxton noted that there are claims that giant squid can grow to be 100 feet (30 m) long. "I don't think giant squid can get that big, but while a measurement of a giant squid total length of 19 meters [62 feet] can be questioned, I'd say it certainly wasn't impossible," Paxton said.

Some scientists have suggested that squid parts may stretch over time, leading to overestimates of the animal's size.

To help resolve that question, "there are people in New Zealand and Spain who fairly regularly collect specimens of giant squid, and I'd like them to see just how stretchy they are postmortem," Paxton said.

Another study, reported in 2015 in the journal *PeerJ*, suggested that it's human nature to exaggerate the sizes of the ocean's giants. The study found that people overestimate measurements for whales, sharks and squid.

As to why giant squid might grow as large as they do, "perhaps it makes them less likely to be eaten by sperm whales,"

Paxton said. "It'd be interesting to find out if they do ever reach a size where they cannot ever be eaten by sperm whales."

Paxton detailed his findings online May 17 in the *Journal of Zoology*.

- See more at: http://www.livescience.com/54870-giant-squid-may-be-school-bus-size.html?cmpid=NL_LS_weekly_2016-5-25#sthash.5cb5Np6y.dpuf



After fish slaying, only 6 endangered humphead wrasses left

The China Post news staff

TAIPEI, Taiwan -- The Council of Agriculture's Forestry Bureau (林務局) confirmed Sunday that only six of the protected species humphead wrasse (龍王鯛) are still in the wild on outlying Green Island, after a killing of one of the species by a local bed-and-breakfast owner led to a public outcry, according to multiple reports by the Central News Agency (CNA). The B&B operator, surnamed Chen, had fished for the endangered species in the past before the humphead wrasse was given "protected" status, but he was released as no laws had been passed at the time to protect the endangered fish or to penalize offenders.

But after Chen recently posted a photo of a slain humphead wrasse on Facebook, the Forestry Service Conservation team, along with Taitung County police officers, began actively pursuing the case, said conservation team leader Kuan Li-hao (管立豪).

The body of the fish was found in the freezer of Chen's B&B, Kuan stated, though the head and tail were missing as of the time of the report.

The suspect originally denied the allegations, stating that the photo that was posted to social media was "an old one from six to seven years ago," a claim that was refuted by internet users.

Internet users, however, pointed out that remarks made during the Coast Guard Administration's (CGA) inspections "did not add up." CGA officials eventually drew out the truth from Chen and further dashed hopes of the island's locals, who had hoped that the case had been a hoax.

CGA officials later on dug up the remains of the killed humphead wrasse in a plot of land beside Green Island's prison facility. According to a study carried out by Academia Sinica researcher Jeng Ming-shiou two years ago, which highlighted the perils faced by the protected fish, no young humphead wrasses were found in the waters around Green Island, meaning that the protected species had not reproduced.

Only seven fish were found in the waters at the time the study was conducted and publicized.

Unbelievable Actions: Bureau

Kuan questioned the motives of the suspect, who had claimed that his brother wished to see the size of the famed humphead wrasse. "It's unbelievable. I'm not sure what this suspect was thinking," he said.

Kuan also stressed that researcher Jeng was "extremely angry" after learning of the killing, because in the past few years, Jeng could not find any young offspring of the endangered species for research purposes.

Jeng explained that the humphead wrasse, whose scientific name is "Cheilinus undulatus," is popular among divers.

Capturing and killing the fish is equivalent to "killing off the local tourism."

According to the Wildlife Conversation Act Article 18, protected wildlife should be conserved and should not be disturbed, abused, hunted or killed. Violators will be punished with imprisonment for no less than six months, and not more than five years and/or given a fine of no less than NT\$200,000 and no more than NT\$1,000,000



Fish-keeping father-of-one is told to demolish his garden pond because BURGLARS could fall in it and drown

- Sovereign Housing have told Kevin Sheehan to demolish his water feature
- When asking why, says he was told 'if someone breaks in they could fall in'
- 62-year-old, who lives with partner and daughter, slammed it as 'ridiculous'
- Been told his main pond and temporary pool must go inside three weeks

A fish fanatic has been told to get rid of the pond in his back garden because it could potentially be a hazard for burglars. Sovereign Housing have told Kevin Sheehan to demolish the water features at his home in Abingdon, Oxfordshire. When he asked why, the 62-year-old claims they told him the measure had to be adopted because 'if someone breaks in they could fall in'.

Sovereign Housing have told Kevin Sheehan to demolish the water features at his home in Abingdon, Oxfordshire. When he asked why, the 62-year-old claims they told him the measure had to be adopted because 'if someone breaks in they could fall in the pond'

He told the **Oxford Mail**: 'It's my home, I am going to fight it as much as I can – there is no rule in the tenancy about fish ponds.

'The reason they gave was if someone breaks into the back garden they can fall in the pond because there's a six-foot fence all round and they can't see it.

Mr Sheehan, who lives with his partner and their one-year-old daughter Olivia, has slammed the ruling as 'ridiculous'

'I said: "Well they shouldn't be breaking in."'

'I've got about 80 fish in the pond, where can I put these fish if I've not got a pond? I can't put them in the river, I'd get into trouble. They can't die because of this.'

Mr Sheehan's fish include Koi carp, fantails and goldfish.

They are currently housed in a small pool at the bottom of his garden as he extends his main pond.

The structure has a wall of concrete blocks surrounding it and the entire garden is surrounded by a 6ft wooden fence.

A letter sent to him from Sovereign said his large brick pond must be removed because of 'possible risk'.

He has also been ordered to remove the smaller one because it 'could impact on the safety of the residents or general public'.

Mr Sheehan has been given three weeks to make the relevant changes.

He added: 'I was thinking of my daughter's safety and was building it up another two blocks. I had it at the old height for about 15 years and it's never been a problem.'

Debbie Down, spokeswoman for Sovereign, said: 'We don't want to prevent anyone enjoying hobbies which may include fish keeping in a garden pond, but as the landlord we ask residents to get our permission if they intend running a business from their home or building a permanent structure.'

When MailOnline contacted Sovereign about the pond being demolished due to its danger to burglars, a spokesman said: 'I'm sure there would be that liability.'



Genital size doesn't matter -- for fish Big isn't always better when it comes to the size of male genitals

CREDIT: STUART HAY, ANU

Big isn't always better when it comes to the size of male genitals.

Researchers at The Australian National University (ANU) have been looking at the breeding habits of fish, to test the theory that bigger genitals make males more attractive or successful in fathering offspring.

They found when it comes to fish, females don't find males with big genitals any more attractive than those with normal or smaller genitals.

"Our findings show the size of male genitals has no effect on their attractiveness, success in reproduction, or their ability to swim and move around in the water," said researcher Professor Michael Jennions, from the ANU Research School of Biology.

The findings contradict two previous ANU studies, which found that larger penis size had a positive relationship with fish paternity success, and human research which found women rate men with a larger penis as more attractive.

Professor Jennions said the latest study, published in Nature Communications, would lead to a greater understanding of the evolution of genitals. Male genital size varies hugely among species.

The research involved studying male genital size of mosquitofish, *Gambusia holbrooki*, which has a penis-like structure known as a gonopodium. The normal male gonopodium is equal to about 30 per cent of the mosquitofish body length. However, the team selectively bred male mosquitofish for eight generations to create some fish with larger gonopodia, and some with smaller gonopodia.

The males with different size genitals were then allowed to freely compete to mate with females. The researchers then used DNA paternity testing to see which males were more successful at fathering offspring.

"To our surprise, we found the size of the gonopodia made no difference to which fish successfully became fathers," said Dr Megan Head also from the ANU Research School of Biology.

The research used a sample size of 173 males and 165 females and paternity tested over 2,250 offspring.

Mosquitofish have live offspring rather than lay eggs. They are considered a feral pest in Australia after they were introduced in the 1920s in a failed attempt to control mosquito populations.

The research has been published in the Nature Communications journal.



Pet fish in tupperware container kicked off

Jetstar flight from Wellington, New Zealand

Unfortunately Lil' B never made it to Auckland.

A goldfish in a tupperware container was given marching orders off a Jetstar flight mid-taxi in Wellington.

The pet's owner and passengers who overheard the exchange said he was initially told little "Lil' b" was welcome aboard. James Ayr's plan to give the two-month old black moor goldfish to his girlfriend was foiled when the flight attendant on the Thursday morning flight from Wellington to Auckland kicked the fish off.

Passengers say the whole debacle ran the flight's arrival time late by 40 minutes when the plane had to turn back so the Wellington student could take the fish off the flight.

SUPPLIED Lil' b in the tupperware container he was in for transport to Auckland.

Another passenger said he overheard Ayr being told during check-in that the the goldfish was welcome to travel with him. Ayr, a Wellington student who has 20 fish at home, said his tank was growing crowded and he had decided to surprise his girlfriend in Auckland with Lil' b for her birthday on Thursday, which he was flying up for. So he researched and concluded Lil' b would be safe in the container for the journey north. Ayr said he showed the fish to Jetstar staff when he checked in and presented his boarding pass. He said they rang the flight deck, got approval and he and Lil' b boarded. "He was happy, he was on the plane. "I had him sitting in my lap." Ad Feedback Then a Jetstar flight attendant approached Ayr. "They came up to me and said, 'do you have a fish?' I said 'yes I do.' " The attendant then told him Jetstar's policy was not to transport goldfish and it would have to be left behind in Wellington. The flight was stopped mid-taxi and turned around back to the terminal so Ayr and Lil' B could disembark. The flight, JQ252, remained on the tarmac with all other passengers waiting while Ayr tried to figured out what to do with the fish. Ayr was unimpressed. "I said, 'well, what am I supposed to do with it?' " Ayr said the duty manager at Wellington Airport offered to take Lil' b home to his fish-tank, which he gladly accepted. A Jetstar spokesman said the aircraft left the gate ten minutes after schedule but returned to offload Li'l b and arrived in Auckland around 35 minutes late. "We know Li'l b doesn't take up much room, but live animals are not able to be carried on Jetstar flights, either domestically or internationally." The spokesman said he understood the fish was now with the airport company in Wellington. The carrier's online policy says it reserves the right to refuse carriage of live animals.



Thousands of miles of rivers 'opened up' to help fish migrate

.Around 12,500 miles of England's rivers have been opened up in the past four years to allow fish to migrate more easily, the Environment Agency said.

Around 12,500 miles of England's rivers have been opened up in the past four years to allow fish to migrate more easily, the Environment Agency said.

Fish passes have been installed, or weirs removed, to overcome almost 200 obstructions on rivers hindering fish as they migrate to reproduce, feed and complete their life-cycles.

The work aims to help coarse fish which spend their lives in rivers, as well as species which migrate between rivers and the sea such as salmon, sea trout and eels, the last of which make a 3,000-mile journey across the Atlantic and back to English rivers.

The steps to remove or get round weirs create "fish highways" from the sea up to the upper reaches of rivers, the agency said, though some of the weirs have to be left in place to prevent flooding, damage to buildings or to maintain heritage features.

Recent efforts to open up the rivers include removing two weirs on the River Don in Sheffield and a weir on the River Aire in Leeds, with both rivers now returning to a natural combination of shallow fast sections and deeper pools which benefit grayling and brown trout.

On the River Tyne in Northumberland, partners including the Environment Agency worked to build the Hexham fish pass to open up miles of spawning and juvenile habitat.

Sarah Chare, head of fisheries at the Environment Agency, said: ""After considerable investment, rivers in England are the healthiest for 20 years. This is down to more than a decade of hard work to improve the health of England's rivers.

"But there is more to do and opening up our rivers to help fish migrate is a crucial part of this. By working with partners we can play to different organisations' strengths, make our money go further and deliver more."



Hundreds of fish killed by farm slurry in Somerset river

More than 1,600 fish have died in a Somerset river polluted with slurry, the Environment Agency has said.

Large numbers of fish were spotted "in distress or dying" in the River Frome last week.

The agency said slurry released from a farm had reduced water oxygen levels to 2%. They would normally be above 90%.

Ian Withers, from the agency, said: "We're pretty confident that all of the fish in about four or five miles of the river were killed."

The agency said it had received a number of reports of a "large fish kill" in the River Frome on 12 May.

It is investigating how slurry from the farm ended up in the water and was "currently collating all of the evidence" before deciding its "enforcement response".

Image captionHydrogen peroxide was pumped into the river to boost oxygen levels in the waterSome 1,600 trout, bream and pike were counted by fisheries officers who worked to restore oxygen levels in the river.

But with "many more" fatalities either washed downstream or eaten by wildlife, Mr Withers said it was a "conservative estimate".

Image captionThe pollution is being treated as a category one incident - the most serious - by the EA"There were certainly more than that, but we will work with the farm - the source of the slurry - to make sure we know what happened, that we've identified the exact cause and make sure that it won't happen again," he said.

The pollution is being treated as a category one incident - the most serious - by the agency.



Abstract

Hyphessobrycon vanzolinii, new species, is described from the Rio Tapajós, Amazon basin, Pará state, Brazil.

The new species can be diagnosed from all its congeners by its unique colour pattern, consisting of a longitudinal, broad, diffuse dark midlateral stripe extending from the snout through the orbit to the base of the middle caudal fin rays, dark pigmentation on the last unbranched ray and first to second branched rays of the dorsal fin, a distal dark stripe along the margin of the anal fin, and the presence of dark pigmentation along the distal margin of the caudal fin. Remarks on the putative relationships of the new species, as well as about the threat posed by a large dam to be build exactly at the only site from whereHyphessobrycon vanzolinii is so far known, are presented.

PDF (363 KB)





A new species of *Melanorivulus* is described from the middle rio Paraná basin, São Paulo state, Brazil.

Melanorivulus polychromus, new species, is found in a tributary of the left bank of the rio Paraná basin, the rio São José dos Dourados. It differs from all congeners by the combination of a metallic green to light green ground colour in males, with 6-8 oblique red bars forming chevronlike rows, the chevron tips along the midline of the body pointing toward the head, and irregular narrow red lines and incomplete red bars along the lower half of the body. *Melanorivulus apiamici*, also endemic from the middle rio Paraná basin, is redescribed.

PDF (439 KB)



Abstract

Anablepsoides hoetmeri, new species, is described from middle Rio Acre, a tributary of the Rio Purus, Amazon drainage, Brazil.

It is the first species of *Anablepsoides* described from that basin and the second species belonging to the *Anablepsoides limoncochae* species group described from Brazil. The remaining species belonging to the *A. limoncochae* group are mainly found in Peru, but also occur in Colombia and Ecuador. *Anablepsoides hoetmeri* n. sp. differs other members of the *A. limoncochae* group by having two longitudinal rows of 18-20 minute contact organs per row on the sides of the body, and by the colouration patterns of both males and females.

PDF (3676 KB)





Abstract

A new *Aphyosemion* species is described from Gabon, (*Aphyosemion bitteri*)

based on eight specimens collected in a small stream within the hydrographic system of the Ikoy River on the northwestern edge of the Massif du Chaillu. *Aphyosemion bitteri*, new species, can be distinguished from all species of the genus by its maze-like red pattern on the caudal fin. It belongs to the *A. grelli* species group (Valdesalici & Eberl 2014) by sharing with *A. grelli* and *A. mengilai* the yellow basal two thirds and the greyish marginal third on the unpaired fins of females, but it can be easily distinguished from these two species by differing male coloration and meristics.

PDF (617 KB)



The upcoming release of Disney's Finding Dory could be great news for kids, but not so much for clownfish and the regal blue tang.

That is because people may decide to rush out and buy them after watching the film, according to scientists at the University of Queensland.

This is bad for the ornamental marine species because it could lead to their decline in the wild, the Australian researchers who teamed up with Adelaide's Flinders University added.

Underwater life: clownfish (*Amphiprion Ocellaris*), blue tang (Regal Tang, *Paracanthurus hepatus*) and sea turtle (*Chelonia mydas*) The same thing happened when the previous film in the series, *Finding Nemo*, was released 13 years ago.

But this time as well as clownfish like *Nemo*, regal blue tangs like *Dory* may also be in jeopardy.

To counter this effect the scientists have set up the Saving Nemo Conservation Fund.

'I was shocked by how many people came into get clownfish when that movie (*Finding Nemo*) was released,' co-founder and marine biologist Anita Nedosyko said, according to *Brisbane Times*.

The number of clownfish in the wild went down when Finding Nemo was released (Picture: Rex)Her organisation aims to stop wild ornamental marine species from being taken.

She added in some places like south-east Asia, the environment could be destroyed when the fish were taken due to bad practices.

There has been a continual decline in the numbers of clownfish in the wild following the release of Finding Nemo in 2003. Finding Dory debuts in cinemas on July 29.



Fish killed and facilities wrecked during break-in at Lincolnshire eco centre

By Lincolnshire Echo

Centre owners have taken to social media to warn vandals they will be dealt with if they get caught.

Fish were caught from the pond and left to die by heartless trespassers who broke into a Skegness nature park and wrecked its facilities.

A string of recent break-ins have left business owners at **The Coastal Eco Centre in Skegness** off Richmond Drive, frustrated. Now, park owners have taken to social media to warn vandals they will be dealt with if they get caught again.

Speaking on Facebook, centre bosses said: "We've recently had evening 'visitors' causing damage to the facilities that have been developed for the local community - they've even left fish they'd caught to die on the grass.

"If anyone knows who the children/teenagers are - please discourage them from visiting the centre again.

"We have clear images of them and although we are not passing them to the authorities at the moment, we will not hesitate to let the police know if this behaviour continues.

"It's taken a lot of hard work to make the centre the special place it is, and trespassers will quickly ruin it for everyone.

"Please spread the word we have rumbled them."

A former landfill site, the popular centre showcases how horticulture, conservation, recycling and sustainability can be applied in everyday life.

The Eco Centre has also developed a meadow, woodlands, boundary habitats, wetlands and garden areas for visitors to enjoy.

The break-ins has left the local community angry.

Sheila Cornew said on Facebook: "Let the police know or at least put some pics on here so we all know who they are.

"Just found this place and really love it. The grandchildren look forward to visiting on a Thursday and would be heart breaking if this has to stop."

Dee Middlebrook, also speaking on Facebook, said: "This is terrible and so wrong.

"I would certainly report it to the police - no respect at all.



Siamese fins? Villager stunned after catching conjoined fish in China

- Fisherman in Huizhou City, southern China was shocked at the discovery
- He pulled the fish out of a pond for dinner to find the extra one attached
- Neighbours have flocked to get a glimpse of the conjoined twins
- According to experts, the conjoined pair are both a Nile tilapia fish

A villager in China got a massive shock when he recently discovered a pair of conjoined fish in his pond.

The fisherman surnamed Zhou from Da Ling Peng Bai Village in Huizhou City, southern China, said he released the tilapia fish when they were fries into a pond a year ago.

The strange phenomenon has brought all of the neighbours to Zhou's house wanting to catch a glimpse of the peculiar creatures.

Fish farmer in China finds conjoined fish siblings in pond

Weird: The man pulled the fish out of the pond to eat for dinner only to find the added growth

The fisherman also breeds fish.

He says the other fish from the group have grown to be around two to three pounds whereas the conjoined fish weigh around 3.5 ounces.

According to Chinanews.com, when he scooped out the fish from the pond to eat for dinner, he saw the growth on its side.

Video footage shows the conjoined animals and also the number of people who have visited the fisherman's house requesting to see the pair.

Dr Martin Genner from the School of Biological Sciences at University of Bristol confirmed the pair are Nile tilapia fish. He told MailOnline: 'I have not seen this before, so assume it rather rare.

The fish can reach a maximum of 2ft in length and can weigh up to 9lb

Despite the fact that the occurrence is incredibly rare, there have been past examples of conjoined fish.

In 2008 it was reported that two Nile tilapia fish in Thailand were joined.

The bigger fish was pictured protecting its smaller sibling on the bottom while it in turn looks for food.

The Nile tilapia fish is a common freshwater species found in tropical rivers, canals, lakes and ponds but these two were found in a Bangkok aquarium.

The fish can reach a maximum of 2ft in length and can weigh up to 9lb.

Originally from waters stretching from Africa to the Cape Horn, the fish was introduced to freshwater irrigation systems so as to fight algae growth but has now become a pest

The fish can reach a maximum of 2ft in length and can weigh up to 9lb



Drunk Bros Suspected of Killing One of the World's Rarest Fish Captured in Nevada

Nevada law enforcement officials have arrested three men who allegedly went on a drunken rampage near Death Valley National Park that may have caused the death of an endangered fish, according to the Los Angeles Times.

The men — Trenton Sargent, 26, of Indian Springs, Nevada; Steven Schwinkendorf, 29, of Pahrump, Nevada; and Edgar Reyes, 35, of North Las Vegas, Nevada — were identified through DNA evidence left at the site.

"The intrusion is believed to have resulted in the death of at least one endangered Devils Hole pupfish, and fisheries biologists are trying to ascertain the extended damage that may have been done to food sources and egg sites, which could lead to more loss of a species whose numbers are now below the last count of 115 in existence," the Nye County Sheriff's Office said, according to the Times.

The inch-long, iridescent blue Devils Hole pupfish is among the rarest fishes in the world, according to the US Fish and

Wildlife Service, occupying one of the smallest habitats — a single cavern in the Mojave Desert — of any known vertebrate. It was listed as endangered in 1967 and remains at "significant risk of extinction," according to the agency.

The men face charges of conspiracy to commit a crime, killing an endangered species, destruction of property, trespassing, and destruction of habitat.

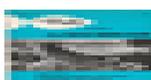
Killing an endangered species is a felony, and the suspects face fines of up to \$50,000 and a year in jail if they are convicted.

Law enforcement and National Park Service officials say the men trespassed on the park on April 30. They allegedly fired shotguns, left behind beer cans and a pair of boxer shorts, and vomited. At least one of the men went skinny-dipping in Devils Hole, where the rare pupfish is found.

The National Parks Service posted security camera footage of the drunken escapade on Monday.

Ileene Anderson, a senior scientist at the Center for Biological Diversity, which offered a \$10,000 reward for the capture of the suspects, called their actions "stupid."

"Places like Death Valley National Park and other public lands are treasures that are owned by the American people," she said. "Crimes like these are crimes against all of us who own and love these spectacular places."



Pet Fish Monthly for April 1971 is now on line at:-

_aqua-worlduk.weebly.com This completes Volume 5



All of a Sudden, Fish Are Dying By The Millions All Over the Planet

Dead fish enumerate many shorelines across the world. (Courtesy/Economic Collapse Blog)Why are millions upon millions of dead sea creatures suddenly washing up on beaches all over the world? It is certainly not unusual for fish and other

inhabitants of our oceans to die. This happens all the time. But over the past month we have seen a series of extremely alarming mass death incidents all over the planet.

As you will see below, many of these mass death incidents have involved more than 30 tons of fish. In places such as Chile and Vietnam, it has already gotten to the level where it has started to become a major national crisis. People see their coastlines absolutely buried in dead sea creatures, and they are starting to freak out.

For example, just check out what is going on in Chile right now. The following comes from a Smithsonian Magazine article titled "Why Are Chilean Beaches Covered With Dead Animals?"

Compared to other countries, Chile is almost all coast, and that geographical fluke means that the country is known for its beautiful beaches. But that reputation may be on the wane thanks to a new sight on Chilean shores: dead animals. Lots of them. Heaps of them, in fact. As Giovanna Fleitas reports for the Agence France-Presse, the South American country's beaches are covered with piles of dead sea creatures—and scientists are trying to figure out why.

Tales of dead animals washing up on shore are relatively common; after all, the ocean has a weird way of depositing its dead on shore. But Chile's problem is getting slightly out of hand. As Fleitas writes, recent months have not been kind to the Chilean coast, which has played host to washed-up carcasses of over 300 whales, 8,000 tons of sardines, and nearly 12 percent of the country's annual salmon catch, to name a few.

Authorities in Chile are scrambling to come up with a reason for why this is happening, but nobody appears to be quite sure what is causing this tsunami of death.

In Vietnam, things are even worse. At this point, so many dead fish and clams have been washing up along the coast that soldiers have been deployed to bury them...

Millions of fish have washed up dead along a 125-kilometre stretch of the Vietnamese coast in one of the communist country's worst environmental disasters.

Soldiers have been deployed to bury tonnes of fish, clams and the occasional whale that began dying in early April along the north-central coast, including some popular tourist beaches.

Vietnamese officials facing growing anger over the disaster have not announced the official cause of the deaths, which have affected the livelihoods of tens of thousands of families.

Elsewhere in Asia, there have been similar incidents. For example, CNN is reporting that one lake in southern China is currently dealing with 35 tons of dead fish:

At least 35 tons of dead fish appeared in a lake in southern China, leaving residents stunned.

The piles of fish washed up in a lake in Hainan province on Wednesday, Chinese state media reported.

Residents expressed concerns on pollution, but local authorities said the fish died as a result of salinity change.

On the other side of the world, similar incidents have also happened in major lakes. Here is one example from Bolivia:

Thousands of dead fish have washed up onto the shores of a lake in Bolivia.

Just before they died, some of the fish had just hatched from their eggs in lake Alalay, in the central Bolivian city of Cochabamba.

No one yet knows the number of dead fish, but they have stockpiled five cubic metres (177 cubic feet) so far, so it's possible there is over a tonne of dead fish in the lake.

And here is an example from Brazil...

More than 200 tons of dead fish were removed from the Furnas Lake on Sunday (1st) in Alfenas (MG). According to the Military Police of the Environment, both fish raised in ponds, networks and those who are released, all of the tilapia species in the lake were affected. The damage to the piscicultores is estimated at around R \$ 900 thousand.

I could go on and on all day with examples such as these.

Just within the last month, 40 tons of fish died in India, 65 tons of fish died in Cambodia, 70 tons of fish died in Colombia, and millions of fish "suddenly died" in Indonesia.

So why is this happening?

I don't know.

Could it be possible that these mass deaths are somehow related to the alarming **earth changes** that we see happening all around us?

Without a doubt, we have seen a dramatic rise in seismic activity during the early portions of 2016. There has been a series of very destructive earthquakes around the world in recent months, and once dormant volcanoes are coming to life **all over the globe** with distressing regularity.

Of course humanity has done much to destroy the planet as well, and we continue to deal with the aftermath of the Fukushima nuclear disaster. I do think that it is very interesting to note that most of these mass fish deaths have happened in nations that border the Pacific Ocean.

I am certainly not claiming to have an answer for why so many fish are dying. All I know is that millions upon millions of dead fish are washing up on shores all over the globe, and people are really starting to freak out about this.

We live in a world that is becoming increasingly unstable, and major disasters seem to be getting more frequent and more intense. Just look at what is happening **up in Alberta right now**.

I believe that we are entering the "perfect storm" that myself and so many others have been warning about for so long. Or could it be possible that I am just being overly dramatic?



Valenciennea yanoi, a new species of sleeper goby from Japan

Valenciennea yanoi is a yet another new species of sleeper goby from Japan that is definitely going to turn some heads. Sure we get tons of new species of gobies every year, but sleeper gobies are a little more special, being large showy bottom dwelling fish which make excellent aquarium fish.

The new sleeper goby species, *Valenciennea yanoi*, has been known for a long time as *Valenciennea* sp. 1 "sensu". The official description of Yanoi's sleeper goby brings the total number of sleeper gobies to 16, with a whopping 10 species to be found in Japan alone. Although, we know of at least one more **sleeper goby from Mauritius** that also awaits taxonomic analysis.

Interestingly, and fortunately for divers and aquarists, unlike so many of the new species that have been described, especially from Japan, is that this species lives at rather shallow depths. The type specimens for the description of *Valenciennesa yanoi* were collected at a mere 13 to 20 meters deep, you could practically free dive that deep without too much training.

The newly described *Valenciennesa yanoi* is similar to two other small species of sleeper gobies, all of which share a low rounded dorsal fin, bluish body color and a pattern of two longitudinal stripes. *Yanoi's* sleeper goby can be distinguished from *V. parva* and *V. limicola* by having an upper lobe to its tail fin, no black spots on the snout, and much more pronounced yellow stripes which reach all the way to the tail.

The three similar looking species of sleeper gobies from Japan. The newly described *Valenciennesa yanoi* at top, *V. parva* in the middle and *V. limicola* at bottom. Photo by T. Suzuki.

Although the new *Yanoi's* sleeper goby is described based on specimens from Japan, photographic records exist for this species from the wider Indo-Pacific region. Underwater photographs of this fish place it in Malaysia, Philippines, and even as far as Bali Indonesia.

It's a wonder that such a showy and shallow living reef fish has gone undescribed for so long, but at least now we have one more species of sleeper goby to appreciate. *Valenciennesa yanoi* is described by Suzuki, Senou & Randall in the latest volume of the Journal of the Ocean Science Foundation. [JOSF]



Hunt for vandals accused of killing one of the rarest fish on earth during drunken rampage in Death Valley National Park

- Men climbed a fence guarding Devils Hole in Death Valley National Park
- They fired at least 10 rounds from a shotgun, drunk beer and skinny-dipped
- Vomit was left at the scene and boxer shorts found in pond in Nevada park
- One pupfish has been found dead, but authorities are unsure if it was directly caused by the men

- Three have been identified after tips poured in identifying their customized off-road vehicle, but no arrests have been made so far

Three men left a trail of destruction when they went on a drunken binge in a national park, possibly killing one of the rarest fish on earth.

The men climbed a fence guarding Devils Hole in Death Valley National Park, southwestern Nevada and fired at least 10 rounds from a shotgun around 7.30pm on April 30.

They shot the locks off two gates, hit a motion sensor and several signs. Beer cans and vomit were left at the scene and one man waded into an ancient, water-filled cavern leaving his boxer shorts behind.

At least one of the pupfish, which are considered 'critically endangered', has already been found dead.

A surveillance video was released and investigators have identified the three after tips poured in from people who recognized their customized Yamaha Rhino. No arrests have been made so f

Drunken vandals kill one of the 'rarest fish on earth' in NV

Devils Hole - a 40 acre section of the park - includes a cavern pool fed by a hot spring and is the only natural home of the tiny Devils Hole Pupfish.

The iridescent blue fish is considered critically endangered. Only around 115 currently live in Devils Hole, which is more than 500 feet deep in parts but less than 2 feet deep where the fish feed on an algae mat.

An underwater camera in the pond captures one of the men drunkenly wading about on the shelf where the Pupfish feed, and authorities are concerned he may have crushed pupfish eggs during 'peak spawning season'.

On Monday, one pupfish was found dead, the Park Service said. A necropsy was performed, and investigators found it died 24 to 48 hours before.

Wines said it was possible the men's actions led to the fish's death, but they will never know for sure, the **LA Times** reported.

'Something like this hasn't happened in about 20 years,' said Abby Wines, spokeswoman for Death Valley National Park, which manages Devils Hole. 'Occasionally people will throw something over the fence'.

Wines also confirmed the men had been identified, although their names have not been released. A \$15,000 reward is being offered for their arrests and convictions.

The pupfish was at the center of a 1976 ruling by the U.S. Supreme Court that barred groundwater pumping for agricultural use near the site because of its impact on Devils Hole.

The Devils Hole pupfish is the smallest of several pupfish species in the Southwest deserts (many of which are also endangered), growing to no more than an inch long. They are believed to be what remains of what used to be a much wetter

environment in the Death Valley area.

Devils Hole - a 40 acre section of the Death Valley National Park, pictured, includes a cavern pool fed by a hot spring and is the only natural home of the tiny Pupfish

Video recorded the men climbing a fence and driving away in what appeared to be a modified blue Yamaha Rhino off-road vehicle.

Devils Hole is guarded by a chain-link fence, barbed wire and a sophisticated security system that provides 24-hour video surveillance. The cameras and alarms are linked to the outside world by a microwave dish on a tower above the spring-fed cavern

Ileene Anderson, a senior scientist with the conservation group, said: 'Devils Hole pupfish have been teetering on the brink of extinction for years. The last thing they need are these idiots running amok in the last place on Earth where they still survive.'

Anyone with information on the men's whereabouts is encouraged to call the park service's Investigative Service Branch at (888) 653-0009.



Our video of a recent visit by the Society to the aquatic shop of Wholesale Tropicals in Bethnal Green, East London is now on line at:- [_https://youtu.be/KEVFDxNMSU0](https://youtu.be/KEVFDxNMSU0)



Study: Small Fish Comforted By Big Predators Baby fish show fewer signs of stress in the presence of large fish that scare off midsize predators.

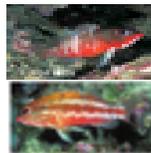
PLOS ONE Researchers from James Cook University in Australia and their colleagues have found that the presence of large predatory fish reduced stress levels in baby prey fish by more than a third, by scaring off midsize predators (mesopredators). The team's findings, published yesterday (April 27) in the *Journal of Animal Ecology*, reveal how ecological pressure on large marine predators can have an adverse impact on smaller prey species.

"Previous studies have proven that the sight of large predators can reduce the activity of mesopredators," study coauthor Maria del Mar Palacios of James Cook said in a **statement**. "But our study is the first to show that such behavioral control on mesopredators is strong enough to indirectly allow baby fish to reduce stress levels by more than 35 percent."

Palacios and her colleagues measured the respiration rate—a proxy for stress—of baby damselfish (*Pomacentrus amboinensis*) when these prey were exposed to the sight and smell of their mesopredators, dottybacks (*Pseudochromis fuscus*); their top predators, coral trout (*Plectropomus leopardus*); and another large, nonpredatory species, the thicklip wrasse (*Hemigymnus melapterus*).

In the presence of dottybacks alone, the baby damselfish increased their oxygen intake by about 38 percent. When both these mesopredators and coral trout were present, the damselfish prey maintained normal oxygen intake. The presence of the wrasse in combination with the dottybacks had an intermediate effect on damselfish respiration.

"We are losing top predators at a super-fast rate," del Mar Palacios told the *Brisbane Times*. "Those baby fish that remain might not die but they will be super stressed and that will [affect] the population."



Serranus pulcher, a new basslet species from West Africa

Serranus pulcher is a new species of basslet from the east Atlantic Ocean off the coast of West Africa. It's been a good long while since we've had a new species of *Serranus* described, so the new *S. pulcher* joins a group of many new reef fish species getting formal descriptions this year.

The new mostly reddish basslet is found primarily around the islands of Sao Tome and Principe.

The newly minted *Serranus pulcher* is most similar in appearance to *Serranus heterurus*, a small basslet with a number of reddish bars across the body. However it also looks quite a lot like another reddish *Serranus* basslet from Ghana which saw a mild degree of circulation in the aquarium hobby several years back.

The new species of *Serranus* is found on hard bottom rocky habitats from about 3 feet to 30 feet of depth. There are many

species of Serranus throughout the Atlantic Ocean and East Pacific Ocean but *S. pulcher* is among the smallest in the East Atlantic growing to a maximum size of just 70mm or under three inches.

Normally the new *Serranus pulcher* is generally reddish, especially around the belly and ventral area, with a white throat, dark upper anterior part of the body and some white patches below the soft dorsal fin. There is a rare color form of the new species which displays two loose whitish stripes the length of the body, giving this species the appearance of having three roughly outlined red bands.

The latest member of the seabass family, *Serranus pulcher* is described by Peter Wirtz & Tomio Iwamoto in Volume 63 of the *Proceedings of the California Academy of Sciences*.



,Fish enlisted to combat mosquitoes: 13,000 released across Plano, North Texas

Plano Environmental Health stormwater specialist Alexandra Stiles releases mosquito fish (*Gambusia affinis*) into a pond at Oak Point Park and Nature Preserve.

Over 13,000 mosquito fish were recently released in 12 different locations across Plano.

The Plano Environmental Health Department unleashed approximately 13,000 *Gambusia* fish Monday to combat mosquitoes.

Gambusia, commonly known as mosquitofish, were distributed at 12 different locations across the city. The fish are capable of eating thousands of mosquito larvae.

According to Rachel Patterson, environmental health director, their release is an important component of the city's integrated mosquito management program, which also includes elimination of breeding sites, trapping and surveillance.

"This is a more natural way to address mosquito larvae," Patterson said. "It is also a much more effective use of resources."

Plano has been releasing the fish annually for several years. However, concerns over the Zika virus have brought more attention to mosquito control.

"Kudos to Plano for doing that," said Steve Moore, a mosquito control professional better known by his nickname, "Mosquito Steve."

Moore has tested hundreds of mosquito repellents, once enduring over 900 bites in a single night. He knows first-hand the harm mosquitoes can inflict, having contracted West Nile virus from mosquitoes a few years ago.

Moore encourages residents to apply repellents and use natural means to reduce breeding areas around their homes.

“Mosquitoes carry 150 different pathogens,” Moore said. “They aren’t on anyone’s bucket list.”

The combination of a mild winter and wet spring may lead to a larger than normal mosquito populations this summer.

Mosquito season typically stretches from April until October or November, when nighttime temperatures start dropping below 50 degrees.

This year, city traps were already catching the flying pests in February.

Patterson implores residents to drain standing water, noting that mosquitoes can breed in pools of water as small as a tablespoon.

Mosquito populations typically peak in July or August. There are no plans to release more fish, but the city will if conditions warrant it.

Officials also hope the fish will reproduce naturally, adding ammunition to the summer battle.



Bizarre prehistoric fish washes ashore at beach in North Carolina

U.S. Fish and Wildlife Service Northeast Region / Wikimedia CommonsAn Atlantic sturgeon at the Northeast Fishery Center in Lamar, Pennsylvania. A similar Atlantic sturgeon was found at Carolina Beach, North Carolina, on May 2, 201

An unusual-looking fish was found washed ashore at a North Carolina beach on Monday.

The fish is believed to be an Atlantic sturgeon, a species that has existed since the dinosaur age 120 million years ago, making it one of the oldest fish species in the world. Its arched back, shark-like tail and scaleless, bony-plated body are reminiscent of prehistoric times.

That one should find itself beached on the northern shores of Carolina Beach, a town in New Hanover County, North Carolina, is more rare than it seems: in spite of its long history, Atlantic sturgeons are threatened by commercial fishing and loss of habitat.

In the United States, the fish was identified as a species of concern as early as 1988, before being federally listed as endangered in 2012. In Canada, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) has listed the country’s Atlantic sturgeons as threatened since May 2011. Having been listed as such, it is now illegal to fish or harvest Atlantic sturgeons in many jurisdictions.

Humans are the main reason for its decline. The fish was over-harvested for centuries – starting in the 1800s – for its roe-making caviar, considered a delicacy in Europe. To make matters worse, its reproductive cycle was vastly overestimated. Unlike many fish, the Atlantic sturgeon does not reproduce every year. Rather, females only reached sexual maturity after 16 to 20 years, at which point they lay eggs every two to six years.

Duane Raver / U.S. Fish and Wildlife Service via Wikimedia CommonsThe Atlantic sturgeon's arched back, shark-like tail and

scaleless, bony-plated body are reminiscent of prehistoric times. There are signs that the fish may be benefiting from its protected status, however. According to a survey by the New York Department of Environmental Conservation, populations in the Hudson River reached a ten-year high in February.

Atlantic sturgeons are anadromous, meaning they spend most of their lives in salt water and travel into freshwater lakes and rivers to spawn in the spring.

They can live as long as 60 years, and can grow up to 2.7 metres in length and weigh more than 225 kilograms. The largest on record, caught in Canada, was more than 4 metres long and weighed a staggering 368 kilograms.



Carp, a pest fish in Australia, will be facing an epidemic sometime around 2018,

at least if the Australian government follows through with a newly announced plan. The nation's deputy prime minister has announced "carpageddon," a program that will use a herpes virus to eradicate the European carp and, hopefully, make it possible for native species to better thrive in local waterways.

According to deputy prime minister Barnaby Joyce, the program has focused on the Murray-Darling basin and will cost about \$15 million Australian. The subject is a type of carp that originates from Europe, having first made its way to Australia in the mid-1800s before a better adapted farmed fish strain managed to escape into the wild, leading to a massive increase in carp numbers.

Because the adapted carp breed so extensively, they take up space and resources that would otherwise belong to native fish species, which have had trouble dealing with the influx of carp. The Murray-Darling Basin is particularly hard hit, with researchers estimating that up to 90-percent of its fish biomass are composed of carp.

Carp is a pest fish in many places around the world, and while they're good fun for sport fishing, they're unfortunately not very suitable for eating -- many people describe them as tasting like mud -- meaning they're often tossed back to live a longer life when captured by fishermen. According to Joyce, these carp cost the Australian fishing industry \$500m AUD yearly.

The government plans to release cyprinid herpesvirus into the water in 2018.



Sueviota bryozophyla is a new goby from Indonesia that loves bryozoans

- Sueviota bryozophyla is a new goby from Indonesia that loves bryozoans

-

Sueviota bryozophyla is a new species of dwarf goby with a peculiar proclivity for bryozoans. The ghostly white Sueviota bryozophyla is distinguished from the multitudes of new Eviota species for among other things, having very pronounced and elongated nasal tubes.

Better known as 'moss animals, you may not be familiar with bryozoans in our aquariums because they are heavily dependent on filter feeding, and generally don't get enough to eat in our nutrient poor aquarium environments. But you've probably seen bryozoans on fresh live rock or on the side of wild collected corals as that lacy 'material' which eventually degrades never to be seen in our reef tanks again.

Sueviota bryozophyla on the white bryozoan that it lives in. Photo Ned DeLoach

The newly described Sueviota bryozophyla was discovered by underwater photographers including Graham Abbott, Ned and Anna DeLoach, Takako Uno, and Stephen Wong who specialize in traveling to remote places, and documenting the rare and unusual. The new bryozoan microgoby was found in Indonesia, at Ambon, Molucca Islands and Lembeh Strait, North Sulawesi.

The bryozoan goby is unique among both Eviota and Sueviota by having pelvic fins joined by a membrane that forms a disc underneath the body of the fish. The body of Sueviota bryozophyla is a ghostly white to match the bryozoans with which it is associated and is decorated by scattered red spots mostly on the head, and trailing along the anterior portion of the body. Sueviota bryozophyla is described by Allen et. al. in the *Journal of the Ocean Science Foundation*.

[found on Reef Builders site.](#)



Terelabrus flavocephalus, third candy hogfish finally gets described

April 28 2016, Jake Adams –

Terelabrus flavocephalus is the newest species of hogfish to be described and added to the growing family of the ever popular marine wrasses. This third species of candy hogfish has been known from the Indian Ocean, Maldives to be precise, for many years now and its official description ties up the few loose ends we had in this unique group of colorful hogfishes. Hardly a few months have gone by since we were formally treated to the official description of *Terelabrus dewapyle* but now we can officially refer to the Indian Ocean candy hogfish by a proper scientific name.

All three species of *Terelabrus* are characterized by a very slender body which is patterned by red and white stripes down the flanks of the body. The name for the Indian Ocean candy hogfish, *Terelabrus flavocephalus* brings in focus a subtle but distinctive feature of this fish, which is its pale yellow colored head.

By comparison, the also recently described *Terelabrus dewapyle* has a yellow stripe down the center of its body. Meanwhile, the species that kickstarted the genus, *Terelabrus rubrovittatus* shows yellow coloration mostly on its dorsal and anal fin, if at all.

Terelabrus flavocephalus recently described from the Indian Ocean. Photo Lemon TYK

The three species of candy hogfish all share the same motif but we can better appreciate the biodiversity of this group which spans from the Maldives in the Indian Ocean, through the Indo Pacific, to the northwest Pacific in Japan. Since they are mostly deeper water species, we wouldn't be surprised to learn of more and different species of *Terelabrus* waiting to be discovered in some other deep, reef regions of the world. [Ichthyological Research]

Reef Builders



Caretaker laid poison to stop heron 'taking fish' from council's pond Ex-Army man Colm Fergus, of Belfry Gardens, Dundalk, given benefit of Probation Act

A council caretaker who put out poison because a heron was taking goldfish from an ornamental pond in front of Louth County Council's headquarters has had the Probation Act applied at Dundalk District Court. Photograph: Cyril Byrne/The Irish Times.

