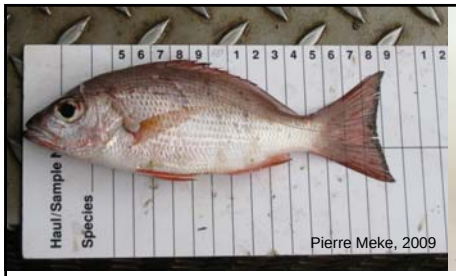


Pierre Meke, 2009


http://www.cnr.vt.edu/

Biological Data – Specimen Collection, Tags, Identification

Objectives

- List 3 types of age structures
- Explain how to select a random otolith sample
- Describe 5 components of the species ID form for Scorpaenidae
- Demonstrate your ability to complete the Specimen Collection, Tag Encounter/Recovery and Species Identification forms

Whole fish / invertebrates

- Reference collection / Unidentifiable / rare species
  - Take photo if can't collect whole specimen
- Document on Specimen Collection form
- Preservation
  - Salt
  - Ice
  - Freezing *
  - Chemicals
- Label

Age structures

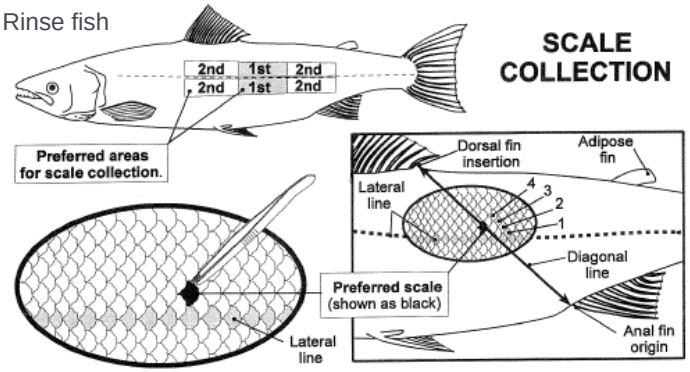
- **Scales**


http://en.wikipedia.org


Bob Magnuson http://eralabs.com

Age structures

- **Scales**
  - Rinse fish



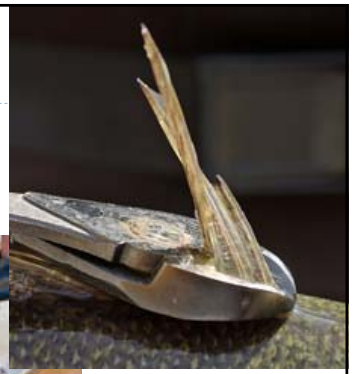
  - Place in envelope

Image from Hanrahan et al.(1997)

Age structures

- Scales
- **Spines / rays**

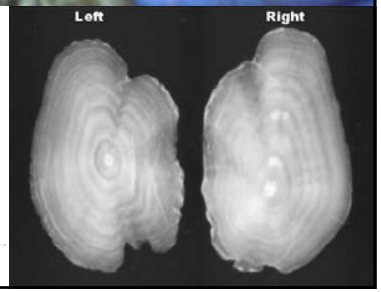
http://www.fla-keys.com



http://www.michigan.gov/dnr/

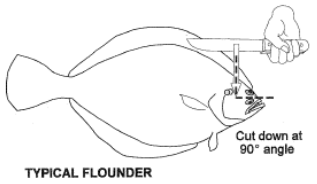
Age structures

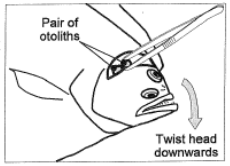
- Scales
- Spines / rays
- **Otoliths** (inner ear bones)

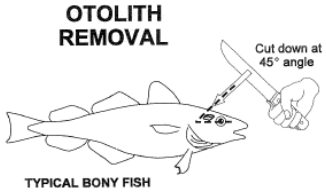


Age structures

- Scales
- Spines / rays
- **Otoliths**







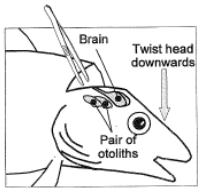


Image from Hanrahan et al.(1997)

