

The background of the slide is a faded, grayscale image. On the left, a shark is visible, swimming towards the right. On the right side, there is a piece of underwater research equipment, possibly a hydrophone or a camera housing, with a yellow label attached to it. The overall tone is scientific and aquatic.

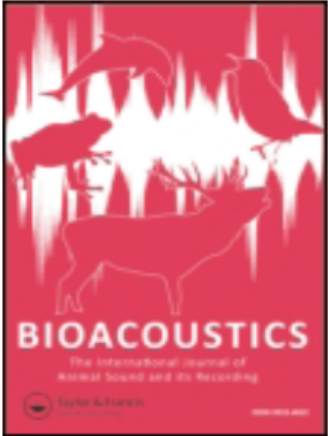
FishSounds: a Website to Compile and Disseminate Research on Fish Sound Production

Part II

Amalis Riera, Audrey Looby, Sarah Vela, Kieran Cox,
Santiago Bravo, Rodney Rountree, Francis Juanes, Laura K.
Reynolds, Charles W. Martin

How many fish
species make
sounds?





Bioacoustics

The International Journal of Animal Sound and its Recording

Over 900 SPMs are known to occur in **over 700** sound-producing fishes (Kaatz in prep.).

ISSN: 0952-4622 (Print) 2165-0586 (Online) Journal homepage: <http://www.tandfonline.com/loi/tbio20>

MULTIPLE SOUND-PRODUCING MECHANISMS IN TELEOST FISHES AND HYPOTHESES REGARDING THEIR BEHAVIOURAL SIGNIFICANCE

INGRID M. KAATZ

Bioacoustics

Over 900 SPMs are known to occur in **over 700** sound-producing fishes (Kaatz in prep.).

Over 800 species of fishes from 109 families worldwide are known to be soniferous (Kaatz 2002), though this is likely to be a great underestimate.

FEATURE: FISHERIES RESEARCH

SCOTT HOLT, UNIVERSITY OF TEXAS AT AUSTIN



Scott Holt listens to red drum sounds from a fish pier in Texas.

Listening to Fish: Applications of Passive Acoustics to Fisheries Science

Passive acoustics is a rapidly emerging field of marine biology that until recently has received little attention from fisheries scientists and managers. In its simplest form, it is the act of listening to the sounds made by fishes and using that information as an aid in locating fish so that their habitat requirements and behaviors can be studied. We believe that with the advent of new acoustic technologies, passive acoustics will become one of the most important and exciting

Rodney A. Rountree

R. Grant Gilmore

Clifford A. Goudey

Anthony D. Hawkins

Joseph J. Luczkovich

David A. Mann



Bioacoustics

Over 900 SPMs are known to occur in **over 700** sound-producing fishes (Kaatz in prep.).

Over 800 species of fishes from 109 families worldwide are known to be

There are **more than 700 species** known to produce sounds from at least 30 families (Fish and Mowbray 1970; Kaatz 2002; Johnston and Phillips 2003; Johnston and Vives 2003; Rountree et al. 2006), and many more soniferous fishes have yet to be recorded.

Passive Acoustics as a Tool in I

JOSEPH J. LUCZKOVIC

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Greenville, North Carolina 278.*

DAVID A. MANN

*College of Marine Science, University of South Florida,
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Bioacoustics

Over 900 SPMs are known to occur in **over 700** sound-producing fishes (Kaatz in prep.).

Over 800 species of fishes from 109 families worldwide are known to be

There are **more than 700 species**

FEATURE

Transactions of the American Fisheries Society 137:533–541, 2008
© Copyright by the American Fisheries Society 2008
DOI: 10.1577/T06-258.1

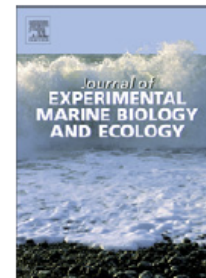
Over 800 species of fish from 109 families are soniferous (Kaatz, 2002; Tricas et al., 2006): the aptly named grunts (Haemulidae), and drums and croakers (both Sciaenidae) generate low frequency sounds using their swim bladders and/or pharyngeal teeth (Tavolga, 1977).



ELSEVIER

Journal of Experimental Marine Biology and Ecology

journal homepage: www.elsevier.com/locate/jembe



Spatial patterns in reef-generated noise relate to habitats and communities: Evidence from a Panamanian case study

E.V. Kennedy^{a,*}, M.W. Holderied^b, J.M. Mair^a, H.M. Guzman^c, S.D. Simpson^b

^a Centre for Marine Biodiversity and Biotechnology, Heriot-Watt University, Edinburgh, EH14 4AS, UK

^b School of Biological Sciences, University of Bristol, Woodland Road, Bristol, BS8 1UG, UK

^c Smithsonian Tropical Research Institute, Box 0843-0309, Balboa, Republic of Panama

Bioacoustics

Over 900 SPMs are known to occur in **over 700** sound-producing fishes (Kaatz in prep.).

Over 800 species of fishes from 109 families worldwide are known to be

There are **more than 700 species**

800 species of fish from 109 families are soniferous (Kaatz, 2002;

Over

Sound production by the West (*Glaucosoma hebraicum*)

Over 800 species of fish are known to produce sound via a number of different evolved mechanisms (Kaatz, 2002).

Miles J. G. Parsons^{a)}

Centre for Marine Science and Technology, Curtin University, GPO Box U1987, Perth, WA 6845, Australia

Simon Longbottom

Curtin Aquaculture Research Laboratory, Curtin University, GPO Box U1987, Perth, WA 6845, Australia

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(Received 31 July 2012; revised 22 June 2013; accepted 5 August 2013)

Bioacoustics

FEATURE

Transactions of the American Fisheries Society 137:533–541, 2008
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DOI: 10.1577/T06-258.1

Sound production of the West (*Glaucosoma hepaticum*)

Miles J. G. Parsons
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David V. Fairclough
Department of Fisheries, Government of Western Australia, PO Box 20, I

(Received 31 July 2010; revised 22 June 2013; accepted 5 August 2013)

over 700

Over 800

more than 700 species

Over 800

Over 800

959

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[FishBase 99 Book, French](#)



[A Global Information System on Fishes](#)

Welcome to the world of fishes!

FishBase is a global biodiversity information system on finfishes. Its initial goal to provide key facts on population dynamics for 200 major commercial species has now grown to having a wide range of information on all species currently known in the world: taxonomy, biology, trophic ecology, life history, and uses, as well as historical data reaching back to 250 years.

At present, FishBase covers >33,000 fish species compiled from >52,000 references in partnership with >2,000 collaborators: >300,000 common names and >55,000 pictures. Our website gathers more than 700,000 visits monthly.

The breadth and depth of information in the database, combined with the analytical and graphical tools available in the web, cater to different needs of diverse groups of stakeholders (scientists, researchers, policy makers, fisheries managers, donors, conservationists, teachers and students). Its various applications aim for sustainable fisheries management, biodiversity conservation and environmental protection.

FishBase is currently hosted by the [Quantitative Aquatics, Incorporated](#) (Q-quatics), a non-stock, non-profit, non-governmental organization engaged in the development and management of global databases on aquatic organisms, including their distribution and ecology. It is scientifically guided by



Mirrors : fishbase.org | fishbase.us | fishbase.de | fishbase.fr | fishbase.se | [中国镜像](#) | fishbase.ca

English | [Español](#) | [Português \(Br , Pt \)](#) | [Français](#) | [Deutsch](#) | [Italiano](#) | [Nederlands](#) | [简体中文](#) | [繁體中文](#) | [日本語](#) | [More...](#)



(34300 Species, 326500 Common names, 59900 Pictures,
56700 References, 2350 Collaborators, 900000
Visits/Month)



FishBase consortium



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[FishWatcher](#) | [Ichthyology Course](#) | [LarvalBase](#) | [Team](#) | [Collaborators](#) | [Quick Identification](#)

Common Name

is (e.g. rainbow trout)

[A](#)[B](#)[C](#)[D](#)[E](#)[F](#)[G](#)[H](#)[I](#)[J](#)[K](#)[L](#)[M](#)[N](#)[O](#)[P](#)[Q](#)[R](#)[S](#)[T](#)[U](#)[V](#)[W](#)[X](#)[Y](#)[Z](#)

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Scientific Name

☐ [Advanced Match](#)

Genus is (e.g. Rhincodon)

Species is (e.g. typus) ☐ Random Species

Genus + Species Sp. ID

[A](#)[B](#)[C](#)[D](#)[E](#)[F](#)[G](#)[H](#)[I](#)[J](#)[K](#)[L](#)[M](#)[N](#)[O](#)[P](#)[Q](#)[R](#)[S](#)[T](#)[U](#)[V](#)[W](#)[X](#)[Y](#)[Z](#)

[Why name assessments may be different](#) between FishBase and the independent [Catalog of Fishes](#) (Eschmeyer, 2014).

Glossary

(e.g. oophagy)

[A](#)[B](#)[C](#)[D](#)[E](#)[F](#)[G](#)[H](#)[I](#)[J](#)[K](#)[L](#)[M](#)[N](#)[O](#)[P](#)[Q](#)[R](#)[S](#)[T](#)[U](#)[V](#)[W](#)[X](#)[Y](#)[Z](#)

Information by Family

- | | | | |
|---------------------------------------|--|---|--|
| <input type="radio"/> Family info. | <input type="radio"/> Identification by pictures | <input type="radio"/> References (FishBase) | <input type="radio"/> Graphs |
| <input type="radio"/> All fishes | <input type="radio"/> List of pictures | <input type="radio"/> Missing photos | <input type="radio"/> Species Ecology Matrix |
| <input type="radio"/> Nominal species | <input type="radio"/> Identification keys | <input type="radio"/> Stamps, Coins, Misc. | |

Note: Lists may be incomplete. Some lists may be very long and will take time to load

Information by Country / Island

- | | | | |
|---------------------------------------|---|--|--|
| Biodiversity | Uses | Tools | Miscellaneous |
| <input type="radio"/> All fishes | <input type="radio"/> Commercial | <input type="radio"/> Identification by pictures | <input type="radio"/> Country info |
| <input type="radio"/> Freshwater | <input type="radio"/> Aquaculture | <input type="radio"/> Identification keys | <input type="radio"/> FAO profile |
| <input type="radio"/> Marine | <input type="radio"/> Aquarium trade | <input type="radio"/> Field guide | <input type="radio"/> ReefBase profile |
| <input type="radio"/> Introduced | <input type="radio"/> Invasiveness | <input type="radio"/> Occurrences | <input type="radio"/> Treaties & Conv. |
| <input type="radio"/> Endemic | <input type="radio"/> Game fishes | <input type="radio"/> References | <input type="radio"/> Collaborators |
| <input type="radio"/> Threatened | <input type="radio"/> FAO aquaculture | <input type="radio"/> Missing data | <input type="radio"/> Stamps, Coins, Misc. |
| <input type="radio"/> Dangerous | <input type="radio"/> FAO catches | <input type="radio"/> Missing photos | <input type="radio"/> Common names |
| <input type="radio"/> Reef-associated | <input type="radio"/> ICES catch | <input type="radio"/> Ecopath parameters | <input type="radio"/> Public aquariums |
| <input type="radio"/> Pelagic | <input type="radio"/> Sea Around Us catch | <input type="radio"/> OSMOSE parameters | <input type="radio"/> MPA database |
| <input type="radio"/> Deep-water | <input type="radio"/> Fish Loss | <input type="radio"/> Species Ecology Matrix | |
| | | <input type="radio"/> Checklist (extended) | |
| | | <input type="radio"/> by Large Marine Ecosystem | |

Note: Lists may be incomplete. Some lists may be very long and will take time to load

Note: A new dropdown list will appear if a country has a sub-country (ex. Canada, USA, etc.)