A council caretaker who put out poison because a heron was taking goldfish from an ornamental pond in front of Louth County Council's headquarters has had the Probation Act applied at Dundalk District Court.

Judge William Hamill said he was applying the Probation Act in the case involving Colm Fergus, Belfry Gardens, Dundalk. He found the facts proven, but was not recording a conviction.

Judge Hamill had previously adjourned the case until Thursday when he was told Mr Fergus had no previous convictions and an exemplary work record.

The judge said the defendant had not acted for his own gain and thought he was doing the right thing. Mr Fergus had €300 in court which the judge directed be paid to the Irish Wildlife Trust.

A previous court hearing was told Mr Fergus had made "a spur of the moment decision" which was a "terrible error of judgement."

He admitted two offences related to using the poison, carbofuran, on September 19th last year at the ornamental pond outside the council headquarters in Dundalk.

Judge Hamill was told at an earlier hearing by State solicitor Fergus Mullen there had been a concern that poison had been laid with a view to protecting an ornamental fish pond from herons.

Mr Mullen said the information was that the accused was not instructed to do this but "did it off his own bat" and of his own volition.

The court heard the defendant had served in the Army for 28 years and has worked as a caretaker with Louth County Council for 17 years.

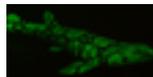
Defence solicitor Adrian Ledwith told the earlier hearing his client had been passing the pond on a Saturday when he saw a heron at the side of the pond. Herons had been taking fish from the pond and he “made a spur of the moment decision to put something down.”

He had laced sardines with a small amount of the poison and put it out with the intent of making the heron sick and curing the problem. He had shown remorse straight away and admitted his guilt from day one.



Pet Fish Monthly for March 1971 is now on

line at:- _Aqua-Worlduk.weebly.com



**Patterns of glowing sharks get clearer with
depth**

Date:

April 25, 2016

Source:

American Museum of Natural History

Summary:

Catsharks are not only able to see the bright green biofluorescence they produce, but they increase contrast of their glowing pattern when deep underwater, new research concludes. The study, conducted with a custom-built 'shark-eye' camera that simulates how the shark sees underwater, shows that fluorescence makes catsharks more visible to neighbors of the same species at the depths that they live and may aid in communication between one another.

FULL STORY

This photo is of a biofluorescent chain catshark (*Scyliorhinus retifer*).

A team of researchers led by scientists from the American Museum of Natural History has found that catsharks are not only able to see the bright green biofluorescence they produce, but that they increase contrast of their glowing pattern when deep underwater. The study, conducted with a custom-built "shark-eye" camera that simulates how the shark sees underwater, shows that fluorescence makes catsharks more visible to neighbors of the same species at the depths that they live and may aid in communication between one another. The work was recently published in the journal *Scientific Reports*.

"We've already shown that catsharks are brightly fluorescent, and this work takes that research a step further, making the case that biofluorescence makes them easier to see by members of the same species," said John Sparks, a curator in the American Museum of Natural History's Department of Ichthyology and a co-author on the paper. "This is one of the first papers on biofluorescence to show a connection between visual capability and fluorescence emission, and a big step toward a functional explanation for fluorescence in fishes."

Sparks and his colleagues recently released the first report of widespread biofluorescence--a phenomenon by which organisms absorb light, transform it, and emit it as a different color--in the tree of life of fishes, identifying more than 180 species that glow in a wide range of colors and patterns. Unlike the full-color environment that humans and other terrestrial animals inhabit, fishes live in a world that is predominantly blue, because with depth, water quickly absorbs the majority of the visible light spectrum. In recent years, the research team has discovered that many fishes absorb the remaining blue light and re-emit it in neon greens, reds, and oranges. By designing lighting that mimics the ocean's light along with cameras that can capture the animals' fluorescent light, the researchers, on their travels around the world, are able to capture this hidden biofluorescent universe. The researchers also recently made the first observation of biofluorescence in marine turtles.

"Our next question was 'What does all this newfound biofluorescence we are finding in the ocean mean?'" said paper author David Gruber, an associate professor of biology at Baruch College and a research associate at the American Museum of Natural History. "Can these animals see other animals that are biofluorescing in the deep blue sea? And are they using it in some way?"

To further explore this phenomenon, the researchers focused on the visual ability of two different catsharks: chain catsharks (*Scyliorhinus retifer*) and swellsharks (*Cephaloscyllium ventriosum*). With the help of Cornell University veterinary expert Ellis Loew, the researchers used a technique called microspectrophotometry to determine how the sharks' eyes absorb light, discovering that they have long rod pigments that help them see in low-light environments. They used this information to build a special camera filter that simulates how light hits a shark's eyes.

Gruber and Sparks then went on a number of expeditions to Scripps Canyon in San Diego County, where they observed swellsharks in their native habitat, about 100 feet underwater. During night dives, the team stimulated biofluorescence in the sharks with high-intensity blue light arrays housed in watertight cases. The resulting underwater light show is invisible to the human eye. To record this activity, the researchers used custom-built underwater cameras with green filters, which block out the blue light, as well as the newly developed "shark-eye" camera to get a better idea of how the shark sees the underwater display.

"Some sharks' eyes are 100 times better than ours in low-light conditions," Gruber said. "They swim many meters below the surface, in areas that are incredibly difficult for a human to see anything. But that's where they've been living for 400 million

years, so their eyes have adapted well to that dim, pure-blue environment. Our work enhances the light to bring it to a human perspective."

By mathematically modeling images from the shark-eye camera, the researchers found that the contrast of the patterns on the biofluorescent sharks increases with depth, suggesting that the animals can not only see the light, but are also likely using it to communicate with one another. The researchers were only able to dive to the top depth range of where this shark lives, where blue and some green light exists. Their model shows that at deeper depths, where the water is bluer, the contrast created by the fluorescence is even greater.

Story Source:

The above post is reprinted from materials provided by American Museum of Natural History. Note: Materials may be edited for content and length.

Journal Reference:

1. David F. Gruber, Ellis R. Loew, Dimitri D. Deheyn, Derya Akkaynak, Jean P. Gaffney, W. Leo Smith, Matthew P. Davis, Jennifer H. Stern, Vincent A. Pieribone, John S. Sparks. Biofluorescence in Catsharks (Scyliorhinidae): Fundamental Description and Relevance for Elasmobranch Visual Ecology. *Scientific Reports*, 2016; 6: 24751 DOI: 10.1038/srep24751



Mysterious deep-sea sharks biting chunks out of migrating whales

Every scar tells a story. Whales migrating through tropical waters often carry crater-like wounds, and cookie-cutter sharks looked like the culprits. But we lacked data on how frequent such attacks by sharks on whales might be, and where and when they happen.

Nicknamed "demon whale biters", these elusive sharks usually lurk in warmer waters between latitudes 40° north and 40° south – corresponding to the zone between the Bahamas and Madagascar.

They are thought to rise up from depths of 1000 to 4000 metres to prey on fresh meat, taking chunks out of live whales – quite an undertaking given they are only around half a metre long.

“That’s one of the ways they feed, taking non-fatal bites from much larger animals,” says Yannis Papastamatiou of Florida International University in Miami.

Now, two South Africa-based researchers have analysed wound data from more than 1700 whale carcasses collected by one of them at Donkergat whaling station in South Africa over 8 months in 1963, when commercial whaling was still allowed.

The characteristics of wounds seen in sei, fin, Bryde’s and sperm whales confirms that cookie-cutters (*Isistius* species) are indeed to blame.

“The fact that the animals were dead allowed us to inspect the whole body of the whale, not just the sections that are visible when the animal surfaces to breathe,” says study co-author Theoni Photopoulou of the Centre for Statistics in Ecology at the University of Cape Town, South Africa. This meant they could look at where on a whale the bites occur, and the stage of wound healing of the wound indicated when the attacks happened.

Dozens of wounds

The results show that the sharks inflicted many wounds from head to tail on whales passing through their habitat. One sei whale carried 138 unhealed bite marks.

Combining this with what we know about whale and shark distributions allowed the researchers to deduce how the frequency and timing of bites was related to whale migration.

“We found that whales are bitten regularly during the [southern hemisphere] autumn, winter and early spring,” says Photopoulou. This indicates that by mid-spring the whales had migrated away from the zone where the sharks live.

The results tally with what we know about sei and fin whale migrations, but also reveal something new about sperm whales.

The lower number of fresh wounds on maturing sperm whales suggest that they spend less time at lower latitudes – where the sharks are – than mature whales.

Papastamatiou says the study convincingly fingers cookie-cutter sharks as having caused the whale wounds. Given that there are often no other ways to study elusive deep-water creatures such as these sharks, he says, studying bite marks could also help refine our knowledge of the sharks’ distribution.

Although the era of whaling in South Africa is long gone, “demon bitten” scars on living whales can offer new insights into the behaviour of lesser-known whale species, too, Photopoulou says.

PLoS One, DOI: 10.1371/journal.pone.0152643



Ensnared Porcupinefish's Pal 'Keeps Vigil' As Snorkeler Sets

It Free

A video of a porcupinefish trapped in a net in Chaloklum Bay, Thailand, being freed by snorkelers who happened upon it got lots of traction last week.

But it's not just this act of kindness that's driving the video to be viewed. There's something special about the two-minute clip, even beyond this — even beyond the porcupinefish's ability to puff up. Have a look:

YouTubeHow striking that the second fish hovers so closely near the trapped one, even as the humans intercede! This, I think, is why the video has more than half a million views on YouTube.

The snorkelers were associated with Core Sea, the group devoted to marine research and conservation that first posted the video, filmed March 20.

I reached out to Core Sea this week in search of some details. For instance: Is the fish that was trapped a male and his companion a female, as I strongly suspect? I haven't heard back.

What I do know is that this species (*Diodon liturosus*) is the black-blotched porcupinefish. Not only can these fish swallow water and raise their spines to make themselves look bigger and fiercer, but they also harbor in their bodies a neurotoxin that contributes to self-defense.

Jonathan Balcombe, author of many books on animal behavior and emotion, including the forthcoming *What a Fish Knows: The Inner Lives of Our Underwater Cousins*, had this to say:

"This touching video shows virtuous behavior in two distantly related vertebrates. A porcupinefish bravely keeps vigil for his entrapped comrade, while a kindhearted snorkeler gingerly negotiates the situation with an improvised cutting implement — the bottom of a broken bottle.

"A skeptic might think the bystander fish is just curious, but if that were the case, the fish would have fled the scene when the large ape approached. Like many fishes, pufferfishes (of which the porcupinefish is a member) can live a decade or more and can form lasting bonds with others of their kind or with human caregivers."

Increasingly, animal behavior researchers recognize lasting bonds in animals beyond mammals and birds. Animal friendship is a real phenomenon. For my definition to apply, we would have to see these two porcupinefish hanging around together for a while before invoking "friendship." If they stay close together only during mating, then separate — which according to my reading is a probable explanation — then their filmed togetherness wouldn't qualify as a friendship.

But it would qualify as a strikingly close bond, and as yet more evidence that fish have a lot of fascinating things going on in their lives.



Pet Fish Monthly for January 1971 is now on line at:-
_Aqua-worlduk.weebly.com



Coral reef 600-miles long containing 73 species of fish found at mouth of Amazon River

The 3,600 square mile reef was discovered below muddy water at the mouth of the Amazon River and extends from the French Guiana to Brazil's Maranhão state

Researchers found a huge coral reef system below the muddy waters at the mouth of the Amazon, Brazil. A huge coral reef system, newly discovered at the mouth of the Amazon River, is already under threat from oil exploration.

Scientists were astonished to find the 600-mile stretch of coral reef under muddy water which ranges from 30-120m in depth. The findings were published in the *Science Advances* journal and states they found over 60 species of sponges, 73 species of fish, spiny lobsters, stars and other reef life.

The huge 3,600 sq mile (9,300 sq km) stretches from French Guiana to Brazil's Maranhão state.

Science Advances

Map of the Amazon shelf showing the benthic megahabitats and seasonal influence of the river plume

Researchers were stunned by the discovery as many of the world's great rivers produce major gaps in reef systems where no corals grow.

Gaps in reef systems occur at points where freshwater combines with the salty ocean however the reefs appears to be

thriving beneath the Amazon plume.

Compared to many others, researchers for Science Advances have said the Amazon reef is relatively "impoverished".

According to the paper however, the Brazilian government has sold 80 blocks right on top of the reef system for oil exploration and drilling at the Amazon mouth and 20 of these are already producing oil.

"These [exploration] blocks will soon be producing oil in close proximity to the reefs, but the environmental baseline compiled by the companies and the Brazilian government is ... largely based on sparse museum specimens.

"Such large-scale industrial activities present a major environmental challenge," said the study's authors.

The discovery is still proving a surprise and delight to scientist as co-author Patricia Yager, a professor of oceanography and climate change at the University of Georgia, told The Atlantic .

She said: "I was flabbergasted, as were the rest of the 30 oceanographers.

"Traditionally, our understanding of reefs has focused on tropical shallow coral reefs which harbour biodiversity that rivals tropical rainforests."



Pet Fish Monthly for February 1971 is now on

line at:- <http://aqua-worlduk.weebly.com> _



Eviota teresae



Eviota eyrae

5 New Dwarfgobies Discovered and Described. The gobies are native to waters off Fiji.

By John Virata | April 11, 2016

Researchers with the California Academy of Sciences and Hawaii's Bishop Museum have described five new goby species of the genus Eviota that have recently been discovered in Fijian waters.

Eviota eyrae. California Academy of Sciences

The dwarfgobies include:

- Eviota eyrae
- Eviota mimica
- Eviota richardi
- Eviota teresae
- Eviota thamani

The fish collections are with the California Academy of Sciences in San Francisco, Calif. Eviota teresae. California Academy of Sciences

The description of each of the five species, along with all dwarfgobies in the Eviota genus can be read in the paper "A review of the dwarfgobies of Fiji, including descriptions of five new species (Teleostei: Gobiidae: Eviota)" on the Journal of the Ocean Science Foundation website.





S.T.A.M.P.S

AUCTION AND SHOW THIS SUNDAY 24/4/16

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BEST PRIZES SHOW PRIZES

BEST RAFFLE PRIZES

NOVICE CLASS--- N.E.T.S. Aquarist Society want to promote new exhibitors , We have already sorted the prizes out for 1st to 4th place but have decided that anyone willing to make the effort to show a fish in the novice class at our show should be giving encouragement .

Now we offer for the first 15 exhibitors on the day who show a fish in the novice class a free £10 BLAYDON EXOTICS gift voucher to use on any purchase within the shop,

FOR MORE INFO PLEASE CONTACT ME!!!

TROPHY- The first place exhibit in the class will also win the Kenny and Wilma Crow memorial trophy (To be returned after 1 year at next show)

<https://www.facebook.com/events/977871822306438/>



Brazil hydroelectric dam fined over fish deaths

Published April 16, 2016

EFEBrazilian environmental authorities have fined the company that operates the controversial Belo Monte hydroelectric power station over fish deaths during the process of filling the dam's reservoir, officials said.

Norte Energia has been ordered to pay 35.3 million reais (some \$10 million) for causing the deaths of 16.2 tons of fish in the Xingu River, a tributary of the Amazon where the dam is located, the state-run Ibama agency said in a statement Friday.

The company also presented "partially false information" about the hiring of personnel to rescue fauna from the river and thus failed to comply with one of the conditions of its operating license, which Ibama issued late last year.

In November 2015, Ibama authorized the start of operations at Belo Monte even though its technicians acknowledged that Norte Energia had ignored requirements to protect the environment and affected indigenous communities.

It finally issued the license after the company pledged to take corrective measures.

Belo Monte began operating in February on a trial basis after the volume of water in its reservoir reached the required level. Construction of the dam began in March 2011 in the northern state of Para despite resistance from local Indians, farmers, fishermen and environmentalists who expressed concern about the \$10.6 billion project's ecological impact. Between 16,000 and 25,000 people were paid to leave their homes to make way for the dam, according to several estimates. Belo Monte will flood a total of 506 sq. kilometers (195 sq. miles) of rainforest and have an average installed capacity of 4.5 gigawatts and a peak capacity of 11.2 GW in times of high river flow. EFE



Synchiropus ocellatus

1

ORA Announces Captive-Bred Scooter Dragonets at Commercial Scale

ORA's captive-bred *Synchiropus ocellatus*, the Scooter Dragonet, is often called a "Scooter Blenny" in the aquarium trade.

Image courtesy ORA

via ORA

Scooter Dragonets, or Scooter Blennies as they are often called, have always been one of our favorite fish. Way back in 2010 when we were intensively raising Mandarins we tried our hand with Scooters countless times with little luck. We were only able to raise roughly 1 Scooter for every 5000 mandarins! We were frustrated to find that we were missing a suitable prey item for their first feeding.

Juvenile Red Scooter Dragonets, *Synchiropus stellatus*. Image courtesy ORA

We learned something important from the few Scooters that we managed to raise though: they grew quite fast once the larvae settled to the bottom of the tank. With Mandarins, under our culture conditions, you will have a few fish that shoot up to 1.25" in around 8 months but the majority of the batch will take up to 14 months to reach that size and 18 months or more to reach 1.5". Much to the chagrin of hobbyists, this timeframe is the reason we are not actively culturing Mandarins today; their slow growth makes them too costly to raise. Scooters on the other hand start spawning at less than 1" in length and reach 1.5" in just 4 to 6 months!

A few years ago we made significant improvements to our Live Feeds program allowing us to increase the variety, quantity and quality of the food we were raising for our larvae. Our most important addition was a consistent supply of a variety of copepod species. These new copepods were just the thing we had been missing for our beloved Scooters.

Once we began setting up spawns from regular and red Scooters with our new supply of copepods we started observing excellent survival and high **settlement** rates. It was encouraging to see the juveniles accept a pelleted diet at a very young age.

With their rapid growth and eager acceptance of a prepared food diet, Scooter Dragonets are proving to be very receptive to our aquaculture conditions and will thrive in a wide array of hobbyist home aquariums.

We are excited to announce that retailers have access to the first batch of Scooter Dragonets now. The Red Scooter Dragonet will be available soon.

To learn more about species of Dragonets we've raised, check out their livestock page here: <http://www.orafarm.com/products/fish/dragonets/>



A CORAL SPECIAL REPORT: The State of the Marine Breeders' Art 2016

by Tal Sweet and Matt Pedersen

CORAL Magazine's Annual Listing of captive-bred marine aquarium fish species, current through early December 2015 – an excerpt from the January/February 2016 issue of CORAL Magazine – **subscribe today!**

This rings true for CORAL's annual list of marine aquarium-fish species that have been successfully bred and raised in captivity. A chronological collection of lists can also establish a history: the first **captive-bred** marine-fish list published by our sister publication, KORALLE, contained only 90 fishes. As we start 2016, our list hovers just over the 300-species mark. Not included are many fish species bred for consumption or to stock food fisheries, and we have not yet started a database of cultured aquarium invertebrates. Also missing from the list are at least four species that were bred in 2015 but whose breeders are not yet ready to trumpet their work publicly. Today, the number of fishes that have been successfully bred in captivity has grown to represent approximately 12.5 to 15 percent of the species available in the aquarium industry, and as 2015 drew to a close the vast majority of popular aquarium fish families had been bred.

"Lists can be as long or as short as necessary," notes Weeks. We can illustrate the value of short lists by citing one very brief list of our own, containing just five entries: Lionfishes (Scorpaenidae), Hawkfishes (Cirrhitidae), Goatfishes (Mullidae), Squirrelfishes (Holocentridae), and the Moorish Idol (Zanclidae). It's certainly not comprehensive, but if you want to try breaking new ground with a family of marine fishes in which a representative species has not been successfully bred, one of these may represent your best shot.

While 2014 seemed to be a year of "gathering momentum," 2015 has turned out to be more of a deluge. Tremendous progress has been made with species that, just a few years ago, appeared to be nearly impossible to breed. Of special note, 2015 marked the first documented success with a butterflyfish, two wrasse species, and a surgeonfish (**tang**) — all of which represent groups of tremendous potential interest to the aquarium trade. We've published the full list of captive-bred species

online this year, and all the new additions are listed here.

An accidental young hybrid of Flagfin and Goldflake Angels (*Apolemichthys trimaculatus* x *A. xanthopunctatus*) from Bali Aquarich. Image: Lemon Tea Yi Kai

MARINE BREEDING TRENDS

This list of new species emphasizes a shift in who is innovating; every achievement can be attributed to aquarists involved with commercial aquaculture facilities, research programs, or public aquariums. The notable exception would be Mike Hoang's beautiful Featherduster Blenny, *Hypseurochilus multifilis*, were it not for the fact that his accomplishment occurred a couple of years earlier and only makes the list now because the species he was working with could not be identified until 2015. Hobbyist breeders are notably absent, having failed to breed any new species in 2015. In every prior year, hobbyists have been good for at least one, if not a few new species. But it wasn't for lack of trying: When the Marine Breeding Initiative hosted its sixth annual MBI Workshop in 2015, it was attended by over 70 individuals from around North America. The MBI continues to lead the way in sharing captive breeding information with aquarists all over the world.

Some breeders elected to reexamine and refine species that, while not "new" to the captivebred list, had long been forgotten. Proaquatix wowed aquarists by making captive-bred Jackknife Fish, *Equetus lanceolatus*, commercially available. This species was first cultured decades ago, but hadn't been revisited and has never been available to the public as a captive-bred offering. In addition to reviving past species, Tami Weiss of FusedJaw.com helped uncover and verify several species of seahorse and pipefish that have been successfully cultivated around the world in years past, but have never been included on our lists until now (you can see these species listed on the online master list).

Tom Bowling and Biota Marine of Palau led the charge of commercial producers, claiming success with nine new species never before seen as captive-bred fishes. Among the many new genera they reared, arguably the most attention-grabbing was the Clown Triggerfish (*Balistoides conspicillum*). Breeding this prized species in captivity is a dream that has haunted commercial breeders for decades. More importantly, although it was not the first captive-bred triggerfish ever, the Clown Trigger was the first to be supplied on a commercial scale (by Quality Marine) in the United States.

Bali Aquarich upped their angelfish game by adding three more new species to their list this year; they are currently the world's leading supplier of captive-bred marine angelfishes. Bali also delighted the aquarium audience with the production of two unique large angelfish hybrids. The first, a hybrid between the Flagfin and Goldflake Angelfishes (*Apolemichthys trimaculatus* X *A. xanthopunctatus*) has been dubbed the "Faux Gold"; so far we've only been shown juveniles, which are mainly yellow in coloration. Outwardly more unique, the accidental hybrid of the Emperor and Annularis Angelfishes (*Pomacanthus imperator* X *P. annularis*) turned heads and, upon maturity, displayed a unique blending of traits from both parental species.

Commercial breeders based in the US have had a few successes of their own: Oceans, Reefs and Aquariums (ORA) is now producing the unusually small-for-its-genus and reef-safe Radial Filefish, *Areichthys radiatus* (see **Rarities excerpt**), as well as the Transparent Cave Goby, *Fusigobius pallidus*, and they surprised us with three other new accomplishments they'd not shared previously (see list, below).

Hawaiian Christmas Wrasse, popular aquarium fish bred for the first time by Frank Baensch.

Frank Baensch, known for his work at Reef Culture Technologies as one of the world's pioneering angelfish breeders, finally broke the butterflyfish barrier with captive-bred *Chaetodon kleinii*. Although Baensch and Rising Tide had a few "near misses" in the preceding years, it was truly only a matter of persistence and time until the work paid off. Wrasses featured prominently this year; in the past Bali Aquarich accidentally reared several of the Cleaner Wrasse, *Labroides dimidiatus*, the first aquarium-size captive-bred wrasse, but that was it for a while. Two more wrasses were cultured this year: Baensch bred *Halichoeres ornatissimus* and Kevin Barden became the first to breed the Melanurus Wrasse, *Halichoeres melanurus*. Barden's work with the Rising Tide Conservation program at the Tropical Aquaculture Laboratory in Florida highlights the growing success of institutional and academic research in the field of marine ornamental aquaculture.

Featherduster Blenny from the Gulf of Mexico, successfully bred by hobbyist Michael Hoang. Image: JIm Garin.

IN THE PUBLIC EYE

As for public aquariums, Noel Heinsohn of the Long Island Aquarium became the first person to successfully raise the beautiful Lyretail Anthias, *Pseudanthias squamipinnis*. This was the first reported success within the Anthiinae subfamily. One of the accomplishments that slipped under the public radar is the breeding of the Longspined Porcupinefish, *Diodon holocanthus*, at the Pittsburgh Zoo & PPG Aquarium. Jennifer Dancico and Josie Romasco share joint responsibility for this accomplishment, which was supported by a grant from the Institute of Museum and Library Services (IMLS) that funded larval fish workshops hosted by the New England Aquarium and Roger Williams University. Additionally, Monika Schmuck reports successes at the New England Aquarium rearing both the Planehead Filefish, *Stephanolepis hispidus*, and the Dusky Pipefish, *Syngnathus floridae*, using techniques from these workshops. Several other successes have occurred as a result of these workshops, and we hope to highlight them as soon as we are given permission to do so. Progress was made in New Zealand, as well: Kelley Tarlton of the Sea Life Aquarium in Auckland announced the first success with the rare Spiny Seadragon, *Solegnathus spinosissimus*. Not only is Sea Life the first institution to put adults on display, but the Aquarium is also raising offspring.

World's first captive-bred surgeonfishes: Juvenile Yellow Tangs by the hundreds at Hawaii's Oceanic Institute. Image: Chad Callan/OI Rising Tide.

The crown jewel on this year's list has to be the Yellow Tang, *Zebrasoma flavescens* (see CORAL Magazine, January February 2016, page 36,). After decades of trial and error, this much-sought-after species has been successfully bred in captivity at the Oceanic Institute in Waimanalo, Hawaii, in a joint project with Rising Tide Conservation. A supply of aquacultured Yellow Tangs, one of the most popular fishes in the hobby, has been on many aquarists' wish lists for some time. This breakthrough bodes well for the future propagation of other members of the genus and of the surgeonfish family, including the Pacific Blue Tang, *Paracanthurus hepatus*, which is reported to be overharvested in a number of collection areas. (See Ret Talbot's report and essay, CORAL Magazine, Jan/Feb 2016, page 104.)

All in all, it is astonishing to see the major strides that were taken and the boundaries that were crossed during the past year, but it is vital to know there is a bigger picture. While captive breeding is a high priority for the hobby and the trade, it must be coupled with regulated, sustainable wild fisheries in order for both to remain viable and diverse.

ON THE INTERNET

Marine Breeders Initiative database of species bred in captivity:

<http://www.mbisite.org>

Weeks, Linton. 2009. 10 Reasons Why We Love Making Lists.

<http://www.npr.org/templates/story/story.php?storyId=101056819>

IMLS Grant to New England Aquarium & Roger Williams University:

<https://www.imls.gov/grants/awarded/mp-00-12-0024-12>

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The new 2016 Captive Bred Marine Fish Species List now supersedes the 2015 list, the 2014 list and the 2013 list. Color-coded perceived availability in the United States during 2015 has been included this year:

Angelfishes (Pomacanthidae)

Apolemichthys arcuatus, Bandit Angelfish
Apolemichthys trimaculatus, Flagfin Angelfish
Centropyge acanthops, African pygmy Angelfish
Centropyge argi, Cherub Angelfish
Centropyge colini, Collins or Cocos Keeling Angelfish
Centropyge debelius, Debelius Angelfish
Centropyge fisheri, Fisher's Angelfish
Centropyge flavissima, Lemonpeel Angelfish
Centropyge interruptus, Japanese Pygmy Angel
Centropyge jocularis, Jocular Angelfish
Centropyge loricula, Flame Angelfish
Centropyge multicolor, Multicolor Angelfish
Centropyge resplendens, Resplendent Angelfish
Chaetodontoplus cephalareticulatus, Maze Angelfish
Chaetodontoplus duboulayi, Scribbled Angelfish
Chaetodontoplus septentrionalis, Bluestriped Angelfish
Genicanthus personatus, Masked Angelfish
Genicanthus watanabei, Blackedged Angelfish
Holacanthus clarionensis, Clarion Angelfish
Holacanthus passer, Passer or King Angelfish
Paracentropyge multifasciata, Multibar Angelfish
Paracentropyge venusta, Purplemask Angelfish
Pomacanthus annularis, Annularis Angelfish
Pomacanthus arcuatus, Gray Angelfish
Pomacanthus asfur, Asfur Angelfish
Pomacanthus maculosus, Yellowbar Angelfish
Pomacanthus navarchus, Majestic or Blue Girdled Angelfish
Pomacanthus paru, French Angelfish
Pomacanthus semicirculatus, Koran Angelfish

Anthias (Serranidae)

Pseudanthias squamipinnis, Lyretail Anthias

Assessors (Plesiopidae)

Assessor flavissimus, Yellow Assessor
Assessor macneilli, Blue Assessor
Assessor randalli, Randal's Assessor

Basslets (Serranidae)

Liopropoma carmabi, Candy Basslet

Liopropoma rubre, Swissguard Basslet

Batfishes (Ephippidae)

Chaetodipterus faber, Atlantic Spadefish

Platax bativianus, Zebra Batfish

Platax pinnatus, Pinnatus Batfish

Platax orbicularis, Orbiculate Batfish

Blennies (Blenniidae)

Chasmodes bosquianus, Striped Blenny

Ecsenius gravieri, Red Sea Mimic Blenny

Ecsenius bicolor, Bicolor Blenny

Enchelyurus flavipes, Goldentail Comb-tooth Blenny

Hypoleurochilus multifilis, Featherduster Blenny

Hypsoblennius hentz, Feather Blenny

Meiacanthus atrodorsalis, Forktail Blenny

Meiacanthus bundoon, Bundoon Blenny

Meiacanthus grammistes, Striped Fang Blenny

Meiacanthus kamohari, Kamohara Blenny

Meiacanthus mossambicus, Mozambique Fang Blenny

Meiacanthus nigrolineatus, Blackline Fang Blenny

Meiacanthus oualanensis, Canary Fang Blenny

Meiacanthus smithi, Disco Blenny

Meiacanthus tongaensis, Fang Blenny (Tonga)

Parablennius marmoreus, Seaweed Blenny

Petroscirtes breviceps, Mimic Fang Blenny

Salaria pavo, Peacock Blenny

Scartella cristata, Molly Miller Blenny

Boxfishes (Ostraciidae)

Acanthostracion quadricornis, Scrawled Cowfish

Butterflyfishes (Chaetodontidae)

Chaetodon klienii, Klien's, Orange or Sunburst Butterflyfish

Cardinalfishes (Apogonidae)

Apogon notatus, Spotnape Cardinalfish

Apogonichthyoides melas, Black Cardinalfish

Apogonichthyoides nigripinnis, Bullseye Cardinalfish

Cheilodipterus quinquelineatus, 5 Lined Cardinalfish
Fowleria flammea, Red Stop Light Cardinalfish
Nectamia bandanensis, Bigeye Cardinalfish
Ostorhinchus compressus, Ochre-striped Cardinalfish
Ostorhinchus cyanosoma, Yellowstriped Cardinalfish
Ostorhinchus margaritophorus, Copper Lined Cardinalfish
Ostorhinchus quadrifasciatus, Two-striped Cardinalfish
Pterapogon kauderni, Banggai Cardinalfish
Pterapogon mirifica, Sailfin Cardinalfish
Sphaeramia nematoptera, Pajama Cardinalfish
Sphaeramia orbicularis, Orbic Cardinalfish
Zoramia leptacantha, Threadfin Cardinalfish

Marine Catfishes (Plotosidae)

Plotosus lineatus, Striped Eel Catfish

Clingfishes (Gobiesocidae)

Gobiesox punctulatus, Stippled Clingfish
Gobiesox strumosus, Skilletfish

Clownfishes (Pomacentridae)

Amphiprion akallopisos, Skunk Clownfish
Amphiprion akindynos, Barrier Reef Clownfish
Amphiprion allardi, Allard's Clownfish
Amphiprion barberi, Fiji Barberi Clownfish
Amphiprion bicinctus, Red Sea (Two-Barred) Clownfish
Amphiprion chrysogaster, Mauritian Clownfish
Amphiprion chrysopterus, Orangefin Anemonefish
Amphiprion clarkii, Clarkii Clownfish
Amphiprion ephippium, Red Saddleback Clownfish
Amphiprion frenatus, Tomato Clownfish
Amphiprion latezonatus, Wide Band Clownfish
Amphiprion latifasciatus, Madagascar Clownfish
Amphiprion leucokranos, Whitebonnet Clownfish
Amphiprion mccullochi, McCulloch's Clownfish
Amphiprion melanopus, Cinnamon Clownfish
Amphiprion nigripes, Blackfinned Clownfish
Amphiprion ocellaris, Ocellaris Clownfish
Amphiprion percula, Percula Clownfish
Amphiprion perideraion, Pink Skunk Clownfish
Amphiprion polymnus, Saddleback Clownfish

Amphiprion rubrocinctus, Australian Clownfish
Amphiprion sandaracinos, Orange Skunk Clownfish
Amphiprion sebae, Sebae Clownfish
Amphiprion tricinctus, Three-Band Clownfish
Premnas biaculeatus, Maroon Clownfish

Convict Blennies (Pholidichthyidae)
Pholidichthys leucotaenia, Convict Blenny, Engineer Goby

Damselfishes (Pomacentridae)
Abudefduf saxatilis, Sergeant Major
Acanthochromis polyacanthus, Orange Line Chromis
Amblyglyphidodon aureus, Golden Damselfish
Amphiglyphidodon curacao, Staghorn Damselfish
Amblyglyphidodon ternatensis, Ternate Damselfish
Chromis nitida, Barrier Reef Chromis
Chromis viridis, Blue Green Chromis
Chrysiptera cyanea, Blue Devil Damselfish
Chrysiptera hemicyanea, Azure Damselfish
Chrysiptera parasema, Yellowtail Damselfish
Chrysiptera rex, King Demoiselle
Chrysiptera taupou, Fiji Blue Devil
Dascyllus albisella, Whitespot Damselfish, Hawaiian Dascyllus
Dascyllus aruanus, Three Stripe Damselfish
Dascyllus trimaculatus, Three Spot Domino Damselfish
Hypsypops rubicundus, Garibaldi Damselfish
Microspathodon chrysurus, Jewel Damselfish
Neoglyphidodon crossi, Cross's Damselfish
Neoglyphidodon melas, Bowtie Damselfish
Neoglyphidodon nigroris, Black and Gold Chromis
Neopomacentrus bankieri, Lyretail Damselfish
Neopomacentrus cyanomos, Regal Damselfish
Neopomacentrus filamentosus, Brown Damselfish
Neopomacentrus nemurus, Yellow-Tipped Damselfish
Neopomacentrus violascens, Violet Demoiselle
Pomacentrus amboinensis, Ambon Damselfish
Pomacentrus caeruleus, Caerulean Damselfish
Pomacentrus coelestis, Neon Damselfish
Pomacentrus nagasakiensis, Nagasaki Damselfish
Pomacentrus pavo, Sapphire Damselfish

Dartfishes (Ptereleotridae)

Nemateleotris decora, Purple Firefish

Parioglossus cf. *dotui*, Dotui Dartfish

Dottybacks (Pseudochromidae)

Congrogadus subducens, Wolf Blenny

Cypho purpurascens, Oblique Lined Dottyback

Labracinus cyclophthalmus, Red Dottyback

Labracinus lineatus, Lined Dottyback

Manonichthys alleni, Allen's Dottyback

Manonichthys polynemus, Longfin Dottyback

Manonichthys splendens, Splendid Dottyback

Ogilbyina novaehollandiae, Australian Pseudochromis

Oxycercichthys veliferus, Sailfin Dottyback

Pictichromis diadema, Diadem Dottyback

Pictichromis paccagnellae, Bicolor or Royal Dottyback

Pictichromis porphyrea, Magenta Dottyback

Pseudochromis aldabraensis, Neon Dottyback

Pseudochromis bitaeniatus, Double Striped Dottyback

Pseudochromis cyanotaenia, Blue Bar Dottyback

Pseudochromis dilectus, Dilectus Dottyback

Pseudochromis elongatus, Red Head Elegant Dottyback

Pseudochromis flavivertex, Sunrise Dottyback

Pseudochromis fridmani, Orchid Dottyback

Pseudochromis fuscus, Dusky or Yellow Dottyback

Pseudochromis olivaceus, Olive Dottyback

Pseudochromis sankeyi, Sankey's or Striped Dottyback

Pseudochromis springeri, Springer's Dottyback

Pseudochromis steenei, Flamehead or Steen's Dottyback

Pseudochromis tapeinosoma, Blackmargin Dottyback

Pseudochromis tonozukai, Tono's or Orange Peel Dottyback

Pseudoplesiops wassi, Fleck fin Dottyback

Dragonets (Callionymidae)

Callionymus bairdi, Lancer Dragonet

Callionymus enneactis, Mosaic Dragonet

Synchiropus ocellatus, Scooter Blenny

Synchiropus picturatus, Spotted Mandarin

Synchiropus splendidus, Green Mandarin

Synchiropus stellatus, Red Scooter Blenny

Drums (Sciaenidae)

Equetus lanceolatus, Jackknife Fish

Equetus punctatus, Spotted Drum

Pareques acuminatus, High Hat

Pareques umbrosus, Cubbyu

Filefishes (Monacanthidae)

Acreichthys tomentosus, Bristletail Filefish

Acreichthys radiata, Radiated Filefish

Oxymonacanthus longirostris, Orange Spotted Filefish

Rudarius ercodes, Whitespotted Pygmy Filefish

Stephanolepis hispidus, Planehead Filefish

Flagtails (Kuhliidae)

Kuhlia mugil, Barred Flagtail

Frogfishes (Antennariidae)

Rhycherus filamentosus, Tasseled Frogfish

Gobies (Gobiidae)

Amblygobius linki, Link's Goby

Amblygobius phalaena, Banded Sleeper Goby

Coryphopterus personatus, Masked Goby

Cryptocentroides gobiodes, Crested Oyster Goby

Cryptocentrus cinctus, Yellow Watchman Goby

Cryptocentrus fasciatus, Y-Bar Watchman Goby

Cryptocentrus leptocephalus, Pink-Speckled Shrimp Goby

Cryptocentrus lutheri, Luther's Prawn-Goby

Elacatinus chancei, Shortstripe Goby

Elacatinus evelynae, Golden Neon or Sharknose Goby

Elacatinus figaro, Barber Goby

Elacatinus genie, Cleaning Goby

Elacatinus horsti, Yellowline Goby

Elacatinus louisae, Spotlight Goby

Elacatinus multifasciatus, Green Banded Goby

Elacatinus oceanops, Neon Goby

Elacatinus prochilos, Broadstripe Goby

Elacatinus puncticulatus, Red Headed Goby

Elacatinus randalli, Yellownose Goby

Elacatinus xanthiprora, Golden Goby

Eviota atriventris, Blackbelly Dwarfgoby
Eviota bifasciata, Twostripe Eviota
Eviota nigriventris, Red Neon Eviota Goby
Eviota punctulata, Finespot Eviota
Fusigobius pallidus, Transparent Cave Goby or Pale Sandgoby
Gobiodon citrinus, Citron Clown Goby
Gobiodon okinawae, Okinawan Goby
Gobiopsis quinquecincta, Jaguar Goby
Gobiosoma bosc, Naked Goby
Koumansetta hectori, Hector's Goby
Koumansetta rainfordi, Rainford's Goby
Lythrypnus dalli, Catalina Goby
Priolepis cincta, Girdled Goby
Tigrigobius macrodon, Tiger Goby (formerly Elacatinus macrodon)

Grammas (Grammatidae)

Gramma loreto, Royal Gramma
Gramma melacara, Blackcap Basslet
Lipogramma klayi, Bicolor Basslet

Groupers (Serranidae)

Chromileptes altivelis, Panther or Humpback Grouper
Epinephelus lanceolatus, Giant or Bumblebee Grouper
Pectropomus leopardus, Coral Trout
Serranus subligarius, Belted Sandfish

Grunts (Haemulidae)

Anisotremus virginicus, Porkfish
Haemulon chrysargyreum, Smallmouth Grunt
Haemulon flavolineatum, French Grunt

Hamlets (Serranidae)

Hypoplectrus gemma, Blue Hamlet
Hypoplectrus guttavarius, Shy Hamlet
Hypoplectrus unicolor, Butter Hamlet

Jacks (Carangidae)

Gnathanodon speciosus, Golden Trevally, Pilot Fish
Selene vomer, Lookdown

Jawfishes (Opistognathidae)

Opistognathus aurifrons, Pearly Jawfish

Opistognathus macrognathus, Banded Jawfish

Opistognathus punctatus, Finespotted Jawfish

Labrasomid Blennies (Labrisomidae)

Paraclinus grandicomis, Horned Blenny

Pipefishes (Syngnathidae)

Doryrhamphus excisus, Bluestripe Pipefish

Doryrhamphus janssi, Janss's Pipefish

Dunckerocampus baldwini, Flame Pipefish, Red Striped Pipefish

Dunckerocampus dactyliophorus, Ringed Pipefish

Dunckerocampus naia, Naia Pipefish

Dunckerocampus pessuliferus, Yellow Banded Pipefish

Haliichthys taeniophorus, Ribboned Pipefish

Syngnathoides biaculeatus, Alligator pipefish

Syngnathus acus, Greater pipefish

Syngnathus floridae, Dusky Pipefish

Syngnathus fuscus, Northern Pipefish

Syngnathus leptorhynchus, Bay Pipefish

Syngnathus scovelli, Gulf Pipefish

Syngnathus typhle, Broadnosed Pipefish

Porcupinefishes (Diodontidae)

Diodon holocanthus, Longspined Porcupinefish

Puffers (Tetraodontidae)

Arthron nigropunctatus, Dog-faced Pufferfish

Canthigaster rostrata, Sharpnose Puffer

Lagocephalus spadiceus, Half-Smooth Golden Puffer

Sphoeroides annulatus, Bullseye Pufferfish

Sphoeroides maculatus, Northern Puffer

Rabbitfishes (Siganidae)

Siganus canaliculatus, White-Spotted Spinefoot

Siganus fuscescens, Mottled spinefoot

Siganus guttatus, Oranged-spotted Rabbitfish
Siganus lineatus, Golden-Lined Spinefoot
Siganus rivulatus, Marbled Spinefoot
Siganus vermiculatus, Vermiculated Rabbitfish

Roundheads & Bettas (Plesiopidae)

Callopleysiops altivelis, Marine Betta, Comet
Plesiops corallicola, Bluegill longfin
Trachinops taeniatus, Eastern Hulafish

Seadragons (Syngnathidae)

Solegnathus spinosissimus, Spiny Seadragon
Phyllopteryx taeniolatus, Common or Weedy Seadragon

Seahorses (Syngnathidae)

Hippocampus abdominalis, Bigbelly Seahorse
Hippocampus algiricus, West African Seahorse
Hippocampus angustus, Western Spiny Seahorse
Hippocampus barbouri, Barbour's Seahorse
Hippocampus bargibanti, Bargibant's Seahorse
Hippocampus breviceps, Short-Head Seahorse
Hippocampus capensis, Knysna Seahorse
Hippocampus comes, Tiger Tail Seahorse
Hippocampus coronatus, Crowned Seahorse
Hippocampus erectus, Lined Seahorse
Hippocampus fisheri, Fisher's Seahorse
Hippocampus fuscus, Sea Pony
Hippocampus guttulatus, Long-Snouted Seahorse
Hippocampus hippocampus, Short Snouted Seahorse
Hippocampus histrix, Thorny Seahorse
Hippocampus ingens, Pacific Seahorse
Hippocampus kelloggi, Great Seahorse
Hippocampus kuda, Yellow or Common Seahorse (*Hippocampus taeniopterus*, currently considered a synonym of *H. kuda*, has also been reared)
Hippocampus patagonicus, Patagonian Seahorse
Hippocampus procerus, High-Crown Seahorse
Hippocampus reidi, Brazilian or Longsnout Seahorse
Hippocampus spinosissimus, Hedgehog seahorse
Hippocampus tuberculatus, Knobby Seahorse
Hippocampus trimaculatus, Longnose Seahorse
Hippocampus whitei, White's Seahorse

Hippocampus zosterae, Dwarf Seahorse

Sharks, Bamboo (Hemiscylliidae)

Chiloscyllium hasseltii, Hasselt's Bamboo Shark

Chiloscyllium plagiosum, Whitespotted Bamboo Shark

Chiloscyllium punctatum, Brownbanded Bamboo Shark

Hemiscyllium hallstromi, Papuan Epaulette Shark

Hemiscyllium ocellatum, Epaulette Shark

Sharks, Bullhead (Heterodontidae)

Heterodontus francisci, Horn Shark

Sharks, Cat (Scyliorhinidae)

Atelomycterus marmoratus, Coral Catshark

Shrimpfishes (Centriscidae)

Aeoliscus strigatus, Razorfish, Shrimpfish

Snappers (Lutjanidae)

Lutjanus sebae, Red Emperor Snapper

Whiptail Rays (Dasyatidae)

Taeniura lymma, Bluespot Stingray

Tangs & Surgeonfishes (Acanthuridae)

Zebrasoma flavescens, Yellow Tang

Toadfishes (Batrachoididae)

Allenbatrachus grunniens, Grunting Toadfish

Opsanus tau, Oyster Toadfish

Triggerfishes (Balistidae)

Balistes vetula, Queen Triggerfish

Balistoides conspicillum, Clown Triggerfish

Xanthichthys mento, Crosshatch Triggerfish

Triplefins (Tripterygiidae)

Enneapterygius etheostomus, Snake Blenny

Wrasses (Labridae)

Halichoeres melanurus, Melanurus or Hoeven's Wrasse

Halichoeres ornatissimus, Ornate, Ornamented, or Hawaiian Christmas Wrasse

Labroides dimidiatus, Cleaner Wrasse

Lachnolaimus maximus, Hogfish

Parajulis poecilepterus, Rainbow Wrass



S.L.A.G will be hosting our 1st show, talks and auction on the 24th of July 2016.