Age structures

- Scales
- Spines / rays
- **Otoliths** – remove membrane & dry before storing

Age structures

- Scales
- Spines / rays
- Otoliths
- **Thorns / vertebrae**

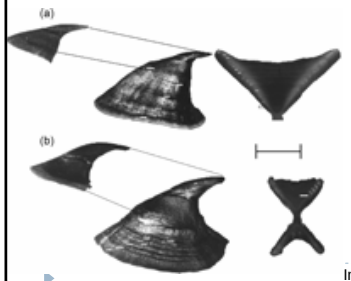


Image from Arkhipkin et al. 2008

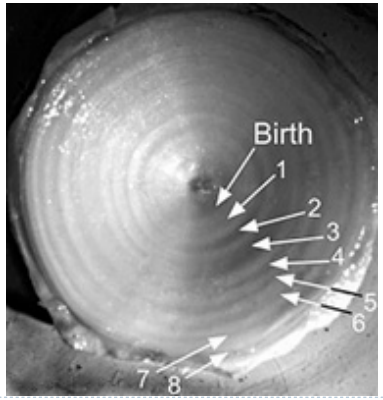


Image :S. Campana, Bedford Institute of Oceanography, Canada, *http://earthguide.ucsd.edu/fishes/kinds/kinds_lifestyle.html*

Selecting individuals

- Species – depends on assignment
- Individuals
  - Whole fish / inverts – haphazard
  - Age structures – random selection from length sample

Specimen Collection

Page _____ of _____

Observer code	Vessel code	Trip ID
Date (dd/mm/yy)	Haul	

Species Name	Species Code	Spec. Type	Specimen #	Sex	Mat.	Length (cm)	Weight (kg)	Comment

Specimen Type
1 - whole animal
2a - scales
2b - spine/ray
2c - otoliths
2d - thorn
2e - vertebrae
3 - stomachs

Sex:
M - Male
F - Female
I - Indeterminate
U - Unknown

Tags

- Atlantic bluefin tuna – tagging data

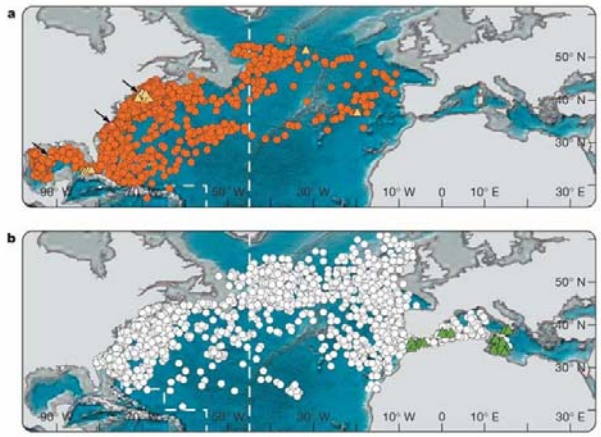
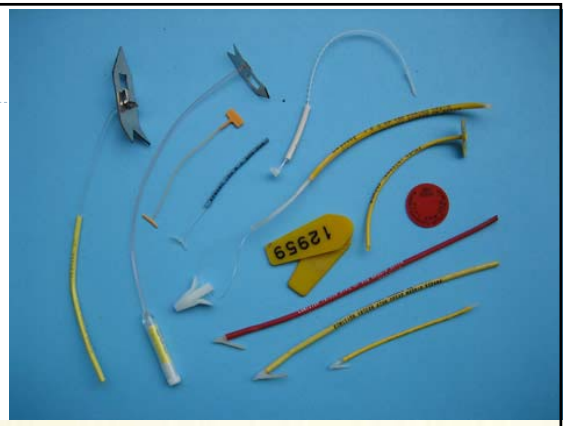
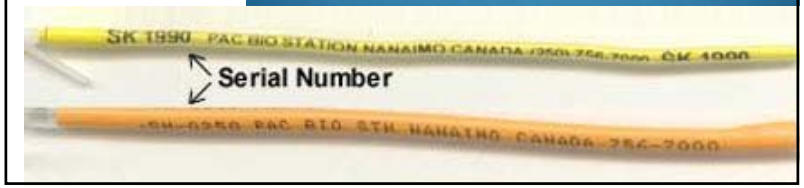