Information by Ecosystem

- | | | |
|---------------------------------------|--|--------------------------------------|
| Biodiversity | Tools | Miscellaneous |
| <input type="radio"/> All fishes | <input type="radio"/> Trophic pyramids | <input type="radio"/> Ecosystem info |
| <input type="radio"/> Introduced | <input type="radio"/> Species Ecology Matrix | |
| <input type="radio"/> Endemic | <input type="radio"/> Ecopath parameters | |
| <input type="radio"/> Threatened | <input type="radio"/> OSMOSE parameters | |
| <input type="radio"/> Dangerous | <input type="radio"/> Identification by pictures | |
| <input type="radio"/> Reef-associated | <input type="radio"/> Identification keys | |
| <input type="radio"/> Pelagic | <input type="radio"/> Resilience of fishes | |
| <input type="radio"/> Deep-water | | |
| <input type="radio"/> Point data | | |

Note: Lists may be incomplete. Some lists may be very long and will take time to load



Regional Interfaces

- ☐ FishBase for Americas
- ☐ FishBase for Africa (Search)
- ☐ FishBase for Africa (Home)
- ☐ FishBase for the Red Sea
- ☐ FishBase for HighARCS
- ☐ FishBase for Europe

Information by Topic

- ☐ Trophic ecology
 - ☐ Diet
 - ☐ Food items
 - ☐ Food consumption
 - ☐ Ration
 - ☐ Predators
- ☐ Physiology/Behavior
 - ☐ Metabolism
 - ☐ Gill area
 - ☐ Brains
 - ☐ Vision
 - ☒ Fish sounds
 - ☐ Swim. speed
- ☐ Life history
 - ☐ Growth
 - ☐ L-W relationship
 - ☐ Length frequencies
 - ☐ Recruitment
 - ☐ Reproduction
 - ☐ Maturity
 - ☐ Spawning
 - ☐ Spawning Aggregation
 - ☐ Fecundity
 - ☐ Eggs
 - ☐ Egg dev.
 - ☐ Larvae
 - ☐ Larval dynamics
 - ☐ Abundance
- ☐ Uses
 - ☐ Aquaculture
 - ☐ Aquaculture profiles
 - ☐ Introductions
 - ☐ Diseases
 - ☐ Ciguatera
 - ☐ Processing
 - ☐ Ecotoxicology
 - ☐ Genetics
 - ☐ Allele frequencies
 - ☐ Heritability
 - ☐ Otoliths
 - ☐ Mass conversion
 - ☐ Rice-fish
- ☐ Miscellaneous
 - ☐ Treaties & Conv.
 - ☐ CITES
 - ☐ CMS
 - ☐ National databases
 - ☐ Names by Language
 - ☐ Collaborators
 - ☐ Public aquariums
 - ☐ Expeditions
 - ☐ Video
 - ☐ Stamps, Coins, Misc.
 - ☐ Uploaded photos online
 - ☐ Editor messages

Note: Lists may be incomplete. Some lists may be very long and will take time to load

Tools

- ☐ Quick Identification
- ☐ Identification keys
- ☐ Identification by morphometrics
- ☐ Adverse introductions
- ☐ Global introductions
- ☐ Invasiveness
- ☐ Species by ecosystem
- ☐ Graphs
- ☐ SeaFood Advisory
- ☐ Shifting Baselines WP2 - Online Toolset
- ☐ Preferred algae/plants of herbivorous fishes
- ☐ Match names
- ☐ Disease diagnosis
- ☐ My Fish Page
- ☐ Life-history tool
- ☐ L-F Analysis
- ☐ Information gaps
- ☐ Sea Around Us
- ☐ ISSCAAP Troph
- ☐ FAO aquaculture
- ☐ FAO catches
- ☐ Catch analysis
- ☐ ICES catch
- ☐ Catch-MSY
- ☐ Classification List
- ☐ Classification Tree
- ☐ Fish statistics
- ☐ World records
- ☐ Country codes
- ☐ Catalogue of Life
- ☐ Fish collections
- ☐ Collection History
- ☐ Trophic pyramids
- ☐ Ecopath parameters
- ☐ OSMOSE parameters
- ☐ Species in GoMexSi
- ☐ New species in FishBase
- ☐ New species in Welt der Fische
- ☐ New photos
- ☐ Web Stats
- ☐ Top 100
- ☐ Coastal Transects Analysis Model (CTAM)
- ☐ Mobile Apps
- ☐ rfishbase: R interface to FishBase
- ☐ AquaMaps

References

Author

 (e.g. Randall)

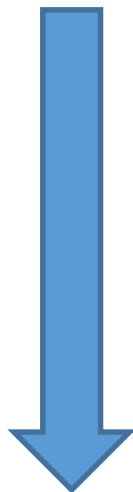
[A](#)[B](#)[C](#)[D](#)[E](#)[F](#)[G](#)[H](#)[I](#)[J](#)[K](#)[L](#)[M](#)[N](#)[O](#)[P](#)[Q](#)[R](#)[S](#)[T](#)[U](#)[V](#)[W](#)[X](#)[Y](#)[Z](#)

Year

fishbase.se/search.php

Sort By: ☒ Species ☐ English name ☐ Family

Species	English name	Family
<i>Albula vulpes</i>	Bonefish	Albulidae
<i>Alectis ciliaris</i>	African pompano	Carangidae
<i>Alphestes afer</i>	Mutton hamlet	Serranidae
<i>Anguilla rostrata</i>	American eel	Anguillidae
<i>Anisotremus virginicus</i>	Porkfish	Haemulidae
<i>Ariopsis felis</i>	Hardhead sea catfish	Ariidae
<i>Brevoortia tyrannus</i>	Atlantic menhaden	Clupeidae
<i>Carangoides bartholomaei</i>	Yellow jack	Carangidae
<i>Caranx crysos</i>	Blue runner	Carangidae
<i>Caranx hippos</i>	Creville jack	Carangidae
<i>Caranx latus</i>	Horse-eye jack	Carangidae
<i>Caranx ruber</i>	Bar jack	Carangidae
<i>Centropomus ensiferus</i>	Swordspine snook	Centropomidae
<i>Centropristis striata</i>	Black seabass	Serranidae
<i>Cephalopholis cruentata</i>	Graysby	Serranidae
<i>Cephalopholis fulva</i>	Coney	Serranidae
<i>Chloroscombrus chrysurus</i>	Atlantic bumper	Carangidae
<i>Clupea harengus</i>	Atlantic herring	Clupeidae
<i>Conodon nobilis</i>	Barred grunt	Haemulidae
<i>Cynoscion jamaicensis</i>	Jamaica weakfish	Sciaenidae
<i>Diapterus rhombeus</i>	Caitipa mojarra	Gerreidae
<i>Diplectrum formosum</i>	Sand perch	Serranidae
<i>Dorosoma cepedianum</i>	American gizzard shad	Clupeidae
<i>Encheliophis boraborensis</i>	Pinhead pearlfish	Carapidae
<i>Encheliophis gracilis</i>	Graceful pearlfish	Carapidae
<i>Encheliophis homei</i>	Silver pearlfish	Carapidae
<i>Epinephelus adscensionis</i>	Rock hind	Serranidae
<i>Epinephelus guttatus</i>	Red hind	Serranidae
<i>Epinephelus itajara</i>	Atlantic goliath grouper	Serranidae
<i>Epinephelus morio</i>	Red grouper	Serranidae



Language: English ▼

[FishBase](#)

List of Sound for *Clupea harengus*

n = 1

Main Ref.	Sound File	Type	Production
35830	CLHAR_S1	swimming noise, knocks, thumps	yes,passive & active sound production

Glossary

Search

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cfm script by eagbayani, 21.08.01 , php script by rolavides, 2/8/2008 , last modified by elaxamana, 11:15 AM 1/9/09

Sounds Made by *Clupea harengus*



Picture by Svensen, R.

Please be patient while sound file is loaded. You may have to increase volume settings.

If you did not hear the sound, [click here to download sound file.](#)

Sound produced	yes,passive & active sound production
Type of sound produced	swimming noise, knocks, thumps
Sound production organ	swim bladder & pneumatic duct
Sound mechanism	may be escape sounds (discharge of gas through pneumatic duct)
Behavioural context	swimming & handling
Reference	Fish, M.P. and W.H. Mowbray, 1970
Remark	active sound production (knocks & thumps) only recorded during handling, recorded with bandpass filter: 30 -1200 Hz



Q

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Facts and Myths



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Technology Gallery

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Career Gallery

Other Natural Sounds

Anthropogenic Sounds

Audio Gallery Summary



Arctic Char

Atlantic Croaker

Bar Jack

Barred Grunt

Bigeye Scad

New Zealand Bigeye

Black Drum

Bluestriped Grunt

Clownfish

Dusky Damselfish

Garibaldi

Haddock

Longhorn Sculpin

Lusitanian toadfish

Northern Seahorse

Oyster Toadfish

Painted Goby

Plainfin Midshipman

Red Drum

Red Grouper

Rock Hind

Sand Seatrout

Spotted Seatrout

Hardhead Sea Catfish

Silver Perch

in the Sea

ous Marine

to function both in air and under

Topics

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- [Longhorn Sculpin](#)
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- [Lusitanian toadfish](#)
- [Northern Seahorse](#)
- [Oyster Toadfish](#)
- [Painted Goby](#)
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Arctic Char

Salvelinus alpinus



Bar Jack

Caranx ruber



Bigeye Scad

Selar crumenophthalmus



Black Drum

Pogonias cromis



Clownfish

Amphipiron sp.



Garibaldi

Hypsypops rubicunda



Atlantic Croaker

Micropogon undulatus



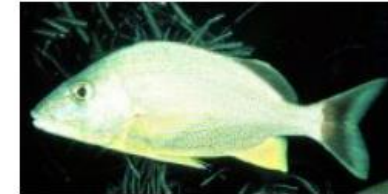
Barred Grunt

Conodon nobilis



New Zealand Bigeye

Pempheris adspersa



Bluestriped Grunt

Haemulon sciurus



Dusky Damselfish

Stegastes adustus



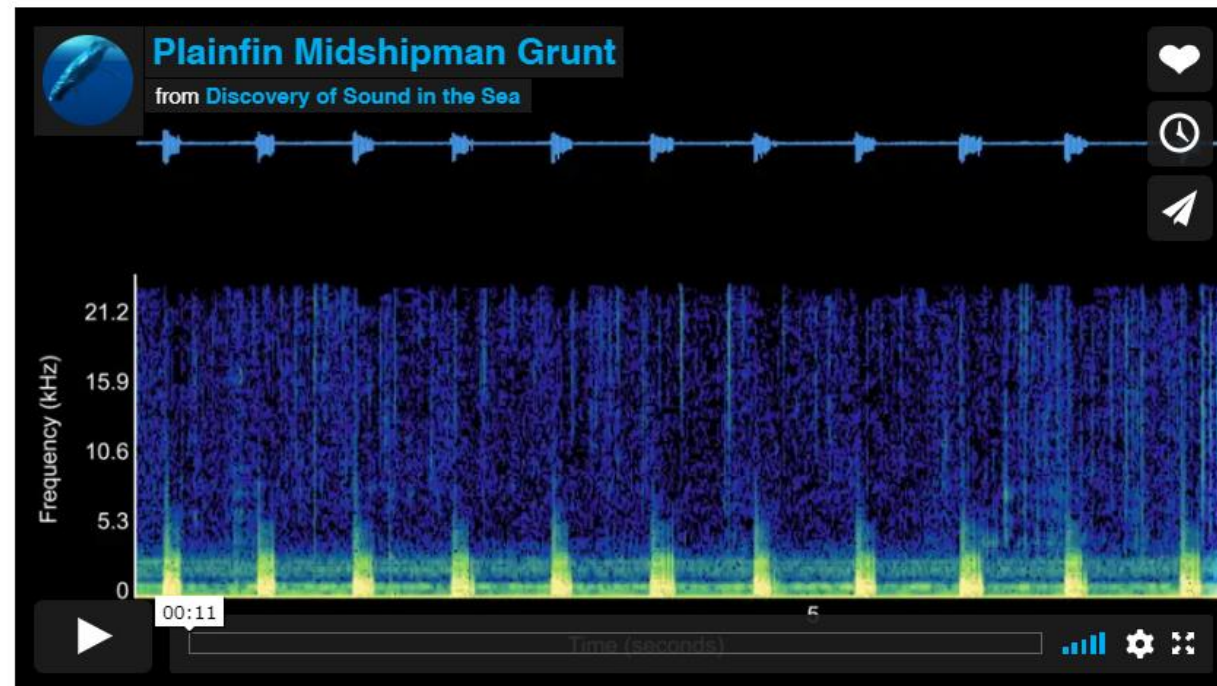
Haddock

Melanogrammus aeglefinus

Plainfin Midshipman

Plainfin Midshipman Sounds (*Porichthys notatus*)

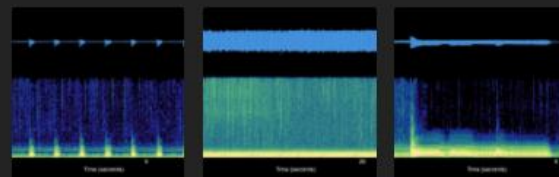
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PLAINFIN MIDSHIPMAN GRUNT

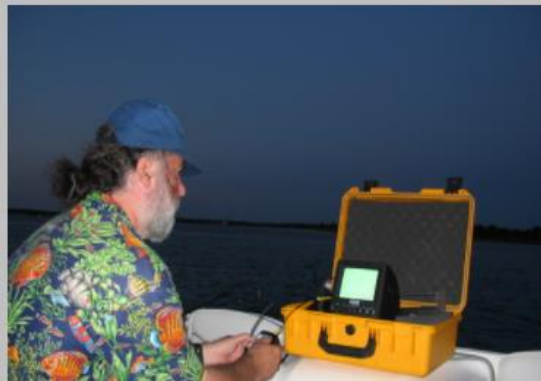
00:11

Plainfin Midshipman grunt.
Andrew Bass, Department of
Neurobiology and Behavior,
Cornell University.