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Sponsored by Fish Science and Association of Aquarists.

<https://www.facebook.com/FishScience/>

<https://www.facebook.com/fishkeepers/>

Great News S.L.A.G. has been reborn the late [Howard Preston](#) and the late Dave Cheswright would be elated as they were both involved in the original [Southern Livebearers Aquatic Group](#)



Scary dead fish washes up on Formby beach. Walker feared creature was a highly poisonous Stone fish

A mystery sea creature, thought to be a Stone fish, found on Formby beach. A walker feared a dead sea creature on Formby beach was a poisonous Stone fish.

The dead fish, which appeared to have claws and a fin, was found on Tuesday afternoon by Michelle Snelling.

Michelle, a mum from Lydiate, spotted the dead fish while on one of her regular walks with a friend. She told Visiter.co.uk that she feared the find was a Stone fish, which are extremely venomous.

She said to Visiter.co.uk: "It was a few feet long, and had a leopard print on its scales. It had claws and a fin. I thought it was a shark at first. I thought it might be a Stone fish, but they are found in the south Pacific, not Formby. I just hope it's not a poisonous fish, because so many children play on the beach."

Michelle added: "My daughter loves the photographs. Although it was a bit scary the dead fish has not put me off Formby. I love walking on the beach, at least twice a week."

A marine expert told the Visiter.co.uk that the fish is the remains of a Skate or Ray that has had its wings cut off, so giving the misleading impression of a long thin fish.





This issue of Pet Fish Monthly which features the 1970 AQUARIUM SHOW IN LONDON also records how Southend, Leigh & District Aquarist Society did in the tableaux class. It is now on line at:- [_aqua-worlduk.weebly.com](http://aqua-worlduk.weebly.com)



Toxic chemicals on rise in Lake Erie fish, scientists say

Researchers suggest those who regularly eat small-mouth bass from Lake Erie limit consumption to no more than a couple of fish a month. Flame-retardant chemicals could show up in greater concentrations in Lake Erie's small-mouth bass, and scientists say an invasive species could be to blame.

Researchers at the State University of New York-Buffalo found that concentrations of polybrominated diphenyl ethers, or PBDEs, are likely to increase by nearly 50 percent in Erie's small-mouth bass, according to a recently published study in the Journal of Environmental Pollution.

That's not good because a lot of people catch and eat fish from Lake Erie.

The researchers found that small-mouth bass are eating more round gobies, small, invasive fish that have overrun Lake Erie in recent years. Gobies eat zebra mussels, another invasive species that filter water through their bodies.

PBDEs, flame-retardant chemicals used in textiles, furniture and computer parts, have been linked to hyperthyroidism in adults and a slew of health issues in children, including slowed cognitive development, lower IQs and some syndromes on the autism spectrum.

Josh Wallace, one of the authors of the study and a doctoral candidate at SUNY-Buffalo, said scientists believe flame-retardant chemicals found in the lake's sediment are filtered by the mussels, which are eaten by the gobies, which are food for bass.

The chemicals get into the water, Wallace said, through improper disposal.

Wallace and other researchers studied gobies and bass. An earlier study, by one of Wallace's colleagues at SUNY-Buffalo, found that as the goby population has increased, so, too, has the number of gobies eaten by small-mouth bass.

When the researchers pulled small-mouth bass from the lake and dissected them, gobies accounted for about 97 percent of

what remained in the fishes' guts. Gobies make up a small portion of the diets of other Lake Erie species, including walleye. The researchers found that PBDEs appeared to be decreasing in other species.

Wallace then used statistical modeling to predict how the amount of PBDEs in the small-mouth bass would change over time. Their model showed that those levels would increase by 47.6 percent over two years. The actual amount of chemicals inside the fish is still relatively small — about 33 parts per billion, Wallace said. But because the chemicals stay in human fat stores, they accumulate over time. Mothers who breast-feed also can pass along the chemicals to newborns.

That could mean trouble for people who regularly eat Erie's small-mouth bass.

The Ohio Environmental Protection Agency already recommends people eat no more than one serving of sport fish a week. But even that might be high, Wallace said.

"If you eat a couple of fish a month it's not going to be a big deal, but if you eat a lot, it will be a problem," he said.

PBDEs are not a new concern. Studies as far back as 2002 examined how PBDEs accumulate in breast milk and warned that the chemicals could pose a similar risk as PCBs and DDT, both of which were banned in the United States decades ago. Representatives for the PBDE industry did not return calls or emails requesting comment.

Many manufacturers have voluntarily eliminated PDBEs from their products, but like PCBs, they can persist for years in lake sediment, said Michael Murray, a staff scientist with the National Wildlife Federation's Great Lakes Regional Center.

"It'll likely take some time before they eventually get buried or, in some cases, degraded," Murray said. "But in degradation, they might get transformed to some other chemical that's also a problem."



1

Top cop promises more action on fish theft from Lincolnshire's rivers

Chief Insp` Jim Tyner is promising more action on illegal angling.

Police are stepping up their patrols of county waterways to combat illegal fishing after the man in charge of the operation admits the service has "fallen short" in the past.

Lincolnshire Police is also asking the public to play their part by calling 101 if they suspect fish are being taken from rivers illegally.

Working with the Angling Trust, Environment Agency and other partners, Lincolnshire Police launched Operation Traverse in November 2014 as a response to the concerns of the angling community about fish being stolen from local waterways.

As well as pro-active patrols by specialist officers, part of the operation was aimed at raising awareness within the police service that fishing without permission and the theft of fish are criminal matters that the police should deal with.

Chief Insp Jim Tyner, force lead for rural crime, said: "Fishing offences are not the sort of thing that officers encounter every day, so education of officers is vitally important.

"This is a long process. Unfortunately there have been occasions when the service provided has fallen short.

"I accept and am addressing this.

"Moving forward I would take this opportunity to reassure the angling community that Lincolnshire Police remains committed to Operation Traverse and will continue to work with our partners on this important initiative.

"There will be increased patrols of Lincolnshire's waterways and if you suspect illegal fishing, this should be reported via 101."

- Police say Operation Traverse has been acknowledged as good practice and is being rolled out in other counties.

Found in the Spalding Guardian



Micro-plastic found in digestive systems of Tokyo Bay fish

KYODO

Nearly 80 percent of Japanese anchovy caught during a survey of Tokyo Bay had plastic waste inside their digestive systems, according to the research team who conducted the study.

Eating the fish is unlikely to cause major health problems, but the finding indicates worrying levels of pollution in the oceans around the nation, according to the group led by professor Hideshige Takada of the Tokyo University of Agriculture and Technology.

The team examined 64 Japanese anchovies caught in the bay in August last year and found 150 micro-plastic particles, or plastic pieces up to 5 millimeters, in the digestive tubes of 49 of them.

Of the 150 plastic pieces, about 80 percent were 0.1 to 1 mm in size, the team said.

The micro-plastic is believed to come from waste such as plastic bags and containers broken down by waves and ultraviolet light, and also from micro-beads widely used in cosmetics and toothpaste.

Measures should be taken to curb the inflow of micro-plastic into the sea as they may affect the ecosystem, Takada said.

Micro-plastic litter absorbs hazardous chemicals such as polychlorinated biphenyl and could become concentrated in birds and fish, he said.

The study marks the first finding of micro-plastics in fish in the nation's waters, the professor said.

Micro-plastics have so far been found in fish in the United States, Britain and Indonesia, as well as in sea turtles, whales, clams and seabirds, with another study suggesting 90 percent of seabirds have ingested such small plastic pieces.

The world leaders' joint declaration adopted at the Group of Seven summit last year in Elmau, Germany, called for "increased effectiveness and intensity of work" to address plastic litter pollution.



Vancouver Aquarium 1, PETA 0: Canadian court hands first win to aquarium

You recall the folks at PETA, the ones that funded the controversial shcokumentary Blackfish, well they were at it again recently, this time setting their sights on the Vancouver Aquarium. After seeing the film, the aquarium filed a lawsuit against the filmmaker over the numerous false allegations, copyright infringements and contract violations.

In the injunction, Justice Jeanne Watchuk of the B.C. Supreme Court gave the aquarium a big win when they ruled that "Vancouver Aquarium Uncovered" producers must re-edit the film because it was violating the law and stealing and manipulating materials.

Justice Watchuk granted the aquarium an injunction after it filed a notice of civil claim in February against the filmmaker and his company, Evotion Films Inc. In the lawsuit, the Vancouver Aquarium claimed filmmaker, Gary Charbonneau, violated copyright laws and stole material the facility developed as part of its conservation efforts.

Charbonneau stands by his claim the material is covered by the fair dealing provision of the Copyright Act. He said he gave proper credit and used the material to educate the public.

"In granting this order, I am mindful of the inconvenience to the defendants to excise the contentious segments," Justice

Watchuk said. "However, it is the preferred course to maintain the status quo pending trial."

According to a statement from the Vancouver Aquarium Marine Science Centre from **The Globe & Mail**, the aquarium said it's seeking to protect copyrighted materials developed to raise awareness about ocean conservation.

"We feel strongly that the conservation, research and education programs we lead need to be fairly represented and protected from those who choose to deliberately make false claims," said the statement.

PETA has a history of pitting the public against organizations they feel are in the wrong. The radical animal rights activist organization always seems to take the aggressive approach to protest wielding misinformation as its weapon of choice, so this is a huge victory for the Vancouver Aquarium and other marine research institutions around the globe.

This article appeared in Reef Builders



International scientists said Tuesday they have identified a new virus that is killing both wild and farmed tilapia fish, an important global food source worth \$7.5 billion each year.

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The culprit is related to a family of influenza viruses, and appears to kill fish by causing brain swelling in tilapia in Israel and liver disease in the fish in Ecuador, said the findings in the journal mBio.

The newly identified pathogen, named tilapia lake virus (TiLV), affects tilapia, the world's second most farmed fish.

"Tilapia is one of the most important fish industries worldwide," said co-author Eran Bacharach, a molecular virologist at Tel

Aviv University.

“Moreover, because they eat algae, they are ecological gatekeepers for freshwater and they are an inexpensive, important source of protein in poorer countries.”

Scientists still know little about the virus' biology, where it originated, or how it made its way into Israel in 2009 and two years later, to commercial ponds in Ecuador. A future research paper will describe its effects in Colombia as well, the authors said. In Israel, the virus affected both wild tilapia species in the Sea of Galilee, and fish in commercial ponds.

Annual yields from Israel have dropped as much as 85 percent.

Knowing more about the virus could speed efforts to craft a vaccine.

“We are shifting our focus now to implementing diagnostic tests for containment of infection and to developing vaccines to prevent disease,” said co-author Avi Eldar of the Kimron Veterinary Institute in Bet Dagan, Israel.

According to researcher Ian Lipkin of Columbia University, “building a vaccine would save billions of dollars and preserve an industry that ensures employment in the developing world and food security.”



British man lands a 5ft-long fish weighing as much as a BABY HIPPO after 2,500-mile trip to Hungary

- Warren Harrison drove from Manchester to Hungary to go carp fishing
- 54-year-old couldn't believe his luck when he reeled in 101lb whopper
- Father-of-two had to get a friend to help him drag the 5ft fish to scales
- Carp is second biggest caught by a British angler, with first at 104lb

A British fisherman who travelled more than 2,500 miles to carry out his hobby has had his determination rewarded after catching a carp weighing as much as a baby hippo.

Warren Harrison drove from Denton, Manchester to a 28-acre lake in Hungary in a desperate bid to catch a huge fish.

The 54-year-old couldn't believe his luck when he felt a tug on his line and reeled in a carp, which was more than 5ft long and weighed 101lb 8oz.

+3A British fisherman who travelled more than 2,500 miles to carry out his hobby has had his determination rewarded after catching a carp weighing as much as a baby hippo

The father-of-two has now described the catch - the third biggest of its kind and second biggest by a Briton - as a 'monster'.

Describing reeling it in, he said: 'As soon as I got to my rod and felt it I realised it was massive, and I turned to my mate and said: "This is a monster".

'Half an hour is a very long time to try and land a fish, my arms were in agony and sweat was just pouring down my face. I was boiling hot, but it was so cold even our kettle had frozen solid.

'I just kept seeing this big vortexes bubbling up in the water and when it popped up I just though "Jesus".'

Warren Harrison drove from Denton, Manchester to a 28-acre lake in Hungary in a desperate bid to catch a huge fish. He is pictured above with his carp

The 54-year-old couldn't believed his luck when he felt a tug on his line and reeled in a fish, which was more than 5ft long and weighed 101lb 8oz

The fish was so heavy Mr Harrison needed his friend David Treasure to help drag it onto the scales.

He said: 'I couldn't pick it up and we had to both lift it to be weighed. My fingers were trembling with the weight when I posed for the pictures.

'It wasn't a world record but I'm still pretty chuffed with it, as it's the second biggest carp caught by a British angler.'

The biggest carp ever landed by a Brit was caught by Hampshire's Stephen Weir at the same venue last year and weighed in at 104lb 2oz.

He was just short of Czech angler Tomas Krist's world record of 105lb 130z - who also landed the beast in Hungary.



Tomiyamichthys levisquama.

Another type of goby fish (Tomiyamichthys levisquama.) that was previously undescribed in the scientific world and found "just on the doorstep" of the harbourside museum in October.

PHOTO: The previously undescribed species of shrimp goby caught just outside MAGNT during a routine survey.(Supplied: MAGNT)

"We were doing survey tests out front of the MAGNT on a low tide with scoop nets and found it," Dr Hammer said.

"I didn't really recognise it. I sent it to a goby fish expert down at the Australian Museum [in Sydney] and I got a pretty quick email back saying: 'That's a really exciting find.'

"They said they had some specimens of it but they'd never seen a live animal of this type before."

The species has now been formally described as a type of shrimp goby in a scientific journal and given a formal name — Tomiyamichthys levisquama.

"The next thing is to map out where they occur and get a good idea of abundance," Dr Hammer said.

Shrimp goby get their name from their relationship with shrimps, he added.

"The shrimp digs the hole and finds some food and the shrimp goby defends the burrow from other shrimp," he said.

"The shrimp goby has about 50 species or so [and is found] particularly on coral reefs. We don't know half the things that happen out there."



'Alien-like' goby fish needed alive for identification by Museum and Art Gallery of the NT

105.7 ABC Darwin

PHOTO: The worm goby hooked by a fisherman in Darwin harbour. (Supplied: MAGNT)

RELATED STORY: Mystery of 'severed finger' solved

MAP: Darwin 0800Wanted: A live specimen of an eyeless, worm-like fish with a gnashing row of teeth for identification by a Northern Territory museum.

Since the capture of one of these rare creatures a few years ago, its true identity has continued to baffle experts at the Museum and Art Gallery of the NT (MAGNT).

It is believed to be an undescribed species of goby fish — one of the largest fish families in the world — and possibly even a new genus.

"We're doing genetics and X-rays to discover more," Dr Michael Hammer, curator of fishes at MAGNT, told 105.7 ABC Darwin.

Dr Hammer said a fisherman caught their current 10-centimetre specimen near Darwin harbour and, after it died from its hook wounds, popped it on ice and brought it into the museum.

"That started our tale of discovery," Dr Hammer said.

PHOTO: The fisherman who caught the specimen dubbed it "the worm of death" due to its snapping teeth. (Supplied: Phil Hall)

He said the specimen was easily identified as a worm goby — a mud-dwelling "alien-like" type of fish that has sensory sockets instead of eyes and sneaks out of burrows to catch prey.

However the dead worm-like creature's unusual characteristics made further identification difficult.

"It was like nothing I'd ever seen. It's supposed to have ridges on the head, which it didn't," Dr Hammer said.

"It had really big teeth, which was different to other specimens."

"The fisherman who caught it said it lashed out and nearly took a chunk out of his skin.

"The main features are its big teeth, no eyes, and tiny little fins. It's really adept at moving underground."

'Call to arms' for Darwin fishermen
Several years later, the museum is still trying to figure out what the fisherman's specimen is, and believes it might even be part of a previously undescribed genus halfway between several other types of worm goby found in the Top End and in Asian waters.

The museum needs a living specimen to properly describe the fish and then lodge it as a new species, and is hoping people will keep their eyes out for long, skinny and pink fish with big teeth.

"It's a call to arms to fishermen," Dr Hammer said.

"Even just photos is great. That's even good to know so you can map what habitats they're in."



Salmon like black

British Columbia scientists have discovered that salmon are more aggressive in blue tanks than black ones, which could affect the success of fish farms.

Researcher Leigh P. Gaffney of the University of B.C.'s Animal Welfare Program published a study last week in the online science journal PLOS ONE on the effects of background colours on aggression in Coho salmon.

Salmon are becoming very popular in aquaculture, which involves raising fish inland in large tanks, explained study co-author Becca Franks. For reasons that aren't clear, these tanks are almost always blue-coloured. The team wanted to see if this blue colour could affect the behaviour of the fish, as, in the wild, background colour can affect fish survival (e.g. through camouflage).

The team put 100 Coho salmon into 10 tanks and divided the tanks into different colour zones: black versus white, light grey, dark grey and patterned; and blue versus white, light and dark grey, and black. Each tank got to experience each combination.

The team found that the fish vastly preferred to hang around in darker coloured regions compared to lighter ones. Statistical analysis found that the fish preferred black backgrounds over all others, and preferred darker ones over lighter ones.

Whereas the fish normally circled the tank constantly, the fish would stop and hang around whenever they swam into a black-coloured zone, Franks said.

"I've been doing this (work) for over a decade and I don't think I've ever seen effects this strong."

The team also filmed the fish to track their aggression levels. They found that the fish were about four times more aggressive when in a blue area than a black one, being much more likely to chase, charge, or bite their cohorts.

Salmon rely on sight to hunt invertebrates, so the team theorized that the fish might prefer black as it makes bugs easier to

spot. Fish might also see dark places as protection against predators.

Franks noted that salmon also change their colour to better fit their background and that light colouration is perceived as a sign of dominance. Blue or light backgrounds would therefore make all the salmon turn light-coloured, causing conflict as they all seem to be saying "I'm the best" to each other.

Adrian Theroux, of St. Albert's Paradise Pets, said he was surprised by this study, as he had never heard of a link between tank background colour and aggression in fish. Colour often relates to mating, so he suspects this response may be a territorial instinct.

Franks said it's tough to say if all fish will react to black this way, but that you could find out by colouring half of a fish tank one colour and seeing if the fish show any preference. The team suggested that farmers could influence the health of their fish through the colour of their tanks.

The study can be found at plosone.org.



New type of symbiosis: Bacteria eat ammonia in fish gills

Date:

April 6, 2016

Source:

Radboud University

Summary:

Microbiologists and fish researchers have discovered an entirely new type of symbiosis: bacteria in the gills of fish that convert harmful ammonia into harmless nitrogen gas. Fish produce a lot of ammonia, which is a waste product from their protein metabolism. Ammonia also pollutes the water in which they live, and in excessive concentrations can even be deadly. "We humans excrete excess ammonia in our urine, through urea. Fish do so through their gills," explains a microbiologist.

Share:

FULL STORY

Microscopic analyses of carp gill tissue. A, B and C show stainings of all bacteria (A), beta-proteobacteria (B) and specific ammonia-oxidising bacteria (C). This indicates that many of the bacteria in the clusters are ammonia oxidisers. The scale bar is 10 µm. D, E, and F show electron microscope images of clusters of bacteria close to the blood vessels (D) with further enlargements in the cells of the carp (E, F). The scale bars are 5 µm, 5 µm and 500 nm, respectively.

Microbiologists and fish researchers from Radboud University have discovered an entirely new type of symbiosis: bacteria in the gills of fish that convert harmful ammonia into harmless nitrogen gas. Environmental Microbiology Reports published an early view of the results this week.

Fish produce a lot of ammonia, which is a waste product from their protein metabolism. Ammonia also pollutes the water in

which they live, and in excessive concentrations can even be deadly. "We humans excrete excess ammonia in our urine, through urea. Fish do so through their gills," explains microbiologist Huub Op den Camp. "In Nijmegen we specialise in identifying and propagating ammonia-eating bacteria such as anammox." The gills were therefore a logical first place to start looking for nitrogen cycle bacteria in fish.

Preparing gills

The research indeed showed that the gills of both zebrafish and carp are filled with micro-organisms. To identify these micro-organisms, microbiologists used a variety of microscopic techniques and isotope measurements, in addition to DNA fingerprinting. "Preparing gills for experiments was challenging, it was much different than what we are accustomed to," says Mike Jetten. "The cartilage in the branchial arch makes it extremely difficult to slice thin sections for microscopic study." But the microbiologists ultimately succeeded.

Ultimately the biologists removed the gills from the fish for further study. Even then, they still produced nitrogen gas, which means that the bacteria remained active. The biologists also wanted to determine exactly how much ammonia the bacteria eat. To do this, they had to determine the nitrogen balance in aquariums. This was a difficult task due to the continuous water exchange and biofilters, which also remove some ammonia. In intermittently fed fish, it turned out that 31% of the feed ends up in the water as ammonia. In continuously fed fish this was only 18%; much of the ammonia had been converted to nitrogen gas, which escaped harmlessly from the water.

Feeding tactics

The discovery of a new type of symbiosis does not happen very often. "At some point during evolution, fish accepted these bacteria, which turned out to be a successful strategy," says Op den Camp. "The question is now whether the bacteria are also present in species other than zebrafish and carp. We suspect that this symbiosis is common in freshwater fish, but that remains to be confirmed." This study also provides a lesson for aquaculture. "Feeding leads to a peak in the ammonia production. For the symbiosis between fish and bacteria, it is better if the ammonia production is more constant. It is therefore better to feed often with small amounts than with large amounts once or twice a day. The bacteria -- and therefore the fish -- benefit from this feeding tactic. Nearly all organisms benefit from constancy." Story Source:

The above post is reprinted from materials provided by Radboud University. Note: Materials may be edited for content and length.

Journal Reference:

1. Maartje A.H.J. van Kessel, Rob J. Mesman, Arslan Arshad, Juriaan R. Metz, F.A. Tom Spanings, Stephanie C.M. van Dalen, Laura van Niftrik, Gert Flik, Sjoerd E. Wendelaar Bonga, Mike S.M. Jetten, Peter H.M. Klaren, Huub J.M. Op den Camp. Branchial nitrogen cycle symbionts can remove ammonia in fish gills. *Environmental Microbiology Reports*, 2016; DOI: 10.1111/1758-2229.12407



Dead fish spotted in Ross-on-Wye's flood alleviation scheme. The scene on Saturday morning.

Photo by Hadrian Whittle

A SIGNIFICANT number of fish were swept into a town's flood alleviation scheme and became trapped.

Dead fish were spotted in water by a member of the public near to the Homs Road car park in Ross-on-Wye.

The town's flood alleviation tunnel runs between the Homs Road and Kings Acre car parks.

Balfour Beatty Living Places engineer Richard Perkins said: "We are battling to rescue fish trapped in the Ross-on-Wye Flood Alleviation Scheme and have launched an investigation into the cause of the problem.

"We were alerted to the situation at the weekend by the Environment Agency (EA) after they had been contacted by a member of the public who had spotted fish floating in the water.

"We are working with the EA and the Wye and Usk Foundation to rescue fish trapped within the structure."

The EA believe the fish became trapped around March 29 when water levels in the River Wye rose and washed a significant number of fish into the outlet chamber.

Mr Perkins added: "Our priority is to rescue the fish then further investigation is going to be required to establish the underlying cause."





'Forgotten' fish turns up in West Texas Minnow rediscovered by scientists

Date:

April 5, 2016

Source:

Texas A&M AgriLife Communications

Summary:

With no more 'swimmable' water than thirsty West Texas has, it's hard to imagine a fish, even a minnow-sized fish could remain 'missing' for more than a century. But due to a case of mistaken identity, such is the case, says a scientist.

FULL STORY

The West Texas shiner closely resembles the Texas shiner.

Credit: Texas A&M AgriLife Research photo courtesy of Dr. Kevin Conway
With no more "swimmable" water than thirsty West Texas has, it's hard to imagine a fish, even a minnow-sized fish could remain "missing" for more than a century. But due to a case of mistaken identity, such is the case, said a Texas A&M AgriLife Research scientist.

Dr. Kevin Conway, AgriLife Research wildlife and fisheries scientist, College Station, and Daemin Kim, a former graduate student of Conway's now at Ewha Womans University, Seoul, South Korea, collaborated on the paper "Redescription of the Texas shiner *Notropis amabilis* from the southwestern U.S. and northern Mexico with the reinstatement of *N. megalops*."

The paper was published in the journal *Ichthyological Exploration of Freshwaters*.

"*Notropis megalops*, the scientific name of the newly discovered fish, is a new species for Texas, though it's not 'really' a new species," said Conway, the paper's lead author. "Charles Frederic Girard, an early day scientist who documented many new species, beat us to the find in 1856, but Girard's discovery has been dismissed since the 1860s."

Conway said Girard described many new species of fish, amphibians and reptiles from the southwestern and central U.S., with most collected during the U.S. and Mexican boundary surveys between 1853-1855. But Conway said some of his contemporaries thought Girard was a bit "careless," saying he sometimes described the same species more than once, which may have led to the current confusion.

"So I guess you could say we have discovered an 'old-but-new' minnow way out in West Texas where nobody expected to find anything new, especially a fish," Conway said. "Though we can't give this species a new scientific name, we are proposing the common name of West Texas shiner, though the species is also found in adjacent parts of Mexico."

Conway said their paper documents the rediscovery of the minnow and the confusion surrounding it. That confusion arose because another minnow, the Texas shiner or *Notropis amabilis*, and the rediscovered minnow were thought to be one and the same, so it was not recognized as a valid separate species.

But based on Conway's and Kim's detailed study using genetics and morphology, they have shown that *Notropis megalops* and *Notropis amabilis* are in fact two very different fish and are valid but separate species.

"They do look a lot alike, thus the confusion," Conway said. "But they do not interbreed, and they are actually not even closely related, although they were considered to be the same thing for the last 120 years or so."

"Unlike the Texas shiner, which is common in Central Texas, the West Texas shiner is restricted entirely to the Rio Grande drainage, has a fragmented distribution and has low levels of genetic diversity," Conway said. "As such, it is already being considered a conservation priority by state agencies."

So what restrictions does the minnow's newfound status place on landowners along the minnows' haunts? Not to worry, said

an expert on the topic.

Dr. Gary Garrett, former Texas Parks and Wildlife Department director of watershed conservation and now research scientist at the Texas Natural History Collections, University of Texas at Austin, had this to add about the West Texas shiner:

"The Texas Parks and Wildlife Department maintains a list of species that are in need of conservation efforts, officially called Species of Greatest Conservation Need. Although there are no regulatory actions associated with the listing, it does call attention to impending problems and provides incentives for research and conservation."

Garrett said the distribution of the West Texas shiner is similar to many other fish that have already been recognized as imperiled such as manantial roundnose minnow, Devils River minnow, Tamaulipas shiner, Rio Grande shiner, longlip jumprock, Mexican redhorse, spotfin gambusia, blotched gambusia, Conchos pupfish, Rio Grande largemouth bass and Rio Grande darter.

"All Texans should be concerned when beautiful and previously pristine habitats are in decline and portions of our state's natural resources are at risk of being lost," he said.

"Finding this minnow just goes to show that we still don't know everything about the fauna that we share our state with," Conway said. "Discoveries or rediscoveries can still be made, justifying the need for continuing research in the rivers and streams of Texas."

The report can be accessed at: http://www.pfeil-verlag.de/04biol/pdf/ief26_4_03.pdf Story Source:

The above post is reprinted from materials provided by Texas A&M AgriLife Communications. The original item was written by Steve Byrns. Note: Materials may be edited for content and length.

Texas A&M AgriLife Communications. "'Forgotten' fish turns up in West Texas: Minnow rediscovered by scientists." ScienceDaily. ScienceDaily, 5 April 2016. <www.sciencedaily.com/releases/2016/04/160405161248.htm>.



Diver Has Visited The Same Friendly Fish For 25 Years

Beneath the surface of Japan's Tateyama Bay stands a shrine called a torii, sacred to the Shinto religion. But more than being a place of spiritual importance, the underwater site is host to something else that's remarkable — a unique friendship between a man and a fish.

For more than two decades, a local diver named Hiroyuki Arakawa has been entrusted with overseeing the shrine and being a guide to others who wish to visit it. In that time, he's become well-acquainted with the local marine animals who live in the area — including one friendly Asian sheepshead wrasse named Yoriko.

Over the course of 25 years, the pair have forged an incredible bond based on trust and respect.

Perhaps the sweetest testament to their friendship can be seen in Arakawa's custom of greeting Yoriko with a kiss.

Although fish may not be commonly considered particularly feelingsorts of creatures, that's a notion based more on misconception than reality. In fact, a recent study found that fish are smarter and more social than previously thought — and one only need look at Arakawa and Yoriko's quarter-century-long relationship for proof.



ROBIN HOOD AQUATIC SOCIETY

AUCTION

Sunday 10th April 2016

We will be holding an auction of fish, plants and equipment at the

Highbank Community Centre, Farnborough Road, Clifton, Nottingham, NG11 9DG.

Doors open 10.30am and Auction starts 11am.

Refreshments will be available throughout the day and a licensed bar has been applied for.

This Spring, the auction will have a raffle, the first we've held for a few years. Many thanks to our sponsors for this, here's

what will be on offer

Starter/LED Tank from ALF/Aquael

Heater, Powerhead, Air Pump and Food

from Coalville Aquatics

Food from Fish Science

Food from King British

Admission to the auction is free.



XINGU Rising. New Damn means problems for fish

A young aquarium-fish collector with one of the many plecós native to the Xingu's "big bend." With the completion of Brazil's controversial Belo Monte Dam, both the fishes and the people who rely on them for food and income are now endangered species.

Article & images by Michael J. Tuccinardi

Excerpt from *AMAZONAS*, May/June 2016

Xingu. The word itself conjures up the image of a remote and impossibly exotic locale, one of the last truly wild places left on the map. For aquarium enthusiasts worldwide, the mystique of the Río Xingu runs even deeper, as it is home to some of the most spectacular, outlandish, and poorly understood freshwater fishes on the planet. It is a massive canvas depicting evolution at work, a living laboratory for Darwin's "endless forms most beautiful"—species isolated and diverging from their next of kin just a river or two away. It is also an ethnological treasure, home to 18 distinct indigenous peoples who have managed to retain much of their cultural identity and tradition, due largely to their isolation.

Yet to those who have been following the news, Río Xingu is ground zero for what has been called the worst environmental disaster in a generation—the highly controversial, widely reviled Belo Monte Dam. This infrastructure project, which has been in development since 1975, has been reported even in mainstream international news outlets, mainly due to the fact that its impacts will include catastrophic environmental and social costs for the entire Xingu River basin. Despite almost overwhelming criticism from scientists, sustained protests from local indigenous people who stand to be displaced by the

dam, and a slew of judicial challenges in Brazil, the Belo Monte project has plodded onward through years of conflict-ridden construction. As the dam passed from an unbelievable ecological nightmare into an even more terrible reality, observers braced for the complete devastation of one of the wildest and most unique of the Amazon's tributaries.

Map of Big Bend area showing the impact areas from construction of Belo Monte. Image: International Rivers.

The sordid history of the Belo Monte Dam, from its inception through the heavily contested and much interrupted construction process, has been documented in numerous news articles (as well as in the pages of this magazine), so I won't spend too much time on the particulars here. Suffice it to say that the concept for the dam arose as a result of Brazil's fast-paced development and the increasing demand for electricity that typically follows such growth. After years of planning, protests, revisions, and government intervention, construction finally began in earnest in 2011.

No Stopping Now

The project is owned by a consortium of state-owned utility companies known as Norte Energia and financed by over \$10 billion from Brazil's state development bank (BNDE), which is currently under investigation for a corruption scandal that has implicated the country's president and prompted a major political crisis. Today, the dam stands completed, its floodgates raised, and despite some last-minute legal wrangling over its operational license, it will be up and running by the time this story is printed.

The dam is actually a complex of structures along what is known as Volta Grande—a big bend in the Xingu where the river takes a sudden 180-degree turn through nearly 87 miles (140 km) of rocky, generally shallow rapids. At Volta Grande, the main stream of the river spiderwebs outward into dozens of smaller channels separated by islands and shoals. This area is one of the epicenters of aquatic biodiversity in the Xingu and the one most impacted by the dam. The main dam is located about a third of the way into this big bend, just before the first major rapids. It reroutes the flow of water around Volta Grande and into a series of canals and reservoirs where pristine forests once stood. The flow is then directed into turbines far downriver at Belo Monte, completely circumventing its original path through the river's big bend. It is estimated that this stretch of river will lose almost 80 percent of its normal water volume, causing a permanent, extreme low-water season at Volta Grande and essentially eliminating the annual flooding that most fish species rely on for feeding and spawning.

The main dam, just weeks away from being fully operational. This series of floodgates will divert up to 80 percent of the river's flow away from the highly biodiverse stretch of rapids known as Volta Grande.

The project will leave vast stretches of once-submerged riverbed exposed—and, lest the environmental destruction caused by the dam remain incomplete, this land has been slated for intensive gold mining. A Canadian mining company, Belo Sun, has spent millions to obtain mining rights to land in Volta Grande just beyond the main dam, which is set to become Brazil's largest open-pit gold mine. The environmental effects of gold mining on such a massive scale in the heart of the Xingu are hard to even imagine, but likely outcomes include increased deforestation, silting the river's once-clear waters, and leaching of toxic slurry into the main river. It is difficult to conjure up a scenario in which the fragile and complex underwater ecosystems of the Xingu could survive this sustained onslaught. The Belo Sun mine, just like the dam, has faced significant legal challenges (including revocation of its license by a federal court in 2014), but progress on the project continues regardless. The company recently submitted a revised proposal to the Brazilian government, and analysts expect that the license will be reinstated in the near future.

Volta Grande, robbed of the flow of water that has sustained it for centuries, is not the only area of the Xingu to feel the effects of Belo Monte. The city of Altamira and many other areas upriver of the dam will see significant flooding as well. This has forced people out of their homes, causing unsustainable suburban sprawl outside the city, where rows and rows of tiny houses constructed by Norte Energia now stand. (The company is legally required to relocate residents displaced by the project.) In areas expected to flood, the local government has granted logging concessions, allowing clearcutting of forest to prevent trees and vegetation from washing downriver and clogging the dam's spillways. It is a poorly kept secret that the logging companies have continued to clear areas well beyond even generous estimates of the flood zone. The dam will also significantly slow the flow of the river, turning areas of shallow, fast-moving water frequented by many of the Xingu's

endemics into still pools.

Xingu untamed: a last glimpse

Like many others, I have been following this story for years with a sense of dread and vague disbelief, along with a sort of “issue fatigue” that is becoming increasingly common among those concerned with the future of Earth’s fragile ecosystems. With the constant stream of bad news pouring in, it’s hard not to become numbed to individual issues like Belo Monte—especially when nothing can be done to stop it. But when my travels took me into eastern Brazil for a short time, I felt an overwhelming urge to see the thing itself, in the flesh, and to catch a glimpse—possibly the last—of the mighty Xingu before Belo Monte becomes fully operational. So, carrying little more than a backpack and the name of a contact who (I hoped) would meet me at the airport, I boarded a flight to Altamira, the only major city along the Xingu and the main staging point for the construction of the dam.

Flying into Altamira on a small, crowded plane didn’t afford much of a view, and with the cloud cover I had little hope of seeing much, but just as the plane began descending I was treated to a brief glimpse of the area through a break in the clouds—my first view of the Xingu and the entirety of Volta Grande south of Altamira. It was a breathtaking vista, but one marred by the crisscross of bright red lines where the soil had been exposed, like fresh, bleeding gashes in the earth. Soon I was walking across the Altamira airstrip to begin my journey to the dam. My first stop was a local aquarium-fish holding facility in town, one of several small enterprises in Altamira where fishes collected throughout the middle Xingu are brought and held for shipment to the export hub of Belem, at the mouth of the Amazon. Even though I had visited dozens of these little setups in the course of my travels in the Amazon, my eyes widened as I walked past rows of shallow plastic tubs, each filled with a stunning array of the colorful (and expensive) L-number plecós the region is known for. This facility was set on one of the main roads in town, overlooking the river, and from the door you could see the first unmistakable signs of the ecological havoc being wrought by the dam.

A view of Altamira from above, showing the burned and partially flooded island Ilha do Arapujá, one of the first casualties of the dam.

Island’s Charred Remains

Just across the river lay the charred remains of Ilha do Arapujá. Once a lush, forested island, home to two species of killifish found nowhere else on Earth, this strip of land now resembles a post-apocalyptic wasteland or a napalm-cleared combat zone. The island had been cleared and burned in preparation for the inevitable rise in water level after the floodgates closed on the dam. The sight of that ruined land brought on the first twinge of the horrible truth I was about to confront—this wasn’t just something I saw on the news, this was really happening. In stilted Portuguese, I talked to the owner and caretaker of the little fish house about the dam—what it meant for the business and what the future held. I expected a diatribe about the dam, but what I heard was vague uncertainty. The owner said he was looking to sell his house in Altamira and possibly find work elsewhere, but for now he wanted to keep operating his facility. The caretaker explained that although fishes had been scarcer lately, he hoped it would not get much worse.

My next step was to arrange for travel up the river to the Xingu’s big bend, Volta Grande—never an easy task—to visit aquarium-fish collecting villages there and see for myself what stood to be lost. The aquarium-fish seller in town helped me organize a boat and driver and put me in touch with a local fisherman, who traveled upriver regularly to collect and would act as my guide. With everything tentatively arranged for the following day, I didn’t want to waste the afternoon, so I enlisted the boat driver to take me out on the river, in the opposite direction of the dam, for some exploring.

The Xingu near Altamira is broad, crystal-clear, and surprisingly shallow—despite being an hour’s boat ride out and far from either shore, most areas were between 3 and 10 feet (1–3 m) deep. And although everything I had read about the R o Xingu should have prepared me for it, this is a fast river. The water flows over the rocky substrate with a force that’s hard to imagine until you’re in it and struggling to stand up in the powerful current. After some effort, I was able to improvise a method of exploring the river with mask and snorkel, using large rocks as anchors and pulling myself forward against the current.

Beneath its benign surface, the Xingu conceals a bizarre and otherworldly environment—which has almost certainly

influenced the evolution of the river's equally unique aquatic life. The reddish, clay-like river bottom is largely covered with a wide variety of rocks—from small, water-worn pebbles to massive boulders.

Although at first this strange underwater landscape appeared rather barren, many of the river's inhabitants eventually revealed themselves. Slender and impossibly fast *Teleocichla* darted around in small groups, occasionally venturing close in hopes of picking off small invertebrates from under the rocks I had disturbed. Even more wary were the beautiful *Retroculus xinguensis*, relatives of the eartheaters that are well adapted to the Xingu's rapid current. *Leporinus julii*, very attractive spotted characins, also flitted by in small groups, using their torpedo-like body shape to swim effortlessly through the rapids. And of course, by carefully overturning some rocks I found an abundance of plecos—perhaps the predominant group of fishes in the Xingu.

The facility of one of the aquarium-fish traders in Altamira. Fishes from the middle Xingu are brought here before being shipped to Belem and then exported.

To Volta Grande: the Huge Bend

The next day, according to the plans I had made with the boat driver and the fisherman/guide, I made my way to Altamira's waterfront in the early morning to begin the trek upriver to Volta Grande. Having arranged this sort of thing many times before, I anticipated plenty of waiting around for who knows what to occur before we actually got underway. I was pleasantly surprised when the boat driver arrived only 30 minutes late, but things soon took a frustrating—if predictable—turn for the worse when the fisherman did not show up and didn't answer his phone. After almost three hours of fruitless waiting, unanswered phone calls, and driving up and down the waterfront, the disheveled-looking fisherman arrived and started conversing with the boat driver. I had been counting the passing minutes with increasing concern, as my return flight to Belem left later that night; there was no chance for a do-over here if the arrangements fell through.

My hopes were dashed even further when the driver returned to the boat sans guide and started the engine, and we began to head upstream without him. I seethed quietly with the realization that our carefully arranged plans—and the considerable amount of money I had spent to make them—had been for nothing. As we steered toward a mass of storm clouds on the darkening horizon, I tried desperately to think of a way to prevent this from becoming the most expensive and fruitless boat tour of my life. The boat driver, who was pleasant and helpful enough, didn't know a thing about aquarium fishes, but said he would try to visit some villages where collecting occurs. Several hours behind schedule and guideless, I braced for the coming rain and hoped that the day would turn around.

After some time on the boat, the bad weather passed and some telltale signs of development began to emerge on shore. Deforested hillsides, recently cleared dirt roads, and a few logging camps passed by like mile markers, warning of our proximity to the dam. Wisps of smoke from a few lingering fires billowed upward to join with the last remaining grey clouds, and in the distance I spotted the first manmade structure I had seen since leaving Altamira. It was a large concrete ramp, buttressed with gravel and surrounded by shockingly red piles of earth. As our boat approached the ramp, a group of uniformed Norte Energia staff came sauntering down the hillside to meet us. Following the driver's lead, I left the boat and got in a waiting Volkswagen bus emblazoned with the Belo Monte logo. Much to my surprise, a tractor towing a boat trailer backed down the ramp and lifted our boat clear out of the water, then followed the van along a recently paved road in what seemed to be the middle of nowhere.