Image from Block et al. 2005

Tags

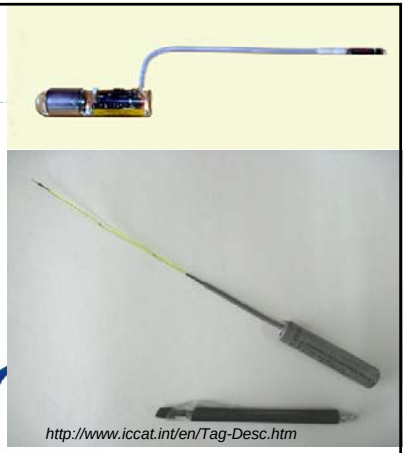
- **Conventional**
  - Spaghetti
  - Streamer
  - Disc



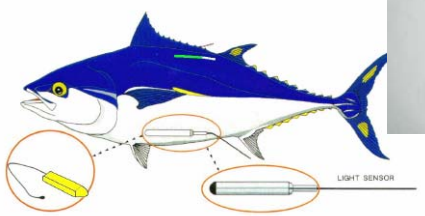


Tags

- Conventional
- **Electronic**
  - Archival (implanted)



http://www.iccat.int/en/Tag-Desc.htm

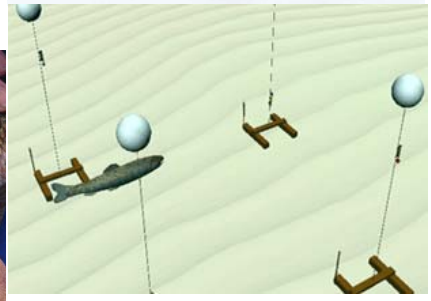


Drawing from Anon. (2008)

Tags

- Conventional
- **Electronic**
  - Archival
  - Acoustic (implanted)

http://www.pier.org/CA_coastal_tagging.shtml

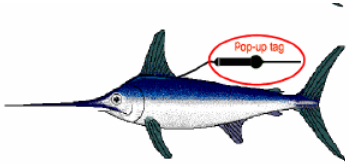


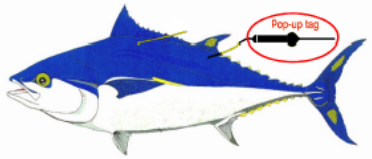
http://www.htisonar.com/

Tags

- Conventional
- **Electronic**
  - Archival
  - Acoustic
  - Pop-up (satellite; external)

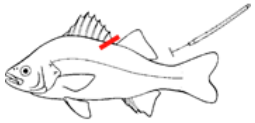
http://www.tunalab.unh.edu/PSATresearch.htm

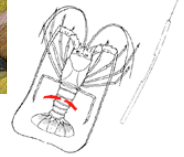




- Drawings from Anon. (2008)

Tags





Tag Encounter and Recovery

Observer code	Vessel code	Trip ID	Haul / Set

Tag Information

Tag Number

Check one: ☐ Applied ☐ Recaptured & released alive ☐ Removed

Tag type
- ☐ Conventional
- ☐ Archival (implanted)
- ☐ Electronic (other)
- ☐ Other

Tag location
- ☐ Below 1st dorsal fin
- ☐ Behind pectoral
- ☐ Opercle
- ☐ Belly
- ☐ Carapace
- ☐ Other

Tag color
- ☐ Blue
- ☐ Green
- ☐ Pink
- ☐ White
- ☐ Other
- ☐ Yellow
- ☐ Red
- ☐ Orange
- ☐ Metal

Who found tag?

Name:

Address:

Phone/email:

When was tag found?

☐ While fishing

☐ During offload

Date:

Location:

Fish Information

Species name	Species code	Length (cm)	Weight (kg)	Sex (M,F,I,U)

Structures collected?
- ☐ Otoliths
- ☐ Scales
- ☐ Other:_____
- ☐ None

Length types (Circle # and letter)
- 01 Fork — C Curved
- 02 Total — S Straight
- 03 Standard — E Estimated
- 04 Eye to fork
- 05 Lower jaw to fork
- 11 Disc width

Weight types (Circle # and letter)
- Blank - no weight — A Actual
- 01 Whole — E Estimated
- 02 Gilled & gutted
- 03 Gilled & headed
- 04 Headed & gutted
- 99 Other, describe in comment

Invertebrate Information

Phone/email:

Date:

Location:

Fish Information

Species name	Species code	Length (cm)	Weight (kg)	Sex (M,F,I,U)