Rodney Rountree's Homepage on Fish Ecology

Contact information: Email_rrountree@fishecolology.org





[Sounds of NW Atlantic Fishes](#)

This section includes samples from the historic archives of Marie Fish and William Mowbray (see my ebook for background information). I am keenly interested in facilitating collaborations to rescue and archive for wide distribution historical sound recordings of marine fishes and invertebrates. Towards this end I have collaborated with a network of scientists to establish a National Archive of Fish Sounds in the Library of Natural Sounds at Cornell University. This work also involves on going efforts to rescue historical data on fish sounds. Besides summarizing these efforts, this page provides sound clips for 17 fish species. Sounds of fishes as originally published by Fish and Mowbray in their landmark book "Sounds of Western North Atlantic Fishes: A Reference File of Underwater Biological Sounds" published in 1970, are now available from [Fishbase.com](#) and the [Macaulay Library of Natural Sounds](#).

Click on the following link to learn more about this archive and listen to some fish sound samples [Sounds of NW Atlantic Fishes](#)



[My Fish Sounds Gallery](#)

This page includes shortcuts to some of my recordings of fish sounds, other sounds can be found on the pages describing the various projects. **NOTE that many of these sounds are very quiet and you will need to use headphones to hear them. You may also need to amplify the sounds in some cases.**
[My gallery of underwater sounds.](#)

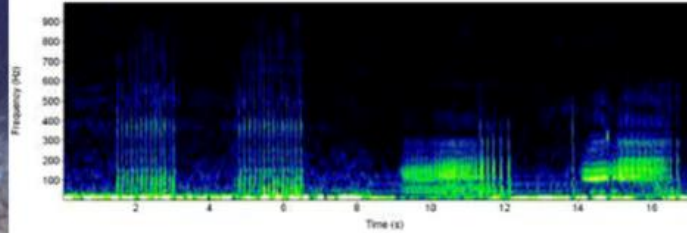
46



[Fish Songs Ringtones.](#)

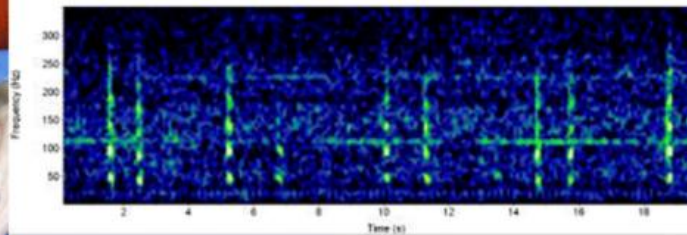
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Haddock



Melanogrammus aeglefinus | [Species profile](#) | [Play audio](#) | [Download audio file](#)

Atlantic Cod



Gadus morhua | [Species profile](#) | [Play audio](#) | [Download audio file](#)

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SOUND RECORDING

Mating call of a haddock



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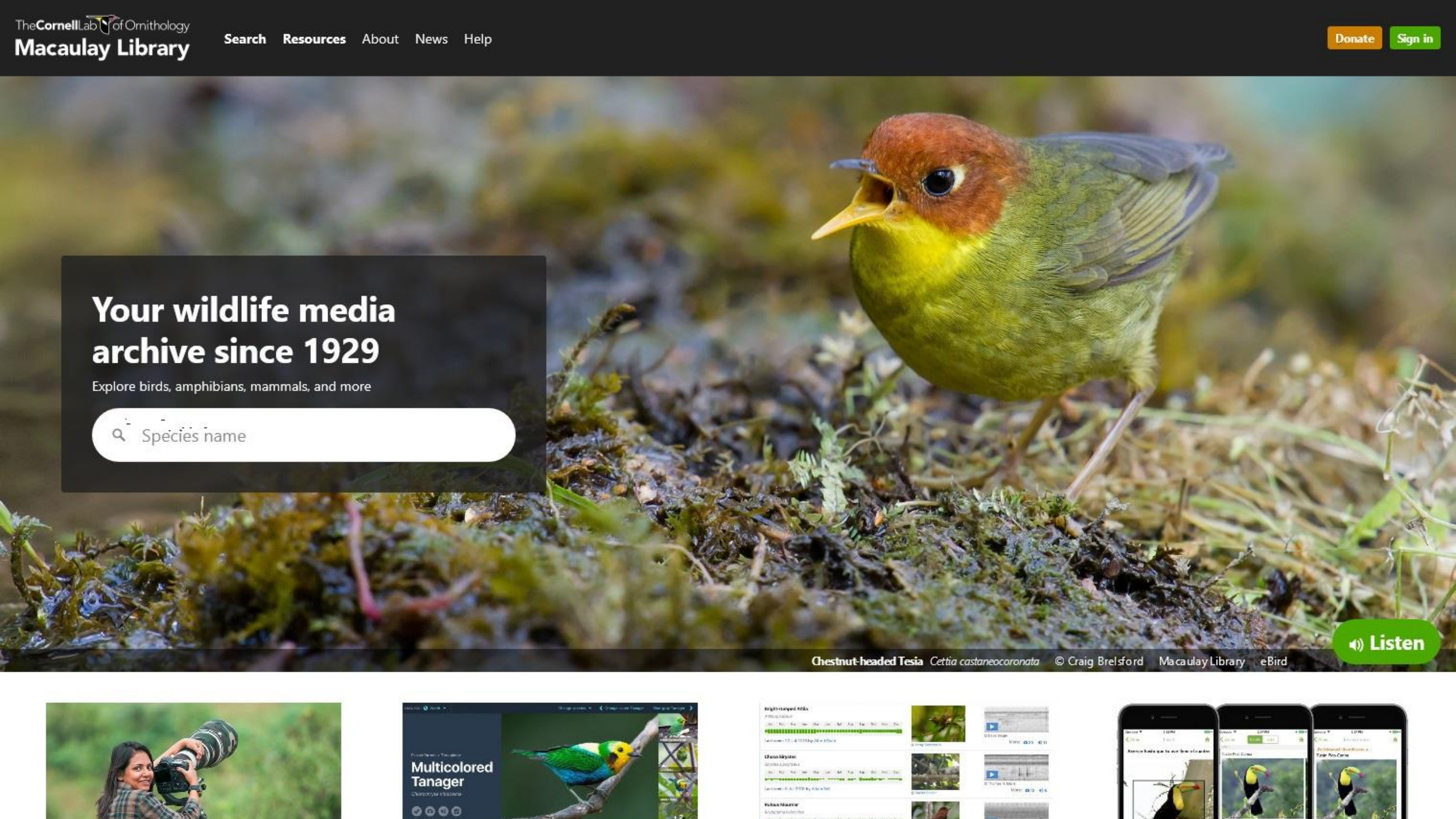
Title: Mating call of a haddock
Date: April 1967
Format: Sound recording
Creator: A D Hawkins
Copyright: © Audio: Haddock, Scotland (in captivity), 1967 by A D Hawkins.
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Shelfmark: WS6689 C1
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Haddock are fish found in the North Atlantic Ocean. The drumming sound in this recording is



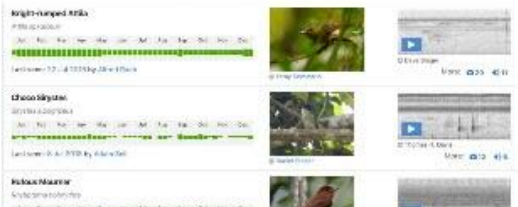
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- ☐ Swainson's Warbler
- ☐ Orange-crowned Warbler
- ☐ Nashville Warbler
- ☐ None of the above

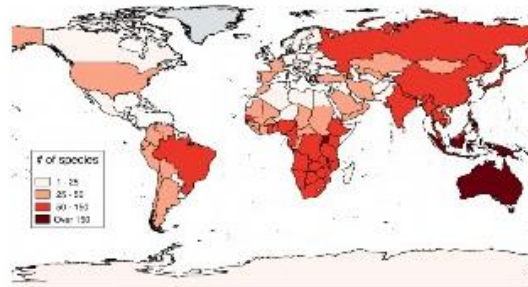


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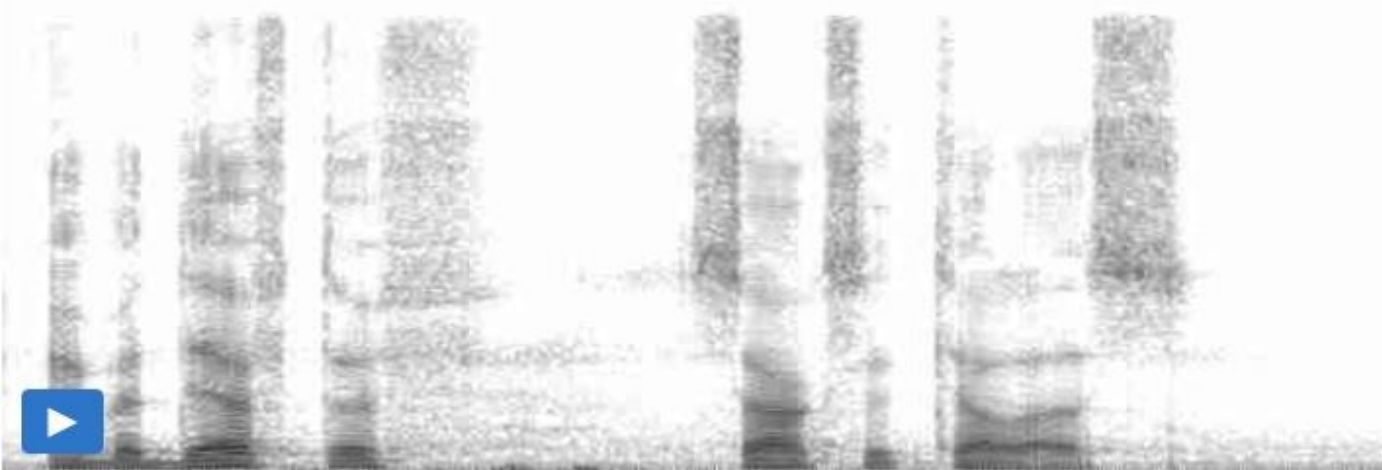
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- Bar Jack
- Barred Grunt
- Bigeye Scad
- New Zealand Bigeye
- Black Drum
- Bluestriped Grunt
- Clownfish
- Dusky Damselfish
- Garibaldi
- Longhorn Sculpin
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Rodney Rountree's Page on Fish Ecology

Contact information: R.Rountree@fhnw.edu

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SOUND RECORDING

Mating call of a haddock

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Creator: A D Hawkins
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FishBase
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Rodney Rountree: The Page of Fish Ecology

Contact information: R.Rountree@fda.gov

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Discovery of *Sound in the Sea*

Fishes

- Arctic Char
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- Bigeye Scad
- New Zealand Bigeye
- Black Drum
- Bluestriped Grunt
- Clownfish
- Dusky Damselfish
- Garibaldi
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- Haddock

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Ocean

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Sarah Vela



University
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Welcome to the FishSounds website! We offer a comprehensive, global inventory of fish sound production research. Information can be searched by fish taxon, by sound characteristics, or by reference in the tabs provided above. Links to our complete data spreadsheets are also available.

We are still growing! If you would like to suggest an edit or contribute a reference or associated fish sound recording, please [contact us](#).

To learn more about a specific fish species, we recommend visiting FishBase at [fishbase.org](https://www.fishbase.org).

To learn more about sounds underwater, we recommend visiting Discovery of Sound in the Sea at [dosits.org](https://www.dosits.org).

How to cite: please cite any individual records as well as the FishSounds website.