What madness is this?

We disembarked after a short ride and our boat was placed back in the water at a small launch just like the one we had left. I was a bit dazed by this unexpected turn of events, so it took me too long to realize what had just occurred: we had been driven around the site of the dam. The dam had, of course, made the river unnavigable by boat, so our boat had to be hauled to the other side with heavy machinery. "Que loucura é essa?" ("What madness is this?") I muttered to myself in Portuguese as I boarded the boat once again. The driver, seeming to understand, nodded solemnly and we continued on. As we rejoined the main river, abutted by a massive mound of red earth, I suddenly saw it—a low series of concrete ramparts on the horizon. As the boat drew closer I could make out the floodgates of the main dam, already diverting water into the sizable spillway

feeding into the main turbines some 19 miles (30 km) away. To our right a power station sporting rows of transformers was emitting a high-frequency hum, the only sound audible over the idling outboard.

The main dam, just weeks away from being fully operational. This series of floodgates will divert up to 80 percent of the river's flow away from the highly biodiverse stretch of rapids known as Volta Grande.

So this was Belo Monte. Occupying what is arguably the most fought-over stretch of the Amazon basin since the rubber boom of the nineteenth century, the freshly constructed dam, with its floodgates raised and just weeks away from being fully operational, was a somewhat disappointing sight. Put simply, it just didn't look like much; it was difficult to imagine that this concrete obstruction could possibly have an impact on a waterway as vast and powerful as the Rio Xingu. I realized, of course, that what I had seen was just a small part of the overall dam complex—the metaphorical tip of the iceberg—and that from a better vantage point the damage and deforestation would seem exponentially greater. But as the dam quickly faded from view and we entered Volta Grande itself, the impact of this incongruous feat of modern engineering deep in the Amazon basin became immediately apparent.

Rounding a sharp bend in the river, we entered a series of rapids and cascades that the boat driver navigated handily. Once we were through, he looked concerned, stating that the water should be much higher by now. With the dam nearly operational, this stretch of the river was unlikely to ever see a high-water season again. The “big bend” region of the Xingu is strikingly beautiful, a tropical oasis of forested hillsides and rocky shores—but the freshly exposed rock formations in the middle of the river and the long sandbars were proof that the water flow to this entire area had been permanently altered. Here, in Volta Grande, is where many of the popular aquarium species from the Xingu are collected, and despite the morning's setbacks I still held out hope for visiting with fishers in the communities downstream.

Pleco Hotspots

The first of these communities that we reached was a tiny **settlement** known as Ouro Verde (green gold), a cluster of small wooden houses abutting a red clay beach. The boat driver thought there may be some aquarium fishermen in this village, although that turned out to be incorrect—the primary livelihoods here were mining and mineral extraction. A ways downriver, we came across another, slightly larger village, Ilha da Fazenda, which was known in the region as a major center for aquarium-fish collecting. After wandering through the town, we met an older man who had collected ornamental fishes here for many years. Now, however, he was retired. His son had landed a job working for Belo Monte downriver in Vitoria do Xingu, and he proudly showed me a large map of the dam complex hanging in the living room of his small wooden house. When I offered to hire him as a guide for the next few hours, he politely but firmly declined. Another half-hour of inquiries around town turned up nothing—locals either didn't know any aquarium fishers in town or told us they were away at the moment.

Inside an aquarium-fish holding facility, the caretaker proudly shows off a Scarlet Cactus Pleco (L025).

Somewhat defeated, we left Ilha da Fazenda and continued further into Volta Grande. The boat driver, trying his best to be helpful, offered to take me to a shallow area where I could find peixes ornamentais—ornamental fishes. Along the way we passed by two large indigenous territories, Paquicamba and Arara, both of which had resisted the construction of the dam for years. They appeared largely deserted—some of the residents had probably retreated back into the forests, and others, no doubt, had migrated to Altamira looking for work and shelter. We made our way among the rocks with some difficulty, the river here being in a permanent dry season due to the dam. Eventually the boat turned into a small, extremely shallow branch of the main river, strewn with boulders.

Here I spent a good hour exploring the river and saw plenty of pleco species familiar to most hobbyists. Gold Nugget Plecos were almost always encountered in horizontal cracks in the boulders, where they live in close association with Medusa Plecos (*Ancistrus ranunculus*, L034). This may represent a **symbiotic** or commensal relationship between species and warrants further investigation. The massive Goldie Pleco (*Scobinancistrus aureatus*, L014) was also common in this area, although they moved far too quickly among the rocks for my clumsy attempts to collect them. Large pike cichlids, *Teleocichla*, and *Leporinus julii* were also abundant, darting quickly away whenever I approached too closely. It was an

incredible **ecosystem**, unique among all the rivers, streams, and flooded forests I had visited in the Amazon basin thus far. But as the sun moved ever closer to the western horizon, I was reminded that my goal in coming to Volta Grande remained unaccomplished. After conferring with the boat driver once more, it was decided that we would return to Ilha da Fazenda and make a renewed effort to find some aquarium fishers who would, ideally, spend the rest of the day with us (a not-insignificant amount of money would be necessary to help make this possible).

As we pulled up onto the beach in front of the small village for the second time, we were greeted with some fantastic news: a group of local fishermen had just returned from a morning collecting trip with a boatful of aquarium fishes. We hustled over to where their canoe was moored and struck up a conversation as they began sorting their catch. The fishers were two brothers—the younger one, Daniel, a boy of no more than 10—and an older cousin, João, who owned the boat. Aquarium-fish collecting had been their family's primary trade for many years, and as I watched them working their collective experience in this trade was obvious. They had arrived with just over 280 small Gold Nugget Plecos (*Baryancistrus xanthurus*, L081) in several stacked plastic tubs. Water changes were carefully performed on each tub and the fish were hand-sorted by size. From there, they were transferred to simple plastic holding pens that were placed in the river. These contained a large amount of rockwork, both to weigh them down and to provide ample cover for the plecos held within.

The fishers were planning on heading back out almost immediately to collect some different pleco varieties in a different area, and after some persuasion (of the monetary variety), we were able to go back out with them and observe them working. I was fairly buzzing with excitement at this unexpected turn of events as we motored toward the exact same spot I had been exploring earlier.

I struck up some simple conversation with the fish collectors. They worked freelance, usually collecting for the same Altamira shipper I had visited. They collected fishes two or three days per week and made a weekly boat trip upriver to Altamira to deliver them. At the moment, there was a lot of demand for Gold Nugget Plecos, which were among the easier fishes to collect. João occasionally used the hookah method, in which the fisherman holds in his mouth a long plastic tube connected to a compressor aboard the boat, to dive for some of the deep-dwelling plecos—including the endangered Zebra Pleco (*Hypancistrus zebra*, L046), which, although banned from export by IBAMA, still makes its way into the trade regularly by way of Colombia and Peru. I learned that aquarium fishing is a year-round occupation for many in Ilha da Fazenda, with more than six extended families in town relying on this trade for their primary livelihoods.

Plecos like these two are collected from the rocky Xingu largely by hand.

No-Net Fishing

When we arrived back at the shallow rocky area, the fishers disembarked and immediately began fishing. Using well-worn dive masks and a simple wooden tool, they quickly brought up dozens of plecos at a time, holding the smaller fishes in their mouths (!) or using modified plastic Sprite bottles to contain larger ones. It was remarkable to witness the ease with which they were capturing fish after fish—even Daniel was deftly collecting plecos by hand in waist-high water—from the same spot where earlier I had struggled for the better part of an hour to collect anything. The skill level and the ecological knowledge these fishers displayed was remarkable—as they brought up each pleco species, they would tell me its local name and its preferred **habitat**: horizontal crevices, vertical crevices, rounded caves, near patches of freshwater sponge, and so on.

In between rounds of diving we talked about the business, their outlook on the future, and their feelings about the dam. They explained that the construction of the dam had been very bad for fishing—that many fishes had died due to poisoning or from the blasting used during the early stages of the project. This year, however, was a good year for the fishes—although the water was very low for food fishing, conditions had been ideal for collecting plecos. Furthermore, they were quick to explain that Norte Energia had helped their village significantly, having installed its first sewer system and providing much more consistent electricity. There was ambivalence about some things, especially that the lure of paying jobs had driven many of the young people in the community away to Altamira or Vitoria, but the conversation was a reminder that Belo Monte had done a masterful job of gaining local support through federally mandated infrastructure projects and slick public relations. When I asked about the dam's impact on the fishes, João said that they had been assured by Norte Energia representatives

that there would be little to no effect on Volta Grande from the dam, and he took the current boom in aquarium-fish collecting as a sign that the worst was over. Eduardo, the older brother, was not so sure, pointing out the low water levels and expressing concern about the increased mining and mineral extraction activity in the area. He had heard that Volta Grande was going to be mined for gold, and he was under no illusion about its effects on the river. “The mining, the chemicals, they kill all fishes. They destroy the river. And now with the dam the fishes cannot return.”

We discussed what they would do if they could no longer collect aquarium fishes here, and they expressed a somewhat fatalistic attitude toward an uncertain future. João’s brother-in-law had moved to Altamira, where he worked as a private security guard, and João anticipated doing the same if the fishing dried up. Eduardo hoped to stay in Ilha da Fazenda, but understood that that meant limited options for work. It was not the easiest of conversations, given the language barrier, and I let them get on with the rest of their work as they finished collecting some of the varieties their buyer in Altamira had asked for. These included Medusa Plecos (*Ancistrus ranunculus*, L034), *Spectracanthicus punctatissimus*, and the very pretty Jaguar Pleco (bolo onçain Portuguese), more commonly known as the Golden Vampire Pleco (*Leporacanthicus heterodon*). João and Eduardo were obviously in their element below the water’s surface, doing something they had both learned as kids and instructing Daniel—the next generation—on the most effective methods.

This was difficult to watch, knowing that this skilled work, which has sustained so many families along the Xingu for years now, would soon be a relic. As the ecosystem collapses, aquarium fishers will be the first to feel the effects. Over time, people in fishing villages like Ilha da Fazenda will be forced to make the difficult choice between leaving in hopes of a better life elsewhere or remaining and eking out an increasingly challenging existence in what was once a thriving corner of Amazonia.

A short time later we returned to Ilha da Fazenda to drop off the three fishers and their catch, an impressive haul of about 60 fishes. These fishes, and the Gold Nugget Plecos they had collected earlier that morning, would be sent to Altamira in a few days and from there would make their way to exporters in Belem before being shipped out to the United States, Europe, Hong Kong, or Japan.

Boomtown before the bust

In town, I accompanied the boat driver to a house where he purchased some dinner for the evening—two pacu, the endangered *Ossubtus xinguense*, and a string of frozen plecos (likely *Parancistrus nudiventris*, L031). We stopped for a celebratory shot of conhaque, a kind of syrupy local liquor, on the way back to the boat and began the long journey back upriver to Altamira. The return trip passed uneventfully, but with clear skies this time around I was able to see more evidence of the dam’s impact on this once-pristine stretch of river. Deforested hillsides, with logs lined up awaiting pickup along the shore, bore testament to the increased logging activity in the region. In the rapids, rusted-out remnants of industrial equipment protruded above the water’s surface where they had gotten snagged among the rocks. Finally, the dam appeared in view once again, its angular superstructure marring the horizon. After another trip around the dam, courtesy of Norte Energia and Belo Monte, I watched fishes through crystal-clear water at the edge of the newly built pier as I waited for the boat to be put back into the water. The mummified remains of a dead Xingu River Ray (*Potamotrygon leopoldi*) gathered flies among piles of branches and debris that had washed up on shore, a visceral reminder of the dam directly behind me.

Pleco hunting in action: Daniel, a young aquarium fisher in training, collects Gold Nugget Plecos from the shallows.

Back in Altamira, having nothing left to do but kill time before my flight out, I sat on a bench beside the main road out of town and overlooking the waterfront. It was almost evening now, and in a frenzy of activity, Belo Monte workers were returning home from their day’s work on company-owned buses. Over the course of an hour, more than 30 Norte Energia buses—each full of workers—blew past me in a cloud of diesel exhaust, leaving me to reflect on the fleeting nature of Altamira’s prosperity and the incredibly short-term thinking that had led to the dam. In a year, almost all of those jobs will disappear as construction wraps up. Altamira will begin the age-old slide into a boomtown gone bust. The thousands of people who have migrated toward the city to work will be forced to move to yet another city to hunt for employment or return to small communities in and around the surrounding forests, where the influx of people will fuel a rise in logging and slash-and-burn subsistence

agriculture. Some will almost certainly find work in Belo Sun's vast new mine at what was once Volta Grande, where they will extract what mineral wealth they can for a few years before moving on, having thoroughly poisoned what remained of the Río Xingu's big bend.

Now that I have finally seen the Xingu for myself, possibly for the last time before the dam irrevocably reshapes the river and forces dozens of its endemic species into decline and extinction, it is hard not to mourn the loss of one of the most important and legendary waterways left on Earth. It is truly one of the more wild places I have ever seen and experienced—an ecological paradise whose uniqueness and isolation have combined to form wilderness and aquatic habitat unlike those found anywhere else on the planet. Still, I count myself fortunate to have caught a glimpse of the Río Xingu “monstrous and free” before its now-inevitable demise.

In Altamira, however, I was confronted with the enormous human cost of the dam as well—forced resettlement, unfulfilled promises of prosperity, whole families and entire ways of life uprooted and removed in the name of progress. It is a story that has played out too many times in recent history, and but for the relentless myopia of the human race when money and power are in play, we would have learned our lesson long ago.

It is unlikely that, a decade from now, the Belo Monte Dam project will be viewed as anything but a monument to institutionalized greed and poor planning. Perhaps, by then, the harsh lessons learned and the irreversible damage done will prevent other tragedies on this scale from playing out in other parts of the world where dams are being erected, but that remains to be seen.

Resources for Belo Monte info:

<http://amazonwatch.org/work/belo-monte-dam>

<http://www.internationalrivers.org/campaigns/belo-monte-dam>

www.economist.com/news/americas/21577073-having-spent-heavily-make-worlds-third-biggest-hydroelectric-project-greener-brazil

www.theguardian.com/environment/2014/dec/16/belo-monte-brazil-tribes-living-in-shadow-megadam

<http://norteenergiasa.com.br/site/ingles/belo-monte/>

http://www.theecologist.org/News/news_analysis/1016666/belo_monte_dam_marks_a_troubling_new_era_in_brazils_attitude_to_its_rainforest.html

www.fluvalaquatics.com/ca/explore/expeditions/xingupexpedition/#.VttSStCm1TM



The bizarre bulbous 'alien fish' caught in Cabo: Experts reveal strange pink creature is actually a rare albino SHARK

- Pink and white shark with massive belly was caught off shore of Cabo
- Experts have confirmed this is a swell shark, lacking typical pigmentation
- Swell sharks fill up with air or water as protection against predators

By CHEYENNE MACDONALD FOR DAILYMAIL.COM

PUBLISHED: 19:19, 1 April 2016 | **UPDATED:** 00:18, 2 April 2016

Earlier this week, a fisherman pulled something bizarre from the ocean just off of Cabo, Mexico.

The photos reveal a pink and white creature with alien-like eyes and a massively distended belly, spurring speculation across the internet as to what it might be.

Local experts have confirmed that the 'alien fish' is actually a swell shark that lacks typical pigmentation.

Earlier this week, a fisherman pulled something bizarre from the ocean just off of Cabo, Mexico. The photos reveal a pink and white creature with alien-like eyes and a massively distended belly, spurring speculation across the internet as to what it might be

The 'alien fish' was revealed on Tuesday by **Pisces Sportfishing Fleet**, who was told of the unusual catch by Jaime Rendon, Captain of Dr. Pescado.

Since its brief capture, the small shark has been released back into the wild.

A client of Rendon's caught the bizarre swell shark roughly a mile off the shore in 370 feet of water.

A client of Rendon's caught the unusual swell shark roughly a mile off the shore in 370 feet of water. The captain said the most striking feature was its oddly shaped, greenish eyes. Thinking it may be endangered, the captain released it back into the water, where it 'swam off back down to where it had come from'

Though he initially thought it might be an alien, the creature 'had raspy skin, three rows of tiny teeth and three gill slits on each side of the head,' indicating that it was likely a shark.

This is particularly unusual, as most sharks have 5-7 gills on each side, but the captain said the most striking feature was its oddly shaped, greenish eyes.

'I was really surprised, but what caused most impact were the eyes, so strange,' Rendon told the organization.

Thinking it may be endangered, the captain released it back into the water, where it 'swam off back down to where it had come from.'

WHAT SWELL SHARKS TYPICALLY LOOK LIKE Experts confirmed that the creature is a **swell shark**, *Cephaloscyllium ventriosum*.

Swell sharks are known for their ability to engorge themselves with water or air to make it difficult for predators to bite or swallow them.

Typically, these sharks are a yellowish-brown colour with dark splotches, though juveniles are lighter.

Experts have confirmed that the 'alien fish' is actually a swell shark, attributing its lack of pigmentation to albinism or leucism

Swell sharks are known to have large, oval shaped eyes, and mouths which contain 50-60 small teeth in the upper and lower jaws.

These sharks are found in subtropical waters from Central California to as far south as central Chile.

The pink shark's huge belly caused many to believe it was a swell shark.

These sharks are known for their ability to engorge themselves with water or air to make it difficult for predators to bite or swallow them.

But, many people still had questions.

On Wednesday, Pisces Sportfishing Fleet wrote, 'Even if it is a swell shark, why is it this color and why does it only have three gill slits? The scientists are still reviewing and will let us know when they have an answer.'

Swell sharks are known to have large, oval shaped eyes, and mouths which contain 50-60 small teeth in the upper and lower jaws. They are found in subtropical waters from Central California to as far south as central Chile

The organization reached out to experts, who were later able to confirm that the creature is, in fact, a swell shark, *Cephaloscyllium ventriosum*.

Typically, these sharks are a yellowish-brown colour with dark splotches, though juveniles are lighter.

The pink hue of this particular specimen is an indicator that the shark is either albino or leucistic, meaning it lacks total or partial pigmentation.

Among other characteristics, the alien-like eyes of the shark caught off Cabo also hint at its identity, as swell sharks are known to have large, oval shaped eyes.

These sharks are found in subtropical waters from Central California to as far south as central Chile.



Midnight poachers are using boats to steal fish from Northampton park lake

Abington Park Lake has fallen foul of poachers in recent weeks - now the angling club based there wants to put a stop to it. Poachers using boats to steal fish from a Northampton lake in the dead of night are threatening the existence of a long-running angling club.

Secretary for Abington Park Fishing AC, Vince Battams, says club members have recovered a number of illegal gill nets and dead lines in recent months, placed in the water to snare the park lake's freshwater fish.

Over the bank holiday weekend a group of anglers rescued a 6lb carp stranded in one such device and now they say enough is enough.

As the nets are being placed under the water more than 70 yards from the bank, it is believed poachers are using boats to fix them under cover of night.

Mr Battams, said: "As the club members are not allowed to fish at night, these poachers are making hay while the sun shines - or should I say when the moon shines.

"It is unlit and there is no security down there, so they must be using boats, a dinghy, an inflatable of some sort to fix these nets.

"We can't go down there as a club mob-handed and try and stop them."

In the past five years the fishing club has been hit by dwindling members and dwindling fish supplies.

An oxygenation problem led to the death of several of the smaller species, which in the past five years has seen

memberships drop from 100 to around 40.

Mr Battams said it was key that the stocks of carp, tench and breams in the lake did not drop any more.

Taking fish from Abington Park Lake is illegal, but it is believed the poachers are catching the carp to eat or sell.

Mr Battams said: "If the fish continue to drop, membership will drop and the club will fold. There has been a community club on here for 30 years."

The club, which is due to meet next week to discuss how it can improve security at the lake, has urged anyone who notices suspicious activity at Abington Park Lake to report it to police.

from Northampton Chronicle



3D printed sea turtle eggs to help track and deter poachers

The world's sea turtle population is dwindling. As the ancient creatures' environments are infringed upon and their eggs are stolen by poachers looking to make a pretty penny, the future is not looking so bright for the aquatic and increasingly endangered species. In Nicaragua, for instance, hundreds of sea turtle eggs are dug up by poachers who then sell the precious eggs to international markets for more than \$150 a piece, and discard of the extras in local bars for mere cents. In an effort to combat and even deter poachers from further damaging the world's sea turtle population, nonprofit organization **Paso Pacifico** has come up with a brilliant plan to develop 3D printed, GSM equipped, fake turtle eggs. The fake 3D printed eggs, once perfected, will be placed in real turtle egg nests before poachers get to them, in order to help conservationists and law officials track the movement of the stolen incubating turtles.

As mentioned the project was conceived of by the US and Nicaragua based non-profit Paso Pacifico, which has dedicated itself to restoring and conserving the natural ecosystems of Central America's Pacific slope since 2005.

Excitingly, their 3D printed decoy turtle egg project was recently announced as one of the winners of **The Wildlife Crime Tech Challenge**, which seeks to find innovative solutions to conservation and poaching problems. The challenge, organized in association with U.S. Aid for International Development, National Geographic, the Smithsonian Institution, and TRAFFIC, a wildlife trade monitoring organization, awarded Paso Pacifico's project \$10,000 along with technical support to continue

developing their 3D printed prototypes and to put them into action.

So far, the 3D printed turtle eggs, each about the size of a ping-pong ball, don't quite resemble the material of real turtle eggs. To fix this, Paso Pacifico has been working with a Californian art studio to perfect the color and texture of the next prototypes. The team of developers are also testing and determining which GSM transmitters are best suited for the important tracking job.

Eduardo Boné-Morón, managing director at Paso Pacifico explains, "The plan is to start testing [the transmitters] in the next nesting season, which will start in July. Our rangers will locate vulnerable active nests that are more likely to be poached, for example, nests that are closer to trails. We will plant as many eggs as possible in the beach to increase the possibility of poachers taking the artificial eggs."

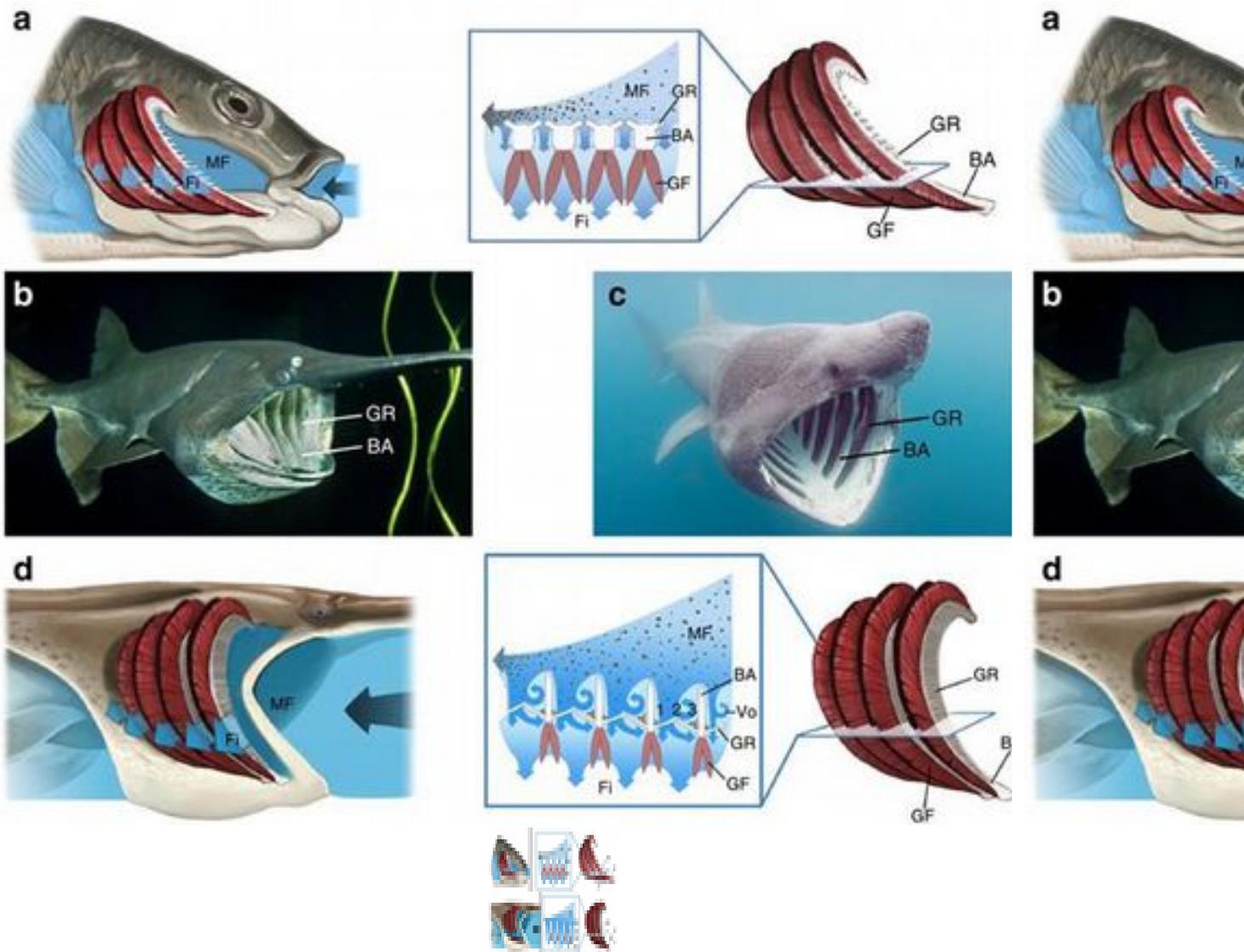
With the GSM equipped 3D printed eggs hiding amongst the real turtle eggs, the team of conservationists are hoping to find out important information about sea turtle egg trafficking routes and the locations of smuggling networks. Boné-Morón also explains that because turtle eggs are only good for about two weeks, the networks to have them shipped to places as far as China in such a quick time must be very well established. With their recent project, he is hoping to shed light on this process and to even eventually break it down.

While you may be thinking that writing about such a covert operation might give poachers a one-up on the conservation effort, Boné-Morón explains that this is not the case and that spreading the word about the location tracking 3D printed decoys will hopefully deter poachers from even stealing the eggs in the first place. He says, "Eventually the poachers will learn there is something wrong with the beaches. That is totally fine with us. The reason they're poaching right now is because it's so easy. If they see that we're watching them, we may be able to discourage them."

By using 3D printing technologies to create the sea turtle eggs, the organization is also hoping to eventually provide their innovative designs and products to governments and nonprofit organizations around the world for an affordable cost, encouraging said agencies to prioritize the conservation of the endangered sea turtle.

The 3D printed sea turtle project is being led by Dr. Kim Williams-Guillen, and will receive technological support from a variety of individuals and companies including Wayra-Mexico, NFCGroup, Goodnight & Co, Turtle Island Restoration Network, etc.





Researchers develop clog-resistant filtration system inspired by 3D printed fish mouths

Mar 30, 2016 | By Alec

Filters can be found all around us, from our cars to our coffee makers. But they have one universal quality: they get clogged eventually. But a 3D printed solution could be just around the corner, as the Professor of Biology and ichthyologist Laurie Sanderson from the College of William and Mary has a patent pending for a bio-inspired alternative. Learning from the mouth structure of filter-feeding fish (using 3D printed models), she has developed a new mechanism that prevents filter clogging by

trapping particles in vortices in the fluids.

This intriguing solution is has just been covered in detail in a paper published in the journal *Nature Communications*, entitled **Fish mouths as engineering structures for vortical cross-step filtration**. Combining biomechanics, medicine and ecology into a single filtration system, Sanderson and her team studied exactly how fish retain and transport prey in their mouth – a technique that could be used to change filtration systems as we know them.

For some fish have filtering skills mankind has not yet mastered. “Since fish have been filtering particles for more than 150 million years longer than human beings, we suspected fish may have evolved filter designs that use unknown processes to remain unclogged. So we decided to investigate,” Sanderson said. While our existing filters screen particles out of a stream of fluid, these types of fish (including goldfish, menhaden and basking sharks) filter tiny cells or shrimp-like prey from the gallons of water they swallow without clogging their oral filters.

As she explains, Sanderson has essentially been working on a system that separates particles from fluids more effectively. “Just by way of example: What if you could design an oil filter that instead of clogging and needing to be changed, it would send the stream of concentrated particles in one direction and the clean oil in another?” Sanderson said of the design. “There are many cases in industry in which we need to do something quite similar to what these filter-feeding fish are doing. For example, in filtration of dairy products or fruit juices, we separate the hard parts — the fruit pulp, some of the congealed milk products — from the liquid. There is a filter, and that filter always clogs.”

And that’s where the fish come in. Sanderson has been studying fish mouths for about 30 years now, especially the “black box” of filter-feeding fish. “When you look at a live fish, the water and the particles come into this black box, and then only water exits from the sides of the head,” she said. “So — water and particles go in the mouth. Then, something mysterious happens.”

While many specialists believed that these fish essentially had a type of spaghetti strainer in their mouths, this is not what Sanderson saw when looking down with an endoscope. “We saw fluid and particles moving parallel to the filter. By the early 2000s, we had combined the endoscopy with computational fluid dynamics and realized that a diversity of fish species were using crossflow filtration. However, this just created another puzzle, because the fish crossflow filter never clogs, even though industrial crossflow filters always clog,” she says.

Joined by a team of students (Erin Roberts, Jill Lineburg and Hannah Brooks), Sanders began studying how to reverse-engineer these mouths – in part using preserved paddlefish and in part with cone-shaped 3D printed models of fish oral cavities (made from nylon). “We made our own filters by using computer-aided design (CAD) software and 3D printing to create cone-shaped plastic models of fish mouths. We covered the branchial arch “ribs” with a fine nylon mesh,” Sanderson explains. We based our physical models on paddlefish and basking sharks because their branchial arches form a series of tall ribs that are separated by deep grooves. In our models, each rib served as a backward-facing step that interacted with the crossflow of water traveling over the step.”

Using brine shrimp eggs as particles and dye to trace fluid movement, these 3D printed models helped them to discover that the unique structure of the arches in the mouths form “backward-facing steps” that created recirculation regions, behind each step. “The fish use these backward-facing steps and the resulting recirculation regions to manipulate and concentrate the particles,” she explained. This keeps the particles moving through the system without clogging.

As this system could have a revolutionary impact in industrial settings, Sanderson turned this into a fish-free filter design. The resultant crossflow filtration design (called cross-step filtration) essentially concentrates particles, and directs and recirculates fluid flow through a structure that kind of looks like fish's gullet. According to the designer, it can be used to separate particles in a controlled environment, and send them into any desired direction. "In theory, you could even separate different sizes out of the particle stream," she said, "so it could send big particles in one direction and small particles in another direction."

Jason McDevitt, William & Mary's director of technology transfer, is now working to bring this intriguing innovation to the marketplace and is very optimistic about its chances. "This is a great example of a biomimetic technology that could have significant advantages over the current state-of-the-art," he said. "We are particularly hopeful that this technology will be commercially developed and widely used for crossflow filtration." Importantly, they can be used on any scale, from filters for cell-sized particles to industrial pipelines. Sanderson and her lab, meanwhile, are still working with fish to gain more insight into the particle processing mechanisms inside fish mouths. It seems we can still find a lot of inspiration in nature.

Posted in 3D Printing Application

Note: Some materials used in 3D printers have been shown to be toxic to fish



New Mexico's plan to use pesticide on fish makes some uneasy

SANTA FE (AP) – New Mexico officials plan to use a pesticide to help re-establish a native Gila trout population, but some scientists say the chemical could pose health risks for humans and other species.

The New Mexican reports that the New Mexico Game and Fish Department says the pesticide, rotenone, has been safely used to kill invasive fish species for years. The department hopes to use rotenone to kill off remaining populations of rainbow and brown trout in parts of Whitewater Creek and its tributaries, giving the threatened Gila trout a better chance of survival. Recent studies have linked rotenone exposure to an increased likelihood of developing Parkinson's disease. Some scientists say the pesticide's effect on humans and the environment should be studied further.



New species of Lipogramma basslet potentially discovered in Dominica

March 28 2016, Jake Adams –

Lipogramma klayi is a beautiful and delicate looking species of Caribbean basslet which is no stranger to the pages of Reef Builders. We've written about this species at length over the years and now it seems like it may one day have a sister species, or at least an easily identifiable morph.

The Curasub has been making research dives far away from its normal home in Curacao for the last couple of months. It seems that they've been finding some really cool new fish at great depths in Dominica because the same Chapman Expedition that brought us a **potentially new Decodon** species of hogfish may have also discovered a new *Lipogramma* species.

The unique pink and yellow basslet has a very similar resemblance to the *Lipogramma klayi* fairy basslet but with some notable differences. It's hard to tell if it is a photographic artifact but the *Lipogramma* sp. 'Dominica' appears to have a more rosey pink head color compared to the lilac purple 'true' *Klayi* basslet.

Lipogramma sp. from Dominica above compared to a true *Lipogramma klayi* from Curacao below. Photo by Chapman Expedition.

However the most obvious and significant difference between the classic *L. klayi* and the one from Dominica is the much more pointed anal and dorsal fins. The tail fin is also different with two nearly filamentous extensions which almost give the *Lipogramma* sp. 'Dominica' a lyretail appearance compared to the smoother outline of a typical *L. klayi*.

Senior Ichthyology researcher of the Chapman Expedition Dr. Carol Baldwin is quick to point out that "Discovering new species is rarely a "eureka" experience — it takes time and effort. Describing something new takes even more work" and that this is merely a putative new species based on differences in fin shape and color.

We won't know for sure whether *Lipogramma* sp. 'Dominica' is indeed a new species until a thorough analysis of morphology and genetics is performed. It's exciting to see even potential new species of beautiful little reef fish being discovered in the Caribbean, even if it is at great depths, and we look forward to hearing more about the special *Lipogramma* from Dominica.

[Dominica News Online]



Predators drive social complexity in Cichlids

Date:

March 29, 2016

Source:

University of Bern

Summary:

Variation in social organization and behavior of highly social animals like cichlids is primarily explained by predation risk and related ecological factors. This stresses the significance of predation for social evolution, report scientists.

Share:

FULL STORY

A cichlid breeder attacks a predator.

Credit: © Michael Taborsky, University of Bern
Variation in social organization and behavior of highly social animals like cichlids is primarily explained by predation risk and related ecological factors. This stresses the significance of predation for social evolution.

Sociality is a ubiquitous feature of life, but the reasons why animals cluster together can vary. In nature, there is great diversity in social organization and in the complexity of interactions among group members. It is widely accepted that high predation risk may select for group living, but predation is not regarded as an important driver of social complexity. This view neglects the important effect of predation on dispersal and offspring survival, which may require cooperation among group members. The significance of predation for the evolution of social complexity can be well illustrated by behavioural and morphological adaptations of highly social animals showing division of labour, such as ants and cooperatively breeding fishes like cichlids.

Long-time study of eight fish populations

In several species of cichlids in Lake Tanganyika, for example, groups consist of many individuals differing in size, age, dominance rank and relatedness. Group members typically cooperate in brood care, territory maintenance and defence, and they decide about their cooperative effort in dependence of relatedness to beneficiaries and the outcome of negotiations with other group members. Importantly, the form and function of social organization varies considerably among different populations of the same species, which enables to study the significance of ecological factors for social organization.

In a long-term study at Lake Tanganyika, a team of the Behavioural Ecology Division of the University of Bern in collaboration with researchers from the Universities of Groningen (Netherlands), Cambridge (UK) and Osaka (Japan), compared the ecology and social organization of eight populations of *Neolamprologus pulcher*, a cichlid fish commonly called "the princess

of Lake Tanganyika." These fish arguably represent the pinnacle of social evolution in poikilothermic vertebrates.

Small helpers maintain shelter, large ones fight predators

The results of this study have now been published in the Proceedings of the National Academy of Sciences of the United States of America (PNAS). They show that variation in social organization and behaviour of these fish is primarily explained by predation risk and related ecological factors. Remarkably, predation risk affects group composition much more than group size, with inverse effects on small and large group members. High predation risk and shelter limitation causes groups to contain many large but only few small helpers, which is exacerbated under low population densities. These effects reflect increased costs of dispersal and reduced benefits of independent breeding. The ecological context also affects the behaviour of group members, with small helpers specializing in shelter maintenance and large helpers in predator defence. The latter is also influenced by the proximity to neighbours, revealing that not only living in groups can be important for individual survival, but also the assembly of groups in colonies.

Story Source:

The above post is reprinted from materials provided by University of Bern. Note: Materials may be edited for content and length.

Journal Reference:

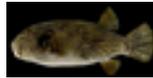
1. Frank Groenewoud, Joachim Gerhard Frommen, Dario Josi, Hirokazu Tanaka, Arne Jungwirth, Michael Taborsky. Predation risk drives social complexity in cooperative breeders. Proceedings of the National Academy of Sciences, 2016; 201524178 DOI:10.1073/pnas.1524178113

University of Bern. "Predators drive social complexity." ScienceDaily. ScienceDaily, 29 March 2016.

<www.sciencedaily.com/releases/2016/03/160329101544.htm>.



Pet Fish Monthly for November 1970 is on line at- <http://aqua.worlduk.weebly.com>



Arothron multilineatus, a new pufferfish species described from Japan

Arothron multilineatus is a new species of large pufferfish that has just been described from Japanese caught specimens. The new pufferfish species is most closely related to the starry puffer, *Arothron stellatus*, but it is easily distinguished by a network of thin lines along the length of the body.

As a juvenile the new *Arothron multilineatus* could easily be mistaken for a map puffer, *Arothron mappa*. But the taxonomists who described the new large multilined pufferfish state that it doesn't have the same network of radiating lines around the eyes as in the map puffer.

One of the smaller specimens of *Arothron multilineatus* from Japan measuring just 4.5 inches from Miyazaki Prefecture. Photo by Masaaki Wada

The holotype and paratypes specimens of *Arothron multilineatus* were all around 50cm, 20 inches long. We're not sure how a fish that grows up nearly two feet long could have gone unnoticed for so long, and the kicker is that this species is not even restricted to Japan! Further investigation has revealed underwater photographs of this fish from all over the Indo West Pacific and even as far as the Red Sea.

Interestingly, the appearance of the new species in underwater photographs is not exactly consistent. In the image below, the specimen from Japan has a bright white belly, slightly reticulated stripes on the body and a spotted tail fin. Meanwhile in the image of the same species from the Red Sea the specimen has much more consistent and thinner stripes that extend all the way to the tail fin.

The discrepancy could be due to regional variation but the description of *Arothron multilineatus* doesn't include any genetic analysis. Without genetics to confirm the identity of this species, and its relationship to other pufferfish in the *Arothron* genus, it's possible that we could be dealing with a regularly occurring hybrid.

Further research may reveal that like *Amphiprion thielli*, the new multilined pufferfish is not a valid species at all, but only time will tell. *Arothron multilineatus* is described by Keiichi Matsuura in *Ichthyological Research*.



This weird little fish can walk up waterfalls

By Rachel Feltman March 24 at 4:07 PM

Cryptotora thamicola. (New Jersey Institute of Technology)The cavefish *Cryptotora thamicola* is blind as a – well, blind as a cavefish. But according to a study published Thursday in *Scientific Reports*, the fish uses a unique method of movement that allows it to walk like a four-legged animal. In fact, it can even climb its way up a waterfall.

"It possesses morphological features that have previously only been attributed to tetrapods," or four-foot mammals and amphibians, study co-author Brooke E. Flammang of the New Jersey Institute of Technology **said in a statement**. "The pelvis and vertebral column of this fish allow it to support its body weight against gravity and provide large sites for muscle attachment for walking."

[This invasive fish can live for days on land, dragging itself along with its gills]

When Flammang first saw the pink fish in footage taken by co-author Daphne Soares, she was blown away by its salamander-esque wiggle. There are other fish that use their fins in feetlike ways, but *Cryptotora thamicola* takes the skill to new heights.

"I was like, 'Fish can't do that,'" Flammang **told Wired**. "That's ridiculous."

Plunged into complete darkness inside caves in Thailand, the fish stick fast to the rock behind flowing waterfalls and climb their way to the top. That's unusual, as the researchers explain in the above video, because they wouldn't expect eyeless fish to be able to function so well in fast-flowing water.

Scientists think the ancestors of land animals must have moved in similar ways when they **first dragged themselves out of the sea**.

"From an evolutionary perspective, this is a huge finding," Flammang **told Discovery News**. "This is one of the first fish that we have as a living species that acts in a way that we think they must have acted when they evolved from a fluid environment to a terrestrial environment."



Seal spotted hanging around Billingsgate Fish Market

Rare: the seal was spotted behind Billingsgate Market by Zahari Zankov. A seal has been spotted basking on the banks of the River Thames.

The mammal appeared behind Billingsgate Market, London's most famous fish market, and had perhaps paid a visit in the hope of picking up a tasty treat.

Zahari Zankov was exercising in the gym in 1 Churchill Place, Canary Wharf, when the aquatic animal popped by to say hello, and he managed to snap a picture before the seal swam away.

The Thames Estuary is home to harbour seals, also known as 'common seals', grey seals, harbour porpoises and sometimes even dolphins and whales.

Since ZSL started collecting data in 2004, 352 harbour seals and 506 grey seals have been spotted in the Thames as well as 261 harbour porpoises, 23 dolphins, and 305 unknown seals.

Survey: hundreds of seals have been spotted since ZSL started recording data. Last week Stuart Graham also posted on Twitter saying he had spotted one of the animals in the River Thames, just around a bend at Victoria Deep Wharf.

And earlier this month, Richard Page-Jones saw one of the animals in the water in Rotherhithe, near the Old Salt Quay pub.

Seal: this animal was seen in Rotherhithe near the Old Salt Quay pub. Richard Page-Jones/@WorgInfoZSL encourages Londoners who spot seals in the Thames to report the sighting.

According to scientists from the zoo, the Thames Estuary seals are some of the least understood seal populations in the country.

ZSL is using tagging, annual population surveys and information about sightings reporting by members of the public to gather data to better inform conservation and management, as part of the newly-formed Greater Thames Seal Working Group.

Swimming: the seal appeared to be enjoying the water. Richard Page-Jones/@WorgInfoA spokesperson said: "ZSL has been collecting public sightings of these marine mammals since 2004 and they are frequently sighted all the way up to Richmond.

"These sightings form a crucial part of our understanding of the biodiversity in the Thames and help us conserve these charismatic top predators."



Female fish grows testicles and fertilizes itself in strange case of 'selfing'

by Brett Smith

Desperate times call for desperate measures, and for a female tropical fish known as a cichlid, that means growing a testicle when there aren't any males to mate with.

According to a report published in the **Royal Society Open Science** journal, the gender-additive fish, or 'hopeful monster', was ultimately able to fertilize its own eggs and produce fertile offspring.

"Selfing" when no mates are availableThe phenomenon is the first known example of "selfing" in a vertebrate that normally reproduces sexually, the study authors said. Self-fertilization has been observed in mangrove killifish, but selfing is the primary mode of reproduction for those fish.

"In the mangrove killifish, selfing is an adaptation," lead author Ola Svensson told **Discovery News**. "It is believed that it can be hard for them to find a mate, and selfing is better than not producing at all."

The study began with the examination of *Crenicara punctulata* and *Cichlasoma portalegreense*, two species of cichlid believed to have the ability to change sex. In the course of that research, scientists produced a hybrid offspring not seen in nature.

The hybrid fish then shocked researchers by producing four offspring. Then, over the ensuing year, she produced 42 more.