Structures collected?
- ☐ Otoliths
- ☐ Scales
- ☐ Other:_____
- ☐ None

Length types (Circle # and letter)
- 01 Fork — C Curved
- 02 Total — S Straight
- 03 Standard — E Estimated
- 04 Eye to fork
- 05 Lower jaw to fork
- 11 Disc width

Weight types (Circle # and letter)
- Blank - no weight — A Actual
- 01 Whole — E Estimated
- 02 Gilled & gutted
- 03 Gilled & headed
- 04 Headed & gutted
- 99 Other, describe in comment

Invertebrate Information

Species name	Species code	Length (cm)	Weight (kg)	Sex (M,F,I,U)

Structures collected?
- ☐ Carapace
- ☐ Eggs
- ☐ Other:_____
- ☐ None

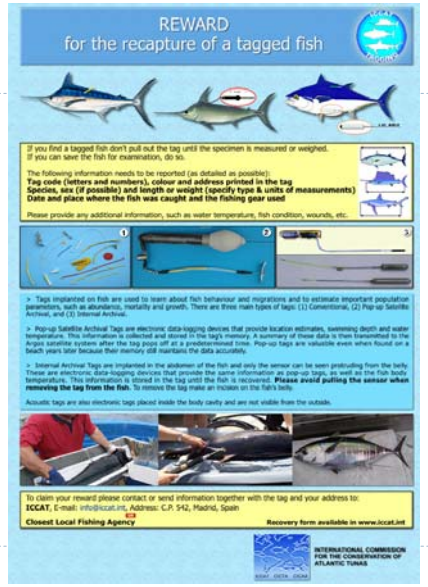
Length types (Circle one)
- 02 Total
- 32 Body
- 34 Carapace length (lobster)
- 37 Carapace length (crab)
- 38 Carapace width (crab)

Weight types (Circle # and letter)
- Blank - no weight — A Actual
- 01 Whole — E Estimated
- 99 Other, describe in comment

Comments

Version 1.2 6/2011

Tag rewards



Species Identification

Genus / Species	Family	Phylum / Class / Order
• Marine mammals • Sea turtles • Sharks & rays • Bony fish: Tunas & tuna-like fishes, see also country specific list in Appendix 1 • Shrimp: *Penaeus notialis, Penaeus kerathurus, Parapenaeopsis atlantica, Parapenaeus longirostris* • Crab: *Callinectes amnicola, C. pallidilus, Portinus validus, Callapa robroguttata* • Lobsters: *Panulirus regius, P. argus* • Cuttlefish, octopus and squids: *Sepia officinalis hieredda, Sepia bertheloti, Octopus vulgaris, Illex coindettii, Alloteutis africana, Loligo vulgari*	• Seabirds • Fish: all except those listed in Species column and country specific list	**Phyla** • Porifera –sponges; **Classes** •Scyphozoa – jellyfish •Polycheata •Gastropoda – snails, limpets, nudibranchs •Pycnogonida – sea spiders •Crinoidea – feather stars •Stelleroidea – starfishes •Echinoidea – sea urchins, sand dollars •Holothuroidea – sea cucumbers **Order** •Actinaria – sea anemones •Scleractinia – corals •Pennatula & Gorgonacea – sea pens, sea whips, sea fans

Species Identification Forms

- Verification of ID
- Different forms for different groups
  - Sharks
  - Rays, skates
  - Scorpaenidae
  - Flatfish
  - Misc. Fish
  - Crustacean
  - Invert
  - Seabirds

  Sharks, Rays, skates: Elasmobranch ID
- Check boxes for presence/absence & counts of various features