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Highlighted Species

[*Chelidonichthys lastoviza* \(Streaked gurnard\)](#)



iNaturalist, Photo 27287824, (c) gianfrs, some rights reserved (CC BY-NC-ND)

Statistics

Number of Fish Species: 1153
Number of Sound Recordings: 79
Number of References: 772

Last Updated: 2018/12/31

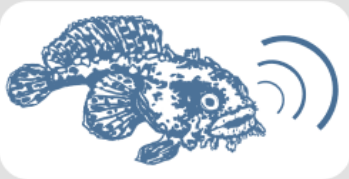
Latest Fish: [*Chelidonichthys lastoviza* \(Streaked gurnard\)](#)

Latest Sound Recording: [Amorim & Hawkins 2000](#)

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Region

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Select Option

Climate Zone

Select Option

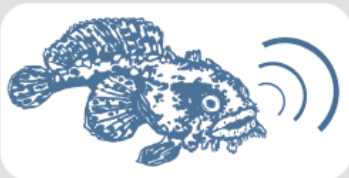
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Search

Chelidonichthys lastoviza (Streaked gurnard)

Triglidae Family

Saltwater

1 Sound Records

1 References

Serrasalmus elongatus (Slender pirhana)

Serrasalminae Family

Fresh Water

2 Sound Records

4 References

Cyclothone signata (Showy bristlemouth)

Cyclothone Family

Saltwater

6 Sound Records

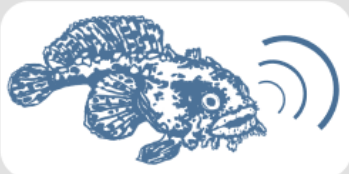
10 References

Netuma thalassina (Giant catfish)

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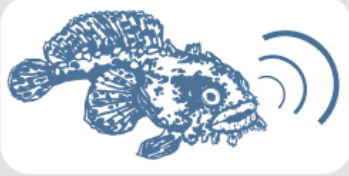
Chelidonichthys lastoviza (Streaked gurnard)

► **Species Description**



► **Sound Recordings**

► **References**



Chelidonichthys lastoviza (Streaked gurnard)

Species Description



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[View on FishBase](#)

Class: Actinopterygii

Order: Scorpaeniformes

Family: Triglidae

Genus: Chelidonichthys

Region: North America; Pacific Ocean

Climates: Subtropical; Temperate; Tropical

Water Type: Freshwater; Salt water



Chelidonichthys lastoviza (Bonnaterre, 1788)

Streaked gurnard

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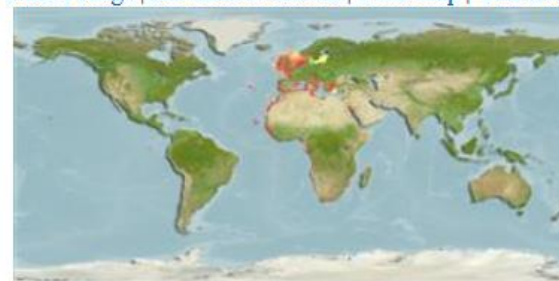


Chelidonichthys lastoviza

Picture by [Hernández-González, C.L.](#)

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[Native range](#) | [All suitable habitat](#) | [Point map](#) | [Year 2100](#)



This map was computer-generated and has not yet been reviewed.
Chelidonichthys lastoviza AquaMaps Data sources: GBIF OBIS

Classification / Names

[Common names](#) | [Synonyms](#) | [Catalog of Fishes \(gen., sp.\)](#) | [ITIS](#) | [CoL](#) | [WoRMS](#) | [Cloffa](#)

Actinopterygii (ray-finned fishes) > [Scorpaeniformes](#) (Scorpionfishes and flatheads) > [Triglidae](#) (Searobins) > [Triglinae](#)

Etymology: *Chelidonichthys*: Greek, chelidon, -onos = swift, as black as a swift + Greek, ichthys = fish (Ref. [45335](#)). More on author: [Bonnaterre](#).

Environment: milieu / climate zone / depth range / distribution range

[Ecology](#)

Marine; demersal; depth range 10 - 150 m (Ref. [3687](#)), usually ? - 40 m (Ref. [12382](#)). Subtropical; 61°N - 35°S, 32°W - 38°E

Distribution

[Countries](#) | [FAO areas](#) | [Ecosystems](#) | [Occurrences](#) | [Point map](#) | [Introductions](#) | [Faunafri](#)

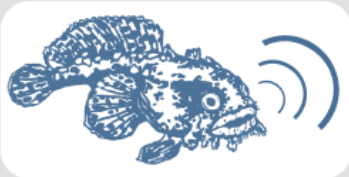
Eastern Atlantic: Norway continuously south around Cape of Good Hope to Mozambique. Heemstra 1982 recognizes two valid subspecies, *Chelidonichthys lastoviza lastoviza* which ranges south to Angola and *Chelidonichthys lastoviza africana* occurring in South Africa (Ref. [4316](#)).

Length at first maturity / Size / Weight / Age

Maturity: L_m [15.0](#), range 20 - ? cm

Max length : 40.0 cm TL male/unsexed; (Ref. [3397](#)); common length : 15.0 cm TL male/unsexed; (Ref. [3397](#));

max. reported age: 18 years (Ref. [26321](#))



Chelidonichthys lastoviza (Streaked gurnard)

► **Species Description**

► **Sound Recordings**



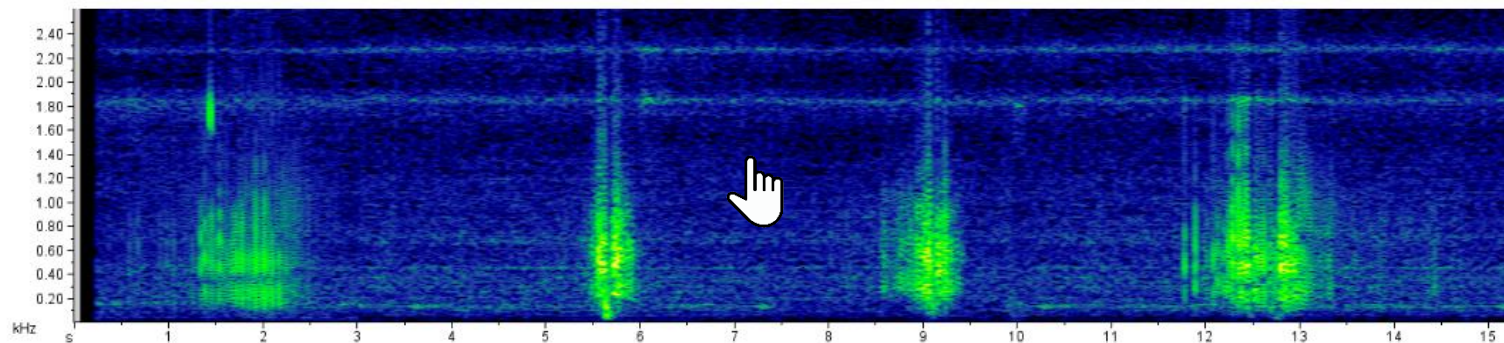
► **References**



Chelidonichthys lastoviza (Streaked gurnard)

► Species Description

▼ Sound Recordings



Amorim & Hawkins 2000

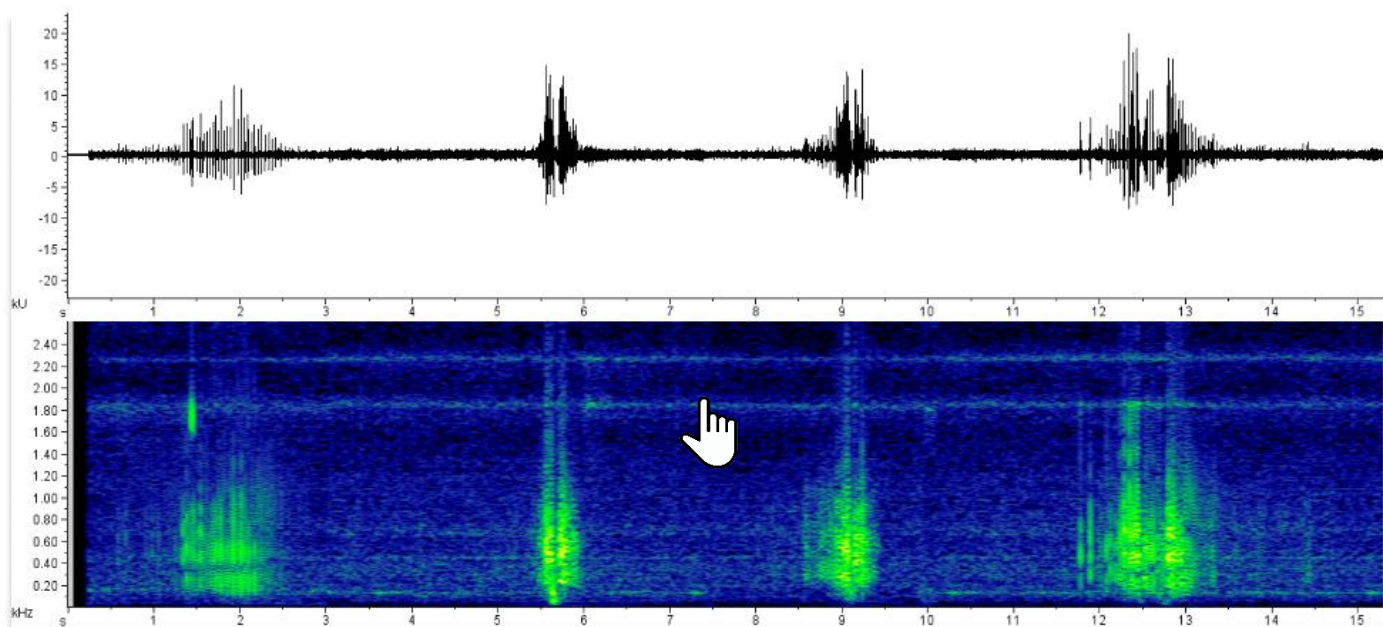
Call Name: Growl

Mean Peak Frequency: 555.1 ± 125.4 Hz

Mean Duration: 1069.0 ± 775.6 s



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Measurement	Minimum	Maximum	Mean (\pm Standard Deviation)	Sample Size
Peak Frequency (Hz)	304	1018	555.1 \pm 125.4	372
Sound Duration (ms)	52.9	3149.9	1069.0 \pm 775.6	41
Pulse Duration (ms)	2.9	7	4.7 \pm 0.6	372
Pulses per Group	1	27	2.0 \pm 1.3	372
Pulses per Sound	30	188	100.7 \pm 54.5	9
Pulse Period (ms)	2.3	6.3	3.8 \pm 0.6	251
Group Period (ms)	6.8	64.9	23.2 \pm 10.2	358
Number of groups of pulses	3	94	36.5 \pm 25.2	39

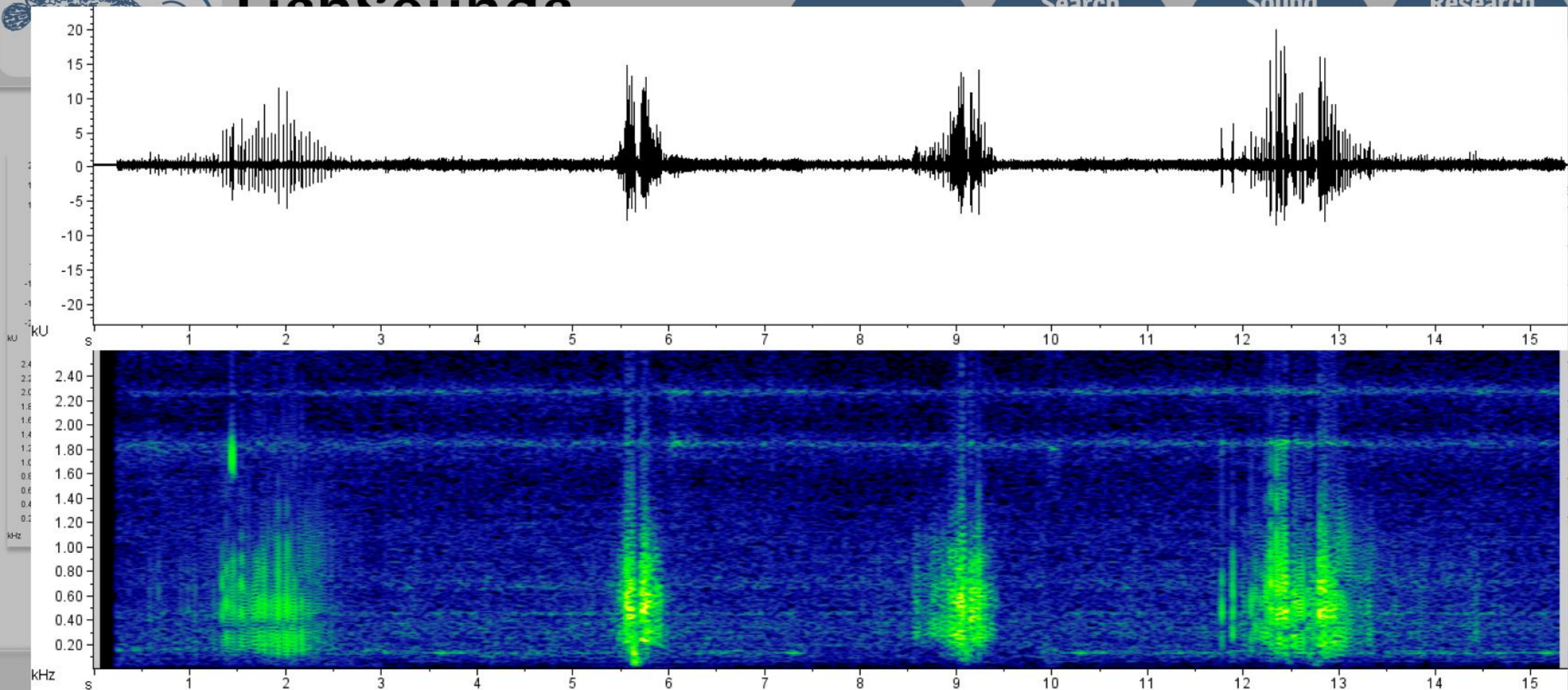
View fish: [Trigloporus lastoviza](#) (Streaked gurnard)