After the fish died, a post-mortem analysis revealed the fish had both ovaries and a male testis, making it an intersex fish.

"These are mouth brooding fish, and fertilization takes place in the mouth," said **Cock van Oosterhout**, a biologist at the University of East Anglia. "If some spermatozoa are released together with the eggs, they may be fertilized upon release, or in the mouth of the fish."

In a final part of the study, the researchers tracked 18 sibling sisters of the cichlid and its 12 daughters for a year to see if they would also display selfing, but none reproduced in that manner. When the female and male offspring were crossed, they generated offspring of both sexes.

"Hermaphroditic selfing is likely to be under-reported in vertebrates because of the unusual set of conditions that is required for it to be observed," the study concluded. "(W)e suggest that although such 'hopeful monsters' may be evolutionarily transient and rare in nature, certain environmental conditions may make them biologically significant."

Image credit: Old Svensson et al./Royal Society Open Science



Green light stops sea turtle deaths

Illuminating fishing nets is a cost-effective means of dramatically reducing the number of sea turtles getting caught and dying unnecessarily

Source:

University of Exeter

Summary:

Attaching green battery powered light-emitting diodes (LED) to gillnets used by a small-scale fishery reduced the number of green turtle deaths by 64 per cent, without reducing the intended catch of fish, new research demonstrates.

Share:

FULL STORY

LED lights used at sea.

Credit: University of Exeter Illuminating fishing nets is a cost-effective means of dramatically reducing the number of sea turtles getting caught and dying unnecessarily, conservation biologists at the University of Exeter have found.

Dr Jeffrey Mangel, a Darwin Initiative research fellow based in Peru, and Professor Brendan Godley, from the Centre for Ecology and Conservation at the University's Penryn Campus, were part of a team of researchers who found that attaching green battery powered light-emitting diodes (LED) to gillnets used by a small-scale fishery reduced the number of green turtle deaths by 64 per cent, without reducing the intended catch of fish.

The innovative study, carried out in Sechura Bay in northern Peru was supported by ProDelphinus, the UK Government's Darwin Initiative, the National Oceanic and Atmospheric Administration and published in Marine Ecology Progress Series. It is the first time that lighting technology has been trialled in a working fishery. At a cost of £1.40 (\$2) for each LED light, the research showed that the cost of saving one turtle was £24 (\$34) -- a sum which would be reduced if the method was rolled out at larger scale.

Multiple populations of sea turtle species use Peruvian coastal waters as foraging grounds including green, olive ridley and hawksbill, loggerhead and leatherback. Peru's gillnet fleet comprises the largest component of the nation's small-scale fleet

and is conservatively estimated to set 100,000 km of net per year in which thousands of turtles will die as 'bycatch' or unintentionally.

The researchers used 114 pairs of nets, each typically around 500-metres in length. In each pair, one was illuminated with light-emitting diodes (LEDs) placed every ten metres along the gillnet floatline. The other net in the pair was the control and not illuminated. The control nets caught 125 green turtles while illuminated nets caught 62. The target catch of guitarfish was unaffected by the net illumination. They are now working with larger fisheries in Peru and with different coloured lights to see if the results can be repeated and applied with more critically endangered species.

"This is very exciting because it is an example of something that can work in a small-scale fishery which for a number of reasons can be very difficult to work with. These lights are also one of very few options available for reducing turtle bycatch in nets," said Dr Mangel, who is one of the lead authors on the paper and ProDelphinus Research Co-ordinator.

"The turtle populations in the eastern Pacific are among the world's most vulnerable and we are hoping that by reducing bycatch, particularly in gillnets, will help with the management and eventual recovery of these populations."

Thousands of endangered turtles die as bycatch in gillnet fisheries around the world and it is hoped that this study will help to provide a solution. Professor Brendan Godley notes, "It is exciting to be part of research that is highlighting innovative methods that may assist the move towards sustainability in these fisheries. Understanding costings will help emphasize the need for institutional support from national ministries, international non-governmental organizations and the broader fisheries industry to make possible widespread implementation of net illumination as a sea turtle bycatch reduction strategy."

"Bycatch is a complex, global issue that threatens the sustainability and resilience of our fishing communities, economies and ocean ecosystems," said Eileen Sobeck, assistant NOAA administrator for fisheries. "Funding research like this is key to NOAA's efforts to reduce bycatch. Through this work, we can better protect our natural resources."

Story Source:

The above post is reprinted from materials provided by University of Exeter. Note: Materials may be edited for content and length.

Journal Reference:

1. N Ortiz, JC Mangel, J Wang, J Alfaro-Shigueto, S Pingo, A Jimenez, T Suarez, Y Swimmer, F Carvalho, BJ Godley. Reducing green turtle bycatch in small-scale fisheries using illuminated gillnets: the cost of saving a sea turtle. *Marine Ecology Progress Series*, 2016; 545: 251 DOI: [10.3354/meps11610](https://doi.org/10.3354/meps11610)

University of Exeter. "Green light stops sea turtle deaths: Illuminating fishing nets is a cost-effective means of dramatically reducing the number of sea turtles getting caught and dying unnecessarily." *ScienceDaily*. ScienceDaily, 23 March 2016. <www.sciencedaily.com/releases/2016/03/160323115622.htm>.



Solving the mystery of the Tully Monster

Yale University

Summary:

The Tully Monster, an oddly configured sea creature with teeth at the end of a narrow, trunk-like extension of its head and eyes that perch on either side of a long, rigid bar, has finally been identified. A team of paleontologists has determined that the 300-million-year-old animal -- which grew to only a foot long -- was a vertebrate, with gills and a stiffened rod (or notochord) that supported its body.

Share:

FULL STORY

A reconstruction of the Tully Monster as it would have looked 300 million years ago.

Credit: Sean McMahon/Yale University The Tully Monster, an oddly configured sea creature with teeth at the end of a narrow, trunk-like extension of its head and eyes that perch on either side of a long, rigid bar, has finally been identified.

A Yale-led team of paleontologists has determined that the 300-million-year-old animal -- which grew to only a foot long -- was a vertebrate, with gills and a stiffened rod (or notochord) that supported its body. It is part of the same lineage as the modern lamprey. "I was first intrigued by the mystery of the Tully Monster. With all of the exceptional fossils, we had a very clear picture of what it looked like, but no clear picture of what it was," said Victoria McCoy, lead author of a new study in the journal *Nature*. McCoy conducted her research as a Yale graduate student and is now at the University of Leicester.

For decades, the Tully Monster has been one of the great fossil enigmas: It was discovered in 1958, first described scientifically in 1966, yet never definitively identified even to the level of phylum (that is, to one of the major groups of animals). Officially known as *Tullimonstrum gregarium*, it is named after Francis Tully, the amateur fossil hunter who came across it in coal mining pits in northeastern Illinois.

Thousands of Tully Monsters eventually were found at the site, embedded in concretions -- masses of hard rock that formed around the Tully Monsters as they fossilized. Tully donated many of his specimens to the Field Museum of Natural History, which collaborated on the *Nature* study along with Argonne National Laboratory and the American Museum of Natural History.

The Tully Monster has taken on celebrity status in Illinois. It became the state fossil in 1989, and more recently, U-Haul trucks and trailers in Illinois began featuring an image of a Tully Monster.

"Basically, nobody knew what it was," said Derek Briggs, Yale's G. Evelyn Hutchinson Professor of Geology and Geophysics, curator of invertebrate paleontology at the Yale Peabody Museum of Natural History, and co-author of the study. "The fossils are not easy to interpret, and they vary quite a bit. Some people thought it might be this bizarre, swimming mollusk. We decided to throw every possible analytical technique at it."

Using the Field Museum's collection of 2,000 Tully Monster specimens, the team analyzed the morphology and preservation

of various features of the animal. Powerful, new analytical techniques also were brought to bear, such as synchrotron elemental mapping, which illuminates an animal's physical features by mapping the chemistry within a fossil.

The researchers concluded that the Tully Monster had gills and a notochord, which functioned as a rudimentary spinal cord. Neither feature had been identified in the animal previously.

"It's so different from its modern relatives that we don't know much about how it lived," McCoy said. "It has big eyes and lots of teeth, so it was probably a predator."

Some key questions about Tully Monsters remain unanswered, however. No one knows when the animal first appeared on Earth or when it went extinct. Its existence in the fossil record is confined to the Illinois mining site, dating back 300 million years.

"We only have this little window," Briggs said.

Additional Yale co-authors are Erin Saupe, Lidya Tarhan, Sean McMahon, Christopher Whalen, Elizabeth Clark, Ross Anderson, Holger Petermann, Emma Locatelli, and former Yale researcher James Lamsdell, who is at the American Museum of Natural History.

Story Source:

The above post is reprinted from materials provided by Yale University. The original item was written by Jim Shelton. Note: Materials may be edited for content and length.

Journal Reference:

1. Victoria E. McCoy, Erin E. Saupe, James C. Lamsdell, Lidya G. Tarhan, Sean McMahon, Scott Lidgard, Paul Mayer, Christopher D. Whalen, Carmen Soriano, Lydia Finney, Stefan Vogt, Elizabeth G. Clark, Ross P. Anderson, Holger Petermann, Emma R. Locatelli, Derek E. G. Briggs. The 'Tully monster' is a vertebrate. *Nature*, 2016; DOI:10.1038/nature16992

Yale University. "Solving the mystery of the Tully Monster." ScienceDaily. ScienceDaily, 16 March 2016. <www.sciencedaily.com/releases/2016/03/160316151355.htm>.



Fish bond when they eat the same food

Date:

March 22, 2016

Source:

University of Lincoln

Summary:

Similar-smelling chemical cues could explain why some animals choose to live together with other species, according to new research.

Share:

FULL STORY

Adult three-spined (top) and nine-spined (bottom) sticklebacks from the study population.

Photo Credit: Prarom Sriphavatsarakom

Similar-smelling chemical cues could explain why some animals choose to live together with other species, according to new research from scientists at the University of Lincoln, UK.

Published in the scientific journal *Behavioural Ecology and Sociobiology*, the research found that for some fish it makes more sense to swim around with those that share their taste in food -- and smell similar in the process -- than to shoal with members of their own species. The findings highlight the role that chemical cues might play in creating familiarity and group bonds between members of different species.

Led by Tanja Kleinhappel, a PhD researcher in the School of Life Sciences at the University of Lincoln, the study is the first to group members of different free swimming shoals of fish together to investigate how bonds between different species form. The research team caught a number of three-spined sticklebacks (*Gasterosteus aculeatus*) and nine-spined sticklebacks (*Pungitius pungitius*) from local rivers and streams. In nature, these two species live side by side, yet individuals are also known to shoal together. The Lincoln team carefully planned what individual fish ate, and the groups into which they were placed.

Some groups contained members of both species that ate different types of food. In such cases, three-spined sticklebacks were most likely to associate with other fish with which they shared a diet -- irrespective of the species their new-found friends belonged to. When all individuals in a group were fed on the same diet, the three-spined sticklebacks showed no particular preference to be with members of their own species.

Tanja explained: "This behaviour is most likely mediated by the general familiarity of diet-derived chemical cues, as the fish were previously housed in different tanks and were unfamiliar to one another. We don't believe that the observed shoaling behaviour of the fish is controlled by visual or other non-dietary cues that are specific to a particular species, and the results therefore suggest the general familiarity of shared chemical cues could be a way by which to induce shoaling behaviour between fish of the same and different species."

The researchers believe that free amino acids (the building blocks of cells, tissue and muscle) may form part of the chemical cue that the fish are picking up on. Previous research has shown that free amino acids in the skin mucus of fish are very similar to those found in their food.

Further experimental work is now needed to establish whether free amino acids indeed help individual fish to decide which others they want to associate with, but these initial findings may help our understanding of the underlying mechanisms that enhance social learning and information transfer.

Tanja added: "Associating with fish that smell the same might be all about food and protection. By associating with others that share the same preference for particular types of food, a fish ensures that it has enough to eat. Being surrounded by similar-smelling fish also protects an individual against predators that use certain chemical search patterns to detect prey."

Story Source:

The above post is reprinted from materials provided by University of Lincoln. Note: Materials may be edited for content and length.

Journal Reference:

1. Tanja K. Kleinhappel, Oliver H. P. Burman, Elizabeth A. John, Anna Wilkinson, Thomas W. Pike. A mechanism mediating inter-individual associations in mixed-species groups. Behavioral Ecology and Sociobiology, 2016; DOI: 10.1007/s00265-016-2099-x

University of Lincoln. "Fish bond when they eat the same food." ScienceDaily. ScienceDaily, 22 March 2016. <www.sciencedaily.com/releases/2016/03/160322100513.htm>.



Sea snake makes meal out of stonefish

An Australian man captured video of a sea snake eating a venomous stonefish. The snake can be seen with the fish halfway in its mouth, as it begins to contort itself and use other methods to swallow its potential meal. Screen capture/Beau Greaves/Facebook QUEENSLAND, Australia, March 22 (UPI) -- A sea snake was able to devour a stonefish as a diver captured video of the face-off between the two deadly creatures.

Facebook user Beau Greaves shared video of the sea snake as it managed to swoop in and swallow the venomous stonefish.

"Got lucky to come across this while diving! Sea snake eating a stone fish!" Greaves wrote on Facebook.

The video begins with the stonefish already ensnared in the snake's mouth, as it begins to contort itself while trying to swallow the fish whole.

As the struggle continues, the sea snake uses its own body as well as a nearby rock to continue to force the stonefish further down its throat.

Once the fish had been completely swallowed the snake can be seen swimming away sporting a large lump from the well earned meal.



Veterinarian crafts 'fish braces' for goldfish with missing jaw bone

A goldfish named Mr. Hot Wing smiles for the camera with the new set of fish braces he received at the Lehigh Valley Veterinary Dermatology clinic. Photo by Lehigh Valley Veterinary Dermatology/Facebook ALLENTOWN, Pa., March 22 (UPI) -- A Pennsylvania veterinary clinic performed an unusual dental procedure on a goldfish that needed "fish braces" to replace his missing jaw bone.

The Lehigh Valley Veterinary Dermatology clinic in Allentown shared a photo on Facebook of a goldfish named Mr. Hot Wing with his new set of "fish braces."

"Mr. Hot Wing came in today for trouble breathing and inability to eat. He was born without a lower jaw bone and his mouth could not stay open. Brian Palmeiro did surgery to open his mouth and created this brace to help his mouth stay open," the post read.

Palmeiro said he crafted the fish braces from a plastic credit card after performing some research into methods for helping with Mr. Hot Wing's condition.

The entire procedure cost about \$150, Palmeiro said.



Ecuador creates Galápagos marine sanctuary to protect sharks

Belgium-sized area around northern islands of Darwin and Wolf will be off-limits for fishing in bid to conserve sharks and unique habitat. Some 15,000 square miles (38,000 sq km) of the waters around Darwin and Wolf - the most northern islands - will be made off limits to all fishing to conserve the sharks that congregate there and the ecosystem on which they rely. Several other smaller "no-take" areas have also been created throughout the volcanic archipelago, a biodiversity hotspot around 600 miles (1,000km) off the coast of Ecuador in the Pacific Ocean.

The announcement of the new reserve, which is the same size as Belgium, means that 32% of the waters around Galápagos will now be protected from fishing and other extractive industries. It will be incorporated into the existing 80,000-square mile marine reserve created in 1998.

Until now, small-scale local fishing cooperatives had been allowed to operate in the area, but the government says additional

protection is now essential as the habitat has come under increased pressure from global warming and incursions by industrial trawlers and illegal shark fin hunters.

More than 34 different species of shark can be found off the shores of the Galápagos including the largest shark species, the filter-feeding whale shark, the migratory hammerhead shark and the Galápagos shark.

The world's shark populations are in steep decline. Scientists estimate that about 100 million sharks are killed every year, representing 6-8% of all sharks and far outstripping the ability of populations to recover.

The government hopes the new protection will support a breeding ground that can allow sharks to grow to full size and repopulate the world's oceans. It hopes the shark sanctuary, together with the existing marine reserve, will strengthen international pressure for ocean conservation, action on shark finning and more ambitious action on climate change.

Environment minister, Daniel Ortega Pacheco, said: "These pristine waters around the Galápagos archipelago are precious not just for Ecuadorians but for the whole balance of our ocean systems. Shark populations in steep decline around the world come here to rest and breed and we want to guarantee complete sanctuary for them."

The Galápagos Islands were the source of Charles Darwin's theory of evolution and are seen as a priceless "living laboratory" for scientists.

The combination of cold and warm ocean currents make it one of the most biodiverse marine habitats in the world, supporting almost 3,000 species of fish, invertebrates and marine mammals, endemic seabirds and the world's only marine iguana. Because of their remote and isolated nature, many species - such as the famous giant tortoises - are found only in the Galápagos and have not changed much since prehistoric times.

Almost 99% of the land area of the islands, which are recognised by Unesco as a world heritage site, are protected as a nature reserve with no habitation allowed and strictly-regulated tourism. The existing marine reserve - one of the world's largest - was created 18 years ago to protect the unique habitat from industrial fishing.

At the launch of the newest reserve, Ecuador's president, Rafael Correa, will say: "The establishment of this marine sanctuary represents a major breakthrough, not least because it hosts the largest biomass of sharks in the world, which is an indicator of the pristine condition of the site as well as the importance of conservation."

The scheme has been supported by the National Geographic Foundation, which has offered compensation to the local fishing cooperatives. The government says evidence from other no-take zones around the world shows there is net benefit for local fishermen through an increase in fish numbers outside the protected zone.

A 2015 economic study calculated that the tourism value of a shark over its lifetime in the Galápagos is US\$5.4m (£3.75,) while a dead shark brings in less than US\$200.





Manta rays are first fish to recognise themselves in a mirror

Looking good. Giant manta rays have been filmed checking out their reflections in a way that suggests they are self-aware. Only a small number of animals, mostly primates, have passed the mirror test, widely used as a tentative test of self-awareness.

“This new discovery is incredibly important,” says **Marc Bekoff**, of the University of Colorado in Boulder. “It shows that we really need to expand the range of animals we study.”

But not everyone is convinced that the new study proves conclusively that **manta rays**, which have the largest brains of any fish, can do this – or indeed, that the mirror test itself is an appropriate measure of self-awareness.

Csilla Ari, of the University of South Florida in Tampa, filmed two giant manta rays in a tank, with and without a mirror inside. The fish changed their behaviour in a way that suggested that they recognised the reflections as themselves as opposed to another manta ray.

They did not show signs of social interaction with the image, which is what you would expect if they perceived it to be another individual. Instead, the rays repeatedly moved their fins and circled in front of the mirror (click on image below to see one in action). This suggests they could see whether their reflection moved when they moved. The frequency of these movements was much higher when the mirror was in the tank than when it was not.

The rays also **blew bubbles** in front of the mirror, behaviour that Ari had not observed in the rays before.

“The behavioural responses strongly imply the ability for self-awareness, especially considering that similar, or analogous, behavioural responses are considered proof of self-awareness in great apes,” Ari says.

Diana Reiss, of Hunter College in New York, says that it is interesting that manta rays did not show social behaviour towards the mirror image, as fish usually do. But she says it is unclear whether the rays actually recognise themselves in the mirror.

Curious behaviour

Gordon G. Gallup Jr, of the University at Albany, New York, who originally developed the mirror test, is also sceptical. The unusual movements in front of the mirror might have merely been a sign of curiosity or exploratory behaviour, he says.

Other studies have suggested that dolphins, elephants, monkeys and magpies, and even a robot, can recognise themselves in the mirror. But Gallup says these were usually conducted on just one or two animals and the results were not reproducible. “Humans, chimpanzees and orangutans are the only species for which there is compelling, reproducible evidence for mirror self-recognition,” he says. This implies that self-awareness may be limited to humans and some great apes.

But Bekoff says that the mirror test may not be the litmus test for self-awareness in all animals. It is a visual measure, so it might not work in species that navigate their worlds primarily using senses other than vision. Such species may fail the mirror test, but they may still be self-aware, Bekoff says.

He thinks it is time to raise the bar on the way we study self-awareness in animals, including manta rays.

“It would be nice if someone could do neuroimaging while these animals are doing something in response to seeing a reflection,” he says.

Journal reference: Journal of Ethology, DOI: 10.1007/s10164-016-0462-z



1

TWO SPECIES OF STICKLEBACK FISH DISAPPEAR FROM CANADA LAKE AFTER SCIENTISTS INTRODUCED CRAYFISH

Photo credit: Ernie Cooper

Scientists are surprised at what happened in Enos Lake on Vancouver Island of Canada after they introduced crayfish to the lake. It was total extinction of two endangered species of threespine stickleback fish, and an evolution of crossbreeds of the two extinct species.

This incident occurred within three years, between 1994 and 1997, after the introduction of the crayfish according to a study published in the journal *Current Biology*.

This event makes researchers to understand that humans can speed up evolution by introducing a new species into an ecosystem, creating subsequent changes in the ecosystem – a process that has come to be known as “reverse speciation”.

"When two similar species are in one environment, they often perform different ecological roles," said Seth Rudman, a PhD student in zoology at UBC. "When they go extinct, it has strong consequences for the ecosystem."

One of the extinct threespine stickleback fish lived in the middle of the lake and ate zooplankton and the other species lived closer to the shore and fed on larva and other insects. Within three years of introducing crayfish to the lake, the two stickleback fish disappeared only to be replaced with an interbred, hybrid species.

Unfortunately, the new hybrid species does not function like its predecessors to maintain balance in the ecosystem. This species consumes large insects close to the shore, causing tiny insects emerging from the lake to increase in a demonstration of the fact that changes to a lake would cause changes on the land surrounding it.

"Much of Canada's biodiversity, particularly fish in lakes and rivers, are considered to be 'young' species that formed in the last 12,000 years or so," said Rudman. "This type of evolution, known as reverse speciation, happens remarkably quickly and can cause alterations to the ecology of the ecosystem. It means we need to consider evolution in our conservation efforts."

Rudman and co-author Dolph Schluter, a professor in UBE's department of zoology noted that this case of reverse speciation shows up in ecosystems altered by human activity.



Photographer snaps friendly fish off the Devon coast

By North Devon Journal | Posted: March 18, 2016

- The discovery of distinctive face markings on one of the UK's most charismatic and inquisitive fish has enabled an underwater photographer in Devon to reveal intriguing new information about its behaviour.

Wembury-based Paul Naylor has been studying tompot blennies for many years, undertaking more than 100 dives at particular spots in Devon.

He recently discovered, thanks to his library of close-up photographs, that each fish has distinctive face markings, allowing him to get to know individual blennies.

Paul said: "Before discovering the distinctive facial markings, it wasn't possible to interpret whether interactions between tompot blennies were territorial disputes or courtship.

"Being able to identify individual fish leads to much better recording and a greater understanding of their behaviour."

Paul determined that a male tompot blenny, as found on shallow rocky reefs around Britain, can live in the same crevice in

the rock for up to four years.

Paul now knows he witnessed males encouraging females - not just one but many – and over subsequent breeding seasons, to lay eggs which the male guarded from all predators, such as other fish and crabs, until the eggs hatched. Paul identified males having disputes over territory, with one individual seen recovering from injuries endured in the fights. Juvenile tompot blennies learn the ways of adulthood quickly, with even the youngest fish having stand-offs. Through photo identification, Paul also recorded a highly unusual aspect of blenny behaviour close to the Dorset coast; a large male tompot followed winning a territorial fight, by pushing a large shell around the seabed 'showing off' to two smaller tompots.

Paul adds: "I hope the results of this study will help to illustrate the awesome antics going on in UK waters and how important it is for us to protect them for the future."

Joan Edwards, The Wildlife Trusts' head of Living Seas, said: "The photo identification of fish is very unusual as they are generally perceived to be all the same and lacking in character.

"However, through his underwater photography, Paul has helped The Wildlife Trusts over many years to inspire people about the many charismatic creatures we do have in UK seas, including the clown-like tompot blenny.

"We are very grateful to him for his ongoing dedication and commitment to marine conservation."

More pictures etc at:-



Corydoras eversi

New Corydoras Species

Honors AMAZONAS Editor

16 Mar, 2016

Formerly known as *Corydoras* sp. C65, and regionally as *Corydoras* sp. “Guaraná”, this species is now described as *Corydoras eversi* Tencatt & Britto, 2016. Image by Hans-Georg Evers.

AMAZONAS Staff Report

A *Corydoras* catfish which has gone by so many names and misnomers—C65, C065, CW65, Guarana Cory and our personal favorite, the Soda Pop Cory—has finally received proper taxonomic treatment. This month, authors Luiz Fernando Caserta Tencatt and Marcelo Ribeiro de Britto published the description: A new *Corydoras* Lacépède, 1803 (Siluriformes: Callichthyidae) from the Rio Araguaia basin, Brazil, with comments about *Corydoras araguaiaensis* Sands, 1990, in the journal *Neotropical Ichthyology*.

“After the analysis of some *Corydoras* specimens captured by Hans-Georg Evers during an expedition in Brazil, a new short-snouted species with similar color pattern to *C. araguaiaensis* was revealed, which is described herein. Additionally some comments about the taxonomic status of *C. araguaiaensis* were also provided.”

The result of this analysis culminated in the description of *Corydoras eversi*; it’s noteworthy that the holotype and paratypes were collected by Evers almost 18 years ago (1998), a story which he retold in 2015.

My favorite Cory

“For many years a particular species among all Corys has been my absolute favorite,” wrote Hans-Georg Evers in 2015. “I had the honor that my host Valerio Paulo da Silva showed me the undisclosed location of a beautiful species that his father Savio had discovered many years before. Since the population is very small and the place should not be overfished, the family has only ever collected the locality a few times.

We collected in March 1998 a total of 30 specimens of this undescribed species that the Brazilians call *Corydoras* sp.

“Guaraná” for a popular Brazilian herbal soft drink with the same reddish-orange color. (Editor: Guarana is a tropical herbaceous flowering plant producing large berries that are a source of the stimulant “guanine”—better known as caffeine.)

Several animals were preserved for scientific purposes and sent by me to a museum. Several more animals were later sold to England and I took ten animals home. Since that time I have been breeding the species, which I later designated with the code number C65.”

Hans-Georg Evers, now honored with the naming of *Corydoras eversi*, a fish he collected in 1998.

Ramifications of a Single Collection

“*Corydoras eversi* is named in honor of Hans-Georg Evers, a dear friend and great enthusiast in the fishkeeping hobby, especially in the breeding of *Corydoras* species. Hans collected the specimens of *C. eversi* that apparently originated all the stock present in the hobby until the present day and also the specimens used herein for the description,” wrote Fernando

Caserta Tencatt and Ribeiro de Britto in their description of *C. eversi*.

We invite you to read more about Hans-Georg Evers' "Favorite Corydorass," including more images and encounters with its cohorts in the Rio Araguaia system, in a **special online excerpt** from AMAZONAS Magazine.

The full description of *Corydorass eversi*, including an extensive discussion and identification notes to distinguish this species from the similar *C. araguaiaensis*, is available for download at <http://www.scielo.br/pdf/ni/v14n1/1982-0224-ni-14-01-e150062.pdf>

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Evers, H-G. 2015. Sweet Corys: An overview of the Corydoradine catfishes & their natural habitats. AMAZONAS Magazine (English edition), November/December 2015, Vol. 4, Number 6.

Guarana: Good background article on Wikipedia. <https://en.wikipedia.org/wiki/Guarana>



Sharkskin actually increases drag.

Computational models demonstrate that the denticles that make up mako shark skin increase hydrodynamic drag by up to 50 percent

Date:

March 15, 2016

Source:

American Institute of Physics

Summary:

To clarify sharkskin's ability to reduce hydrodynamic drag (academically contested for the past 30 years), researchers recently conducted simulations on the ability of the small, tooth-like denticles that make up sharkskin to modify hydrodynamic flow with an unprecedented level of resolution. Far from easing the glide through the water, they found, the structures can actually increase drag by up to 50 percent.

Share:

FULL STORY

Computer simulations unveil flow around sharkskin.

Credit: A. Boomsma & F. Sotiropoulos/UMN On an intuitive level, you'd expect a shark's skin to reduce drag. After all, the purpose of sharkskin-inspired riblets -- the micro-grooved structures found in aircraft wings, wind turbine blades and Olympic-class swimsuits -- is to do just that. Sharkskin's ability to reduce hydrodynamic drag, however, has been academically contested for the past 30 years.

To clarify this phenomenon, researchers at Stony Brook University and the University of Minnesota recently conducted simulations on the ability of the small, tooth-like denticles that make up sharkskin to modify hydrodynamic flow with an unprecedented level of resolution. Far from easing the glide through the water, they found, the structures can actually increase drag by up to 50 percent.

Fotis Sotiropoulos -- whose previous work focused on developing computational tools to study the evolutionary impact of hydrodynamic factors on fish body shapes and swimming styles -- and his Ph.D. student Aaron Boomsma discuss their work exploring the hydrodynamics of sharkskin this week in *Physics of Fluids*, from AIP Publishing.

"The work on sharkskin was a natural progression, especially after observing the commonalities between sharkskin and riblet films," said Sotiropoulos, dean of the College of Engineering and Applied Sciences at Stony Brook University and primary investigator of the project. "Our interest was piqued by the thought that sharkskin was capable of providing a hydrodynamic advantage to sharks."

Sotiropoulos and his colleagues used experimental data about the three-dimensional geometry of shortfin mako shark denticles provided by George Lauder, a professor of organismic and evolutionary biology at Harvard University, to create computational beds of sharkskin denticles in aligned and staggered configurations. They then applied numerical simulations based on immersed boundary concepts to study the details of turbulent water flow through and over the stationary denticle beds.

"Our simulations show conclusively, that for the tested configurations, sharkskin actually increases drag -- as high as fifty percent," Sotiropoulos said.

The researchers also simulated the same flow over riblets, finding that they reduced drag by 5 percent.

This disparity arises due to differences between the objects' geometries: Riblets are able to confine viscous stress along their ridges because they're essentially two-dimensional, whereas the complex three-dimensional features of denticles generate turbulence and swirling flow patterns that complicate the confinement of viscous stress.

"This is a great example of how our attempts to get inspired by nature have led to something truly beneficial, even though the functionality of the original natural construct may not be as simple to explain or understand," said Sotiropoulos.

Future work for Sotiropoulos and his colleagues includes expanding their work to understand how sharkskin denticles perform under swimming conditions and its subsequent pressure forces. Sotiropoulos noted, however, that next-generation super computers are needed to gain a full understanding of this interplay.

Story Source:

The above post is reprinted from materials provided by American Institute of Physics. Note: Materials may be edited for content and length.

Journal Reference:

1. A. Boomsma, F. Sotiropoulos. Direct numerical simulation of sharkskin denticles in turbulent channel flow. *Physics of Fluids*, 2016; 28 (3): 035106 DOI:10.1063/1.4942474

American Institute of Physics. "Sharkskin actually increases drag: Computational models demonstrate that the denticles that make up mako shark skin increase hydrodynamic drag by up to 50 percent." *ScienceDaily*. ScienceDaily, 15 March 2016. <www.sciencedaily.com/releases/2016/03/160315120554.htm>.



Dissostichus eleginoides

Spanish family 'poached fish' saved by Prince Charles

A FAMILY of Spanish fishing moguls have appeared in court on charges relating to the global poaching of the endangered Patagonian toothfish, (*Dissostichus eleginoides*) a species that has been championed by the Prince of Wales.

The Vidal family, (based in the port of Ribeira in Galicia, northwest Spain, are said to have targeted the Antarctic fish to supply surging demand in Europe, America and Japan. The fish is sold as Chilean sea bass and can fetch £40 a pound in restaurants.

Court documents filed in Madrid say the six accused are linked to the Vidal Armadores SA fishing company. They are alleged to have used vessels flying Asian and African flags to disguise their ownership. The accused were released on bail of £78,000 each by a Madrid court and told to surrender their passports.

The plight of the Patagonian toothfish, which takes 10 years to reach maturity and so is acutely vulnerable



Please Check that your ponds are totally Child proof!

The parents of twin boys who drowned when they fell in a pond have said they are devastated by the death of their "miracle babies".

Two-year-olds Rhys and Shaun Scott were found in a garden fish pool in Dalgety Bay, Fife, on Saturday morning. Emergency services were called to the property at around 8.20am and the boys were taken to Victoria Hospital in Kirkcaldy but later died, Police Scotland said.

The twins' parents said their boys were 'long awaited little soldiers'

In a statement issued through police, the twins' parents Mervyn Scott and Sarah Aitken said: "We would like to thank everyone for their support at this unfortunate and difficult time.

"Both boys were long awaited little soldiers who were full of love, happiness, fun and cheek. Individually and together they have touched the lives of everyone they met.

"We along with our family and friends are still in shock and devastated at such a tragic loss from such a 'freak' accident."

They thanked medical staff, family, friends and others for their efforts in trying to save "our miracle babies".

One message left with flowers reads: 'Rest in peace little ones'

The parents are being supported by officers as inquiries are made to establish the circumstances that led to their deaths.

Local MSP Alex Rowley said: "This is awful news and is every parent's worst nightmare.

"The loss of two young lives from the same family is just heartbreaking.

"My thoughts and prayers, and those of the whole community, are with the family."

Flowers and messages of support have been left at the house. One note reads: "Rest in peace little ones."



1



Tragulichthys jaculiferus

T

1

New Zealand Poisonous fish more prevalent

Posted at 9:02am Monday 14 Mar, 2016 | By Hunter Wells hunter@thesun.co.nz

They're toxic, they shouldn't be handled and it seems they're becoming more prevalent on our coastlines.

They're porcupine fish or *Tragulichthys jaculiferus* (synonym *Allomycterus jaculiferus*) and they belong to a group called puffer fishes that are known to be poisonous. The one pictured in this story washed up on the beach at Papamoa.

"To be safe they shouldn't be touched as the spines may act as a conduit for toxins," says Chris Battershill, Professor of Coastal Science at the University of Waikato Coastal Field Station Tauranga.

"Dogs licking the fish on Auckland beaches a few years ago became very ill. It's believed some died."

It is the spines that identify the porcupine fish, while a puffer fish has a smooth blotchy skin. The toxin in both fish is tetrodotoxin, it's extremely toxic and is concentrated in the liver and eggs.

In Japan specialist chefs prepare puffer fish for eating by removing the poisonous parts but there are still occasional poisonings.

"If dead porcupine fish are discovered use gloves or some protection to pop it in a rubbish bin at the beach" says Chris.

"They present a danger to anyone stepping on it."

Stormy conditions and heavy swells bring the fish ashore. And it seems the species is more common and moving further south along both coastlines.

"A few years back you would be lucky to see one at the Poor Knights. But on a recent dive at Tutukaka, inside the harbour, I saw two."



History-Making Yellow Tangs Coming to Global in Orlando

Members of the first graduating class of aquacultured Yellow Tangs just prior to leaving Hawaii for the United States. The fish will make their debut to the aquarium trade at Global Pet Expo 2016 in Orlando, March 16-18.

The result of decades of aquaculture experimentation and more research dollars than have been expended on any other marine aquarium fish species, members of the first successful captive spawning and rearing of Yellow Tangs to achieve market size will appear in the week of March 14th at Global Pet Expo 2016.

Longtime marine aquaculture advocate Jeff Turner of Boyd Enterprises.

The fish were bred and raised at the Oceanic Institute of Hawaii Pacific University, under the leadership of Chatham "Chad" Callan, Ph.D., director of finfish breeding programs with support from the Rising Tide Conservation Initiative.

"We are thrilled to have these first aquacultured Yellow Tangs to display," says Jeffrey A. Turner of Boyd Enterprises. "It's really awesome that OI and the Rising Tide organization have brought us to this milestone achievement in Marine Ornamental Aquaculture."

Dr. Chad Callan, Yellow Tang team leader at Hawaii's Oceanic Institute, coming to Global Pet Expo 2016

Dr. Chad Callan, director of the program that accomplished this breeding milestone at the Oceanic Institute, will be hosted by Boyd and available to meet with members of the aquarium trade during the three days of Global Expo, March 16-18. An annual Orlando event, Global Expo is expecting a record turnout in the range of 16,000 people from the pet industry. The show is not open to the general public.

"It's with great enthusiasm and respect that we are able to fly Chad in for Global and it will be fantastic to have industry representatives and key store owners be able to speak with Dr. Callan face-to-face and to see his team's fish in our displays at the show."

From a report in Coral Magazine



Small brain is good for the immune system – if you are a guppy

Date:

March 10, 2016

Source:

Stockholm University

Summary:

Having a small brain may provide immune benefits, at least if you are a guppy. A new study shows that guppies with smaller brains have stronger immune responses than guppies with larger brains.

Share:

FULL STORY

Male guppy.

Credit: Paul Bentzen
Having a small brain may provide immune benefits, at least if you are a guppy. A new study published in the journal Proceedings of the Royal Society shows that guppies with smaller brains have stronger immune responses than guppies with larger brains.

The study has measured how the immune system of fish responded to transplanted scales and found that individuals with small brains have stronger immune rejection responses than those with large brains. Developing and maintaining a larger brain surely requires more energy and resources, which may explain the negative effects on immune function.

“The results suggest that apart from the obvious advantage of making you cleverer, a larger brain can also come at a cost – an impaired immune system,” says Alexander Kotrschal, the lead author of the study.

The researchers transplanted scales of large-brained fish onto small-brained fish and vice versa and observed how those alien scales were rejected. What they found was that large-brained individuals showed a weaker rejection reaction than those with small brains. This showed that the innate immune system is impaired in large-brained individuals.

Three weeks later scales were transplanted between the same pairs of fish to test the adaptive immune system which develops specific antibodies, for example in response to vaccinations. This test showed no difference between large- and small-brained fish, but males showed a stronger rejection response than females. The results indicate that male guppies have stronger acquired immunity than females.

“In most species, males have weaker immune responses than females and increased susceptibility to infectious diseases. It is thought that males can benefit by investing more resources into mating effort, even at the expense of reduced immune responses. However, we are unaware of any theory to explain our findings and the increasing number of other cases that provide exceptions to this general rule”, says Dustin Penn, the senior author on the study.

The next step is to identify the mechanisms that generate these sex differences in immunity, and to explain how genes that influence brain size also control innate immune responses.

Story Source:

The above post is reprinted from materials provided by Stockholm University. Note: Materials may be edited for content and length.

Journal Reference:

1. Alexander Kotrschal, Niclas Kolm, Dustin J. Penn. Selection for brain size impairs innate, but not adaptive immune responses. Proceedings of the Royal Society B: Biological Sciences, 2016; 283 (1826): 20152857
DOI:10.1098/rspb.2015.2857

Stockholm University. "Small brain is good for the immune system – if you are a guppy." ScienceDaily. ScienceDaily, 10 March 2016. <www.sciencedaily.com/releases/2016/03/160310112057.htm>.





Melanotaenia etnaensis

Abstract of Article in Aqua International Journal of Ichthyology for January 2016

Genetic investigations reveal the closely-related “Goldiei” group of melanotaeniids from the Birds Neck region of western New Guinea contains at least six species, including five new taxa, which are described herein. Members of this group share a wide range of morphological and meristic features and lack notable differences, although discrepancies in modal or average values are sometimes useful. Due to their great similarity, the species in this group are most reliably distinguished on the basis of genetic differences and their allopatric geographic distributions. Three of the new species, including *M. bowmani*, *M. grunwaldi*, and *M. mamahensis*, represent the first descriptions of this southern New Guinea lineage from northern drainages. The ancestral species possibly colonised northward via the Omba-Woromi corridor, a low elevation (to 160 m) area linking the respective southern and northern drainages. The remaining three species, including the previously described *M. dumasi* Weber (previously considered a synonym of *M. goldiei*) from the Yamur Lake area and two new taxa, *M. etnaensis* and *M. lacunosa* from the vicinity of Etna Bay, inhabit southern drainages.

PDF (740 KB)

Aquarium photographs of *Melanotaenia etnaensis*, adult male, (upper), approximately 100 mm SL and female, approximately 65 mm SL, Ambalanga River, Etna Bay, West Papua Province, Indonesia. Photos by G. R. Allen.

LINK <http://www.aqua-aquapress.com/>



Newly-Identified Spider Rides Waves, Catches Fish.

The spider is named for a Columbia University string theorist. Scientists announced Wednesday that they had discovered a new species of spider that rides waves and can catch and eat much bigger prey, like fish and toads.

The spider, named *Dolomedes briangreenei*, was unveiled at the World Science Festival in Brisbane, Australia, and was named after a festival co-founder, Columbia University professor Brian Greene, a world-renowned theoretical physicist.

The spiders are found in fresh water and hunt insects, small fish, and toads, sometimes capturing prey up to three times its

size, according to Mashable Australia. The spider's hunting technique, scientists said, was also notable.

"These spiders sit there on the water and then all of a sudden an insect will hit the water and the spider races out to get it, grabs it, dives under the water and then swims back to the shore and starts eating it," Robert Raven, a scientist at the Queensland Museum, tells Mashable Australia.

Humans shouldn't be worried, though. Raven says he was bitten by the spider once, but only experienced a few ill effects. "It just stung for a little while," he says.



Casper the friendly cephalopod?

A curiously cute new octopus was

recently discovered when NOAA's exploration ship Okeanos Explorer took a dive off the Hawaiian Archipelago. This charming and ethereal cephalopod was captured on video during first dive of the season.

The internet is enthralled with this lil critter with many calling for it to be named Casper after the cute and friendly cartoon ghost. The team encountered the octopus over over 4,000 meters down (13,120 feet) and was northeast of Necker Island.

Unlike most cephalopods that use colour-changing chromatophores to disguise itself and elude prey, this new creature appears to lack those pigment cells and is not as muscular as its shallow-water relatives. Although the final verdict is not in, it appears the octopus is most likely undescribed and might even be a new genus.

[via Scientific American]



The Octopus Project: Raising Octopus

bimaculoides Hatchlings in Captivity.

Raising *O. bimaculoides* is a challenge, but it proves to be a rewarding experience

.By Andrew Tran and Alex Duman | February 29, 2016

Just keeping healthy and happy octopuses requires the aquarist both to provide enriched environments and limit possible escape routes. An even more taxing endeavor centers on hatching, raising, and maintaining octopus larvae. While raising these picky eaters is an immense challenge, it is an extremely rewarding and exciting adventure that few aquarists are fortunate enough to experience.

There may be more than 300 species of octopuses in the world's oceans. These eight legged legends - inspirations for many Greek tales - vary greatly in size, but those we normally encounter in aquaria hold true to the voracious appetites portrayed in these ancient tales. Unlike in the fables, their main diet consists of crustaceans, an assortment of other invertebrates, and fish that they can extract from impressively small crevices. The success of these animals in hunting, escape, and maneuverability is a product of their hydrostatic skeleton that allows them to adjust their shape to slip through cracks and project hundreds of skin papillae upward to give the appearance of texture further enhancing their camouflage capabilities. In addition to changing shape, most octopuses are masters of color change, using highly coordinated chromatophores to rapidly change colors for camouflage and social signaling to fellow octopuses. Alas, this perceptive and bright cephalopod suffers the limitation of a generally short life span in both captivity as well as in the wild.

One particular species, *Octopus bimaculoides* commonly known as the California two-spot octopus, are relatively hardy and have peaceful temperaments making them one of the best pet octopuses for an advanced aquarist looking to take on a challenge. This species receives its name from two beautiful deep blue false eyespots located on either side of the head. Several months ago, the Rhanor Gillette Laboratory at the University of Illinois in Urbana-Champaign ordered an adult male *O. bimaculoides* for the purpose of researching memory in the peripheral nervous system. However, it was immediately apparent on arrival that the specimen was a female. Not only that, but within a month she laid eggs in an empty abalone shell, ceased eating, and mostly stayed under the shell to protect and care for the eggs. Now, the initial research project was unrealistic. When we discovered that the eggs were developing, our new objective became to successfully raise the offspring of an octopus native to coastal California in the middle of land-locked Illinois. We were successful, using artificial seawater and learning to feed the larvae with live prey not normally found in their environment. Now, we aim to share our findings with other enthusiasts so they too can share in this experience.