Species ID – Scorpaenidae

- *Scorpaena angolensis*

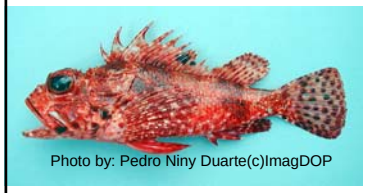
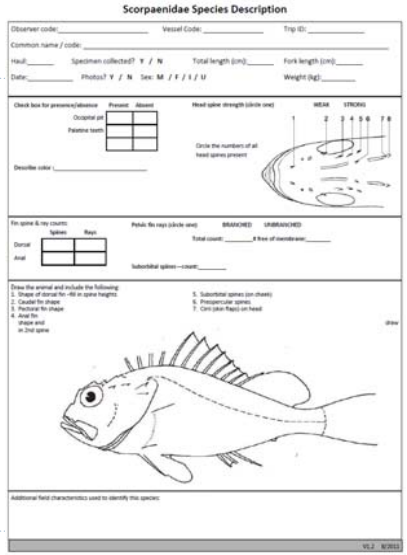
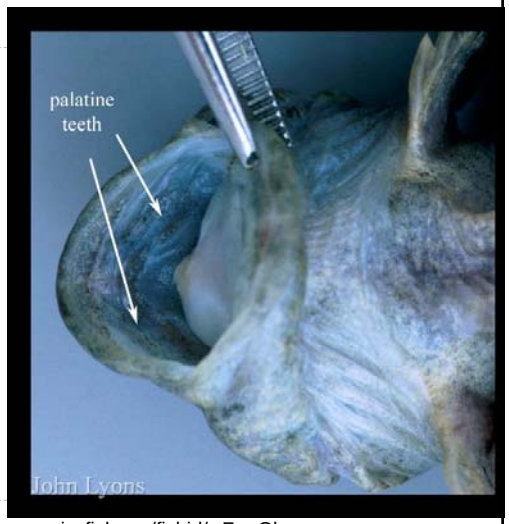


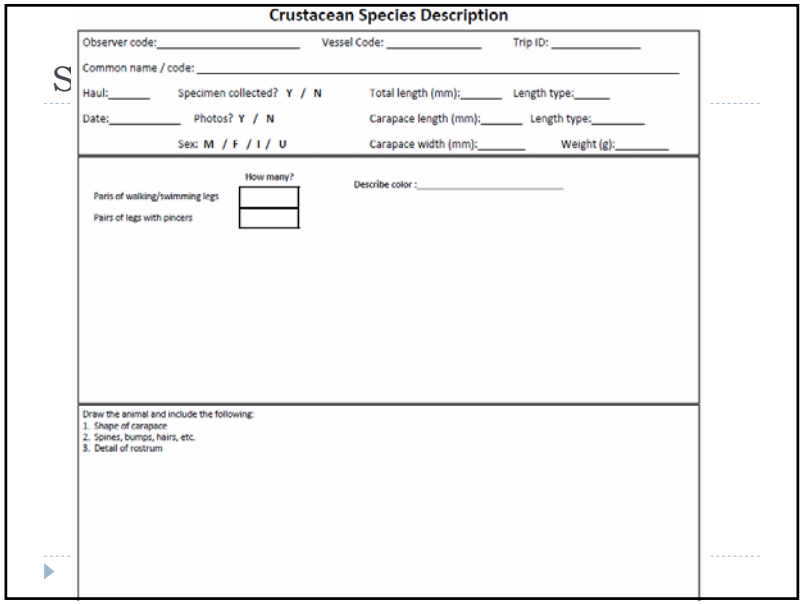
Photo by: Pedro Niny Duarte(c)ImagDOP



- Palatine teeth - patches of small teeth on the palatine bones that are found on each side of the roof of the mouth
- Occipital pit - a cavity in the hind portion of the upper surface of the skull.



http://www.wiscfish.org/fishid/wFrmGlossary.aspx



Crustacean Species Description

Observer code:_____ Vessel Code: _____ Trip ID: _____

Common name / code: _____

Haul:_____ Specimen collected? Y / N Total length (mm):_____ Length type:_____

Date:_____ Photos? Y / N Carapace length (mm):_____ Length type:_____

Sex: M / F / I / U Carapace width (mm):_____ Weight (g):_____

How many?

Pairs of walking/swimming legs

Pairs of legs with pincers

Describe color :_____

Draw the animal and include the following:
1. Shape of carapace
2. Spines, bumps, hairs, etc.
3. Detail of rostrum

Activity

- Use information on handout to complete a Specimen collection, Tag and Species ID form
- 15 minutes

Photo by: Pedro Niny Duarte; *www.fishbase.org*

Summary

- Which age structures can be collected from fish?
- How will you select fish for an otolith collection?
- What do you do if you encounter a tag?
- List a few components on the Scorpaenidae species ID form