View reference: [Amorim & Hawkins 2000](#)

Funding Info

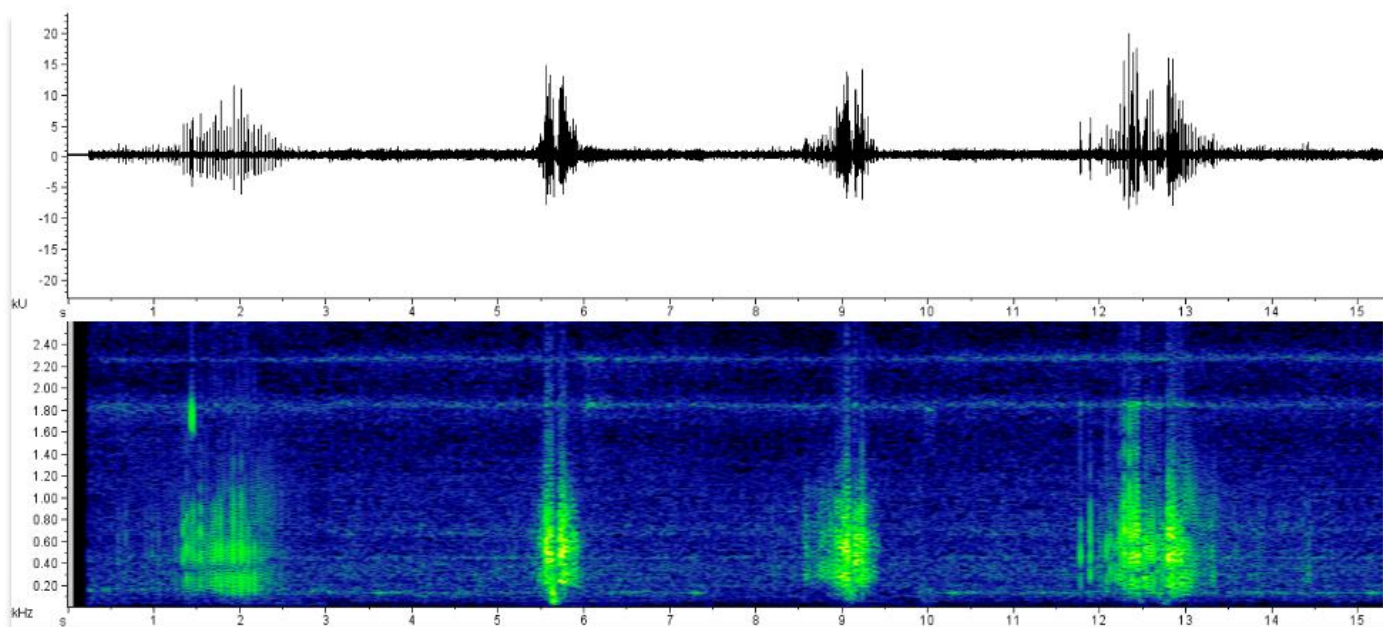


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View fish: [Trigloporus lastoviza](#) (Streaked gurnard)

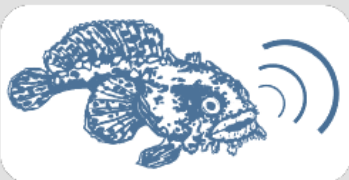
View reference: [Amorim & Hawkins 2000](#)



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Growling for food: acoustic emissions during competitive feeding of the streaked gurnard

Reference Information

Authors - Amorim, M. C. P.; Hawkins, A. D.
Year - 2000
Publication - Journal of Fish Biology
Volume - 57(4)
DOI - 10.1111/j.1095-8649.2000.tb02200.x
Number of Pages - 12
ISSN - 0022-1112
Language - English

Fish Species Observed

(Click to view details)

Chelidonichthys lastoviza (Streaked gurnard)

[Read Full Sound Description](#)

Sound Types:

- ☒ Active
- ☐ Passive Feeding
- ☐ Passive Other
- ☐ None

Sound Names: (Hover for notes)

Pulse
Drum
Growl

Behaviour Descriptions: (Hover for notes)

Aggressive/antagonistic (tentative)
Competitive Feeding

Sound Observations:

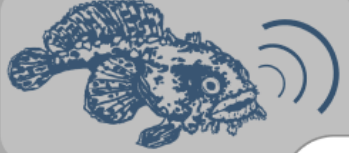
- ☐ Physiological
- ☒ Auditory
- ☒ Visual

Observation Environments: (Hover for notes)

- ☐ Wild
- ☐ Semiwild
- ☒ Lab
- ☐ Unspecified/Unknown

Included Diagrams:

Spectrogram
Oscillogram



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Chelid

"The streaked gurnard *Trigloporus lastoviza* produced only one sound type, a growl, lasting up to 3 s and consisting of repeated groups of typically one to three pulses."

"In the first, the fish circled the feeding area, grasped a food item and fled, sometimes displaying aggressively to competitors. With this foraging strategy, fish usually made sounds as they circled, grasped and fled. Fish that growled while circling were more likely to grasp a food item subsequently than were silent fish. The second feeding strategy occurred when a fish had already ingested food or failed to get any. In this case, typically fish searched for food on the substratum or approached and touched other individuals that were feeding, sometimes grabbing food that was spat out during food handling by the other fish. Although payback experiments would be needed to draw firm conclusions on the communicative function of growling during competitive feeding in the streaked gurnard, the results suggest that sound production confers advantages to individuals competing for limited food resources."

"The acoustic signals made by triglids, including those of the streaked gurnards, are loud and conspicuous with main frequencies falling within the typical hearing sensitivity of fishes (Hawkins, 1993; Amorim, 1996)."

"Example of a growl produced by the streaked gurnard. (a) Sonogram and oscillogram of a section of the growl sound (filter bandwidth=125 Hz). Note that the sound pulses are organized in groups; this section shows six groups each consisting of one, two or three pulses. (b) Envelope of the whole growl."

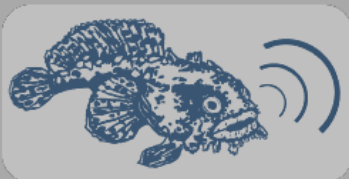
"The studied streaked gurnards emitted only one sound type, a growl. Growls were low frequency sounds composed of pulses. The pulses within a single growl were organized in groups of typically one to three pulses (Fig. 1). A group of pulses within a growl was identified easily in the oscillogram since the interval between groups was significantly longer than the interval between pulses within a group (Fig. 1; Table I)."

"Also growls were heard, less frequently, from fish that were not interacting with conspecifics. Sound emissions and associated behavioural acts that occurred during video feeding sessions but outside feeding interactions were registered also. In addition, because the behaviour grasp was clearly associated with sound production, all occurrences of this behaviour outside feeding interactions were recorded, registering also whether each

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Growling for food: acoustic emissions during competitive feeding of the streaked gurnard

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[Read Full Sound Description](#)

Sound Types:

- ☒ Active
- ☐ Passive Feeding
- ☐ Passive Other
- ☐ None

Sound Names: (Hover for notes)

Pulse
Drum
Growl

Behaviour Descriptions: (Hover for notes)

Aggressive/antagonistic (tentative)
Competitive Feeding

Sound Observations:

- ☐ Physiological
- ☒ Auditory
- ☒ Visual

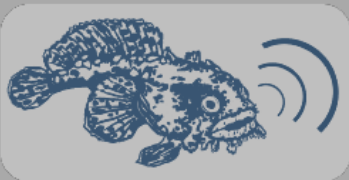
Observation Environments: (Hover for notes)

- ☐ Wild
- ☐ Semiwild
- ☒ Lab
- ☐ Unspecified/Unknown

Included Diagrams:
Spectrogram

"The streaked gurnard *Trigloporus lastoviza* produced only one sound type, a growl, lasting up to 3 s and consisting of repeated groups of typically one to three pulses."

"Streaked gurnards have a large physoclist swimbladder (Davenport, 1999), with a pair of strongly developed intrinsic sonic muscles, embedded laterally on either side. Rapid contractions of the sonic muscles cause the swimbladder wall to vibrate rhythmically, producing a typical drumming sound (Hawkins, 1968; Amorim, 1996)."



Growling for food: acoustic emissions during competitive feeding of the streaked gurnard

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Volume - 57(4)
DOI - 10.1111/j.1095-8649.2000.tb02200.x
Number of Pages - 12
ISSN - 0022-1112
Language - English

Fish Species Observed

(Click to view details)

Chelidonichthys lastoviza (Streaked gurnard)

[Read Full Sound Description](#)

Sound Types:

- ☒ Active
- ☐ Passive Feeding
- ☐ Passive Other
- ☐ None

Sound Names: (Hover for notes)

Pulse
Drum
Growl

Behaviour Descriptions: (Hover for notes)

Aggressive/antagonistic (tentative)
Competitive Feeding

Sound Observations:

- ☐ Physiological
- ☒ Auditory
- ☒ Visual

Observation Environments: (Hover for notes)

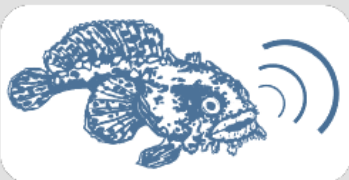
- ☐ Wild
- ☐ Semiwild
- ☒ Lab
- ☐ Unspecified/Unknown

Included Diagrams:

Spectrogram
Oscillogram

"Here, the significance of sound production in the streaked gurnard has been studied during competitive feeding in captivity."

"Streaked gurnards were captured by trawling in the Eastern Mediterranean, off the Bay of Iraklion (Crete, Greece), at depths of 10–15 m. Trawl duration was short to minimize skin and fin damage and shallow trawling depths aimed to avoid swimbladder damage. Fish were kept in 1800-l fibreglass tanks at the Institute of Marine Biology of Crete, Iraklion, provided with aeration and filtered recirculated sea water."



Growling for food: acoustic emissions during competitive feeding of the streaked gurnard

Reference Information

Authors - Amorim, M. C. P.; Hawkins, A. D.
Year - 2000
Publication - Journal of Fish Biology
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- ☐ None

Sound Names: (Hover for notes)

Pulse
Drum
Growl

Behaviour Descriptions: (Hover for notes)

Aggressive/antagonistic
Competitive Feeding

Sound Observations:

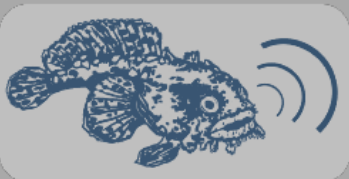
- ☐ Physiological
- ☒ Auditory
- ☒ Visual

Observation Environments: (Hover for notes)

- ☐ Wild
- ☐ Semiwild
- ☒ Lab
- ☐ Unspecified/Unknown

Included Diagrams:

Spectrogram
Oscillogram



Growling for food: acoustic emissions during competitive feeding of the streaked gurnard

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- ☐ Physiological
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- ☒ Visual

Observation Environments: (Hover for notes)

- ☐ Wild
- ☐ Semiwild
- ☒ Lab
- ☐ Unspecified/Unknown

Sound Names: (Hover for notes)

Pulse
Drum
Growl

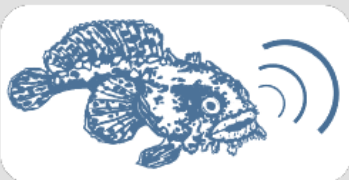
Fish Species Observed

Chelid

"Although payback experiments would be needed to draw firm conclusions on the communicative function of growling during competitive feeding in the streaked gurnard, the results suggest that sound production confers advantages to individuals competing for limited food resources."

"Behavioural acts and sound production occurring during competitive feeding interactions were significantly dependent ($\chi^2=612.85$, $n=1901$, $d.f.=10$, $P<0.001$). Sound production was associated mainly with the behavioural acts grasp ($P<0.001$), circle ($P<0.001$), and flee ($P<0.05$, programme ACTUS) (Fig. 4)."

"Streaked gurnards growled frequently while competing for food." "Growling may reflect a state of feeding arousal caused by the sight of food or be associated with low levels of aggression. "



Growling for food: acoustic emissions during competitive feeding of the streaked gurnard

Reference Information

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Fish Species Observed

(Click to view details)

Chelidonichthys lastoviza (Streaked gurnard)



[Read Full Sound Description](#)

Sound Types:

- ☒ Active
- ☐ Passive Feeding
- ☐ Passive Other
- ☐ None

Sound Names: (Hover for notes)

Pulse
Drum
Growl

Behaviour Descriptions: (Hover for notes)

Aggressive/antagonistic (tentative)
Competitive Feeding

Sound Observations:

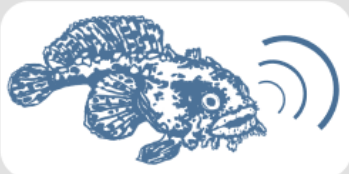
- ☐ Physiological
- ☒ Auditory
- ☒ Visual

Observation Environments: (Hover for notes)

- ☐ Wild
- ☐ Semiwild
- ☒ Lab
- ☐ Unspecified/Unknown

Included Diagrams:

Spectrogram
Oscillogram



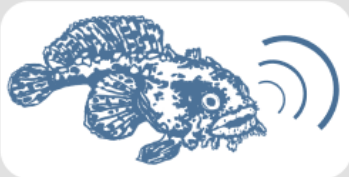
Chelidonichthys lastoviza (Streaked gurnard)

► **Species Description**

► **Sound Recordings**

► **References**





Chelidonichthys lastoviza (Streaked gurnard)

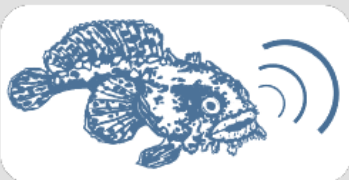
► **Species Description**

► **Sound Recordings**

▼ **References**

Citation	Sound Types	Examination Type	Examination Environment
Amorim, M. C. P. & Hawkins, A. D. 2000. Growling for food: acoustic emissions during competitive feeding of the streaked gurnard. <i>Journal of Fish Biology</i> 57:4895-907.	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Passive Feeding <input type="checkbox"/> Passive Other <input type="checkbox"/> None	<input type="checkbox"/> Physiological <input checked="" type="checkbox"/> Auditory <input checked="" type="checkbox"/> Visual	<input type="checkbox"/> Wild <input type="checkbox"/> Semiwild <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Unspecified/Unknown





Growling for food: acoustic emissions during competitive feeding of the streaked gurnard

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[Read Full Sound Description](#)

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- ☐ Passive Feeding
- ☐ Passive Other
- ☐ None

Sound Names: (Hover for notes)

Pulse
Drum
Growl

Behaviour Descriptions: (Hover for notes)

Aggressive/antagonistic (tentative)
Competitive Feeding

Sound Observations:

- ☐ Physiological
- ☒ Auditory
- ☒ Visual

Observation Environments: (Hover for notes)

- ☐ Wild
- ☐ Semiwild
- ☒ Lab
- ☐ Unspecified/Unknown

Included Diagrams:

Spectrogram
Oscillogram



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Water Type

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Sound Name Placeholder Text

Fish Order Placeholder Text

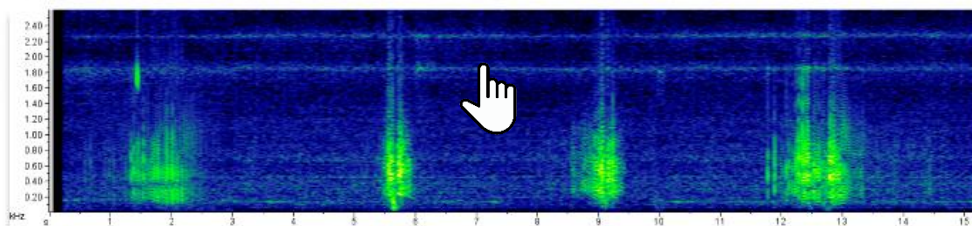
Fish Family Placeholder Text

Region Default Selection ▼

Water Type Default Selection ▼

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Trigloporus lastoviza (Streaked gurnard)



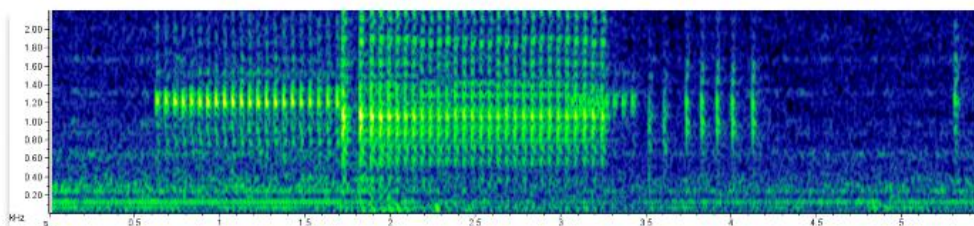
Amorim & Hawkins 2000

Sound Name: Growl

Mean Peak Frequency: 555.1 ± 125.4 Hz

Mean Duration: 1069.0 ± 775.6 s

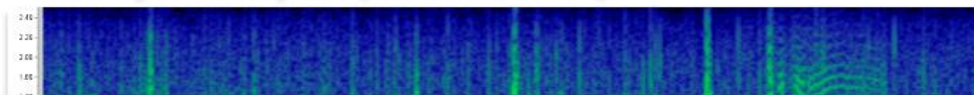
Ophidion marginatum (Cusk-eel)



Mann *et al.* 1997

Sound Name: Pulsed call

Oncorhynchus mykiss (Rainbow Trout)



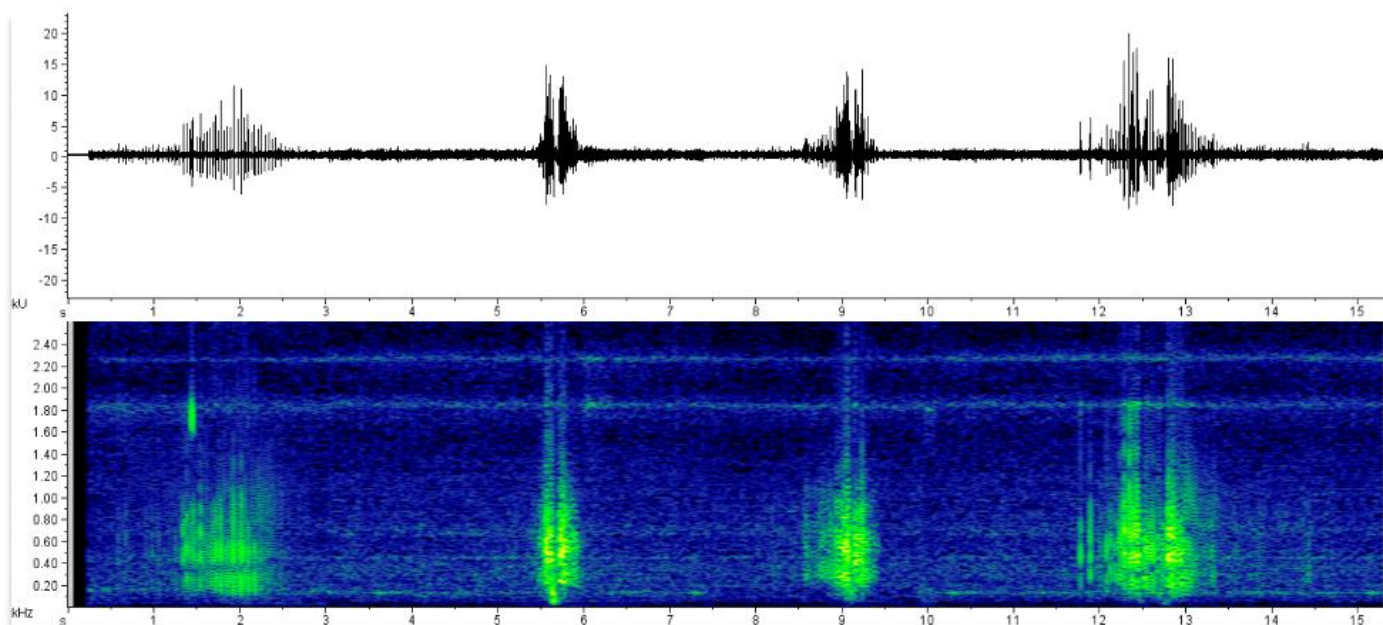
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Measurement	Minimum	Maximum	Mean (\pm Standard Deviation)	Sample Size
Peak Frequency (Hz)	304	1018	555.1 \pm 125.4	372
Sound Duration (ms)	52.9	3149.9	1069.0 \pm 775.6	41
Pulse Duration (ms)	2.9	7	4.7 \pm 0.6	372
Pulses per Group	1	27	2.0 \pm 1.3	372
Pulses per Sound	30	188	100.7 \pm 54.5	9
Pulse Period (ms)	2.3	6.3	3.8 \pm 0.6	251
Group Period (ms)	6.8	64.9	23.2 \pm 10.2	358
Number of groups of pulses	3	94	36.5 \pm 25.2	39

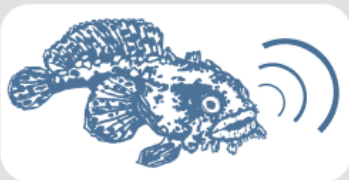
View fish: [Trigloporus lastoviza](#) (Streaked gurnard)

View reference: [Amorim & Hawkins 2000](#)

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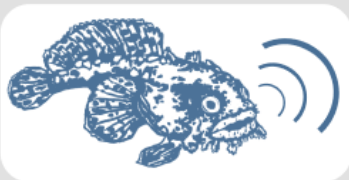
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Amorim, M. C. P. & Hawkins, A. D. 2000. Growling for food: acoustic emissions during competitive feeding of the streaked gurnard. *Journal of Fish Biology* 57:4895-907.

Chelidonichthys lastoviza
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Argyrosomus japonicus
(Japanese meagre)

Sebastianutto, L., Picciulin, M., Costantini, M., Rocca, M. & Ferrero, E. A. 2008. Four type of sounds for one winner: vocalizations during territorial behavior in the red-mouthed goby *Gobius cruentatus* (Pisces Gobiidae). *Acta Ethologica* 11:2.

Gobius cruentatus
(Red-mouthed goby)

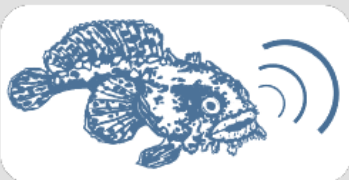
Nelissen, M. 1975. Sound production by *Simochromis diagramma* (Günther) (Pisces, Cichlidae). *Acta Zoologica et Pathologica Antverpiensia* 61:19-24.

Simochromis diagramma

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Growling for food: acoustic emissions during competitive feeding of the streaked gurnard

Reference Information

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Language - English

Fish Species Observed

(Click to view details)

Chelidonichthys lastoviza (Streaked gurnard)

[Read Full Sound Description](#)

Sound Types:

- ☒ Active
- ☐ Passive Feeding
- ☐ Passive Other
- ☐ None

Sound Names: (Hover for notes)

Pulse
Drum
Growl

Behaviour Descriptions: (Hover for notes)

Aggressive/antagonistic (tentative)
Competitive Feeding

Sound Observations:

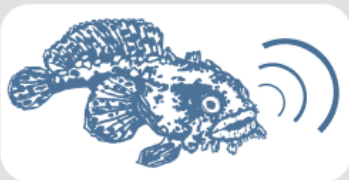
- ☐ Physiological
- ☒ Auditory
- ☒ Visual

Observation Environments: (Hover for notes)

- ☐ Wild
- ☐ Semiwild
- ☒ Lab
- ☐ Unspecified/Unknown

Included Diagrams:

Spectrogram
Oscillogram



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Simochromis diagramma

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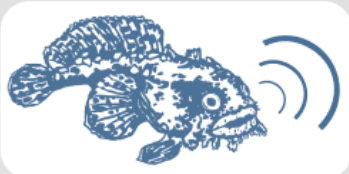
Chelidonichthys lastoviza (Streaked gurnard)

[▶ Species Description](#)[▶ Sound Recordings](#)[▶ References](#)

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Welcome to the FishSounds website! We offer a comprehensive, global inventory of fish sound production research. Information can be searched by fish taxon, by sound characteristics, or by reference in the tabs provided above. Links to our complete data spreadsheets are also available.

We are still growing! If you would like to suggest an edit or contribute a reference or associated fish sound recording, please [contact us](#).

To learn more about a specific fish species, we recommend visiting FishBase at [fishbase.org](https://www.fishbase.org).

To learn more about sounds underwater, we recommend visiting Discovery of Sound in the Sea at [dosits.org](https://www.dosits.org).

How to cite: please cite any individual records as well as the FishSounds website.