Aquarium Set Up. A spacious 40-gallon breeder (151 L) aquarium was used to house the adult *O. bimaculoides* and her developing young. The temperature was maintained at 64.4°F (18°C). An undergravel filtration system, sponge filter and protein skimmer were used to maintain the water quality. Crushed shells served as the substrate, with large clam shells, abalone shells, and live rock for decor and size-appropriate hiding spaces. A 25-percent water change was conducted weekly using pre-prepared Instant Ocean Sea Salt Mix and deionized water.

A second 15 gallon (57 L) bare-bottom aquarium was set up and maintained at 59°F (15°C). Two air stones and a sponge filter were used to promote water circulation and maintain water quality. The aquarium housed two clutches of eggs that were removed from the mother octopus and allowed to develop on their own. Each clutch was contained within a slender 150 ml Erlenmeyer flask with a single airstone suspended directly above the eggs to increase water currents around eggs and promote exchange of nutrients and removal of waste byproducts. A 33 percent water change was conducted biweekly to

keep the aquarium clean.

Eggs CapsulesA month after arrival, the female *O. bimaculoides* laid approximately 200 fertilized egg capsules under a large abalone shell. Her demeanor changed drastically, most notably she refused to eat and confined herself under the abalone shell with her developing eggs. This type of behavior is similar to many other species of octopus. Egg laying serves as an indication of the end of the life cycle for these creatures, which occurred to our *O. bimaculoides* mother about four months after she laid her eggs.

One month after the eggs were laid, eyespots were visible. As the months passed, more characteristics were observed. At two months post-laying, the embryos developed pigmentation in their chromatophores. At first the pigmentation was minimal, but within a month, the octopus larvae displayed advance control of their chromatophores, changing from white to vibrant yellows and dark browns in a matter of seconds. At the end of the third month, the embryonic octopuses seemed to grow restless, moving and shaking within their egg capsules, suggesting that hatching was imminent.

One clutch of around 20 fertile eggs was removed from the mother 49 days post-laying and placed in a 15 gallon (57 L) aquarium 5.4°F (3°C) cooler than the main aquarium. A second and third clutch containing 15 to 40 eggs each were removed 72 days post-laying. The lower temperature in the 15-gallon aquarium markedly delayed the development of individuals from all three of the clutches relative to those in the main aquarium. The initial clutch removed had considerably fewer individuals hatch, and individuals from clutches removed to the cooler environment after 72 days showed greater hatching rates relative to the first clutch, suggesting eggs less than 72 days are significantly less tolerant to temperature fluctuations and stressors than their more developed siblings.

HatchlingsOf the roughly 200 hatchlings, 18 of the larvae were housed in separate homemade containers ranging from 100 mL to 5 L to reduce cannibalistic encounters. Each container was constructed from household plastic Tupperware that was thoroughly washed. Large holes were cut out of the tops and replaced with fine mesh to prevent octopus escape, while providing adequate circulation to the developing juveniles. Additionally each container had several small shells about 2 cm in size for the developing juveniles to hide in and feel secure. Containers were cleaned daily using Pasteur pipettes with rubber bulbs to remove any and all solid waste.

Hatchlings are known to feed on live amphipods and mysid shrimp. As we were on a budget and in the middle of the Midwest, we had to get creative! We knew that when it came to feeding, live food was crucial to stimulate the innate predatory response. Young octopuses in the wild usually only pursue live food, and it was essential that we mimic this to increase their likelihood of survival. We tried a variety of live food, from bloodworms to guppy fry, and found success in feeding and raising the hatchlings including acclimating them to frozen shrimp.

None of the larvae accepted a first meal consisting of bloodworms until six days after the first larvae began hatching. Bloodworms offer an abundant and cheap source of live food that will wiggle vigorously and attract the curious and hungry juveniles into pursuing them. It is also visually easy to see if the young octopuses are eating at this age, as the red pigments of the bloodworm show through in the octopuses' stomachs. Guppy fry were also offered 12 days after the initial wave of hatching which the larvae eagerly accepted. This common aquarium fish is an excellent food source as it tolerates high salinity and relatively low temperatures long enough to attract attention of the octopuses. A batch of newly hatched crayfish from another lab project also proved very attractive to the ravenous and rapidly growing larvae. Again crayfish are also tolerant of water salinity and can survive for several minutes in a marine environment before becoming dinner.

Eventually after 33 days after hatching some individuals began accepting frozen shrimp morsels cut into pieces of about 1 to 2 mm. This was accomplished by only introducing frozen food to the young hatchlings. At first there was resistance, but as the young octopuses went a couple days without food, they readily accepted the thawed out treats.

Looking ForwardRaising *O. bimaculoides* is a challenge, but it proves to be a rewarding experience. What sets these animals apart from raising many other marine animals is the process and patience that it requires. We have shown that development can be delayed successfully and dramatically by decreasing the temperature slightly by 5.4°F (3°C) which is accomplished

more optimally at least two months after initial egg-laying to increase larval survival and hatching rate. Additionally the young larvae readily accept a wide variety of live food and will gradually accept frozen foods with age. The young were raised and eventually reached the size of a quarter. Unfortunately summer was upon us and we had to leave the university for summer internships. It was decided that the best avenue for these octopuses was to ship them off to another laboratory where they could continue to be studied.

We truly enjoyed having these octopuses and highly recommend it. These animals will keep any aquarium enthusiast on their feet. If ever given the chance to raise octopus hatchlings, we highly recommend taking on the challenge. The work is worth every second. Raising baby octopuses is an experience that not many get the opportunity to have. For more information, check us out at theoctopusprojectuiuc.weebly.com

Found on the Fish Channel



1

Businessman says shattered fish tank at Gleneagles mansion has left £6 million repair bill

- The 50ft tubular aquarium which was a centre-piece of the house near Gleneagles. Supplied One of Scotland's wealthiest businessmen has lodged a multi-million-pound insurance claim after a massive fish tank shattered at his Perthshire home.

Steven Malcolm, the boss of a leading taxi firm, faced a major clear-up when his 100,000-litre aquarium shattered, flooding parts of his £9 million mansion near Gleneagles.

The incident, which killed all of his fish, caused extensive damage to the kitchen, electrics and décor.

Now loss adjusters have estimated it will cost around £6 million to fully restore the property.

Mr Malcolm bought a plot at Auchterarder's Queens Crescent, overlooking Gleneagles' Queen's golf course, for £1.3 million in 2007.

The 50ft tubular aquarium, worth more than £1 million, was a centre-piece of the six-bedroom house. It is understood that Mr Malcolm was at home when the tank burst late last year.

The 52-year-old came downstairs to find the ground-floor area filled with water and dead fish.

A source told the Sun newspaper: "The tank was filled with salt water and it soaked into the fabric of the building."

The source said the house is "practically new and finished to a very high standard".

According to architects' designs, the fish tank extended across three storeys and had a steel spiral staircase built around it. A huge crane was used to lower the tank into the house through the roof.

The ground floor, which suffered the most damage, had a formal dining room and huge kitchen, as well as an office with a large bank of CCTV monitors.

The top of the house is dominated by a large circular bedroom and bathing area.

Special reinforced glass was used on floor-to-ceiling walls to avoid cracked panes from wayward golf balls.

The Queens Crescent estate is protected by a gatehouse and code-operated electric security gate.

Mr Malcolm could not be reached for comment. Workmen at his home declined to speak.



Unidentified since its discovery in 2007, a large fish species from Amazonia has failed to give out enough information

about itself, leaving only insufficient hints about its genus. Nevertheless, three scientists have now recovered the missing pieces to puzzle out its mysterious identity. In their study, published in the open-access journal *ZooKeys*, they describe the fish as a new species and name it after the fictional secretive Latin American character Zorro.

The new fish, called *Myloplus zorro*, is commonly known among the Brazilians as 'pacu' and is a relative to the piranha. The research team, led by Marcelo C. Andrade, Universidade Federal do Para, Brazil, recognised in a fish, collected by sport fishermen from Rio Madeira basin, Brazil, a previously found, yet undescribed species. Following their analysis, it turned out that its discoverers had assumed an incorrect genus for it.

Among the distinctive features of the new fish, which helped its rightful placement, are its characteristic teeth, specialised to crush seeds.

The new pacu species is quite large, growing up to 47,5 cm. It dwells in moderately to rapidly flowing clear rivers, running over rocky or sandy bottoms, and ranging from about 2 to 8 metres in depth. Its basis colour is reddish silver with darker markings running along the upper side of the body. The head is dark and the belly -- pale yellow.

Curiously enough, although the name of the new fish is chosen as a tribute to Mauricio Camargo-Zorro, a researcher at the Instituto Federal de Educacao, Ciencia e Tecnologia, in recognition of his invaluable contribution to the fish fauna inventory from the Marmelos Conservation Area, *zorroi* is also a playful reference to the Latin American fictional character Don Diego de la Vega and his secret identity hidden behind the nickname of Zorro.

Story Source:

The above post is reprinted from materials provided by Pensoft Publishers. The original story is licensed under a Creative Commons License. Note: Materials may be edited for content and length.

Journal Reference:

1. Marcelo C. Andrade, Michel Jégu, Tommaso Giarrizzo. A new large species of *Myloplus* (Characiformes, Serrasalminidae) from the Rio Madeira basin, Brazil. *ZooKeys*, 2016; 571: 153 DOI: 10.3897/zookeys.571.5983

Pensoft Publishers. "Zorro, the new Latin American fish species, takes off the mask to show its true identity." *ScienceDaily*. ScienceDaily, 8 March 2016. <www.sciencedaily.com/releases/2016/03/160308105058.htm>.



HELSINKI – For one goldfish in Norway, it’s almost like being a fish out of water.

The goldfish in question is being held at a police station in the northwestern town of Bodo while officers try to track down its owner, according to Norwegian news agency NTB.

NTB says officers found the goldfish in a jam jar at the Nordlandshall indoor soccer stadium and decided to take it back to the police station because they couldn’t find the owner.

Ina Selfors, spokeswoman for the Nordland police district, told NTB that somebody likely had bought the goldfish and taken it to the stadium and forgot it there.

Selfors says she hopes the owner will contact them, adding that until then the fish “will stay in the jam jar and keep us company.”

Photo by Norwegian police



Finding Dory: A Darker Side?

04 Mar, 2016

Dory, an animated Pixar/Disney *Paracanthurus hepatus*, is the star of a forthcoming film appearing in mid-June 2016. Image © Disney/Pixar.

Will a lovable cartoon tang trigger problems for a marine species—and the aquarium trade itself?

Essay by Ret Talbot

In my reporting across the Pacific for [CORAL Magazine](#), there is one species of fish that fishers have consistently told me is being overfished: “We used to catch them here, but now we have to go farther to find them.” There is one species that is often so in demand by market countries, that I’ve seen entire orders hinge on whether or not the exporter could provide enough of them. Unfortunately, this same species is often the topic of “help me” posts in online forums, where novice aquarists report this fish becoming “sick” and, too often, dying.

Localized overfishing, strong market demand and a relatively high mortality, especially in the hands of novice aquarists, is not a good recipe for putting the marine aquarium trade and hobby’s best foot forward. Yet this situation describes a species that some trade observers believe will increase in popularity in the coming months and provide a new narrative for anti-trade activists and environmental NGOs to target the trade and hobby.

A relatively small number of aquarists are viewing with growing concern the current publicity wave for the upcoming Disney/Pixar movie titled “Finding Dory” and featuring this fish: a Blue or Hippo Tang (*Paracanthurus hepatus*).

German activist Christiane Schmidt of SAIA (see video below) warns that, like the Nemo movie, Disney’s new film will inspire uninformed marine livestock purchases.

In Nemo’s Wake

When “Finding Nemo” came out in 2003, it was a boon for for the aquarium trade. In the wake of the movie, *Ocellaris* and *Percula* Clownfishes at public aquaria and the local fish store all became “nemo-fish,” and it’s generally estimated that sales

in clownfishes increased by at least 30 percent. While some (notably SAIA in Europe) have expressed concerns about the effects of the aquarium hobby on wild clownfish populations, the fact that so many aquarium clownfishes are now aquacultured has generally made even anti-trade activists who hope to end the wild harvest of aquarium fishes recommend a captive-bred clownfish to novice aquarists.

In many ways, some of the most popular clownfish species are indeed fantastic pet fish. They are, for example, readily available as aquacultured specimens, they remain small enough for the average home aquarium and they generally are considered easy-to-keep. The Blue Tang, however, is the opposite. Originating only from wild reefs, growing too large for the average home aquarium and prone to a variety of health issues, *Paracanthurus hepatus* is nowhere close to the ideal aquarium fish that Nemo has turned out to be. And yet the Blue Tang is amongst the most imported marine aquarium fish. While some aquarium trade advocacy groups have attempted to educate aquarists, the situation with the Blue Tang hinges on the fact that many of the people who will help drive the projected increase in sales of Blue Tang following the movie will have never been reached by these campaigns.

All Wild, Despite What Disney Says

With Disney/Pixar unresponsive to numerous efforts to engage in the issue before the movie launches, the real hope to averting a potential crisis for the hobby and trade now lands squarely at the point-of-sale. Contrary to the facts presented in the movie, Hippo or Blue Tangs are not being bred in captivity. All animals now sold have been collected from the wild, primarily in Indonesia and the Philippines.

Advancements in aquaculture technology are exciting, and we've seen some promising reports concerning the efforts to culture Blue Tang, but we should be clear: Commercial scale aquaculture of Blue Tangs will not be available in time to absorb increased demand for the species. Every "dory-fish" purchased at a big box pet store, local fish store or online will be harvested from a reef in a data-deficient fishery about which there are significant anecdotal concerns.

So it will, I believe, come down to the point of sale. It will require a campaign at the retail level to push novice aquarists away from "buying a Dory"—unless they are also buying—at minimum—a 6-foot (2-meter)-long aquarium.

The marine aquarium trade as a whole has yet to demonstrate a trade-wide ability to respond to concerns by self-limiting. In part, that is one reason the Banggai cardinalfish was recently listed under the Endangered Species Act. Here is an opportunity to put both trade and hobby's best foot forward. Here is a chance to act proactively. Here is an opening for aquarists and trade leaders to look at the data and demonstrate that the trade and hobby are truly concerned about the conservation of reefs replicated in land-locked living rooms across the country.

How will we respond?



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Canadian man caught smuggling nearly 40 turtles in his pants has been fined and placed on two-year probation

- Dong Yan was caught with 38 turtles strapped to his legs trying to cross the Niagara border from America

- The turtles were in plastic bags and taped to his legs
- Placed on two years probation and banned from owning turtles for 10 years
- Also given \$2,578 fine, to be directed to Environmental Damages Fund
- Live specimens are often sought for use in the pet and food trade

A Canadian man caught smuggling nearly 40 turtles in his pants has been fined and placed on probation for two years. Dong Yan was convicted on February 17 for illegally importing reptiles after he was caught crossing the Niagara border in June 2014, with 38 turtles strapped to his legs.

As well as the \$3,500 Canadian (US\$2,578) fine - which will be directed to the Environmental Damages Fund - Yan is also prohibited from owning turtles and tortoises for ten years.

Red-eared Slider (left) and Ringed Map turtles (right) were among those smuggled by Dong Yan, who was caught with 38 turtles strapped to his legs with tape while trying to cross the Niagara border

Yan had tried to bring the reptiles from the United States into the southern part of the province, through the Niagara border . His sentence included 50 hours of community service and he must notify the environment department of international travel.

Yan, of Windsor, Ontario, was also ordered to write a letter about his experience 'for publication as the department sees fit.' According to Canada's environment department, Yan had tried to bring the reptiles from the United States into the southern part of the province.

Environment and Climate Change Canada said in a statement Thursday: 'The turtles were contained in plastic bags and taped to Mr. Yan's legs.'

Officials say live specimens are often sought for use in the pet and food trade.

Officials say live specimens are often sought for use in the pet and food trade. Pictured left and right, a Cambodian woman sells cooked freshwater-turtles at a market in Kandal province

The turtles were identified as ringed map turtles, diamondback terrapins, three-toed box turtles, spotted turtles and red-eared sliders.

The incident was looked into as part of a co-operative investigation between the United States Fish and Wildlife Service and Environment and Climate Change Canada enforcement officers, according to **The Toronto Star**.

And this is not an unusual occurrence.

Last year, a Canadian smuggler was caught attempting to sneak more than 1,000 reptiles over the Canadian border.

Kai Xu, 27, ordered the turtles online and travel to the U.S. from Canada to collect them before either shipping them to China or returning with them to Ontario.

He pleaded guilty to six crimes in federal court in Ann Arbor in December last year and now faces a maximum penalty of 10 years in prison.

Xu has been in custody since his arrest in suburban Detroit in September 2014.



US orders widely used insecticide, Flubendiamide pulled from the market over harm to fishes & aquatic life

U.S. government regulators on Tuesday ordered the makers of a widely used insecticide to take it off the market because it harms tiny aquatic animals.

The Environmental Protection Agency ordered Bayer CropScience and Nichino America to cancel production of all products containing flubendiamide. The decision comes after studies showed the insecticide harms species at the bottom of aquatic food chains in streams and ponds, impacting the fish that feed on them.

Flubendiamide is used on more than 200 crops, including soybeans, tobacco, cotton and numerous varieties of lettuce, fruits and nuts.

"EPA concluded that continued use of the product would result in unreasonable adverse effects on the environment," the agency said in a statement issued Tuesday. "EPA had issued a time-limited registration to the companies with conditions that were understood and agreed upon. If unreasonable adverse effects on the environment were found by EPA, the companies would submit a request for voluntary cancellation of all flubendiamide registrations within one week of EPA notification."

In January, the EPA asked the companies to voluntarily withdraw products containing the problematic insecticide. After they refused, regulators moved to cancel the government registration required to manufacture the product.

Flubendiamide is the active ingredient in Bayer's Belt pesticide. The German chemical giant says its product is safe to use and has sought an administrative law review of the agency's decision.

The company says the methods used by the EPA exaggerated the environmental risk posed by the chemical and would deny farmers access to "a critical pest management tool."

"We are disappointed the EPA places so much trust on computer modeling and predictive capabilities when real-world monitoring shows no evidence of concern after seven years of safe use," Peter Coody, Bayer's vice president of environmental safety, said last month.

Nichino America is a subsidiary of the Japanese chemical maker Nihon Nohyaku Co. A woman who answered the phone Tuesday at the company's U.S. headquarters hung up when a reporter asked for comment on the EPA's decision.

The EPA said crops already treated with flubendiamide or that may be treated with existing supplies can still be sold



Man finds metre-long bristle worm that's been hiding in his fish tank for 2 years The huge creature only comes out at night and is almost impossible to catch

The giant eunice worm was spotted by the man as he cleaned the tank.

He then quickly pulled out his mobile phone to capture footage of the worm slithering around the glass box.

In the video, he can be heard saying: "It's huge!

"I can't believe I haven't seen it before! Two years!"

Giant: The huge worm has been hiding in the tank for two years

The video, filmed in the US, was uploaded to YouTube by gurutek and has now been viewed more than 172,400 times .

Next to the video, gurutek added the caption: "I was breaking down the tank (as I was moving it), hence it looking shoddy.

"That eunice was in there two years before I noticed because I had whole coral colonies missing after a single evening.

The worm stays hidden throughout the day

"I first saw it after I spent a few nights sat up (after lights went out) for about three hours per night looking for the critter who was eating my corals.

"Even when I knew it was there, I only ever saw it three times within the space of a year.

Read more: Woman discovers 6ft venomous snake hiding in cupboard

"It hides in the rocks, and only comes out at night, impossible to catch without taking everything out of the tank."



Super-fast evolving fish splitting into two species in same lake

Same lake, different fish. Eawag/David Marques

Some thought it was impossible. But a population of stickleback fish that breed in the same streams is splitting into two separate species before our eyes, and at rapid speeds.

Three-spine sticklebacks were introduced to Lake Constance in Switzerland around 150 years ago – a blink of an eye in evolutionary terms. But since then, the fish have begun splitting into two separate types: one that lives in the main lake (pictured above left, female top, male in breeding colours below), and another that lives in the streams that flow into it (above right).

The main lake dwellers are bigger, with longer spines and tougher armour. In theory, these differences could be due to lifestyle rather than evolution – perhaps lake fish survive longer and grow larger.

But David Marques of the University of Bern and colleagues have found that there are already clear genetic differences between the two types. “We could be glimpsing the beginnings of two species,” he says.

What makes this finding extraordinary is that both types of fish breed in the same streams at the same time of year. They have been interbreeding all along, and still do, yet they are splitting into two genetically and physically different types.

Splitting apart This kind of speciation, known as sympatry, was once thought to be extremely unlikely, says Chris Bird of Texas A&M University Corpus Christi, who studies how organisms are evolving by analysing their genomes. The **conventional view** is that speciation almost always requires two populations to be physically separated to prevent interbreeding, for example, living on different sides of a mountain, or on different islands in an archipelago.

This is because when animals mate, a process called recombination mixes up gene variants, meaning the genes of a mother and a father will be shuffled together in future generations. As long as interbreeding continues, it’s unlikely that two groups with distinctly different genetic traits will arise.

But Marques’ team found that the genetic differences between the two fish types are concentrated on the parts of chromosomes that are less likely to undergo recombination. As a result, the sets of gene variants that give the two types their distinct characteristics are less likely to get split up.

Rapid change We cannot know for sure that the Lake Constance sticklebacks will continue evolving until they become two non-interbreeding species, says Marques. But evidence for sympatric speciation is growing, from **mole rats in Israel** to palms on Lord Howe Island, Australia, leading some evolutionary biologists, including Bird, to think it could be surprisingly common. There is another case where sympatric speciation seems to be occurring nearly as fast as in the sticklebacks, Bird points out: apple maggots evolved from hawthorn maggots within two centuries of apples being introduced to North America.

As for the speed of the sticklebacks’ separation, there are now innumerable other examples of recent evolution that show **how fast it can happen**, from cancers becoming resistant to drugs and bedbugs becoming resistant to pesticides, to fish

getting smaller to avoid becoming our dinner. It's possible that such rapid evolution may even be the norm, rather than the exception.

Journal reference: PLOS Genetics, DOI: 10.1371/journal.pgen.1005887



Undergraduate student takes to Twitter to expose illegal release of alien fish in JapanDate:

February 29, 2016

Source:

Pensoft Publishers

Summary:

Posing a significant threat to the native biodiversity in Japan, specifically that of threatened aquatic insects, some alien fishes, such as the bluegill, have become the reason for strict prohibitions. However, recently, 10 years after the law against their release into the wild has been adopted, its first infringement is reported by Japanese researchers. Curiously, the case was initially exposed on Twitter by an undergraduate student.

Share:

FULL STORY

A tweet including two fish images posted on June 14, 2015. The image on the left shows two bluegill fish, while the one on the right shows juveniles of *L. macrochirus macrochirus* and two young goldfish. The comments are translated into English as follows: "The results of a pool cleaning. I cannot believe the foolishness of the person who introduced these fish into the pool."

Credit: Akinori Teramura
Posing a significant threat to the native biodiversity in Japan, specifically that of threatened aquatic insects, some alien fishes, such as the bluegill, have become the reason for strict prohibitions. All activities potentially capable of introducing the species into the wild are currently punishable by either a fine of up to 3 million yen for a person (100 million yen for corporations), or a prison sentence of up to 3 years.

Recently, ten years after the law has been adopted, illegal release of bluegill fish has been reported for the first time with the help of a post on Twitter from Akinori Teramura, undergraduate student at the Tokyo University of Marine Science and Technology and second author of the present study. The case is reported and discussed by him and two scientists, affiliated with Kanagawa Prefectural Museum of Natural History, Japan, in the open-access journal ZooKeys.

In June 2015, Akinori Teramura tweeted two photographs of the invasive bluegill fish, both adults and juveniles, along with two young goldfish, which do not belong to the local fauna, either. In his post he identified the species and shared his surprise at the irresponsibility of the people who had released the fish. When lead author Dr Yusuke Miyazaki saw the tweet, he signalled his colleagues with the idea to publish the information as a scientific report.

The student found them in an outdoor public pool in Yokohama city, Japan, while it was being cleaned before being opened ahead of the summer. Usually, these facilities are closed to the public during the colder seasons and it is then when native aquatic insect species, such as dragonflies and diving beetles, find spawning and nursery habitats in them. Curiously enough, though, the pool had been isolated from natural waters since its construction.

Therefore, the researchers conclude that the alien fishes have most likely been released from an aquarium from a local shop or an aquarist who no longer wanted them. However, the authors note that according to the law, keeping bluegill fish in a home aquarium is illegal as well.

"Our report demonstrates an example of web data mining in the discipline of Citizen Science," say the authors. "Web data mining has been rapidly developing over recent years, and its potential continues to expand."

"Community awareness of this issue needs to be improved, and widespread reporting of cases such as this one will help," they conclude.

Story Source:

The above post is reprinted from materials provided by Pensoft Publishers. Note: Materials may be edited for content and length.

Journal Reference:

1. Yusuke Miyazaki, Akinori Teramura, Hiroshi Senou. Biodiversity data mining from Argus-eyed citizens: the first illegal introduction record of *Lepomis macrochirus macrochirus* Rafinesque, 1819 in Japan based on Twitter information. *ZooKeys*, 2016; 569: 123 DOI:10.3897/zookeys.569.7577

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Credit: Akinori Teramura Posing a significant threat to the native biodiversity in Japan, specifically that of threatened aquatic insects, some alien fishes, such as the bluegill, have become the reason for strict prohibitions. All activities potentially

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Oslo Aquarium club is arranging this years Aquarium weekend on behalf of the Nordic Cichlid Society the weekend of 8-10th of April 2016.

Lots of great talks friday through sunday and lots of aquarist attending, making this a weekend not to miss!

Speakers: Stefan Koerber, Thomas Andersen, Svein Fosså, Alf Ole Bull Tornøe and Giorgio Chiozzi will give talks on lots of different subjects from Argentinian cichlids, sand-dwelling cichlids of Tanganyika, Danikilia, trips to Malawi as well as the many faces of animal rights, how to build you own wooden aquarium!

A great event, and I hope to see you all there!

Info about tickets and prices are at: <http://www.akvariehelg.se/anmalanpriser/>. And if your scandinavian isn't fluid, or google translate can't help properly - please ask on this page or email 2016(at)akvarieklubb.no and we will help you!



Banggai Cardinalfish to be Listed Under ESA —Endangered Species Act

19 Jan, 2016

A Banggai Cardinalfish in the Banggai Islands | Source: Ret Talbot

by Ret Talbot,

CORAL Senior Editor

The Banggai Cardinalfish (*Pterapogon kauderni*) will become the first saltwater aquarium fish to be listed under the

Endangered Species Act (ESA) according to the National Marine Fisheries Service (NMFS). The final rule was published in the Federal Register January 20, 2016 and will go into effect February 19, 2016. Because the Banggai Cardinalfish will be listed as “threatened” and not “endangered,” no immediate changes will occur in terms of trade or possession. At some point in the future, however, NMFS may initiate a rulemaking process under section 4(d) of the ESA. Those so-called 4(d) rules could limit or end the trade in Banggai Cardinalfish, including aquacultured fish. In a **press release immediately following announcement of the ruling**, a spokesperson for WildEarth Guardians, the group that had petitioned for the listing, called for a ban on Banggai Cardinalfish in the US aquarium trade:

Taylor Jones, endangered species spokesperson for WildEarth Guardians.

“The Service should quickly finalize regulations prohibiting removal of these beautiful fish from the wild,” said Taylor Jones. “Endangered Species Act protection will mean much less for these fish if it does not address the main threat: collection from the wild for the aquarium trade.”

The best available trade data show that the Banggai Cardinalfish is traditionally one of the most commonly imported marine fishes for aquaria with an average of close to 140,000 fishes imported to the US annually. The US marine aquarium trade is frequently estimated to be as much as 50% of global trade, putting global annual exports as high as 280,000 fish per year. In some supply chains, pre-export mortality has been observed to be as high as 60% before export, increasing the total number of fish harvested.

The International Union for Conservation of Nature (IUCN) listed the species as “endangered” on its **Red List** in 2007, citing data showing an alarming 89% loss of population in eight study areas throughout their extremely limited native range between 2001 and 2004. Most of the declines in population were a result of direct harvest for the aquarium trade. In the same year, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) declined to list the species under Appendix II, which would have regulated trade in order to avoid utilization incompatible with the survival of the species.

Harvest in Indonesia for the aquarium trade is cited as a leading cause of population decline in the last decade, although NMFS acknowledges that aquacultured fish may be replacing wild-harvest and reducing the impact of trade on wild populations. Source: Dr. Matthew L. Wittenrich | Banggai Rescue Project

As of 2013, as many as 120,000 aquacultured Banggai Cardinalfish were being imported annually to the US from a single overseas aquaculture facility in Thailand. This signaled a dramatic shift from a wild-harvest fishery for the species to a reliance on an overseas aquaculture production. Soon thereafter, some leading retailers, including PetCo/LiveAquaria, began offering only aquacultured Banggai Cardinalfish to aquarium hobbyists, and the price point for these aquacultured fish dipped below the price of many wild-caught specimens.

NMFS acknowledged this shift in trade in its proposed rule to list the species in December 2014, saying: “the threat of overharvest has been and will likely continue to be reduced in the future.” Nonetheless, the synergistic effect of historic overutilization combined with other ongoing threats, including, most notably, **habitat** destruction unrelated to the aquarium trade, justifies the listing according to NMFS.

The final rule will go into affect 30 days after it is published in the Federal Register. Stay tuned for full analysis later this week. Federal Register Rule Posting by NOAA: Endangered and Threatened Wildlife and Plants; Final Listing Determinations on Proposal To List the Banggai Cardinalfish

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For a Banggai Cardinalfish timeline, visit Ret Talbot’s GoodCatchBlog.com.

Banggai Rescue Project: <http://www.reef2rainforest.com/banggai-rescue-project/>

For an in-depth look at the plight of the Banggai Cardinalfish, a limited number of copies of the highly praised book, *Banggai Cardinalfish*, the publication of the Banggai Rescue Project, are still available.

Talbot, Ret. Pedersen, M. and Wittenrich, M. (2013). *Banggai Cardinalfish: A Guide to Captive Care, Breeding & Natural*

History hardcover ed. Available from Amazon and aquarium booksellers.



Plesiolebias altamira

Brazil Sanctions Fish Extinctions in the Rio Xingu Region

26 Feb, 2016

A male Plesiolebias altamira. If not already lost, it and a second species from this island may soon be extinct in the wild.

Photo: M. Schlüter.

By Hans-Georg Evers

Excerpt from AMAZONAS Magazine

“Arapuja is being deforested by the project entrepreneurs without any forest management or wildlife rescue.”

Annual killifishes are extremely well adapted to surviving wet and dry seasons in their unique environment, but if this habitat undergoes fundamental changes there can be major consequences. For two exceedingly rare killifish species from the Brazilian Rio Xingu, it is probably already too late. The culprit is man, sanctioned by government.

The Xingu River in central Brazil is the site of one of the greatest environmental crimes for which the Brazilian government and foreign investors are, by all accounts, responsible. According to Antonia Melo, coordinator of the Xingu Vivo Movement, forest clearing on the island brutally threw open the enormous environmental impact of Belo Monte by irretrievably destroying one of the most beautiful views of the river from the port of Altimira.

“Like all the islands of the Volta Grande do Xingu in the flooding area of the future reservoir Belo Monte,” he claims, “Arapuja is being deforested by the project entrepreneurs without any forest management or wildlife rescue.”

“The most terrible part,” said Melo, “is that these killers are carrying out this massacre without any monitoring by animal rescue groups. Today the island dawned with the sky blacked by buzzards, like a swarm. It is simply desperate to see this crime being committed right in front of us. So we went to protest, denounce.”

A giant complex of dams to generate electricity is being built, turning part of the Xingu into a huge artificial lake and significantly reducing the flow in a big bend in the river known as Volta Grande. The Belo Monte dam is predicted to destroy a habitat that is home to many endemic species, including the famous Zebra Pleco (*Hypancistrus zebra*).

An aerial view of Ilha do Arapujá, a large island in the Xingu River, mid-September 2015. The forest was burned so that the island could be flooded. Photo: M. Sabaj-Perez

The drying riverbed has already been claimed by Belo Sun Mining, a Canadian gold-mining company, which hopes to produce 205,000 ounces of gold annually for 17 years if the company can resolve the regulatory issues with the Brazilian government. Thousands of indigenous people have already been displaced by these projects. Hundreds of species of endemic fish and other animals will become extinct or, at the very least, greatly reduced in number. We have already reported many times about this tragedy over the past few years.

Unique habitat

In addition to the very popular armored catfishes, a number of other species, including some cichlids and tetras, are dependent on the rapids at Volta Grande. Other habitats will also be destroyed.

Across the city of Altamira, where the artificial reservoir will be created, is a large river island called Ilha do Arapujá, the only known habitat of two annual killifishes: *Plesiolebias altamira* and *Pituna xinguensis*. These species were scientifically described by Costa and Nielsen in 2007. It is thought that both species live in temporary ponds on the island that contain water during the rainy months (October to April) but dry up from May to September. This is their only known habitat; they have not been encountered anywhere else.

Port of Altamira on the Xingu River, with island to the left, prior to recent clearcutting. Image: Amazon Watch.

In early September 2015, the entire island was cleared of trees to prepare for the flooding of the reservoir. The island will probably be completely flooded in the process. This would destroy the unique habitats on the Ilha do Arapujá, leading to the inevitable extinction of *Plesiolebias altamira* and *Pituna xinguensis* in the wild.

Reference

Xingu Vivo Movement: The murder of the most beautiful island of the Xingu (in the eyes of Altamira) [Translated Page](#)

Costa, W.J.E.M. 2007. Taxonomy of the Plesiolebiasine Killifish genera *Pituna*, *Plesiolebias* and *Maratecoara* (Teleostei: Cyprinodontiformes: Rivulidae), with descriptions of nine new species. *Zootaxa* 1410: 1–41.

Editor: AMAZONAS Senior Editor Michael J. Tuccinardi has recently visited the Rio Xingu and will report more fully on the situation in the May/June issue of the magazine.



Mystery Ocean Hum May be Migration Signal, or Fish Farting

FEB 24, 2016 02:45 PM ET // BY DISCOVERY NEWS

Cuttlefish are among the creatures that call mesopelagic depths home.

Vast communities of migrating deep-sea marine life are the culprits behind a mysterious, low-frequency humming sound in the ocean, made as the creatures swim to and from the surface at feeding time.

The discovery, made by University of California, San Diego assistant research biologist Simone Baumann-Pickering, answers a long-standing question. The source of the hum has for years vexed marine biologists, as [NPR](#) reports. They knew the sound wasn't consistent with whale calls or other marine mammals, such as dolphins, communicating.

Now, thanks to high-sensitivity undersea audio recordings, Baumann-Pickering says it's animals such as fish, jellies, shrimp, and squid living in what's known as the ocean's mesopelagic zone – a range 200 to 1000 meters (660 to 3300 feet) below the surface – that are behind the sound.

Creatures in the mesopelagic neighborhood live deep down, in a dark world where the sun barely shines and there's not exactly a bounty of food. So each night, with the safety of darkness, they venture up to the surface where food is more plentiful.

And when they head up top (or back down) the hum -- about 3 to 6 decibels louder than ocean background noise -- kicks in. "It's not that loud," Baumann-Pickering said in a statement. "It sounds like a buzzing or humming, and that goes on for an hour to two hours, depending on the day.

The purpose behind the sound is still an open question. Baumann-Pickering said it could be a signal to the entire group to head up to the surface or back down.

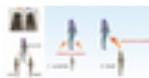
While it's neat to think that such communication could be happening among the animals, there could also be a less high-minded reason for the hum. It turns out the creatures might just be passing gas, as their swim bladders regulate their buoyancy.

"It's known that some fish are considered to be farting," Baumann-Pickering told NPR, "that they emit gas as they change depths in the water column."

If the denizens of the mesopelagic are engaging in communication of some kind, then learning more about the messages being conveyed and which specific animals are doing the conveying would help scientists come to a better understanding of the ecosystem they inhabit, according to Baumann-Pickering.

It could also tell researchers more about the predators that feed on the mesopelagic animals -- if the hunters are listening in, then the hum may tip them off that food is nearby.

Baumann-Pickering presented her findings at the Ocean Sciences Meeting being held in New Orleans.



Research team sheds light on 'rightie' or 'leftie' behavior in a scale-eating cichlid

Date:

February 26, 2016

Source:

Nagoya University

Summary:

Behavioral laterality, or left- or right-handedness, has been reported in many animals, including humans, chimpanzees, toads, rats, mice, and invertebrates such as crustaceans and insects. Now researchers have shed light on the development of behavioral laterality (left-/right-handedness) in a scale-eating cichlid from Africa's Lake Tanganyika.

FULL STORY

Lefty and Righty of scale-eating cichlid fish and development of attack side preference. The mouth of scale-eater is skewed either to the left or to the right. The direction of attack during scale-eating is tightly linked to each individual's mouth asymmetry in adulthood. At first, juvenile attacks from random orientation. And then, they become increasingly specialized at attacking one side as they grow.

Credit: Image courtesy of Nagoya University Nagoya University-based scientists demonstrate the development of behavioral laterality (left-/right-handedness) in a scale-eating cichlid from Africa's Lake Tanganyika, *Perissodus microlepis*.

Behavioral laterality, or left- or right-handedness, has been reported in many animals, including humans, chimpanzees, toads, rats, mice, and invertebrates such as crustaceans and insects. The existence of this phenomenon even in lower animals suggests it arose early in life's evolutionary history and that it confers survival advantages. However, exactly how it is acquired in the early life-stages is not known. A recent article in PLOS ONE reported how a team of Nagoya University-led researchers used a Tanganyikan scale-eating cichlid, *Perissodus microlepis*, as a model organism for behavioral laterality. The group discovered gradual acquisition of the trait during development as the fish learn the more effective side of their mouth for tearing off scales.

Scientists have long been aware of this phenomenon and documented its advantages in many animals. Greater adeptness at acquiring food clearly conveys an evolutionary advantage. While many such examples have been reported in the literature, the means by which left- or right-handedness is acquired during an animal's development, or if it is related to the asymmetrical processes of brain and organ development, have remained unclear.

By analyzing the stomach contents of scale-eating fish ranging from early juveniles to adults (covering various stages of development), the research team determined the proportion of scales from the left and right sides of prey fish in over 200 cichlids collected in the field. This allowed them to determine the age at which the fish transition from eating scales from both sides of their prey to preferentially attacking one side. Measurements of the lower jaw bone revealed a gradual increase in mouth asymmetry—i.e., skewed to the left or right—as the fish age.

"This is truly an important study because it allowed us to observe mouth direction development with age and the relationship between behavioral laterality and mouth asymmetry in these fish," says lead author Yuichi Takeuchi of Toyama University's Graduate School of Medicine and Pharmaceutical Sciences. "We can now also address the question of which came first, scale-eating or mouth asymmetry."

The direction of attack on prey depends on the individual fish's mouth asymmetry. Both "lefties" and "righties" exist in the species. Very young fish have slightly skewed mouths and feed on both sides of their prey, while older fish with more skewed mouths have a preferred attack side that matches their mouth asymmetry. Fish with more skewed mouths ate more scales, clearly indicating an advantage over their less skewed counterparts. This selection pressure is likely what drives young fish to adapt their feeding in accordance with the direction in which their mouth is skewed.

"Thus far, little is known about laterality of scale-eating cichlids in the developmental stage, other than for adults. We observed a gradual increase in mouth asymmetry toward the preferred side of attack as the fish aged," Takeuchi says. "This is exciting because it is the first documented evidence through field work on the development of behavioral laterality. We can

conclude mouth asymmetry precedes behavioral acquisition. When considered in combination with the jawbone measurements, we point to the possibility that behavioral laterality, at least in this species, is a learned strategy that develops in association with morphology.”

The genetic basis of mouth asymmetry has yet to be determined. Recently, researchers identified a relationship between the PCSK6 gene and dominant hand use in humans. This gene regulates the NODAL system, which is responsible for left-right asymmetry during embryonic development and is preserved in all vertebrates.

“Further physiological and genetic investigations may provide insights into neural mechanisms and underlying genetic bases of the lateralized behavior in vertebrates in general,” says Yoichi Oda of Nagoya University’s Graduate School of Science.

Story Source:

The above post is reprinted from materials provided by Nagoya University. Note: Materials may be edited for content and length.

Journal Reference:

1. Yuichi Takeuchi, Michio Hori, Shinya Tada, Yoichi Oda. Acquisition of Lateralized Predation Behavior Associated with Development of Mouth Asymmetry in a Lake Tanganyika Scale-Eating Cichlid Fish. PLOS ONE, 2016; 11 (1): e0147476 DOI:10.1371/journal.pone.0147476

Nagoya University. "Research team sheds light on 'rightie' or 'leftie' behavior in a scale-eating cichlid." ScienceDaily. ScienceDaily, 26 February 2016. <www.sciencedaily.com/releases/2016/02/160226081157.htm>.



Simple Sea Sponges Were Earth’s First Animals Sea

sponges appeared on our planet about 640 million years ago, much earlier than any other animal, according to a study published this week in the Proceedings of the National Academy of Sciences.

Tube sponges *Callyspongia* sp. attracting cardinal fishes, golden sweepers and wrasses. Image credit: Nick Hobgood / CC BY-SA 3.0.

The study, led by Dr. David Gold of the Massachusetts Institute of Technology (MIT), confirms that sea sponges are the source of an unusual molecule found in rocks that are 640 million years old — far before the Cambrian explosion.

“We brought together paleontological and genetic evidence to make a pretty strong case that this really is a molecular fossil of sponges. This is some of the oldest evidence for animal life,” Dr. Gold said.

Scientists have unearthed an extraordinary number of fossils from the time of the Cambrian explosion (circa 521–514 million years ago).

Based on the fossil record, some of them have argued that contemporary animal groups ‘exploded’ onto Earth, very quickly morphing from single-celled organisms to complex multicellular animals in a relatively short geological time span.

However, the fossils that are known from before the Cambrian explosion are peculiar in many respects, making it extremely difficult to determine which type of animal was the first to the evolutionary line.

Dr. Gold, Prof. Roger Summons, also from MIT, and their colleagues have been looking for the answer in molecular fossils.

“There’s a feeling that animals should be much older than the Cambrian, because a lot of animals are showing up at the same time, but fossil evidence for animals before that has been contentious. So people are interested in the idea that some of these biomarkers and chemicals, molecules left behind, might help resolve these debates,” Dr. Gold said.

The team has focused on 24-isopropylcholestane (24-ipc for short), a lipid molecule, or sterol, that is a modified version of cholesterol.

In 1994, scientists first found this molecule in Cambrian and slightly older rocks, and they speculated that sponges or their ancestors might be the source.

In 2009, they confirmed the presence of 24-ipc in 640-million-year-old rock samples from Oman, potentially representing the oldest evidence for animal life.

“It’s known that some modern sea sponges and certain types of algae produce 24-ipc today,” the scientists said. “But which organism was around to make the molecule 640 million years ago?”

To answer this question, Dr. Gold and co-authors sought to first identify the gene responsible for making 24-ipc, then find the organisms that carry this gene, and finally trace when the gene evolved in those organisms.

They looked through the genomes of about 30 different organisms, including plants, fungi, algae, and sea sponges, to see what kinds of sterols each organism produces and to identify the genes associated with those sterols.

“What we found was this really interesting pattern across most of eukaryotic life,” Dr. Gold said.

By comparing genomes, they identified a single gene — sterol methyltransferase (SMT) — responsible for producing certain kinds of sterols depending on the number of copies of the gene an organism carries.

They found that sea sponge and algae species that produce 24-ipc have an extra copy of SMT when compared with their close relatives.

The scientists compared the copies to determine how they were all related and when each copy of the gene first appeared.

They then mapped the relationships onto an evolutionary tree and used evidence from the fossil record to determine when each SMT gene duplication occurred.

No matter how they manipulated the timing of the evolutionary tree, they found that sea sponges evolved the extra copy of SMT much earlier than algae, and they did so around 640 million years ago — the same time period in which 24-ipc was found in rocks.



Georgia couple who love diving together get married 30 FEET underwater in Atlanta aquarium

- Crystal and Justin Reynolds met on dating website Plenty Of Fish
- Tied the knot among thousands of creatures at Georgia Aquarium, Atlanta
- Their wedding party got their scuba certification just for the occasion
- The Reynolds stayed underwater for their first dance as a married couple

A couple of avid divers from Georgia tied the knot 30 feet underwater during a ceremony at Georgia Aquarium, in Atlanta. Crystal and Justin Reynolds, who met on the dating website Plenty Of Fish, enjoy diving together and visited the aquarium shortly after their engagement in December.

Thousands of creatures, including four whale sharks and four manta rays, surrounded them in the 6,3 million gallons aquarium.

Their wedding party even got their scuba certification to take the plunge with them on the big day.

Crystal and Justin Reynolds got married during an underwater ceremony at Georgia Aquarium, in Atlanta. They were surrounded by thousands of creatures 30 feet underwater

The pair met on dating website Plenty Of Fish after Crystal's roommate recommended it to her. Justin was already an avid diver and got Crystal to try it as well

'We never thought we would get married in an aquarium, but it mixes our love for diving and for one another, it's something we love doing together,' Crystal said.

She joined Plenty Of Fish after her roommate recommended the website. Crystal, a private investigator, didn't want to reveal too much personal information but quickly connected with her future husband.

Justin introduced Crystal to diving and soon enough they took their first ocean dive together.

the day of their wedding, a preacher performed the official vows outside of the water and the ceremony continued in the aquarium.

All regular safety protocols required before any dive had to be performed. Then, Justin, wearing a white tuxedo shirt and a bowtie on top of his black wetsuit, took the plunge with his best man and the preacher.

Georgia Aquarium hosts its first underwater wedding

Crystal and Justin visited Georgia Aquarium not long after getting engaged in December last year. They chose the 6.3 million gallons aquarium as their wedding venue

Their wedding party got their scuba certification ahead of the ceremony. All required safety checks had to be performed before everyone took the plunge

Crystal followed with her maid of honor. She wore a white wetsuit topped with a white lace wedding dress. Her veil had to be weighed down so that it wouldn't float away.

The couple's family and friends accompanied them into the aquarium and 100 guests watched the ceremony from the other side.

A dive team made sure no animals disrupted the ceremony.

Justin and Crystal stayed inside the aquarium for their first dance as a married couple. The choreography, performed to Ed Sheeran's Thinking Out Loud, included spins, twirls, and a lift.

The newlyweds then returned to dry land for a private reception with their friends and family. Crystal and Justin stayed underwater for their first dance as a wedding couple. The choreography, performed to Ed Sheeran's Thinking Out Loud, included twirls, spins and a lift

Justin wore a white shirt and a bowtie on top of his white wetsuit. Crystal's wetsuit was white and she paired it with a white lace wedding dress, a tiara and a veil, which had to be weighed down so it wouldn't float away

The Reynolds got married in front of 100 guests at the aquarium who watched the ceremony from the other side. They then returned to dry land for a private ceremony with their friends and family





THE SADDEST FISH IN SALFORD

SALFORD GIANT GOURAMI NEEDS NEW HOME

A stunning giant gourami fish desperately needs a new home as he's currently filling his tank in an aquatics shop in Swinton. He was two inches long back in 2005 but has now grown to almost two feet and requires more swimming space.

The gourami is really well looked after but the shop owner says "We feel really sorry ourselves for him now because he needs a bigger tank"...

As Steve Foley, owner of Foley's Pets and Aquatics shop in Swinton says, there isn't a fish in Salford better fed than the giant gourami that fills a tank at the far end of the store.

Today the fish has a smorgasbord of delights on offer – pieces of banana, kiwi fruit, orange, tangerine, tomato, cucumber and even a raspberry or two. But unfortunately he's grown from a mere two inches in 2005 to almost two feet now, and has well outgrown his six feet wide tank, barely being able to turn and swim to the other side.

"We expected to sell him but he just kept growing and nobody bought him, so we ended up keeping him" says Steve "We feel really sorry ourselves for him now because he needs a bigger tank."

He's offered the stunning fish to Blue Planet in Ellesmere Port, Sealife at the Trafford Centre and Bolton Aquarium but they turned down the chance to home the rare fish.

"Nobody wants him because, quite frankly they are all too bone idol to come for him in my opinion" Steve explains "We went to Blue Planet in Ellesmere Port, which hadn't got a giant gourami and they said they hadn't got room. Have you ever heard anything so stupid in all your life, when they've got tanks as big as this shop?"

Now Steve is asking for help to get the fish more swimming space as there's just not enough room in the shop to house a tank big enough for him. It would need to be at least eight feet or bigger and would suit a public aquarium. In the meantime, the giant gourami struggles to stretch his scales. The saddest fish in Salford?

"I don't think he's sad" says Steve as the fish gulps down a juicy piece of kiwi "He's as interested in you, as you are of him; he weighs up the customers all day long. But he needs more swimming space..."

Anyone who can help out is urged to contact Steve Foley at Foley's Pet and Aquatics. Phone 0161 794 3716





Limacina helicina



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Sea Butterflies Swim Like Flying Insects, Scientists Say

Zooplanktonic sea butterflies (*Limacina helicina*) ‘fly’ underwater using the same technique as tiny flying insects, beating their wings in a figure-of-eight pattern, says a team of researchers at the Georgia Institute of Technology.

The sea butterfly (*Limacina helicina*). Image credit: Russ Hopcroft, Institute of Marine Science, University of Alaska Fairbanks / NOAA.

Sea Butterflies Swim Like Flying Insects, Scientists Say Feb 20, 2016 by Editors

« PREVIOUS

| Zooplanktonic sea butterflies (*Limacina helicina*) ‘fly’ underwater using the same technique as tiny flying insects, beating their wings in a figure-of-eight pattern, says a team of researchers at the Georgia Institute of Technology.

The sea butterfly (*Limacina helicina*). Image credit: Russ Hopcroft, Institute of Marine Science, University of Alaska Fairbanks / NOAA.

Limacina helicina is a pelagic sea snail known as the sea butterfly. This zooplanktonic species is ecologically important for the large biomass it maintains in polar ecosystems.

Furthermore, because its shell sinks when the animal dies, *Limacina helicina* is geochemically important as a major conduit of carbon to the deep ocean.

In temperate regions, *Limacina helicina* reaches shell diameters of 1–4 mm and swims at speeds of 10–50 mm/s, whereas in the sub-Arctic, their shells may grow to 14 mm, with swimming speeds reaching 120 mm/s.

“Most zooplankton swim with a drag-based paddling technique,” said Dr. David Murphy from the Georgia Institute of Technology’s School of Civil and Environmental Engineering, lead author on a study published in the *Journal of Experimental Biology*.

“Sea butterflies and flying insects stroke their wings in a characteristic figure-of-eight pattern to produce lift, and both generate extra lift by peeling their wings apart at the beginning of the power stroke (the well-known Weis-Fogh ‘clap-and-fling’ mechanism).”

Dr. Murphy and co-authors built a 3D system to visualize fluid movements around minute animals.

“Working with *Limacina helicina* in land-locked Atlanta posed a unique set of challenges,” the scientists said.

“Sea butterflies are scarce at the best of times and that transporting the fragile gelatinous creatures across the continent from their ocean home was tricky.”

“You have to ship them overnight in an insulated cooler to keep them cold and if the water is too dirty particles will stick to them, so the water has to be very clean.”

The scientists were astonished when they realized that the snails were swimming just like fruit flies fly.

“I said to myself: its wing stroke is just like what an insect is doing,” Dr. Murphy said. He and his colleagues were impressed to see that the mollusks generated the same low-pressure system that produces lift in flying fruit flies.

“The snails — and fruit flies — clap their wings together at the top of a wing beat before peeling them apart, sucking fluid into the V-shaped gap between the wings to create low-pressure vortices at the wing tips that generate lift.”

“No one has actually been able to measure the flow around an insect doing this while it is flying, and so that was kind of the holy grail of this area of research.”

“It really surprised me that sea butterflies turned out to be honorary insects,” Dr. Murphy said.

David W. Murphy et al. 2016. Underwater flight by the planktonic sea butterfly. *Journal of Experimental Biology*, vol. 219, no. 4, 535-543; doi: 10.1242/jeb.129205

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Man charged for using an alligator as a deadly weapon at a fast food restaurant

The alligator escaped its ordeal unharmed. A man has been arrested and charged with assault with a rather unusual deadly weapon - a three foot alligator.

Joshua James, 24, allegedly threw the reptile through the window of Wendy's drive-thru restaurant in Palm Beach County, Florida in October 2015.



Lophiodes endoi -- Goosefish

A beast with dozens of needle-like teeth and thick drool coming from its mouth pulled from the deep sea... but what is it?

- Flesh-toned bug-eyed beast with razor sharp teeth was caught in Victoria
- This is the second bizarre deep sea creature to appear in Australian waters
- Known as 'monkfish', the Endo's Goosefish is a type of anglerfish
-

A bizarre deep sea creature with bug eyes and dozens of needle-like teeth has been pulled ashore - the second sea monster to appear in Australian waters in less than a week.

The outlandish creature was caught off the Victoria state coast by a fishing trawler, the South East Trawl Fishing Industry

Association said.

Experts said the animal may be an Endo's Goosefish - *Lophiodes endoi*, also known by some people as 'monkfish' - is a deepwater member of the anglerfish family.



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For more information visit <http://www.aquapress-bleher.com/>



New Chromis species sighted in Principe, East Atlantic Ocean

February 17 2016, Jake Adams –

Sao Tome and Principe are a pair of island groups in the Gulf of Guinea, right off the West Coast of the African continent. Sao Tome and Principe are in tropical waters of the East Atlantic Ocean and so far from any aquarium collections

that the hobby is really unaware about what kind of neat fish can be found there.

Luiz Rocha of the California Academy of Sciences has been exploring the northern island of Principe together with a survey team to assess the biological diversity and fish fauna of this understudied part of the world. Unsurprisingly, Dr. Rocha and his team have made a number of great new observations about the fish species they've seen while diving around Principe.

The Azores Chromis, *C. limbata* was sighted in Principe for the first time. Photo Luiz Rocha

Perhaps the most novel discovery is the sighting of a lovely blue damselfish in the Chromis genus. The unknown Chromis has a gorgeous blue color that bears some resemblance to the blue reef Chromis, *C. cyanea*, but it also has pretty yellow fins like the yellow tail reef fish, *Chromis enchrysurus*.

It'll probably be a while until we get an official description for the new blue Chromis from Principe since there's other Chromis species still awaiting an official name. Hopefully a future expedition by Dr. Rocha and The Academy will head to Sao Tome so we can see and learn more about the interesting *Liopropoma* which were discovered there a few years ago.

from Reef Builders



'Sophisticated fish trafficker' gets year in prison, but it's no 'bald eagle'

A former West Hills resident who attempted to export a protected South American air-breathing fish species into Canada from the United States without the proper permits was sentenced Wednesday to a year in federal prison.

The defendant's attorney downplayed the importance of the protected species, calling it "kind of a garbage fish." But the attorney's claims that the fish is no "bald eagle" were apparently ignored in the judge's sentencing decision.

Isaac Zimmerman, a 66-year-old U.S. citizen, apologized to the court, saying he was "very sorry. I beg (you) to allow me to remain free." U.S. District Judge Otis Wright II wasn't swayed, and granted the government's sentencing request for a year behind bars, which included an enhancement for fleeing prosecution after Zimmerman was charged seven years ago.

The judge ordered Zimmerman into federal custody immediately after the sentence was imposed, as shocked family members looked on.

Defense attorney Mark Werksman attempted to object, but was cut off by Wright, who snapped, "Is there something unclear about what I just said?"

Zimmerman was extradited from Mexico last September to face charges contained in a 13-count indictment charging him with running an international fish trafficking operation.

He pleaded guilty in November to a single felony charge related to a 2008 attempt to illegally export two *Arapaima gigas*, a freshwater fish which can sometimes grow to 15 feet in length and has been known to leap from the water to catch low-flying birds.

Zimmerman "was a sophisticated fish trafficker who built a successful business based on the illegal possession and sale of wildlife," Assistant U.S. Attorney Diana M. Kwok wrote in pre-sentencing papers.

"The fact that he fled to Mexico was his choice," she said today. In his plea agreement, Zimmerman admitted possessing the large South American freshwater fish, which were advertised for sale and shipped outside of California.

The indictment also contained allegations that Zimmerman engaged in additional criminal conduct related to the falsification of documents, obstruction of proceedings, false statements and smuggling of protected *Arapaima gigas* from Peru while on pre-trial release.

Zimmerman was apparently selling baby fish at about 15 inches in length for \$180 each and shipping them overnight to their destinations in plastic bags with moisture, without the necessary documentation.

Werksman attempted to downplay the charge, which he described as a "very technical" offense that required the study of "thousands of pages of federal regulations" to discover that the sale and export of the *Arapaima gigas* without federal paperwork was illegal.

The defense attorney described the species as "kind of a garbage fish."

"We're not talking about the bald eagle," Werksman told the judge.

The defendant was initially charged in 2009, along with his company and his wife. Leonor Zimmerman pleaded guilty to a misdemeanor offense in 2010, and her husband fled the United States that same year after prosecutors filed additional charges alleging that he continued to illegally export fish while on bond.

Special agents with the U.S. Fish & Wildlife Service tracked Zimmerman's movements through Europe, to Israel and eventually to Mexico.

Zimmerman was arrested a year ago near Metepec, Mexico, at the conclusion of a four-year manhunt. During his flight to avoid prosecution, Zimmerman changed his appearance and took other steps to avoid detection and arrest, authorities said.

The Mexican government permitted Zimmerman to be extradited to the United States on two of the felony charges related to the illegal exportation of *Arapaima gigas*.

His wife, who pleaded guilty to a misdemeanor count of illegal fish trafficking, was sentenced in January 2011 to 21 months of probation and ordered to pay a \$1,500 fine.

Arapaima gigas are known as fast growers and powerful swimmers that will sometimes jump out of the water to snatch prey. In aquariums, they seldom reach over 2 feet, but in the wild, they often grow to about 6 1/2 feet long, with the largest specimen reported to have reached almost 15 feet in length.

Because of their large size and appetite for other fish, they are not considered a good choice as a home pet and need to be housed in a very large aquarium or pond.



Creature From The Deep' Washes Up On Shores Of Lake Macquari, Australia.

Australia is well-known for its deadly and strange-looking creatures, but a picture of the carcass of a prehistoric-looking creature on the shores of a well-known lake was too much for most people's imaginations.

The beast, which appears to have a crocodile-like jaw but the body of a giant fish, washed up on a boat ramp next to Lake Macquarie, in New South Wales, prompting a local man to post a picture of it onto his Facebook account.

Ethan Tippa shared pictures of the unidentified creature, leading to speculation on across the world.

He wrote: "This is at Swansea boat ramp. What the fuck is it?" to accompany the picture of the grotesque mystery.

The image divided opinion on social media with some suggesting it could be photoshopped, and others thinking it was a Loch Ness monster-esque creature.

But one marine biologist attempted to squash the rumours, arguing instead that it could be a deceptively large pike eel.

Julian Pepperell said the species is frequently caught by fishers at night who get "the fright of their lives" when they reel in a powerful, thrashing predator with a nasty bite.

"There are certainly people who are bitten by them in boats,

"They have incredibly strong muscle and their teeth are geared towards inflicting slashing wounds," he told **the Newcastle Herald**.

The biologist added that the creature was probably "relatively old", and could have died from a net entanglement, been hit by a boat or died of old age.

Japanese Pike eel (*Muraenesox bagio*)

"I think it's definitely a pike eel. The head is very indicative of that species," he said.

He also said that the angle of the photo made it difficult to judge the creature's length, but that it appears longer than the species' average maximum of 1.8 metres (5.9 feet).

Pike eels are not poisonous to eat, and are frequently sold in the markets of Southeast Asia.

Lake Macquarie is Australia's largest coastal salt water lagoon and is a popular spot for many families, who swim in the relatively shallow waters.



Tomiyamichthys levisquama, a large showy goby described from Australia

February 16 2016,

Tomiyamichthys levisquama is a newly described species of shrimp goby joining this large and diverse genus of bottom dwelling reef fish. The newly discovered *T. levisquama* was discovered living in coastal waters and soft bottom habitats of Northern Territory and Queensland, Australia.

Unlike so many of its skinny and narrow bodied congeners, *Tomiyamichthys levisquama* has a distinctive thicker body and head shape which is more in line with more typical species of other gobies. The new *T. levisquama* joins the ranks of *T. smithi*, *T. nudus*, *T. zonatus* and *T. dorsostigma* as the newest inductees into this curious group of goby fish.

Tomiyamichthys levisquama is described by Hoese, Shibukawa & Johnson in the latest release of ZooTaxa.



Little Baddow neighbours end 18-month dispute over 'noisy' pond at Chelmsford Magistrates' Court

By Essex Chronicle | Posted: February 16, 2016

By Sam Balls sam.balls@essexchronicle.co.uk

- Mr Ebrahimi's house, left, with the neighbours' house, right, and the pump

A MARRIED couple desperate to silence their next door neighbour's "noisy" pond have lost their court battle after magistrates found their prosecution bid unnecessary.

Sarah Smith, of The Ridge, in Little Baddow, brought a private case to Chelmsford Magistrates' Court on Monday, alleging neighbour Soroush Ebrahimi's water feature was causing a "nuisance" to her family.

But Mrs Smith, who represented herself and called her husband Simon as her only witness, had her case thrown out of court after a three-hour trial and was also ordered to pay Mr Ebrahimi's legal costs.

"I have no legal training," admitted Mrs Smith as she opened her case, who was guided throughout by the court clerk.

She was in court aiming to secure an order that would prevent Mr Ebrahimi from having a pond filtration system turned on all day after suggesting the noise pollution was "persistent".

"The noise is intolerable and the feature is left on 24 hours a day, even when he goes on holiday," she said. "Our request is simple and entirely reasonable. We would even be happy for the feature to just be boxed in so the noise is directed away from our patio.

"Even when I let my dog out for a wee in the middle of the night I can hear it going.

"It's not specifically the noise levels that matter, but how the noise affects the enjoyment of one's own property that determines whether a nuisance exists.

"The noise never goes away and destroys any pleasure we previously enjoyed from our garden.

"My son cannot leave his window open in the summer and we've even offered to fix the problem ourselves," added Mrs Smith, who explained the pond is 25 metres from her boundary.

The Smiths appeared in court to gain an order to "abate or prohibit a statutory nuisance under the Environmental Protection Act 1990, namely for the noise emitted from a pond within the garden in respect of premises at Foxgloves, The Ridge".

The dispute stems from the noise caused by water that shoots from a hose into Mr Ebrahimi's kidney-shaped, 20 metre by 10 metre pond, which has been recorded in deeds since 1894.

Mr Ebrahimi, who moved into his house in 2011, just months before the Smiths, excavated the pond in September 2013, but complaints over noise from the pipe only began the following year.

A city council environmental protection officer visited the pond in May 2014 to measure the decibel levels after the Smiths claimed they had "hit a brick wall" in negotiations with Mr Ebrahimi, but the officer was satisfied the noise did not constitute a "statutory nuisance".

Nick Ham, defending Mr Ebrahimi, said: "The pipe was installed to deal with algae as the pond was becoming odorous, which in itself can also be a statutory nuisance.

"Mr Ebrahimi has consulted with pond experts about putting plants in his pond to deal with the algae rather than the pipe, but was told that because the pond is surrounded by 30-odd trees, the plants would not get enough sunlight to perform the natural chemical reaction.

"The noise from the pipe was found to be around 40 decibels, which is the same level as a refrigerator or quiet speech; he has done all that has been asked of him at every turn and has rightfully sought legal help to defend his name. The Smiths are simply oversensitive to this issue."

The magistrates found Mr Ebrahimi not guilty of being responsible for a statutory nuisance. Mr and Mrs Smith have 28 days to pay Mr Ebrahimi's legal costs in full. The amount was not disclosed.



Sustainable cod by 2017

NORTH Sea cod could be 'sustainable' by next year after being severely depleted by decades of overfishing.

For the first time ever, cod stocks are now strong enough for the fish to qualify for the Marine Stewardship Council's blue label for certified sustainability.

A partnership between fishermen's organisations, processors and retailers, including Sainsbury's, Marks and Spencer, Tesco and Morrisons, are preparing to submit North Sea cod for an independent assessment that could result in certification by next year.

'If successful, MSC certified sustainable North Sea cod will have a dramatic effect on consumer confidence and buying habits, enabling new generations to enjoy this wonderful fish safe in the knowledge that it's sustainable,' said Nigel Edwards, technical director of Icelandic Seachill.



Why is the aquarium hobby so addicting?

February 13 2016, Michael Paletta –We have all heard and know about the addictions that are frequently talked about such as the addictions to drugs, alcohol, gambling, eating, and sex. But in reality virtually anything can be addicting as is the case with seemingly lesser or even socially acceptable addictions such shopping, cleaning or exercising.

This may also be the case in this hobby. Some of us refer to ourselves as Reefaholics or Coral addicts and looking at some of the groups I am in on Facebook they include such monikers as Compulsive Reefers, Addictive Reef Keepers and Colorful Reef Addicts to name a few. There are even Reef Addicts subgroups in many states and large cities.

So the concept of this hobby being addicting is not a new one. And while many of us consider this a relatively harmless activity as far as addictions go, I thought it might be interesting to look at why this hobby may lend itself to being addicting.

The abstract of my peer-reviewed research paper regarding the science of addiction

Lest you think I am not taking this seriously or am making fun of the hobby, it should be noted that my master's thesis was actually on 'context specific tolerance', which is an integral part of addiction and it is published in the **Journal of Experimental Psychology**. So I actually have a background in addiction and addictive processes.

So in order for us to understand how the hobby can be addicting and lends itself to being addicting we need to understand what addiction is. According to the **definition in Wikipedia**:

"Addiction is a state characterized by compulsive engagement in rewarding stimuli, despite adverse consequences. It can be thought of as a disease or biological process leading to such behaviors. The two properties that characterize all addictive stimuli are that they are reinforcing (i.e., they increase the likelihood that a person will seek repeated exposure to them) and intrinsically rewarding (i.e., something perceived as being positive or desirable)".

As with most addictions, the hobby would not be considered an addiction for most as it is just another pleasurable activity. Only when it becomes compulsive and begins to interfere with everyday activities such as work, or health or relationships should it be considered an addiction. And often the person who is addicted is not even aware that it is causing problems for them self or others.

While most of us are aware of the physical nature of addictions to things like drugs, alcohol or cigarettes, it is also believed that one of the main mechanisms of addiction is that the activity alleviates or reduces stress. I know by now I have probably made many of your eyes glaze over, but hopefully I can show how this relates to the hobby.

You might be addicted if you paid \$6000 for a single polyp of the Bounce Shroom

As noted above, one of the major contributing factors as to why something is addicting may be how stress-reducing it is. As has been documented since the hobby began, having an aquarium and simply sitting and watching the tank reduces stress. In the 80's and 90's numerous articles were published related to **Aquarium Therapy**, showing how blood pressure could be lowered simply by engaging in this activity once or more times a day. And while this may seem simplistic I know from first-hand experience that when I work in my tanks and sit and watch them I do feel more relaxed afterward.

However I will also note that when things are going badly in one of my tanks the converse is true – my blood pressure rises and I feel at least as stressed as when something is going wrong at work or with my family so that has to be taken into consideration. But since we have gotten so much better at being successful at this I would strongly suggest that for most us most of the time our tanks are a source of stress reduction.

You might be addicted to coral if you paid over \$2000 for two polyps of zoanthid

However, this is only part of the reason that I feel that this hobby is so addicting. In addition to the definitions of addiction that were discussed above, one of the other fundamental aspects of addiction is what is called tolerance. Loosely defined tolerance occurs when it takes more and more of a substance or an activity to produce the same amount of pleasure as occurred originally.

This is why drug addicts require more and more of a drug or stronger more potent versions of it to get the same high. In this regard the hobby lends itself well to overcoming or reducing tolerance to getting pleasure from it. First tolerance is reduced by the ever expanding amount of new fish and corals that are coming into the hobby.

If you are bored and have developed tolerance about your Sunset fairy wrasse, then you can add a Rhomboids, and then an

Earl's and if that is not enough a Claire's. By the same token in corals it is even easier to reduce tolerance from occurring. You can switch between coral groups, each going higher and higher in price, rareness and beauty to keep getting a buzz or you can stay within a group and still not get bored.

Coral vendors offer a huge variety of the same corals for you to get a reefing fix

Over the past 8-10 years we have seen there be a "hot" group of named corals that for a year or so were the corals that you had to have in your tank. And finding them, getting them, keeping them and then propagating them became the rage and the thing to do. Watching this cycle occur and repeat itself again and again it became clear that apparently this process in and of itself was at least as pleasurable and stress reducing as is just having a successful tank.

Think about it, over that time we had a year or so of beautiful Montiporas, followed by Acans, then Favias, then Aussie Acans, Aussie Acroporas, Aussie Euphyllias, and now Bounce Mushrooms. And at the same time more and more beautiful Acroporas and fish just in case these were still getting bored with the hobby also coming in. As a result of this constant influx of wildly new and beautiful corals coming into the hobby the likelihood of tolerance occurring been reduced.

There is also another aspect of tolerance in addiction that this hobby also lends itself well to reducing and that is context specific tolerance. This type of tolerance occurs when the physical stimuli in a situation cause the body to prepare to be stimulated and as a result just being in a particular situation reduces the pleasure that the addicting stimuli produces. This is why a lot of heroin and other drug overdoses occur in what are seemingly weird places.

Corals and crack have a lot in common – they're both high priced tiny pieces of rock that can disappear in the blink of an eye. They occur because the body prepares the user for the stimuli and increases their tolerance so that when these cues are not present a smaller amount of drug is necessary to produce the same effect. So as a result when they are not prepared they overdose. On the one hand going into the same shop and seeing the same fish can produce this kind of tolerance and as a result a shop we visit exclusively and often can lose its appeal over time for this reason.

However, this hobby reduces the likelihood for context specific tolerance in that there are now many ways to keep this type of tolerance from occurring. I remember in the early days of the hobby being in a shop when the boxes from a new shipment arrived and it felt like Christmas morning. Over time that diminished and I stopped being there when the shipments arrived.

Crowds of reefers gather at a ReefStock event trying to get their aquarium fix

However now it is possible and I have gotten the same feeling when I saw all the corals that were available from all the great vendors at the MACNAs, Reefaploozas, ReefStocks and other shows as well as while visiting Lou and Victor at WorldWide or Joe and Scott at Unique. But it has even spread wider in that this same sense can even occur when I find a new vendor online or even when some of the old vendors bring out some new corals that I had not seen before.

I also still get a little bit of a buzz simply by walking into a new shop whether it is local or one I encounter in my travels. Each of these venues provides a different context and as a result reduce the likelihood for context specific tolerance to occur, which again may lend itself to why the hobby is so addicting.

And this can also be the reason why ordering corals from different vendors all the time may be a means for further reducing tolerance. I have actually been assessing if this occurs when I try a new online vendor and to be honest I do sense myself getting excited when a box arrives from someone new or from someone who I have not bought from much.

The author's 240 gallon tank circa 1991 showing early signs of addiction

Tolerance can be also be reduced, in a manner like I have done, by constantly adding more and bigger tanks to my collection. While I found my initial 55-gallon tank enjoyable over time the amount of pleasure I got from it waned so then a 120-gallon tank was added, then a 250, a 580 and eventually a 1200-gallon tank.

So in order to reduce my tolerance to the pleasure of the hobby I have kept adding more or bigger tanks. And I know I am not alone in that over the past few years I have watched countless other hobbyists and friends add bigger tanks to their homes as well. So the ability to add more and more successful tanks definitely reduces the likelihood of tolerance occurring and by the same token the level of success we now have also lessens the likelihood for withdrawal.

Withdrawal occurs when the pleasurable stimuli is withdrawn or removed and as a result the individual experiences the

opposite effects of the enjoyable addiction. The usual stings of withdrawal are anxiety or anxiousness, irritability, restlessness, insomnia, poor concentration and even isolation and depression.

In regards to withdrawal I have seen an interesting phenomenon in regards to the hobby about it. During my time in the hobby I have seen a lot of individuals come and go in it. For many of those who left who were successful, they told me they did feel at least a small sense of loss and some of the symptoms described above when they were out of it and as a result came back. While those who were not successful, did not feel any of these symptoms and very few came back into the hobby, even though it has gotten significantly easier to be successful in the hobby.

The author's former 1200gallon tank showing just how far one can go

While researching and writing this article I have become very much aware that I probably do have an addiction to this hobby. I actually realized it more the more as I read about addiction and the signs of it. Fortunately like many of us to date it has not become a major disruptive force in my life and I consider akin to having an addiction to exercise or playing video games.

And since reading up on it more I am trying harder to maintain self-control in terms of my spending both in terms of time and money. No one wants to or should get divorced as a result of this hobby, but it is possible. I think the first sign that things are better is that at the last MACNA I actually walked away without buying a single coral. It is the first time ever I have done that, and it wasn't because there wasn't incredible temptation.

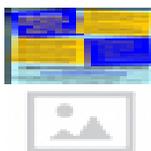
Like most of us I work in a stressful area and life and the fast pace of it can be very stressful. As a result I look to my aquariums as a ready means for stress relief. And while I realize there is a fine line between being obsessive about my tanks and being addicted to them, I hopefully will do a better job of managing my passion for the hobby and my tanks better.

So since it is Valentine's Day weekend I hope all of you have a significant other to be addicted to. I really do not think it is good to paraphrase the late great Robert Palmer that you might as well face it, you're addicted to coral.

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Reef News



Alert issued as cobia,(*Rachycentron canadum*) an invasive fish spreads in Pacific Ocean

Scientists in Panama have released an alert as cobia, a potentially invasive fish spreads in the Central and Eastern Pacific Ocean.

Cobia live throughout the world's oceans except in the Central and Eastern Pacific regions. Thought to be a promising fish for aquaculture, cobia were being raised in fish farms in Ecuador. In August 2015, a large number of young fish escaped their

offshore grow-out cages. Now cobia have been reported to have been found off the Colombian and Panamanian Pacific coast, an indication of their rapid spread from the escape site. Cobia are voracious carnivores, and could have far-reaching effects on fisheries and marine ecology in the Eastern Pacific say Smithsonian scientists. Quoted in Science News Online, D. Ross Robertson, staff scientist at the Smithsonian Tropical Research Institute says, "The havoc caused by invasive Indo-Pacific lionfish throughout the Caribbean provides a compelling lesson about the strong adverse effects that alien marine fish can have on native ecosystems." And like the lionfish, the cobia is an unusual predator because of not having any near relatives. Cobia, *Rachycentron canadum*, are the only species in its family and are closely related to ramoras or sharksuckers. Robertson says this potentially increases the risk of cobia causing major disruption to the marine ecosystem. Scientists are concerned about cobia because of what they eat. They prefer crustaceans (especially crabs), squid and fish. They also adapt well to variations in water temperatures and salinity, sometimes being found in estuaries and mangrove swamps. The cobia has been rated as one of the world's most suitable fish for warm, open-water marine fish aquaculture. Today, the cobia is being cultured in nurseries and offshore grow-out cages in parts of Asia, the United States, Mexico, and Panama. While Smithsonian scientists are correct in voicing their concerns about the impact the cobia may have on native species in the Eastern Pacific, like the lionfish, chances are that nothing can be done to stop the invasion. Just as man was responsible for the lionfish being loosed off the coast of Florida over 10 years ago, the cobia was also introduced by man.



Many animals go to great lengths to ensure the survival of their offspring -- yet some species actually eat some or all of their babies.

Nor is there always an obvious explanation -- like a food shortage -- for such filial cannibalism. Martin Vallon and Dr. Katja Heubel of Tübingen's Institute of Evolution and Ecology have now investigated personality differences between individuals which may play a role in species which practice filial cannibalism. They observed the Common Goby -- a marine fish of up to 6cm in length -- to see how male individuals behave towards their eggs. The results of their study, published in *Ecology and Evolution*, suggest that under the same conditions, more generally active individuals ate more of their eggs. In a second study published in *Behavioral Ecology and Sociobiology*, Vallon and Heubel show that, faced with a mixed brood of freshly-laid and more developed eggs, Common Goby males preferred the younger, less valuable eggs. Once the female of the Common Goby (*Pomatoschistus microps*) has laid the eggs, only the male looks after them. Sometimes he guards several clutches by different females, cleans the nest, and fans oxygen towards the eggs to improve their supply. Yet scientists have repeatedly observed males eating some of the carefully-provided for eggs. Filial cannibalism often occurs in fish species in which males care for the eggs or young. Earlier studies sought to find out what external factors influenced the timing and the extent of the phenomenon. "Various hypotheses predict that the seemingly paradoxical

cannibalism serves to get rid of damaged eggs or that reducing the number of eggs means that the remaining ones are better supplied with oxygen," says Katja Heubel, "and that the male may do it to compensate for his own lack of food and energy." She says the results were ambiguous. "Researchers usually assumed that all fish act similarly under the same conditions. In our study, we aimed to challenge that."

The Tübingen researchers compared individual male Common Gobies' behavior while the fish were caring for their eggs and while they were not. "Individuals with a high general level of activity were much more likely to cannibalize the brood," Katja Heubel reports. The researchers hypothesize that cannibalism is part of a behavioral syndrome -- a kind of spill-over response which the male cannot control or fine-tune. "However, a generally active animal may have advantages in other situations, so that this personality trait has been able to maintain itself in the evolution," Heubel explains.

The second study indicates that filial cannibalism in the Common Goby is not completely uncontrolled in all aspects. The younger eggs, which are more frequently eaten, are of less reproductive value than the older, more developed eggs in which the male has already invested more time and effort. And theoretically, every additional day to maturity is a day in which some developmental problem could occur. That means the older eggs have better chances of reaching the stage of independent hatchlings. And -- on the other side of the slate -- the younger eggs are more nourishing for the adult male. "The males don't just gobble the eggs up at random," says Heubel. It appears that this filial cannibalism -- on the face of it, destructive and counterproductive -- is a part of an adaptive behavior.

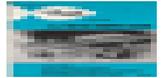
Story Source:

The above post is reprinted from materials provided by Universitaet Tübingen. Note: Materials may be edited for content and length.

Journal Reference:

1. Martin Vallon, Katja U. Heubel. Old but gold: males preferentially cannibalize young eggs. Behavioral Ecology and Sociobiology, 2016; DOI: 10.1007/s00265-016-2074-6

Universitaet Tübingen. "Why do some fish eat their own eggs?." ScienceDaily. ScienceDaily, 10 February 2016. <www.sciencedaily.com/releases/2016/02/160210111907.htm



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Fish fins can sense touch

New study finds pectoral fins feel touch through a surprisingly similar biological mechanism to mammals

Date:

February 10, 2016

Source:

University of Chicago Medical Center

Summary:

The human fingertip is a finely tuned sensory machine, and even slight touches convey a great deal of information about our physical environment. It turns out, some fish use their pectoral fins in pretty much the same way. And do so through a surprisingly similar biological mechanism to mammals -- humans included.

FULL STORY

The pictus catfish can feel with its fins.

photo Credit: Adam Hardy, University of Chicago
The human fingertip is a finely tuned sensory machine, and even slight touches convey a great deal of information about our physical environment. It turns out, some fish use their pectoral fins in pretty much the same way. And do so through a surprisingly similar biological mechanism to mammals -- humans included. In a study published in the Proceedings of the Royal Society on Feb. 10, 2016 University of Chicago scientists have shown for the first time that pectoral fins in at least one species of fish possess neurons and cells that are exquisitely sensitive to touch. The discovery not only sheds light on the evolutionary biology of touch, it might also someday inspire new advances in the design of underwater robotics.

"It was a surprise to us that, similar to mammalian skin, fish fins are able to sense light pressure and subtle motion," said study author Adam Hardy, graduate student in the Department of Organismal Biology and Anatomy. "This information seems to be conveyed by a type of cell important for touch in mammals, which suggests that the underlying sensory morphology may be evolutionarily conserved."

Located just behind the gills, pectoral fins are a pair of distinctive appendages that correspond to forelimbs in four-legged animals. Usually involved in propulsion or balance during swimming, pectoral fins have evolved dramatic functions in certain species. They famously allow flying fish to fly and mudskippers to crawl, for example. Numerous studies have explored the biomechanics, evolution and development of these fins, but little is known about what role they play as a sensory mechanism.

So Hardy, with graduate mentor Melina Hale, PhD, William Rainey Harper Professor of Organismal Biology and Anatomy, asked a simple question: can fish feel with their fins?

There is evidence that fish possess the sense of proprioception, or awareness of where their fins are relative to their bodies (much like how we can tell where our arms are even with our eyes closed). Previous studies have identified fin neurons that send signals containing information about bending, movement and position back to the brain. But touch is distinct from proprioception, and as fins are almost always in motion, teasing apart the two senses in an experimental setting is difficult. Hardy and Hale approached this challenge by focusing on the pictus catfish, a small, bottom-dwelling species native to the muddy waters of the Amazon river. Aside from a hardened, serrated spine used for defense, the pectoral fins of these fish are fairly typical -- several bony rays connected by a soft membrane. However, pictus catfish don't appear to use their pectoral fins for locomotion, which the team confirmed through high-speed camera analyses.

Without conflicting signals from fin movement and positioning, the researchers were able to isolate and study neural activity in response to touch. They applied a variety of different stimuli with the flat end of a pin and a brush to the pectoral fin, and measured the activity of neurons that are responsible for sending information back to the brain.

The team discovered that neurons not only responded when contact was made, they carried information about the degree of pressure and the motion of the brush as well. An analysis of the cellular structures of the fin revealed the presence of cells that closely resemble Merkel cells, which are associated with nerve endings in the skin of mammals and are essential for touch.

"Like us, fish are able to feel the environment around them with their fins. Touch sensation may allow fish to live in dim environments, using touch to navigate when vision is limited," Hale said. "It raises a lot of exciting questions on how sensory cells shape the brain's perception of environmental features, and may provide insight into the evolution of sensation in vertebrates."

Intriguingly, this discovery could also have applications for underwater robotic design, especially in low-light environments.

"Understanding how membranous fins in fish are used to sense touch helps us identify what features are important for the design of underwater sensory membranes," Hale said. "For example, you can envision fish-inspired sensory membranes that can be used to scan surfaces in underwater environments where light may be obscured."

"In addition, animals use mechanical feedback to help control their limb movements," she adds. "Instrumenting underwater robots with touch sensors may help to improve their performance, particularly when navigating through complex environments."

The team are now studying touch sensitivity in the fins of other species of fish, such as flounders, as well as investigating the precise mechanisms for how fin neurons encode information about touch.

"One of big questions were trying to answer is whether this applies to all fish," Hardy said. "We predicted that touch sensitive fins would be very useful for bottom-dwelling fish, but you can imagine its utility in nocturnal or deep-sea environments as well."

The study, "Touch sensation by pectoral fins of the catfish *Pimelodus pictus*," was supported by the Office of Naval Research and the National Science Foundation. Additional authors include Bailey Steinworth.

Story Source:

The above post is reprinted from materials provided by University of Chicago Medical Center. Note: Materials may be edited for content and length.

Journal Reference:

1. Adam R. Hardy, Bailey M. Steinworth, Melina E. Hale. Touch sensation by pectoral fins of the catfish *Pimelodus pictus*. *Proceedings of the Royal Society B: Biological Sciences*, 2016; 283 (1824): 20152652 DOI: 10.1098/rspb.2015.2652

University of Chicago Medical Center. "Fish fins can sense touch: New study finds pectoral fins feel touch through a surprisingly similar biological mechanism to mammals." *ScienceDaily*. ScienceDaily, 10 February 2016. <www.sciencedaily.com/releases/2016/02/160210165859.htm>.



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Cryptomyrus ona

'Hidden fish' genus described for two new weakly electric mormyrid species from Gabon

February 8, 2016

A freshwater mormyrid fish from Gabon, Africa: the only known specimen of new species *Cryptomyrus ogoouensis*. Credit: Dr. John P. Sullivan A new weakly electric mormyrid fish genus of two new species has been described from only three specimens collected over a period of 13 years in the rivers of the Central African country of Gabon. The genus has been named *Cryptomyrus*, meaning 'hidden fish' in Greek, and is the first new genus to be described within the family Mormyridae since 1977.

The study, authored by Dr. John Sullivan and Prof. Carl Hopkins of Cornell University, Ithaca, New York, and Sebastien Lavoue of the Institute of Oceanography at the National Taiwan University in Taipei, Taiwan, is published in the open-access journal *ZooKeys*.

"It's odd we have only three specimens, given how much fish collection effort there's been in Gabon over the past years," says lead author Dr. John Sullivan. "Not having more made the descriptions difficult, but it was important to bring this discovery to light without further delay." Sullivan added that he does not know if these fish are rare throughout their range or if specialists simply have not sampled localities or habitats where they are common, yet. "It shows that we still have a very incomplete picture of fish diversity in Gabon," says Dr. Sullivan.

The last of the three specimens was found on an expedition to Gabon's Ogooue River in September 2014, jointly sponsored by CENAREST and The Nature Conservancy. It was after nightfall on the Ogooue, beside Doume Falls, when Sullivan and the other team members caught the one odd fish in a plastic fish trap baited with earthworms. Reflecting its river of origin, the species now bears the name *Cryptomyrus ogoouensis*, while the second - *Cryptomyrus ona*, is named after Gabonese environmental activist Marc Ona Essangui.

One of only two specimens known of *Cryptomyrus ona*, new freshwater mormyrid fish species from Gabon, Africa. Credit: Dr. John P. Sullivan Puzzled over the identity of the fish, back home at the Cornell University Museum of Vertebrates Dr. Sullivan remembered two somewhat similar specimens collected in Gabon and sent to him for identification by his colleagues Sebastien Lavoue and Yves Fermon, 11 years apart. "This is why we need natural history collections," said Dr. Sullivan, "to

keep these specimens and their DNA samples in good condition, because it can take years or even decades to connect the dots."

Analyses of the DNA from the three specimens conducted at Cornell University showed they were close relatives and did not belong within any recognized genus. "That left us no choice but to describe them as a **new genus**, and *Cryptomyrus*, which means "hidden fish," seemed an appropriate name given how hard they are to find," said Dr. Sullivan.

Over 200 species of mormyrid fish live in fresh waters across Africa where they orient to their environment and communicate using electric pulses, too weak to be felt by humans, in combination with highly sensitive electroreceptor cells embedded in their skin.

Cornell professor Carl Hopkins introduces freshman biology students to his research on fishes that communicate with weak electric signals. Credit: Cornell University
The Nature Conservancy, a global conservation organization that works in more than 35 countries around the world, funded the 2014 expedition of the Ogooue. "We were thrilled to have contributed to this discovery," said Marie-Claire Paiz, Gabon Program Director for The Nature Conservancy. "Our goal is to help Gabon acquire better baseline knowledge about the state of their fish and rivers which will enable them make science-guided choices about where and how to use their resources wisely for both people and nature."

"The Nature Conservancy deserves a lot of credit," commented Sullivan. "It's a great example of how a conservation organization can promote the discovery of biodiversity by partnering with taxonomists and natural history museums."

Explore further: [AC or DC? Two newly described electric fish from the Amazon are wired differently](#)

More information: John Sullivan et al. *Cryptomyrus*: a new genus of Mormyridae (Teleostei, Osteoglossomorpha) with two new species from Gabon, West-Central Africa, *ZooKeys* (2016). DOI: 10.3897/zookeys.561.7137

Journal reference: *ZooKeys*

Read more at: <http://phys.org/news/2016-02-hidden-fish-genus-weakly-electric.html#jCp>'Hidden fish' genus described for two
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Fossil discovery: Extraordinary 'big-mouthed' fish from Cretaceous Period

DEPAUL UNIVERSITY

IMAGE: AN INTERNATIONAL TEAM OF SCIENTISTS HAVE DISCOVERED TWO NEW PLANKTON-EATING FOSSIL FISH SPECIES, OF THE GENUS CALLED RHINCONICHTHYS, WHICH LIVED 92 MILLION YEARS AGO IN THE OCEANS OF THE CRETACEOUS...

CREDIT: ROBERT NICHOLLS IMAGE

CHICAGO -- An international team of scientists have discovered two new plankton-eating fossil fish species of the genus called *Rhinconichthys* (Rink-O-nik-thees) from the oceans of the Cretaceous Period, about 92 million years ago, when dinosaurs roamed the planet.

One of the authors of the study, Kenshu Shimada, a paleobiologist at DePaul University, said *Rhinconichthys* are exceptionally rare, known previously by only one species from England. But a new skull from North America, discovered in Colorado along with the re-examination of another skull from Japan have tripled the number of species in the genus with a greatly expanded geographical range. According to Shimada, who played a key role in the study, these species have been named *R. purgatoirensis* and *R. uyenoii*, respectively.

"I was in a team that named *Rhinconichthys* in 2010, which was based on a single species from England, but we had no idea back then that the genus was so diverse and so globally distributed," said Shimada.

The new study, "Highly specialized suspension-feeding bony fish *Rhinconichthys* (Actinopterygii: Pachycormiformes) from the mid-Cretaceous of the United States, England and Japan," will appear in the forthcoming issue of the international scientific journal *Cretaceous Research*.

The research team includes scientists from government, museum, private sector and university careers. They include Bruce A. Schumacher from the United States Forest Service who discovered the new specimen. It also includes researchers, Jeff Liston from the National Museum of Scotland and Anthony Maltese from the Rocky Mountain Dinosaur Resource Center. *Rhinconichthys* belongs to an extinct bony fish group called pachycormids, which contains the largest bony fish ever to have lived. The new study specifically focuses on highly elusive forms of this fish group that ate plankton.

Rhinconichthys was estimated to be more than 6.5 feet and fed on plankton. It had a highly unusual specialization for bony fish. According to Shimada, one pair of bones called hyomandibulae formed a massive oar-shaped lever to protrude and swing the jaws open extra wide, like a parachute, in order to receive more plankton-rich water into its mouth, similar to the way many sharks open their mouth.

A planktivorous diet, also called suspension-feeding, is known among some specialized aquatic vertebrates today, including the Blue Whale, Manta Ray and Whale Shark. The name *Rhinconichthys* means a fish like the Whale Shark, *Rhincodon*.

Suspension-feeding in the dinosaur era is a new emerging area of research.

"Based on our new study, we now have three different species of *Rhinconichthys* from three separate regions of the globe, each represented by a single skull," Shimada noted. "This tells just how little we still know about the biodiversity of organisms through the Earth's history. It's really mindboggling."



Barramundi refuse to spawn, delay start to breeding season at Gulf fish stocking operation

Staff at Karumba's Barramundi Discovery Centre help fish spawn in a tank environment between the months of October and May.

The young barramundi, or fingerlings, are used to stock dams and rivers across North Queensland.

Centre director Chris McDonald said he had not been able to successfully breed any fish this season, and is blaming the male barramundi selected from the nearby Norman River for the delay.

Males 'letting us down' says fish breeder "The females have been doing their thing but the males have been letting us down, unfortunately," he said.

"We get our brood stock from the river and most other aquaculture set ups have a pond full of males so they can go through and choose from.

"We don't have that luxury, so it's a bit of a lucky dip so to speak.

"It may have something to do with the time we get them, whether we picked them up too early and they spent too much time in the tank before we wanted them to spawn; who knows," he said

YOUTUBE: Feeding time at the Barramundi Discovery Centre in Karumba

Everything inside the tanks has to be perfect for the females to release their eggs, and males to fertilise them with their milt. Mr McDonald said that in the wild, barramundi "do their thing" without too many issues.

To get the fish ready in an unnatural environment, staff at the centre raise the water temperature to match conditions in the nearby Norman River and spend days painstakingly monitoring the water temperature and salinity.

There's not much monsoon activity in the north and we need that to come down from Papua New Guinea and saturate the place.

When the fish show signs of getting ready to spawn, they get a hormone injection to help the process along.

Mr McDonald said if the fish were not able to spawn by May, the process could become more difficult or not happen at all.

"Technically speaking, we could breed all year round, but it is very difficult in our cooler months," he said.

"If the water temperature in the spawning tank drops by more than one degree while they're spawning, we'll lose all those eggs, and that can happen with a bit of a cool breeze running over the tank."

Mr McDonald said he was working with the centre's barramundi breeding expert, Paul Gofton, to work out alternatives for keeping the north-west stocked with fish if they did not get a successful spawn.

Wild barramundi need time to recoverChair of the Gulf of Carpentaria Commercial Fisherman's Association, Garry Ward, said 2016 was shaping up to be another poor year for barramundi fishermen.

Rain in December and January flushed out some of the key breeding grounds for the fish species.

Mr Ward said the rain was welcome, but was nowhere near enough to recover fish stocks to where they were prior to the start of Queensland's drought.

"We'll have very low production rates and the prices will go up, which will help us a fair bit, but at this stage it's not looking real good," he said.

"There's not much monsoon activity in the north and we need that to come down from Papua New Guinea and saturate the place.

"Even if we get a big wet this year, which it doesn't look like we're going to get, the benefits wouldn't be there for a couple of years, so it's a long term thing really.

"I've had reports that the fish are dying in some of the lagoons because there's no oxygen for them, so its not looking good.

"We need to fill those lagoons up with fresh water."



Plenty more fish in the rivers

Paul Frear from the North East fisheries team fish stocking in the River Skerne

FISHY: James Rabjohns from Calverton Fish Farm fish stocking in the Clow Beck

Alexa Copeland, Reporter (Darlington) / Wednesday 3 February 2016 / News

FISHERIES experts have stocked thousands of fish at **Darlington** as part of the Environment Agency's ongoing plans to develop and restore watercourses.

The River Tees above Broken Scar saw 1,000 barbel, 2,000 dace and 2,000 chub stocked, while a further 3,000 dace were

released into Clow Beck, near Aldbrough St John, and the River Skerne at South Park.

The Environment Agency releases fish into the country's waterways annually and target fish stocking activity using data from national fish surveys to identify where there are problems with poor breeding and survival.

Environment Agency North East fisheries officer, Paul Frear, introduced the fish to their new homes this week and said:

"We're pleased that we can provide these fish for stocking as part of our commitment to rod licence paying anglers.

"Restoration and the creation of new fisheries for all people to enjoy is a very important aspect to our work."

High spring flows and cool summers on the River Tees has impacted on coarse fish survival along with barriers to fish passage.

The Clow Beck was badly polluted last year and thousands of fish were killed.

This stocking is part of the restoration and a concerted effort by the Environment Agency is helping to turn this watercourse around.

The fish for stocking all come from the Environment Agency's fish farm at Calverton, in Nottinghamshire, where between 350,000 and 500,000 fish are produced to stock rivers across the country each year.



Norwegian fish farms fight sea lice with 'StarWars'

An Oslo firm have developed a laser gun which kills an out-of-control parasite threatening Norway's massive aquaculture industry.

The sea louse is no larger than a house fly, but for years it has been the biggest headache for Norway's more than 1,200 fish farms. It feeds off the salmon's skin and blood, sometimes leading to open wounds.

The 5.1 billion euro export industry has so far failed to get a grip on the problem, which costs some 310 million euro in lost revenue every year. Chemicals in the water and medicine mixed in with the fish feed has had some success, but the parasite is becoming resistant to more and more of these treatments.

Underwater laser

Hence the race for alternative methods to fight sea lice is on. On an industrial estate in the Norwegian capital Oslo, a team of engineers with the "Stingray" company believe they have a solution that sounds like it comes straight out of a science fiction movie: a laser gun.

More than 1,200 fish farms in Norway offer up innumerable hosts for the sea lice

"The first time I heard about sea lice, I googled it to see what it looked like, and my first idea was to shoot it with a laser," explains Esben Beck, an entrepreneur with background in Norway's oil industry.

"I got laughed at a lot, because the initial thought of the majority of people I spoke to was that this couldn't be done," he says. But Beck insists that shooting sea lice on a moving target - the salmon host - is not as difficult as it sounds.

Easier than hitting cruise missiles

"In the late 70s, early 80s, the Americans had developed a laser system to shoot down cruise missiles from a very long distance," Beck says. "If you have a cruise missile the length of one metre, and you shoot with a laser from several kilometres away, that's a much higher precision than we need to actually shoot the lice."

The laser is enclosed in a watertight pod the size and shape of a punching bag. The pod also holds a camera that identifies the parasite on the fish, before an onboard computer calculates the laser's "trajectory." This way, it should hit a bullseye every time. Another camera provides a live-feed of the action to the Oslo control room.

"As the fish swim by, the sea lice are detected on the fish, and in a matter of a few milliseconds the system aims the laser beam towards the sea lice and kills them," explains John Arne Breivik, Stingray's general manager.

"It gets fried. The laser fills it with a lot of energy, namely photons. The energy coagulates the sea lice so that it dies. And this happens in just a few milliseconds," he adds.

Fighter jet technology

"We can actually document every single louse we have shot," he says, gesturing to a patchwork of photos of more than a hundred individual sea lice identified by the cameras, moments before they are killed by the laser.

"That means we even have a lock-on target like they have on fighter planes, so it's a pretty cool thing!"

The salmon itself is not harmed by the laser, because its shiny shells act as a mirror that reflects the light. So far the lasers have treated millions of fish, and fish farmers have reported no injuries.

Breivik with one of Stingray's "pretty cool" laser pods

But concerns over fish farming and the prevalence of sea lice remain, especially among environmental organisations in Norway.

"We have a situation where we're producing 1.2 million tonnes of farmed salmon [annually], and that means there's a huge amount of hosts for the parasite," Karoline Andaur, conservation director at WWF Norway, says.

"Salmon farming in Norway uses an open net system, which means parasites can float freely between the wild environment and the cage that the farmed salmon is in."

The WWF official thinks it's "far-fetched" to believe that all sea lice can be shot down with lasers.

Optimistic

The people at Stingray remain optimistic, however.

"We believe that two to three years from now, continuous laser treatment inside the pen will be the base treatment," John Arne Breivik, Stingray's general manager, says.

The company is already preparing to fulfil orders of between 100 and 200 new laser guns to be delivered in 2016. Yet the scale of Norway's aquaculture industry means other treatment methods like chemicals and medicines will continue to play an important part for some time.



Pet Fish Monthly for May & June 1970 can
now be viewed at:- <http://aqua-worlduk.weebly.com>



Boat noise making small fish easier to prey on,
reef study finds

Predator fish gobbled twice as many smaller fish when motor boats were nearby, according to first research to show noise pollution directly impacts fish survival

A “cloak of noise” produced by motor boats is making small fish easy prey for predators, according to the first study to show noise pollution in the seas can have a direct impact on fish survival. The research, on Australia’s Great Barrier Reef, showed predator fish gobbled up twice as many prey when motor boats were nearby, compared to when the natural noises of the reef were the only sound.

Earlier research has shown manmade noise in the oceans can affect communication and hunting by marine animals. “But this was about life or death,” said Steve Simpson, at the University of Exeter, UK, who led the international research team. “Noise is yet another [manmade] problem for the oceans, but it is one we can solve more easily than things like climate change,” said Simpson. “If we can take one of the stressors out of the equation, we can give fish one less thing to worry about.”

The research, published in **Nature Communications**, took place at Lizard Island and examined how the rumble of outboard motors affected young ambon damselfish, which are eaten by dusky dottybacks.

As well as doubling the number of damselfish devoured, the team discovered that motor boat noise increased stress levels in the fish by 33%. The scientists also found the noise made damselfish six times less likely to “startle” and dart away when a predator made its move. Even when they did startle, they were 22% slower. The study was the first to use real motor boats to provide the noise, rather than the recordings usually used in research.

“In this case, the motor boats spell death for the young fish,” said Simpson. He thinks two factors - distraction and stress - are the most likely reason, with both probably playing a role.

The motor noise distracts the damselfish, so they take less notice of the dottybacks. “Under the cloak of noise, the predator is winning,” Simpson said. The stress caused by the noise alters the damselfishes behaviour, he said: “It can cause fish to respond [to attacks] in the wrong ways. If you think of people, when we are stressed we often do crazy things.”

“In this case, we think the prey fish are more susceptible to noise than the predator fish, but that might be the other way around in other cases,” he said.

Two-stroke outboard motors are extremely common on most coasts with, for example, 12m registered motor boats in the US alone. But, compared to climate change, ocean acidification, pollution and overfishing, cutting noise pollution is easier to deal with in principle.

Simpson said there could be marine quiet zones, where motor boats are excluded or have to use quieter motors. Four-stroke motors are quieter and electric motors are getting more powerful and are much quieter, he said.

Mark Meekan, at the Australian Institute of Marine Science and part of the research team, said: “If we can reduce the effect of local noise pollution, we can build greater resilience in reef communities to looming threats such as global warming.”





Land plant became key marine species

Date:

February 1, 2016

Source:

University of Gothenburg

Summary:

The genome of eelgrass (*Zostera marina*) has now been unveiled. It turns out that the plant, once land-living but now only found in the marine environment, has lost the genes required to survive out of the water.

FULL STORY

Eelgrass belongs to a group of flowering plants that have adapted to a life in water. As such, it is a suitable candidate for studies of adaptation and evolution.

Credit: Frithjof MoyThe genome of eelgrass (*Zostera marina*) has now been unveiled. It turns out that the plant, once land-living but now only found in the marine environment, has lost the genes required to survive out of the water. Scientists from the University of Gothenburg participated in the research study, the results of which are published in the scientific journal *Nature*.

Eelgrass belongs to a group of flowering plants that have adapted to a life in water. As such, it is a suitable candidate for studies of adaptation and evolution.

'Since flowering plants have emerged and developed on land, eelgrass can be expected to share many genetic features with many land plants. Studying differences between them can tell us how eelgrass has adapted to a marine environment,' says Mats Töpel, researcher at the Department of Marine Sciences, University of Gothenburg, who participated in the sequencing of the eelgrass genome.

Töpel is part of an international research collaboration involving 35 research teams. As a result of their efforts, the eelgrass genome has now been published in *Nature*.

A life on land no longer possible

One interesting discovery made by the scientists is that eelgrass has lost not only the special cells that flowering plants need to be able to 'breathe' (meaning to absorb carbon dioxide and release oxygen) but also the genes required to form these cells.

'This is a good example of how evolution extends beyond mere accumulation of useful traits; organisms can also benefit from losing certain genes and characteristics,' says Töpel.

Eelgrass -- a key species in trouble

Eelgrass belongs to a group of plants generally referred to as seagrass and forms gigantic submarine meadows along European, North American and Asian shores. The plant has adapted to many different environments, from the bitter Arctic cold to the warm waters further south.

In all of these environments, eelgrass serves an important function in the ecosystem by binding sediments and acting as a nursery for young fish and other animals. It also influences our own environment by binding large amounts of nutrients and carbon dioxide.

'Lately, the eelgrass meadows have disappeared in many places, and a lot of research is underway to figure out how these ecosystems work and what we can do to protect them,' says Töpel.

Further studies remain

The genome of an organism contains huge amounts of information.

'So far we have only scratched the surface. A vast number of bioinformatic analyses of eelgrass remain to be done. And the increasing availability of genomes of other organisms enables us to make new comparisons,' says Töpel.

Story Source:

The above post is reprinted from materials provided by University of Gothenburg. Note: Materials may be edited for content and length.

Journal Reference:

1. Jeanine L. Olsen, Pierre Rouzé, Bram Verhelst, Yao-Cheng Lin, Till Bayer, Jonas Collen, Emanuela Dattolo, Emanuele De Paoli, Simon Dittami, Florian Maumus, Gurvan Michel, Anna Kersting, Chiara Lauritano, Rolf Lohaus, Mats Töpel, Thierry Tonon, Kevin Vanneste, Mojgan Amirebrahimi, Janina Brakel, Christoffer Boström, Mansi Chovatia, Jane Grimwood, Jerry W. Jenkins, Alexander Jueterbock, Amy Mraz, Wytze T. Stam, Hope Tice, Erich Bornberg-Bauer, Pamela J. Green, Gareth A. Pearson, Gabriele Procaccini, Carlos M. Duarte, Jeremy Schmutz, Thorsten B. H. Reusch, Yves Van de Peer. The genome of the seagrass *Zostera marina* reveals angiosperm adaptation to the sea. *Nature*, 2016; DOI: 10.1038/nature16548

University of Gothenburg. "Land plant became key marine species." *ScienceDaily*. ScienceDaily, 1 February 2016. <www.sciencedaily.com/releases/2016/02/160201125518.htm>.



Ginglymostoma cirratum

Laziness can help you

succeed... if you're a nurse shark.

A new research paper from Mote Marine Laboratory reveals that nurse sharks have the lowest metabolic rate measured in any shark -- new evidence of the sluggish lifestyle that has helped the species survive for millennia.

The study enhances knowledge about the metabolism of sharks -- marine predators whose energy needs are little-understood but suspected to play a big role in the workings of healthy ecosystems. The study recently debuted online and is slated for print in the April volume of the peer-reviewed Journal of Experimental Marine Biology and Ecology. It was funded by the National Science Foundation (NSF).

Some sharks, like the large and active mako shark, are high-powered swimmers that chase swift prey and eat plenty to replenish their energy. In contrast, nurse sharks tend to loiter under rocks and find crevices where they can suck out lobsters, conchs, resting reef fish and other slow or unwary prey. Nurse sharks can pump water across their gills while lying on the bottom -- a relatively uncommon ability in sharks that enables low-energy loitering instead of constant swimming.

Studies have estimated metabolic rates -- energy use over time -- for only a handful of shark species. Even rarer are studies linking metabolic data with behavior in the wild.

"If we know about a shark's metabolism -- their basic energy needs -- then we can start to estimate their energy use in the wild to better understand their impact on the ecosystem," said Dr. Nick Whitney, manager of the Behavioral Ecology and Physiology Program at Mote. "Sharks are often the top predators in the food web, consuming a lot of calories from animals on lower levels. As such, they often have a larger impact on the balance of the ecosystem than other species. To better understand the ecosystems that we want to preserve, we need to better understand sharks."

The new study is the first published account of nurse sharks' metabolism in the lab: the initial step toward understanding the species' role in the wild. The study included scientists from Mote and Murdoch University.

Lindsay C. Gaskins participated as a Mote intern in the NSF-funded Research Experiences for Undergraduates program. "Being an REU intern was one of the best experiences of my life," Gaskins said. "This was my first time working hands-on with sharks and designing a research project. It gave me confidence in my skills and connected me with shark science experts who are passionate about the same things as I am."

During September 2014 through May 2015, the team monitored nurse sharks in a tank with a sealed plastic lid, so the volume of oxygen would decrease in a measurable way as the nurse sharks breathed. The researchers measured how much oxygen the nurse sharks consumed to estimate energy required at rest or while swimming a specific distance and speed.

The results: Nurse sharks raised -- or rather, lowered -- the bar for lazy living in sharks.

Nurse sharks' average metabolic rate while swimming was estimated to be only 18 percent of a similar measurement in the high-performance mako shark. Nurse sharks were even topped by other slow movers -- for instance, they had about half the metabolic rate of spiny dogfish sharks in motion. Nurse sharks had to consume much more energy to swim than to rest -- a bigger difference than many sharks show -- but they consumed less energy overall than many other shark species.

Comparisons in this study presumed the sharks were in water of the same temperature.

"Overall, nurse sharks have a very low metabolic rate; they don't move much, and when they do move, it's a lot of work," Whitney said. "With this low metabolism, they probably don't need to consume a lot of calories in order to maintain themselves. So their impact on the ecosystem could be less than you'd expect from other large predators. If they had a higher metabolic rate, like a mako shark, you'd expect their impact to be greater."

Even so, the paper notes that "nurse sharks are often one of the most prevalent sharks in tropical and sub-tropical

ecosystems." Given their prevalence, how does their ecological impact compare with that of higher-performing but rarer predators?

Surprisingly, few studies have followed through to estimate sharks' impacts on the energy circulating through their ecosystem. Whitney and his team hope to do just that. During another recent study, they fitted nurse sharks with motion sensors called accelerometers, which use technology similar to the FitBit to track a shark's tail beats and body orientation. Mote scientists have been fitting sharks with accelerometers in the wild as well.

"We want to use the accelerometer data of wild sharks to compare with what we've done in the lab," Whitney said. "With nurse sharks, we first had to do the basic work of estimating their metabolic rate under controlled conditions."

Their findings provide a new glimpse into the life of a shark built for the slow lane.

"With their low metabolic rate, nurse sharks are pretty lazy -- but the interesting thing is that this can be a very successful strategy," Whitney said. "Nurse shark populations are doing very well compared with many other shark species. Their low-energy strategy is not the only factor, but it is part of their success. If a shark figures out how to lie under a coral ledge, breathe without swimming and conserve energy, it can do very well. Compared to other sharks, nurse sharks grow reasonably quickly as young animals, and they ultimately have a relatively large number of pups (babies). That shows that they are efficient."

Story Source:

The above post is reprinted from materials provided by Mote Marine Laboratory. Note: Materials may be edited for content and length.

Journal Reference:

1. Nicholas M. Whitney, Karissa O. Lear, Lindsay C. Gaskins, Adrian C. Gleiss. The effects of temperature and swimming speed on the metabolic rate of the nurse shark (*Ginglymostoma cirratum*, Bonaterre). *Journal of Experimental Marine Biology and Ecology*, 2016; 477: 40 DOI: 10.1016/j.jembe.2015.12.009

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Dynamite fishing in Tanzania

It was European armies during World War I that introduced dynamite fishing as a way to catch a quick, fresh meal, according to marine expert Michel Bariche. Some countries, such as Kenya and Mozambique, have succeeded in shutting it down, but it still goes on in Lebanon, Malaysia, the Philippines, Indonesia, and Myanmar, among others. Tanzania is the only country in Africa where blast fishing still occurs on a large scale, says **SmartFish**, a fisheries program funded by the European Union. When a fisherman can rake in a profit of \$1,800 at the Dar es Salaam fish market from a single blast, as the **BBC** reports, it's not hard to see why people do it.

At Least Ten Blasts a Day

Davenport and other researchers stumbled upon the intensity of Tanzania's problem earlier this year. They set out in March to gather information about whale and dolphin species inhabiting Tanzania's coast. But when they heard more explosions than cetacean whistles on their hydrophone recordings, they decided to analyze those data too.

The researchers counted more than 300 explosions in 30 days, or 231 hours, of underwater recordings from the Tanzania-Kenya border down to Mozambique. "What we wanted to show was how extensive this is," says Davenport, "and that it's going all the way up and down the coast."

Most of the blasts—more than 60 percent—occurred within 50 miles (80 kilometers) of the city of Dar es Salaam, according to a November report, but other hot spots included areas near Songo Songo Island, the Tanga region, and the coastal town of Lindi. Seventy percent of the explosions happened between 9 a.m. and 1 p.m., "suggesting little evidence of concern for the risk of detection by the authorities," the report notes.

"We caught a snapshot," says Davenport, who acknowledges that his group isn't the first to count blasts in Tanzania's waters. The estimate is conservative because the hydrophones didn't record in very shallow waters near the shore, where much of blast fishing occurs. Also, fishermen may have taken the day off when the scientists' boat passed through. Bad weather may have been a deterrent too.

Obliterating Coral Reefs, Fish, and More

In Tanzania, **about two-thirds** of the country's coastline harbors reefs, which support fish, crab, and other species, and play a crucial role in controlling carbon dioxide levels in the ocean. They thrive in the shallows—where blast fishing is most prolific.

"Some of these corals have been growing for decades," says Gabby Ahmadi, a marine conservation scientist with the World Wildlife Fund. "When you damage them, it can take decades for them to recover, and sometimes not at all."

A study of coral reefs in Tanga revealed that fish densities were 12 times higher on a reef with little dynamite damage versus one nearby that was heavily dynamited, the WCS report notes. The report also cites anecdotal evidence that blasts have killed dolphins—the endangered Indo-pacific bottlenose dolphin swim in Tanzania's waters.

Beyond the environmental damage, blast fishing threatens the livelihood of legitimate fishermen, who've blamed dynamite for recent declines in their catch. That's according to a 2014 report by the Mwambao Coastal Community Network, a nonprofit in Tanzania that's helping to combat blast fishing.

Then there's the threat to tourism, which constitutes 17 percent of Tanzania's gross domestic product. "People won't be interested in going to the beach if there are explosions and the coral is being systematically destroyed," Davenport says. If people are scared to swim in the waters because of incidents like this, that's a big problem.

A Renewed Effort

In June, the Tanzanian government launched the Multi-Agency Task Team to deal with wildlife crimes such as blast fishing. "The focus will be to target the individuals and networks that control this illegal trade, bring them to justice, and seize any assets obtained through their crimes," Magese Emmanuel Bulayi, a principal fisheries officer in the Ministry of Natural Resources and Tourism, said during a meeting on blast fishing last month.

The task force shows there's political will to end blast fishing, but it wouldn't be the first time the country's tried to clamp down on the practice. "Occasionally it's been cracked down on, but temporarily," Davenport says. From 1997 to 2003, the navy and marine police combined forces with local programs to enforce the blast fishing ban.

Scant resources, confusion over who's supposed to enforce the law, and lenient sentences for offenders have perpetuated the problem. The country's Fisheries Act of 2003 imposes a minimum of five years for dynamite fishing, but according to marine conservationist Sue Wells, people rarely receive that sentence.

Davenport says he wants the WCS study to help efforts against blast fishing. "I hope that in conjunction with the earlier reports, people will realize that it's extremely serious, that it's not going away, and it needs to be tackled."

This story was produced by National Geographic's Special Investigations Unit, which focuses on wildlife crime and is made possible by grants from the BAND Foundation and the Woodtiger Fund. Read more stories from the SIU on [Wildlife Watch](#). Send tips, feedback and story ideas tongwildlife@ngs.org.



<https://youtu.be/0uQkv-KDPI4>

UKAPS Aquascaping

Experience 2016 - Short intro

If link doesn't work copy and paste into your
browser





Galaxiella nigrostriata



LEPIDOGALAXIAS SALAMANOIDES

Aestivating fish face extinction due to climate change

January 29, 2016 Two endangered Western Australian fish species are facing a battle for survival due to habitat changes caused by the hotter and drier climate, a Murdoch University researcher has found.

Garry Ogston from the Centre for Fish and Fisheries Research said salamanderfish had been lost from 33 per cent of sites in which they were historically present, while black stripe minnows had been lost from 28 per cent of sites. Both are endemic to south west WA.

Mr Ogston, who studied the fish for his Honours research, said further losses should be expected as climate models predict increasing **water temperatures** and declining rainfall.

The two **species** are aestivating, which means they undergo periods of dormancy during dry spells. They survive over the summer by burrowing into sediment when the wetlands dry. As such they are particularly vulnerable to the impacts of climate change, said Mr Ogston.

"These species are the only two aestivating fish that we have here in WA," said Mr Ogston. "The ability to aestivate is a fascinating trait, similar to hibernation.

"The occurrence of both species is associated with lower water temperatures and pH, and higher oxidation-reduction potential. And these factors are influenced by the local climate.

- "The declines we identified were quite alarming and active intervention is required to help save these species."

Based on his findings, Mr Ogston said artificial ponds and wetlands could be the key to protecting the species from further decline.

"Many of the pools we found them in were already artificial pits which were created when soil was removed for raising roads. The naturalness of the wetland did not seem to impact on the presence or absence of the species," he said.

"For salamanderfish, the depth of pools in winter and the length of dry period were significant for their presence. From satellite imagery, and evidence in the field, we observed the surrounding wetlands drying long before the artificial pits, and we believe this is attributed to the increased depth of the pools due to the excavated soil.

"In our drying climate, with less rainfall and increased dry season, the longer we can allow these pools to stay filled with water, the more hope there is for both species."

Mr Ogston studied populations of the fishes from Augusta to Albany, with many of the natural and artificial wetlands that contained them located around Northcliffe. The black stripe minnow also has some outlying populations including two north of Perth. This fragmentation is another risk factor for the fishes, he said.

Mr Ogston said there were plenty of steps that could be taken by people at a community level to help the salamanderfish and the black stripe minnow.

"In our drying climate, being water wise is a major step. The less strain we put on our freshwater systems, the better for the sake of all our freshwater species," he said.

"Many of the wetlands home to salamanderfish and black-stripe minnow are in conservation reserves, however, others border farmlands, so working with landowners regarding fertiliser runoff, and restricting access for livestock would also be key in helping protect these pools."

In the future, Mr Ogston said he and colleagues from the Centre for Fish and Fisheries Research were hoping to study the design and creation of artificial pits that would serve a double purpose as important refuges for fish like the salamanderfish and the black stripe minnow, as well as being bushfire water points.

Read more at: <http://phys.org/news/2016-01-aestivating-fish-extinction-due-climate.html#jCp>



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NOT TO BE MISSED



Fishing ban on stretch of River Wear after poaching reaches 'industrial scale'

The River Wear in Durham.

- A fishing ban has been put in place on a stretch of the River Wear in a bid to put a halt to poachers, according to the Sunderland Echo

The ban, in the heart of Durham, has been ordered to combat what conservationists have condemned as “salmon and sea trout poaching on an industrial scale”.

The indiscriminate plunder of the river's migratory fish at Freeman's Reach must stop. Wear Anglers' Association A bylaw backed by the Wear Anglers' Association (WAA), which has 6,000 members, will ban all fishing.

The move has been supported by the trustees of the City of Durham Freeman, who control riverbank access, and supported by Durham Constabulary, Durham County Council and the Environment Agency.

Thousands of fish come into the river from the Atlantic and North Sea every summer and autumn as they head for spawning grounds, but a series of weirs in the shadow of the cathedral present an obstacle to the migration.

During low water, fish held in pools below the weirs are vulnerable to attack, with many hundreds impaled on hooks by poachers using outlawed rod and line tactics, known as “stroke hauling,” “snatching” or “foul hooking”.

Some offenders have arrived in refrigerated vehicles to take their haul away, and one reported poacher is said to have taken 80 fish one visit.

Police and Environment Agency bailiffs have made arrests, but the trustees decided the only option was to end decades of tradition by withdrawing the free fishing privilege on the south bank.

The latest measures cover more than 500 metres, matching existing restrictions on the opposite side of the river, and extend into the western end of the Sands.

The trustees have set aside 350 metres of the south bank at the eastern end of the Sands to allow law-abiding anglers the chance to continue free fishing away from the poaching “hot spot.”

A spokesman for the WAA said: “The indiscriminate plunder of the river's migratory fish at Freeman's Reach must stop. “The majority of our association's members return most of the fish they catch.”



Death Valley fish a 'recent arrival'?

- One of the most extraordinary fish species in world may not be as old as once thought.

The Devils Hole pupfish survive in 32-degree Celsius water in a rock shaft in Death Valley in the US.

Previous studies suggested they could have become separated as a distinct population more than 10,000 years ago.

But the latest genetic analysis points to the pupfish being resident in their unique habitat for perhaps only a few hundred years at most.

Christopher Martin and colleagues tell a Royal Society journal that the revelation raises interesting questions as to how the animals got into their present location.

There are other pupfish populations in Death Valley but for any of those to have colonised Devils Hole they would somehow have had to cross one of the driest, hottest deserts on Earth.

"My best guess is that they got in there during some extreme flooding events" said, Dr Martin, a scientist from the University of North Carolina at Chapel Hill.

"The ages we've come up with for the Devils Hole fish do overlap with the great flood of 1862, which was the largest rainfall event ever recorded for California/Nevada.

"We also know that pupfish eggs are adhesive and will stick to vegetation, so it's possible they came in stuck on birds' legs." It is not beyond possibility that the fish were directly moved by Native Americans at some point.

It is thought the hole itself opened to the surface about 60,000 years ago. The Devils Hole pupfish (*Cyprinodon diabolis*) were once dubbed the "rarest fish on the planet" because their numbers were so limited. As few as 35 individuals have been counted in the past.

They certainly live a precarious existence. Their rock pool is more than 100m deep, which means they must spawn on a narrow shelf near the surface.

Food takes the form of algae, but this is in short supply for two months of the year when sunlight does not fall on the water's

surface. A mass die-off is a regular occurrence.

The geological evidence suggests the rock pool opened to the surface about 60,000 years ago, and that large regions of Death Valley were under water some 10,000 years. This would have enabled pupfish populations in the region to move more freely.

Some of the first genetic analyses that tried to age the distinctiveness of *Cyprinodon diabolis* looked at mitochondrial DNA - genetic material held in the "energy factories" in cells. This DNA incorporates mutations at a regular rate through the generations, and can be used as a kind of clock. But the approach is notoriously sensitive to the calibration rules that are applied to the analysis.

Early mtDNA efforts suggested *Cyprinodon diabolis* might have been a separate species for 2-3 million years. But the geological indicators rule this out.

For their study, Dr Martin and his team deployed the very latest genomic techniques, analysing thousands of genetic markers and using demographic models that took into account the variation that exists within and across pupfish populations.

Calibration was applied from what appeared to be more solid data based on pupfish diversity in Mexico.

The research estimates that Devils Hole was colonised between 105 and 830 years ago.

"They are special fish," said Dr Martin. "The ecology of the Devils Hole is reflected by the very phenotypic distinctiveness of these pupfish. They have not only reduced aggression and a darker metallic colouration, but they have completely lost their pelvic fins. We don't know whether the loss of this major appendage is due to the effects of severe inbreeding over time or if it's adaptive in this habitat."

The study is published in *Proceedings of the Royal Society B*.



Helping to boost fish numbers in the Slea

Improvement works along the River Slea.

Steps are being taken to boost fish numbers in the River Slea in Sleaford after it was found to be poor in comparison to national standards.

The issue was identified by the Wild Trout Trust after it carried out a survey of the river last year on behalf of the Lincolnshire Rivers Trust.

The bodies are now working together to improve the Slea with support from the River Slea Cleanup and Sleaford In Bloom groups.

The first phase of work involved digging material from the channel and dumping it into the river to create a low-flow channel, meanders, and pooled areas to improve the overall water quality and habitat diversity.

The second phase, which has seen work take place this week, has seen volunteers join members of both the Lincolnshire Rivers and Wild Trout trusts install bundles of brushwood into the river to help protect the river banks from erosion by ducks and enhance the berms created by the 'dig and dump' works.

The steps will not just benefit fishes, but other aquatic life.

There will be a chance to help the trusts install bundles on Saturday.

Marie Taylor, project officer for the Lincolnshire Rivers Trust, said: "It is a great way to be involved with a community based project and improving your local river."

Anyone interested in being a volunteer, and has a pair of wellies and gloves, is asked to email lincsivers@gmail.com



The Voracious Fish That Looks Like a Pug and Stings Like a Bee

The stargazer but it does have to worry about eating. The bulging eyes and frowny mouth that make it look like an aquatic pug are brilliant adaptations for an ambush predator. And even beyond its ... singular looks, this is one of the sea's most remarkable fishes—it's venomous and it shocks like an electric eel.

Unless you've got a coral reef to duck into, the bottom of the ocean is a place of constant peril. Death comes from above, sideways, and, with the strategy of the 50 or so species of stargazer thrown in the mix, from below. To get a jump on their prey, the fish burrow into the sand, exposing only their mouths and bug-eyes. This has an added bonus of hiding the stargazers from their own enemies swimming above.

So the stargazer is buried there, biding its time, probably thinking about eating and stuff. Some species even utilize a specially-shaped piece of flesh on the inside of their mouths, which acts like a lure to fish and crustaceans hunting on the seafloor. "They're able to stick this out of the mouth when they're burrowed, resembling a segmented worm to draw the attention of other fish," says systemicist **Martin Gomon** of Australia's Museum Victoria. (The anglerfishes utilize a similar ruse, only their lures are actually modified dorsal spines. Also, their sex is **kinky**.)

Curious fish expecting an easy meal instead get a healthy dose of death. All the stargazer has to do is rapidly open its gaping maw, and the resulting vacuum drags the prey to its doom. It's so effective, the predator has no need for **nasty, big, pointy teeth** to snag its prey—its chompers are relatively tiny.

But this lifestyle comes with unique challenges. For one, the stargazer has to worry about the water flowing out of its buried gills kicking up sand. If potential prey see the substrate bubbling up around the predator, the ruse is up. So the stargazer has a clever adaptation: Its gill covers are fringed with finger-like projections that may better disperse the water coming out, as opposed to firing it out as a solid jet.

Its mouth, too, has frills around the edges to keep sand from falling in as the fish gulps water. And it's not just that the stargazer wants to avoid choking to death here. Sand is, of course, super abrasive. "What you want to do is minimize the amount of sand that damages the gills over time," says Gomon.

While the stargazer's camouflage may be top-notch, it isn't perfect. So the fish deploys additional countermeasures in the event of an oh-bother-I'm-in-another-animal's-mouth kind of situation. First, it has a venomous spine just above the base of its pectoral fins (those would be the ones on the fish's sides). While its venom is still poorly studied, it's apparently got some kick, considering stargazers have **dropped a handful of humans dead**.

Some stargazer species also deploy a second countermeasure: a specialized organ behind their eyes that fires out a blast of electricity. Like an electric eel, stargazers can zap their enemies, though they use it for defense, not hunting. And the stargazers' blast is far weaker than an electric eel's—50 volts compared to 600—but the jolt may just be enough to startle a predator into turning the fish loose.

With any luck, that fake worm will attract a fish to its doom. So when a stargazer does **the worm**, it's a bit more literal than for humans. Really, though, the stargazers' strategy is to go unseen. Which makes one species, *Pleuroscopus pseudodorsalis*, particularly strange. Other stargazers will swim around as juveniles and settle into the sand once they reach about 2 inches long. But this species' larva spends an inordinate chunk of its life braving a zone even more dangerous than the seafloor, the open ocean, only settling once it's reached a foot long.

The juvenile's body is uniquely suited for this lifestyle. Its eyes and mouth, for instance, aren't angled as far back on the head, allowing it to better tackle prey straight ahead. "We thought it was a different species entirely," says Gomon, "but the form of the body changes quite dramatically" between the juvenile and adult stages. Considering boats have brought the young up on baited lines, the fish appear to be active predators as juveniles.

But even though it's removed from the relative safety of the seafloor, the juvenile is far from conspicuous, having evolved its own form of clever camouflage. The top half of its body is a dark blue, while its underside is paler—the same kind of **countershading**, as it's known, that the great white shark deploys. Predators watching from above will have a harder time picking the stargazer out from the dark background of the water below, while predators watching from below will have a harder time picking it out from the sunlight trickling down from the surface.

It's a kind of terror a fish known as the stargazer embodies its entire life. It may not be worrying about a visit from Child Protective Services, but it does have to worry about eating. The bulging eyes and frowny mouth that make it look like an aquatic pug are brilliant adaptations for an ambush predator. And even beyond its ... singular looks, this is one of the sea's most remarkable fishes—it's venomous and it shocks like an electric eel.

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Small but deadly: The chemical warfare of sea slugs

Date:

January 20, 2016

Source:

University of Queensland

Summary:

This is a picture of another sea slug in the study, *Chromodoris elisabethina*.

Credit: Anne Winters
Brightly coloured sea slugs are slurping deadly chemicals and stockpiling the most toxic compounds for use on their enemies.

While the phenomenon sounds like the stuff of horror films, it is common practice for these "butterflies of the ocean," a new University of Queensland-led study published today in PLOS One has found.

Dr Karen Cheney of UQ's School of Biological Sciences said the multi-disciplinary study examined five closely-related nudibranchs (sea slugs) collected from the Great Barrier Reef and from South East Queensland, Australia.

"These carnivorous creatures are well-known to scuba divers for their beautiful colours and intricate patterns," she said.

"Science has known that many sea slugs obtain toxins from what they are eating, such as sponges, but in our study we found they selected only one toxin to store a particularly toxic compound called Latrunculin A.

"Toxicity tests demonstrated that even the smallest amounts of the compound killed brine shrimp."

"Further tests conducted at the Institute for Molecular Bioscience demonstrated that this compound was more toxic to cancer cell lines than other compounds found in sea slugs."

Dr Cheney said sea slugs used chemical defences and bright colours to warn potential predators away, similar to poison dart frogs and brightly coloured butterflies which signalled they were toxic by their colours.

"However, we still are learning if colour patterns are related to the strength of their chemical defences," she said.

"We are investigating whether the most brightly coloured sea slugs are the most toxic, and also whether cryptic sea slugs that blend in with their environment also contain strong toxic defences."

She said while fish recognised visual signals such as bright colours, the presence of the same toxic compound in the closely related sea slugs suggested that something else was at play. It was possible that other predators, such as crabs, might use other ways of detecting the toxicity of their prey.

One future research avenue would be to explore how these creatures were able to eat their prey and transport toxic chemicals without causing internal damage.

The study tapped into the expertise of co-author Professor Mary Garson of UQ's School of Chemistry and Molecular Biosciences, who has been researching chemicals stored by marine animals for the past 20 years.

"One interesting study aspect is the potency of the compound which five different sea slug species chose to store," Professor Garson said.

"This is a well-studied compound which kills cells. In this study we've uncovered a new use for it in an ecological context."

Natural products play an invaluable role as a starting point in the drug discovery process.

"The role this chosen toxin plays in the natural environment potentially could be transferred in the medical field to guide research into treatments for cancer research or neurodegenerative disease," Professor Garson said.

Professor Garson said a good analogy for sea slugs, because of their bright colours, was the "butterflies of the ocean."

The research was funded by the Australian and Pacific Science Foundation; the Australian Research Council (ARC); The University of Queensland, an Australian Government Postgraduate Endeavour Award; and the Mexican Council for Science and Technology.

Co-authors are Andrew White, Dr Wayan Mudianta, Anne Winters, Michelle Qezada, and Professor Robert Capon (all UQ) and Dr Ernesto Mollo of Consiglio Nazionale delle Ricerche, Italy.

Story Source:

The above post is reprinted from materials provided by University of Queensland. Note: Materials may be edited for content and length.

Journal Reference:

1. Karen L. Cheney, Andrew White, I. Wayan Mudianta, Anne E. Winters, Michelle Quezada, Robert J. Capon, Ernesto Mollo, Mary J. Garson. Choose Your Weaponry: Selective Storage of a Single Toxic Compound, Latrunculin A, by Closely Related Nudibranch Molluscs. PLOS ONE, 2016; 11 (1): e0145134 DOI:10.1371/journal.pone.0145134

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