References

- AFSC. 2009. North Pacific Groundfish Observer Program, 2010 Observer Sampling Manual. North Pacific Groundfish Observer Program. Fisheries Monitoring and Assessment Division, Alaska Fisheries Science Center, 7600 Sand Point Way, NE, Seattle, WA 98115. Access at: http://www.afsc.noaa.gov/FMA/document.htm.
- Anon. 2008. Report of the 2007 Meeting of the Ad Hoc Working Group on Tagging Coordination, Madrid, Spain, March 15-16, 2007 (SCRS/2007/018). ICCAT Coll. Vol. Sci. Pap. **62:1973-2028.**
- Arkhipkin, A. I., Baumgartner, N., Brickle, P., Laptikhovsky, V. V., Pompert, J. H. W., and Shcherbich, Z. N. 2008. Biology of the skates *Bathyraja brachyurops* and *B. griseocauda* in waters around the Falkland Islands, Southwest Atlantic. – ICES Journal of Marine Science, 65: 560–570.
- Barbara A. Block, Steven L. H. Teo, Andreas Walli, Andre Boustany, Michael J. W. Stokesbury, Charles J. Farwell, Kevin C. Weng, Heidi Dewar & Thomas D. Williams. 2005. Electronic tagging and population structure of Atlantic bluefin tuna . Nature 434: 1121-1127
- Hanrahan, J., D. J. Melindy, and J. V. Pelrine. 1997. At-sea Observer Program Operations Manual: A Training Aid and Field Reference. National At-sea Fisheries Observer Program, Department of Fisheries and Oceans, Ottawa, Canada.
- Van Helvoort, G. 1986. Observer program operations manual. FAO Fisheries Technical Paper 275, FAO, Rome.

Activity – Biological Sampling (Part 2)

Name:

On this haul you collected 1) a fish that you encountered for the first time, 2) otoliths from one of the discard species and 3) found a tagged shark. Complete a Specimen Collection, Tag Encounter/Recovery and Species Identification form using the following information.

Observer code: A732; Vessel code: LIB732; Trip 91; Date: May 1, 2011; haul 3

The otoliths are from three African red snapper (*Lutjanus agennes*).

Specimen#	Sex	Length (fork)	weight
75	M	45	3.2
76	F	24	0.8
77	F	34	1.15

A tag was found on a milk shark (*Rhizoprionodon acutus*). Total length 85 cm; weight 3.75 kg. The tag is a red spaghetti tag (conventional) that was attached at the base of the dorsal fin. You were the first to notice the tag while you were sampling. The fish was retained as part of the catch. Tag info is below:

HCP5499934 Spanish Inst.Ocean. Vigo

You've identified the new fish as a swallowtail seaperch (*Anthias anthias*) which is in the family Serranidae. You did not take any photos but you collected the fish for ID verification. The specimen is 16cm (fork), 19cm (total) and weighs 0.4 kg. The coloration is red/orange and has some yellow blotches/stripes on its back & stripes on opercle. The dorsal fin has 10 spines and 15 rays and the anal fin has 3 spines and 8 rays.

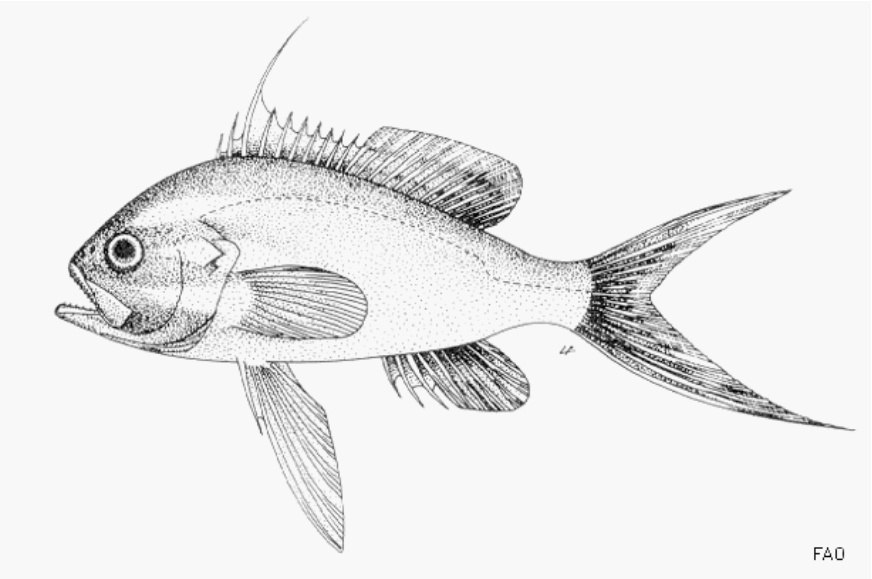


Image: Schneider (1990)