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Highlighted Species

[Chelidonichthys lastoviza](#) (Streaked gurnard)



iNaturalist, Photo 27287824, (c) gianfrs, some rights reserved (CC BY-NC-ND)

Statistics

Number of Fish Species: 1153
Number of Sound Recordings: 79
Number of References: 772

Last Updated: 2018/12/31

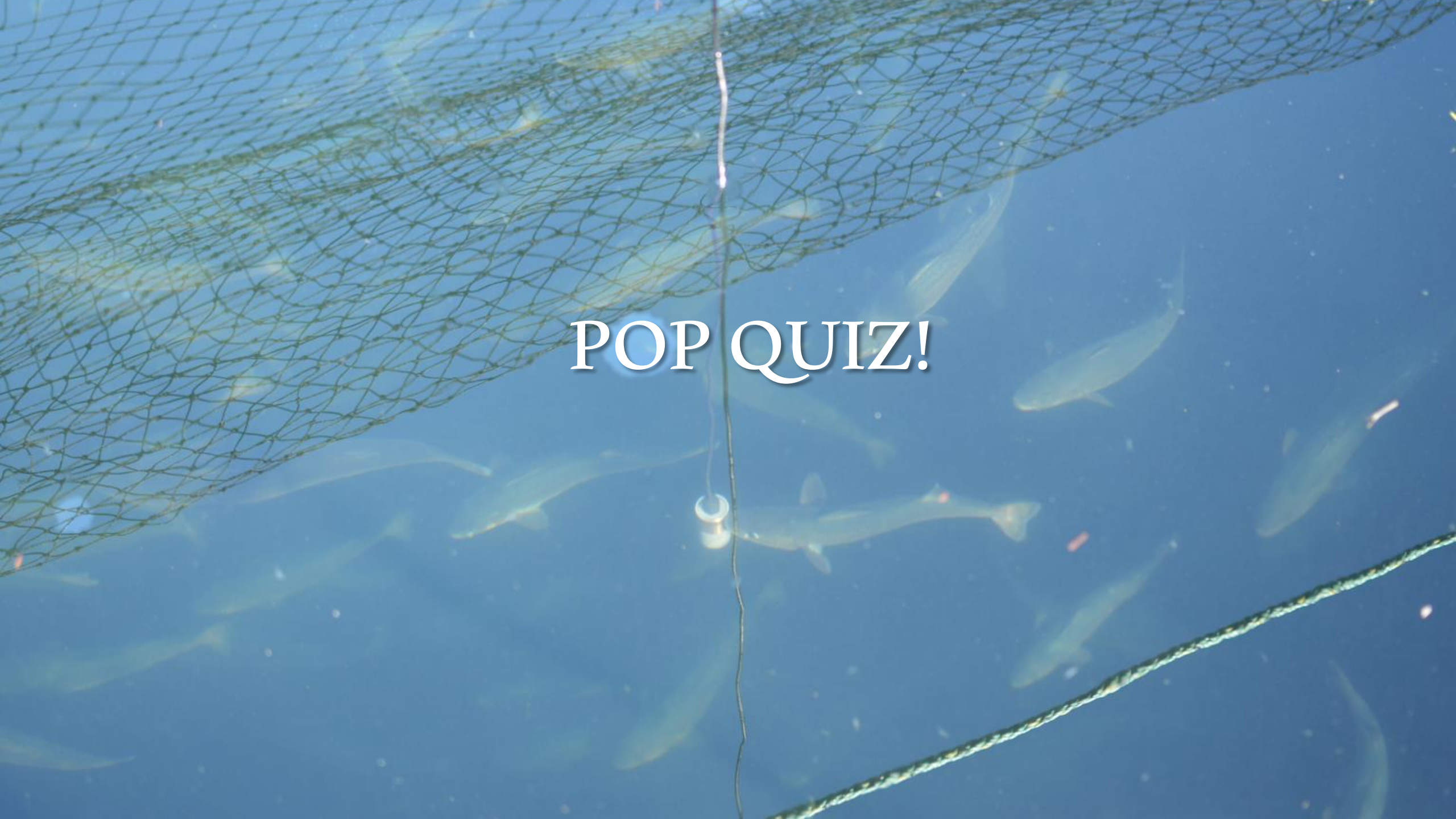
Latest Fish: [Chelidonichthys lastoviza](#)
(Streaked gurnard)

Latest Sound Recording: [Amorim & Hawkins 2000](#)

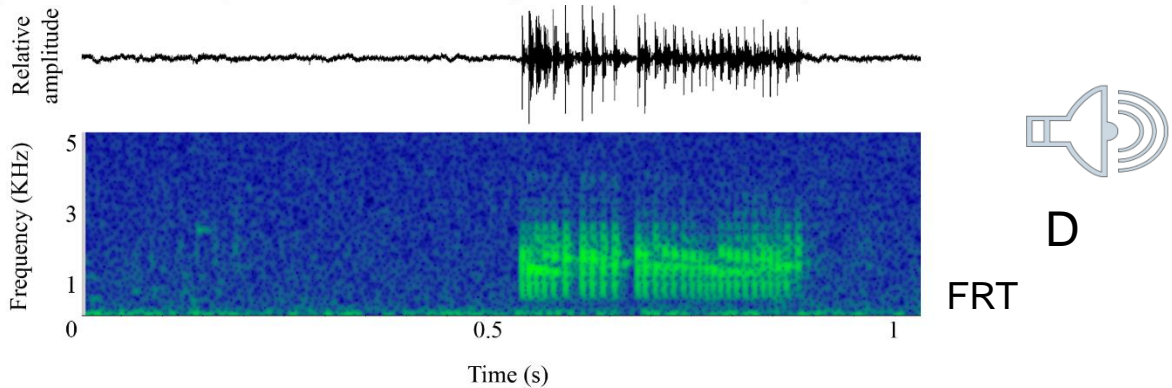
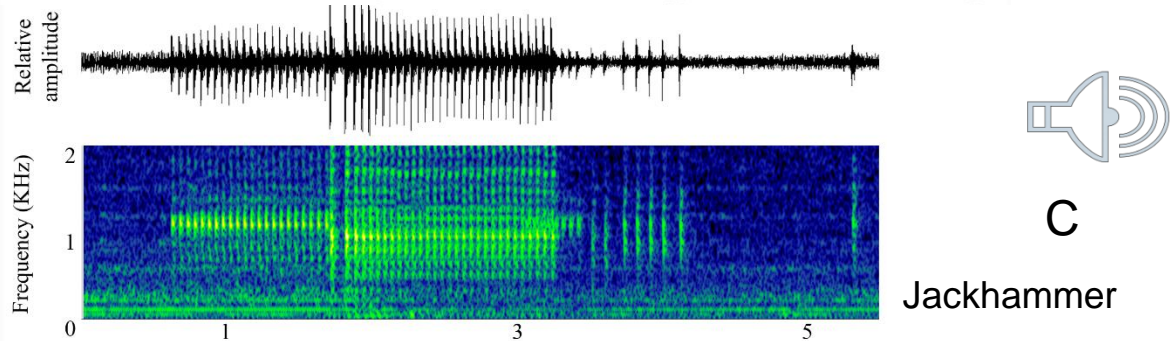
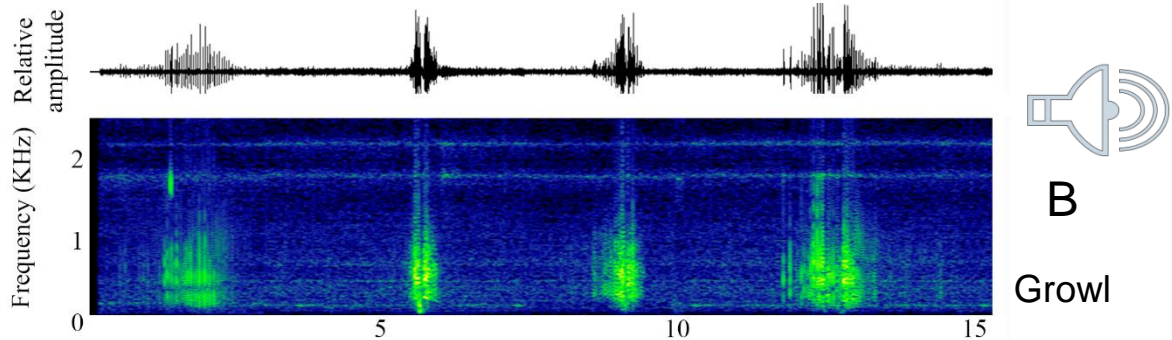
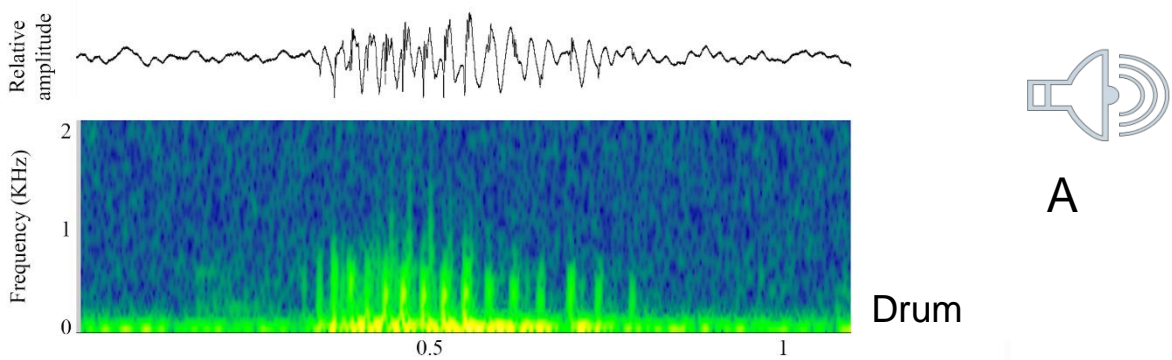
Funding Info



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An underwater photograph showing a large, dark fishing net draped across the upper left portion of the frame. Numerous silver fish, likely salmon, are swimming in the clear blue water. A vertical line with a white float is visible in the center, and a thick rope runs diagonally across the bottom right. The text "POP QUIZ!" is overlaid in the center in a white serif font with a blue drop shadow.

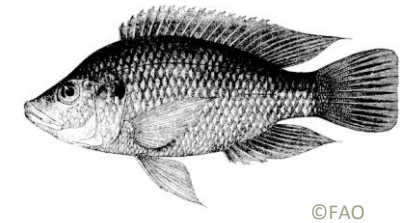
POP QUIZ!



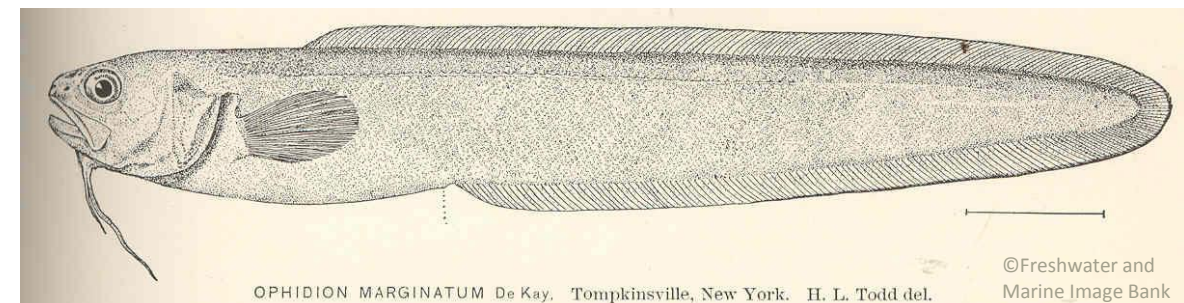
Arctic char
(*Salvelinus alpinus*)
Bolgan *et al.*, 2018



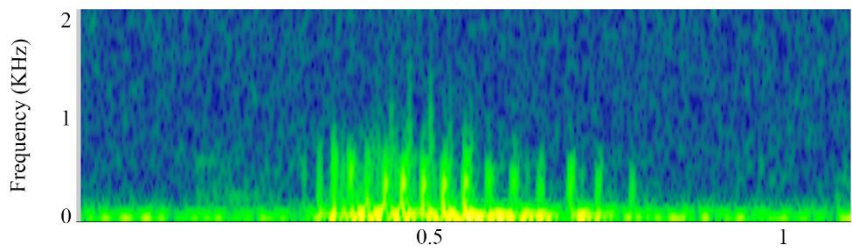
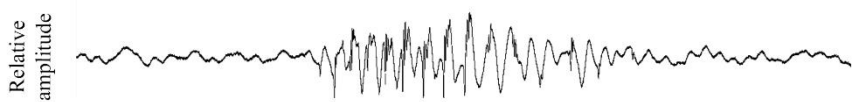
Mozambique tilapia
(*Oreochromis mossambicus*)
Amorim and Almada, 2005
Amorim *et al.*, 2003



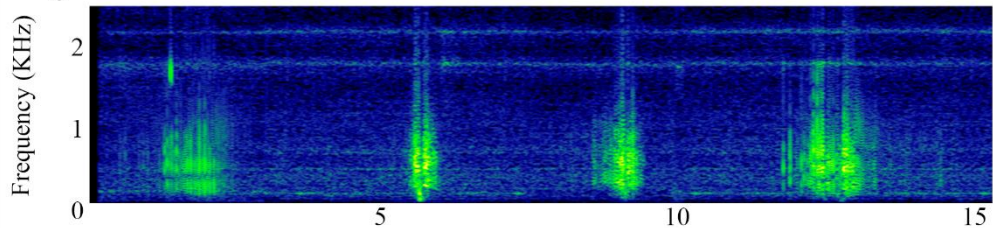
Streaked gurnard
(*Chelidonichthys lastoviza*)
Amorim and Hawkins, 2000



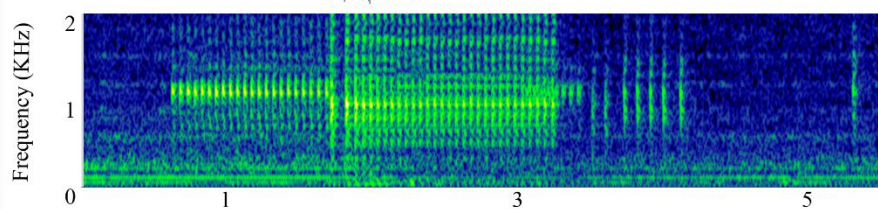
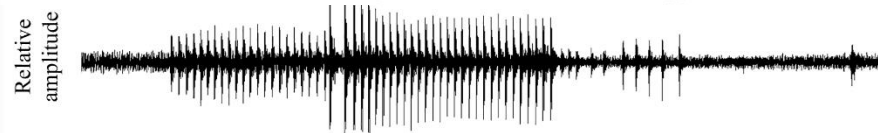
Striped cusk-eel (*Ophidion marginatum*) Mann *et al.*, 1997



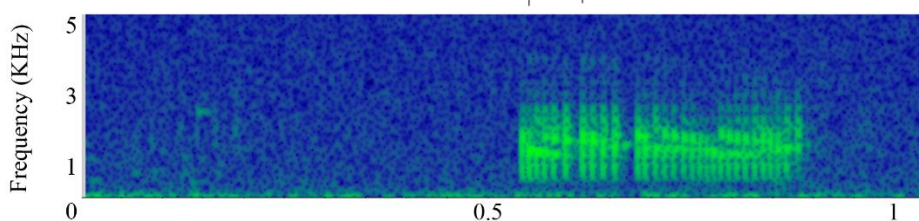
Drum



Growl



Jackhammer



FRT

A

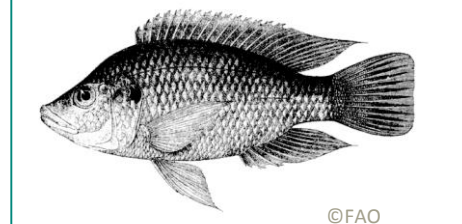


Arctic char
(*Salvelinus alpinus*)
Bolgan *et al.*, 2018



B

Mozambique tilapia
(*Oreochromis mossambicus*)
Amorim and Almada, 2005
Amorim *et al.*, 2003



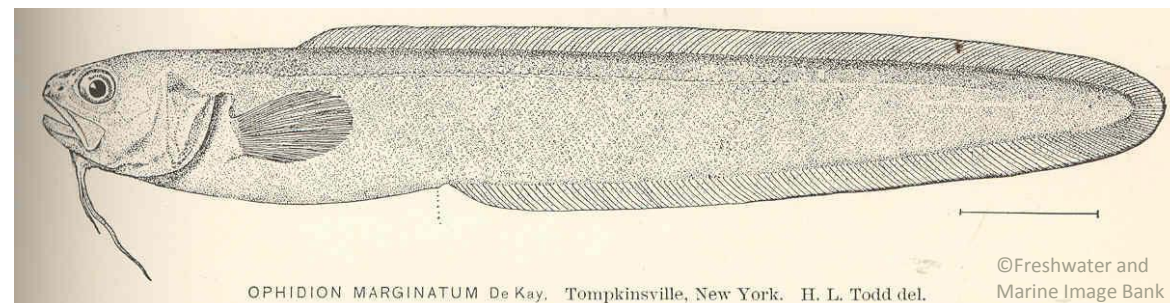
C

Streaked gurnard
(*Chelidonichthys lastoviza*)
Amorim and Hawkins, 2000

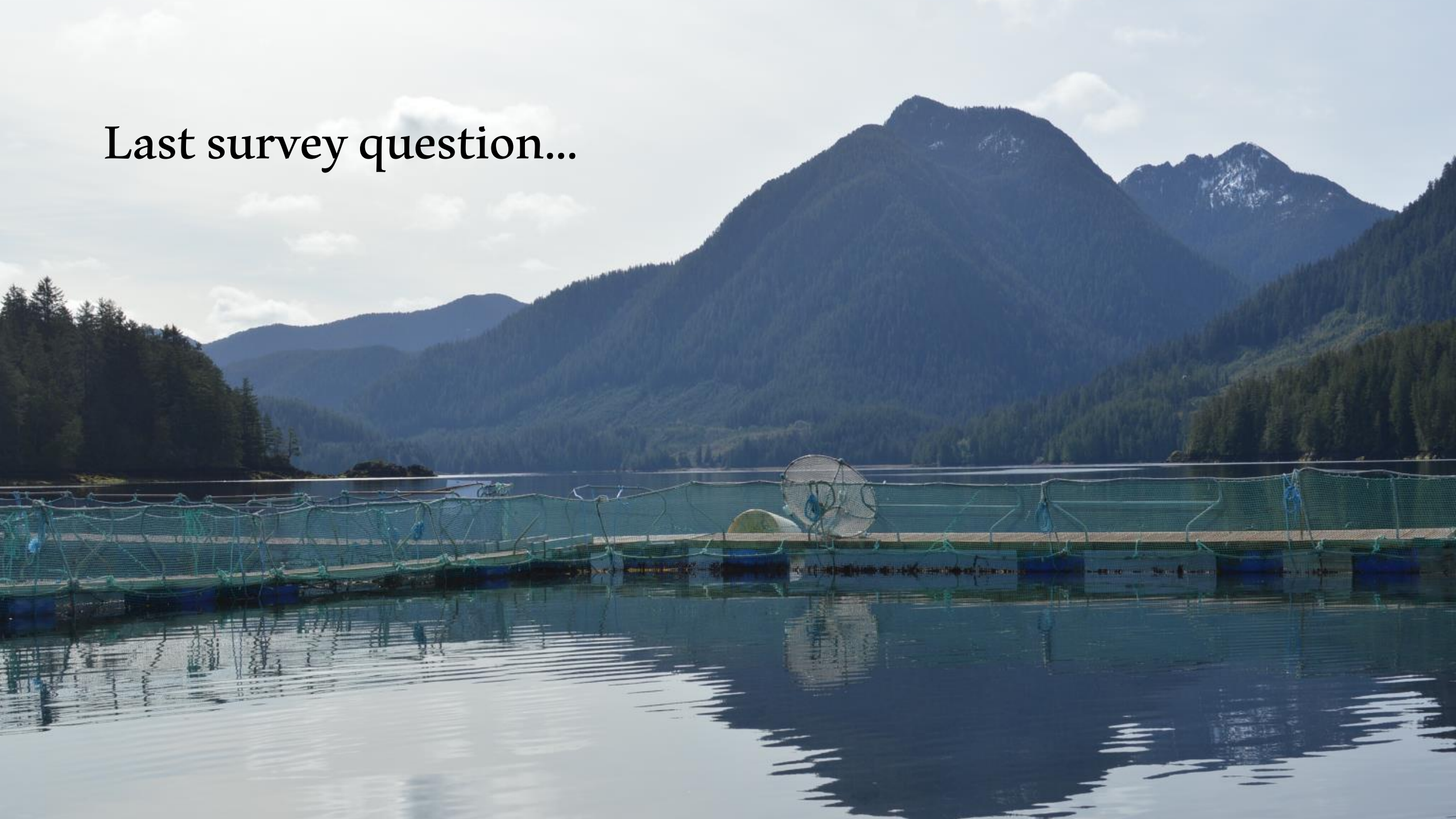


D

Striped cusk-eel (*Ophidion marginatum*) Mann *et al.*, 1997



Last survey question...



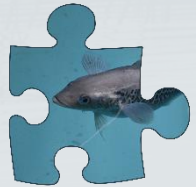
Once it is finalized and live, do you think you will use our website?



Yes, definitely!



No



Maybe

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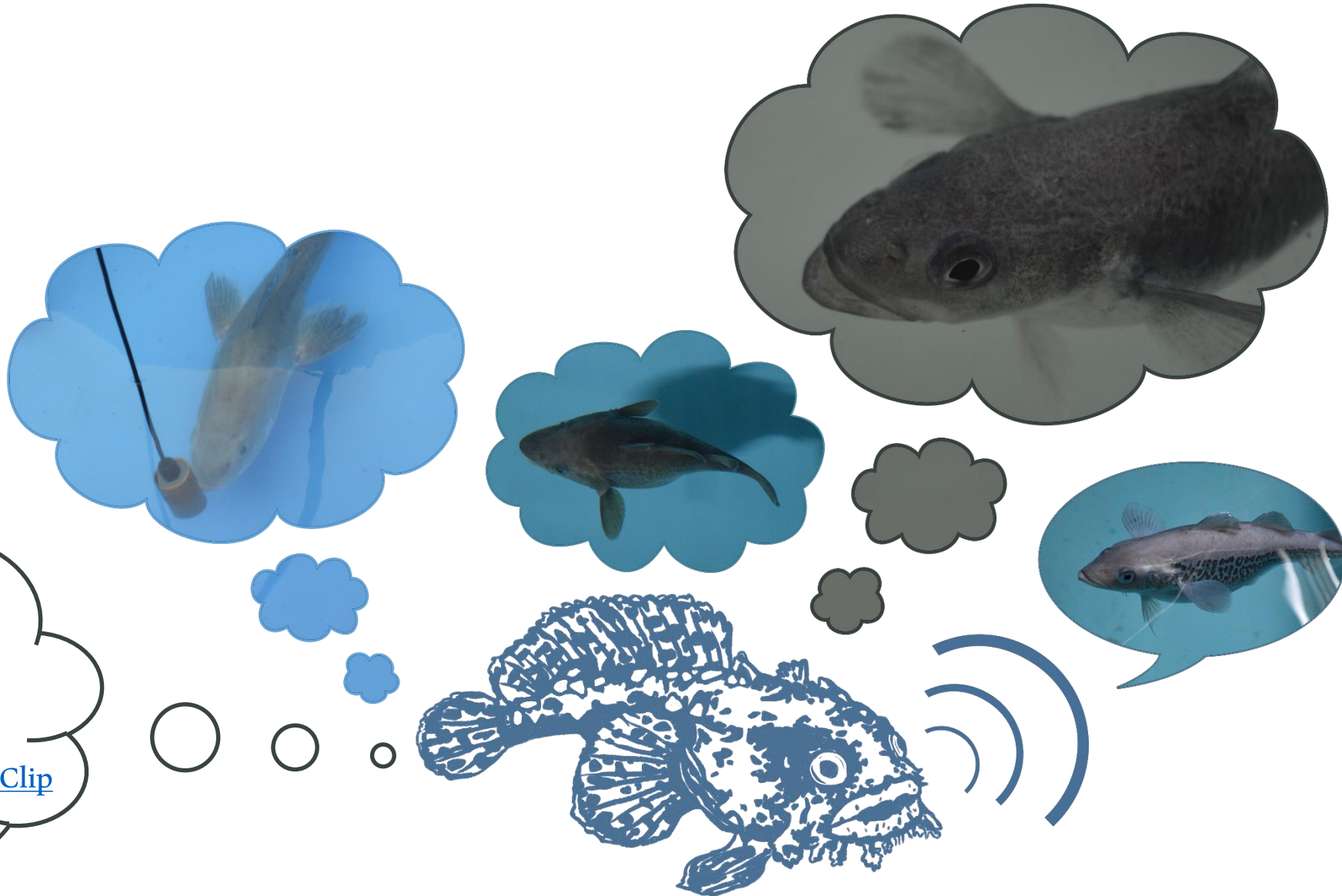


alooby101@gmail.com



kierancx@gmail.com

- Corresponding publication
- Species
- Sound name
- <https://tinyurl.com/FishSoundsClip>



Thank you!



Sound clip donors: Marta Bolgan

Clara Amorim Marta Picciulin

Erica Staaterman Matt Pine

Licia Casaretto Rodney Rountree

Lucia Di Iorio Tony Hawkins



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