Specimen Collection

Observer code	Vessel code	Trip ID

Date (dd/mm/yy)	Haul

Species Name	Species Code	Spec. Type	Specimen #	Sex	Mat.	Length (cm)	Weight (kg)	Comment

Specimen Type

1 - whole animal
2a - scales
2b - spine/ray
2c - otoliths
2d - thorn
2e - vertebrae
3 - stomachs

Sex:

M - Male
F - Female
I - Indeterminate
U - Unknown

Tag Encounter and Recovery

Observer code	Vessel code	Trip ID	Haul / Set

Tag Information

Tag Number

Check one: ☐ Applied ☐ Recaptured & released alive ☐ Removed

Tag type
- ☐ Conventional
- ☐ Archival (implanted)
- ☐ Electronic (other)
- ☐ Other _____

Tag location
- ☐ Below 1st dorsal fin
- ☐ Behind pectoral
- ☐ Opercle
- ☐ Belly
- ☐ Carapace
- ☐ Other _____

Tag color
- ☐ Blue
- ☐ Green
- ☐ Pink
- ☐ White
- ☐ Other _____
- ☐ Yellow
- ☐ Red
- ☐ Orange
- ☐ Metal

Who found tag?

Name:

Address:

Phone/email:

When was tag found?

- ☐ While fishing
- ☐ During offload

Date:

Location:

Fish Information

Species name	Species code	Length (cm)	Weight (kg)	Sex (M,F,I,U)

Structures collected?
- ☐ Otoliths
- ☐ Scales
- ☐ Other:_____
- ☐ None

Length types (Circle # and letter)
- **01** Fork **C** Curved
- **02** Total **S** Straight
- **03** Standard **E** Estimated
- **04** Eye to fork
- **05** Lower jaw to fork
- **11** Disc width

Weight types (Circle # and letter)
- Blank - no weight **A** Actual
- **01** Whole **E** Estimated
- **02** Gilled & gutted
- **03** Gilled & headed
- **04** Headed & gutted
- **99** Other, describe in comment

Invertebrate Information

Species name	Species code	Length (cm)	Weight (kg)	Sex (M,F,I,U)

Structures collected?
- ☐ Carapace
- ☐ Eggs
- ☐ Other:_____
- ☐ None

Length types (Circle one)
- **02** Total
- **32** Body
- **34** Carapace length (lobster)
- **37** Carapace length (crab)
- **38** Carapace width (crab)

Weight types (Circle # and letter)
- Blank - no weight **A** Actual
- **01** Whole **E** Estimated
- **99** Other, describe in comment

Comments

Misc. Fish Species Description

Observer code:_____ Vessel Code: _____ Trip ID: _____

Common name / code: _____

Haul:_____ Specimen collected? **Y / N** Total length (cm):_____ Fork length (cm):_____

Date:_____ Photos? **Y / N** Weight (kg):_____

Sex: **M / F / I / U**

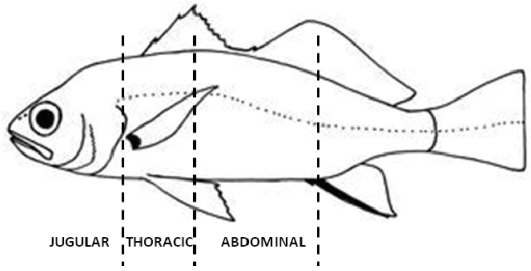
Check box for presence/absence

	Present	Absent
Adipose fin		
Pelvic fins		
Chin barbel		

	How many?	Spines	Rays
Dorsal fins			
Anal			

	Upper	Lower
Gill rakers		

Pelvic fin position (circle one)



Describe color :_____

Draw the animal and include the following:

1. Shape of dorsal fin –fill in spine heights
2. Caudal fin shape
3. Pectoral fin shape
4. Anal fin shape
5. Pelvic fin position
6. Lateral line(s)
7. Position of any spines, cirri, barbells, etc.

Additional field characteristics used to identify this species: