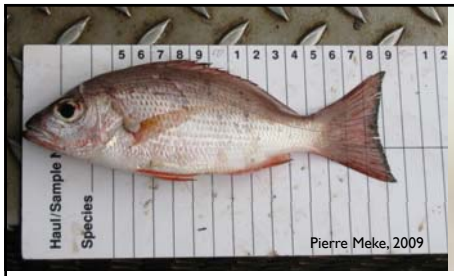


Biological Data – Specimen Collection, Tags, Identification

Objectives

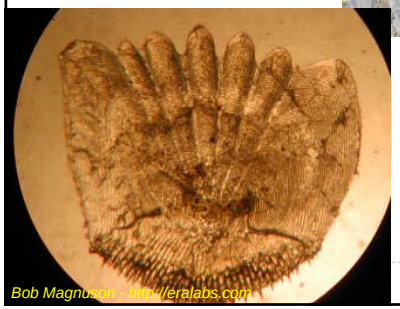
- List 3 types of age structures
- Explain how to select a random otolith sample
- Describe 5 components of a species ID form for Scorpaenidae
- Demonstrate your ability to complete the Specimen Collection, Tag Encounter/Recovery and Species Identification forms

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



Age structures

- Scales

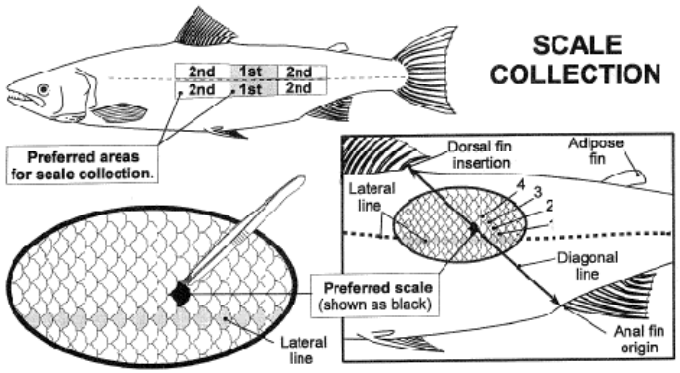
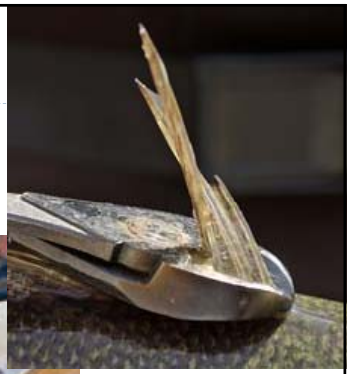


Image from Hanrahan et al.(1997)

Age structures

- Scales
- Spines / rays

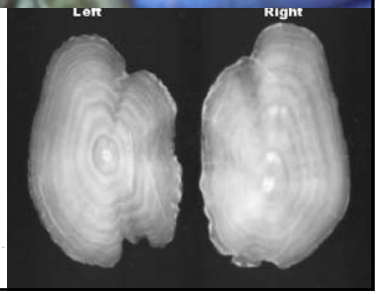


http://www.michigan.gov/dnr/

http://www.fla-keys.com

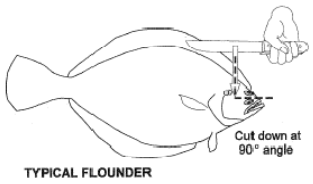
Age structures

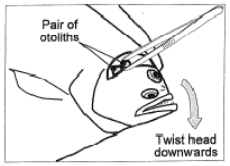
- Scales
- Spines / rays
- Otoliths

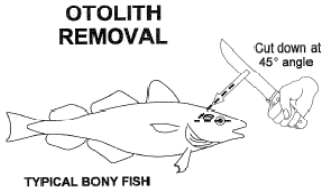


Age structures

- Scales
- Spines / rays
- Otoliths







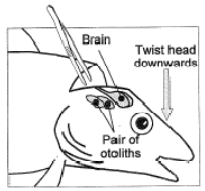


Image from Hanrahan et al.(1997)

Age structures

- Scales
- Spines / rays
- Otoliths

Age structures

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

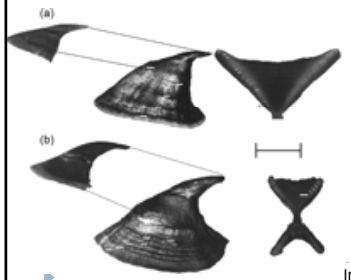


Image from Arkhipkin et al. 2008

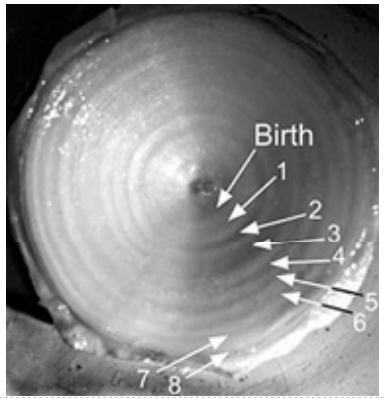
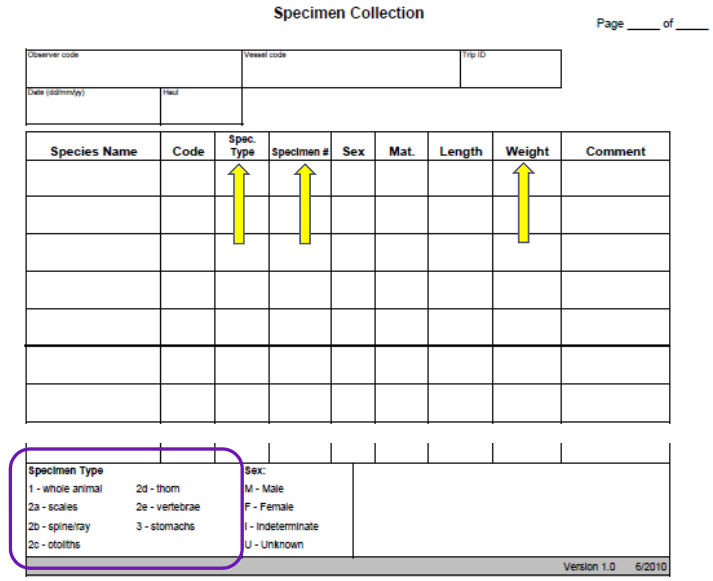


Image :S. Campana, Bedford Institute of Oceanography, Canada, *http://earthguide.ucsd.edu/fishes/kinds/kinds_lifestyle.html*

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	Code	Spec. Type	Specimen #	Sex	Mat.	Length	Weight	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

Version 1.0 6/2010

Tags

- Atlantic bluefin tuna – tagging data

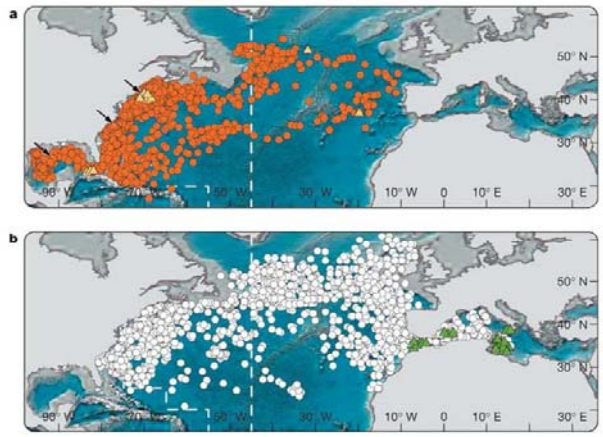
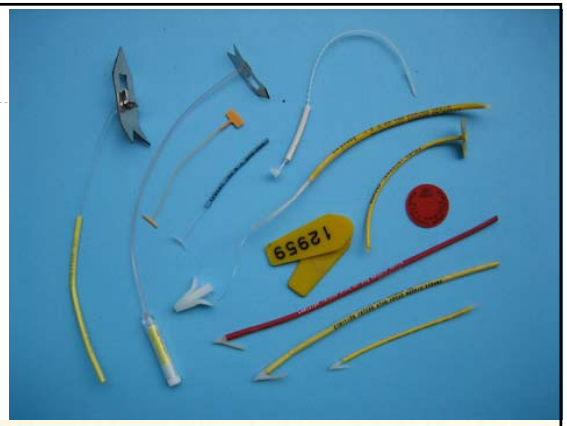
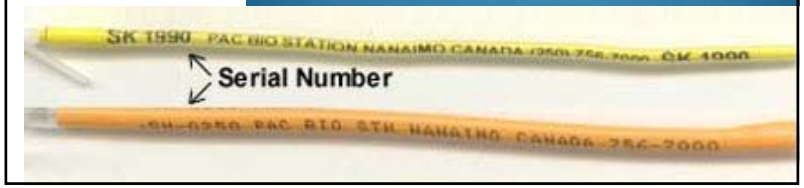


Image from Block et al. 2005

Tags

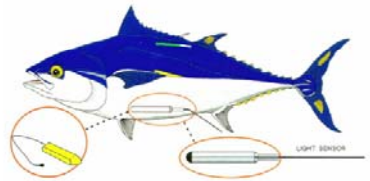
- Conventional



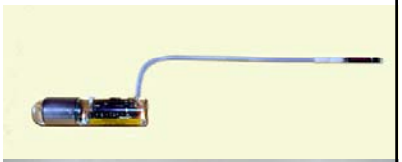


Tags

- Conventional
- Electronic
  - Archival



Drawing from Anon. (2008)

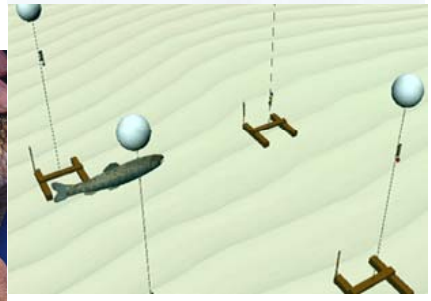


http://www.iccat.int/en/Tag-Desc.htm

Tags

- Conventional
- Electronic
  - Archival
  - Acoustic

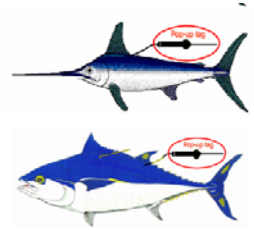
http://www.pier.org/CA_coastal_tagging.shtml



http://www.htisonar.com/

Tags

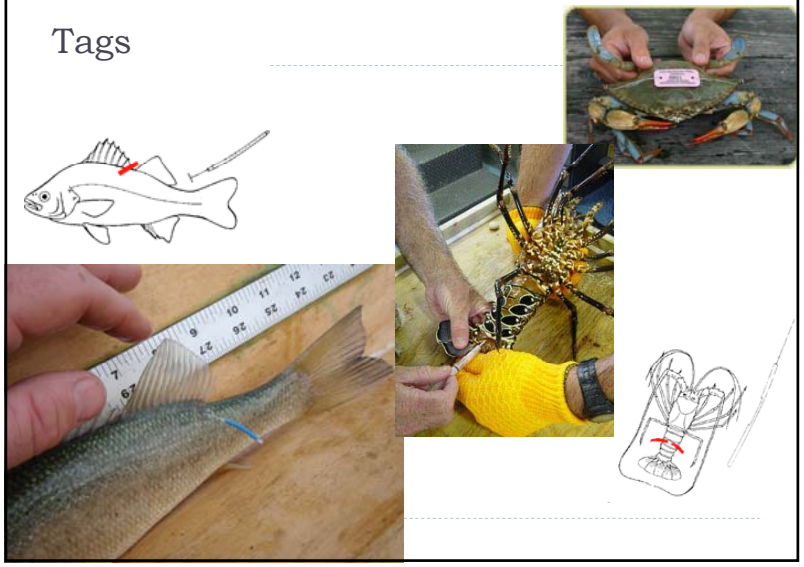
- Conventional
- Electronic
  - Archival
  - Acoustic
  - Pop-up

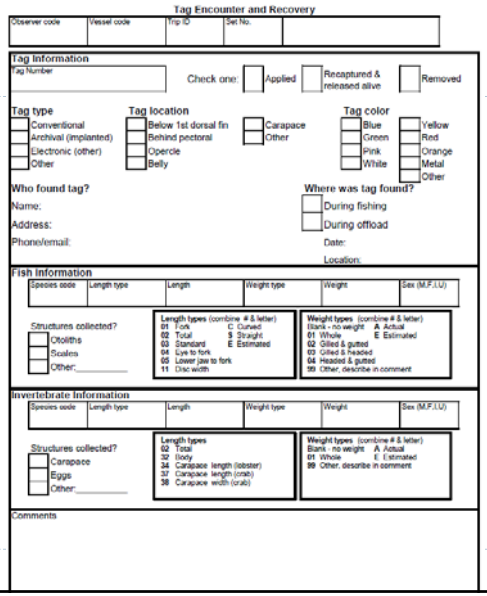


http://www.tunalab.unh.edu/PSATresearch.htm

Drawing from Anon. (2008)

Tags





Tag Encounter and Recovery

Observer code | Vessel code | Trip ID | Set No.

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; Yellow; Red; Orange; Metal; Other

Who found tag? Name: Address: Phone/email:

Where was tag found? During fishing; During offload; Date: Location:

Fish information

Species code | Length type | Length | Weight type | Weight | Sex (M,F,U)

Structures collected? Otoliths; Scales; Other:

Length types (combine # & letter): 01 Fork; 02 Total; 03 Standard; 04 Eye to fork; 05 Lower jaw to fork; 11 Disc width; C Curved; S Straight; E Estimated

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

Invertebrate Information

Species code | Length type | Length | Weight type | Weight | Sex (M,F,U)

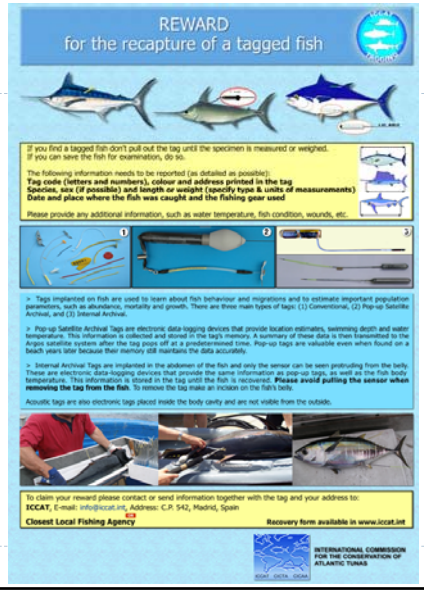
Structures collected? Carapace; Eggs; Other:

Length types: 02 Total; 32 Body; 34 Carapace length (lobster); 37 Carapace length (crab); 38 Carapace width (crab)

Weight types (combine # & letter): Blank - no weight; A Actual; 01 Whole; E Estimated; 99 Other, describe in comment

Comments

Tag rewards



REWARD
for the recapture of a tagged fish

If you find a tagged fish don't pull out the tag until the specimen is measured or weighed. If you can save the fish for examination, do so.

The following information needs to be reported (as detailed as possible):
Tag code (letters and numbers), colour and address printed in the tag
Species, sex (if possible) and length or weight (specify type & units of measurements)
Date and place where the fish was caught and the fishing gear used

Please provide any additional information, such as water temperature, fish condition, wounds, etc.

> Tags implanted on fish are used to learn about fish behaviour and migrations and to estimate important population parameters, such as abundance, mortality and growth. There are three main types of tags: (1) Conventional, (2) Pop-up Satellite Archival, and (3) Internal Archival.

> Pop-up Satellite Archival Tags are electronic data-logging devices that provide location estimates, swimming depth and water temperature. This information is collected and stored in the tag's memory. A summary of these data is then transmitted to the Argos satellite system after the tag pops off at a predetermined time. Pop-up tags are valuable even when found on a beach years later because their memory still maintains the data accurately.

> Internal Archival Tags are implanted in the abdomen of the fish and only the sensor can be seen protruding from the belly. These are electronic data-logging devices that provide the same information as pop-up tags, as well as the fish body temperature. This information is stored in the tag until the fish is recovered. **Please avoid pulling the sensor when removing the tag from the fish.** To remove the tag make an incision on the fish's belly.

Acoustic tags are also electronic tags placed inside the body cavity and are not visible from the outside.

To claim your reward please contact or send information together with the tag and your address to:
ICCAT, E-mail: info@iccat.int, Address: C.P. 542, Madrid, Spain
Closest Local Fishing Agency
Recovery form available in www.iccat.int

INTERNATIONAL COMMISSION FOR THE CONSERVATION OF ATLANTIC TUNAS

Species Identification

Genus / Species

- 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*

Family

- Seabirds
- Fish: all except those listed in Species column and country specific list

Phylum / Class / Order

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

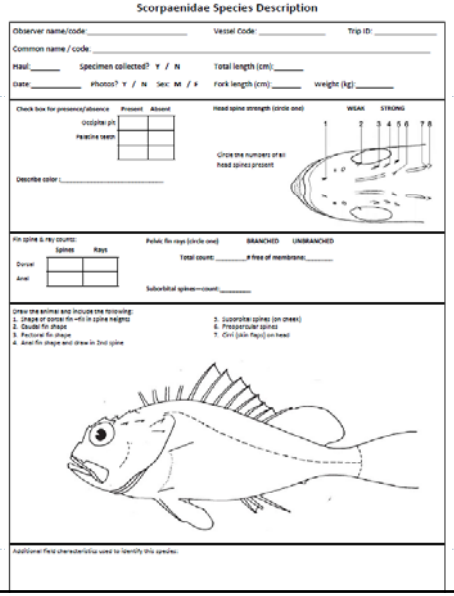
- Actinaria – sea anemones
- Scleractinia – corals
- Pennatula & Gorgonacea – sea pens, sea whips, sea fans

Species Identification Forms

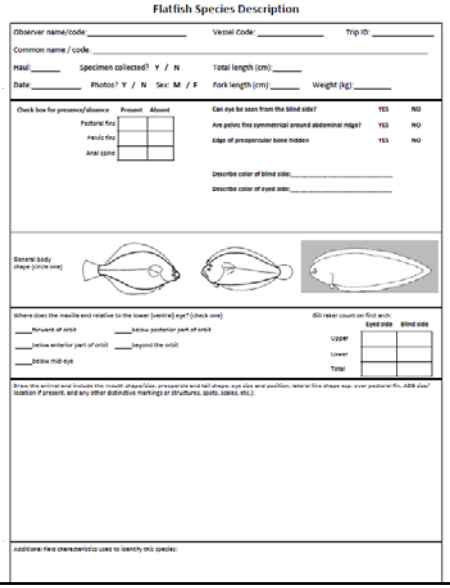
- Verification of ID
- Different forms for different groups
  - Sharks
  - Rays, skates

  } Elasmobranch ID
  - Scorpaenidae
  - Flatfish
  - Misc. Fish
  - Crustacean
  - Invert
- Check boxes for presence/absence & counts of various features

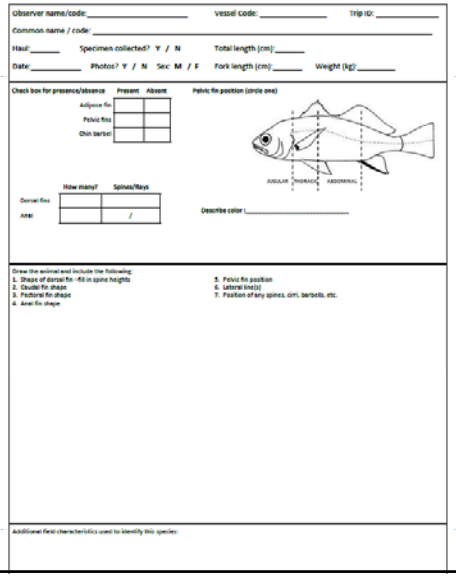
Species ID



Species ID



Species ID


Misc. Fish Species Description

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

Common name / code:_____

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

Date:_____ Photos? Y / N Sex: M / F Fork length (cm):_____ Weight (kg):_____

Check box for presence/absence — Present / Absent: Adipose fin; Pelvic fins; Chin barbel

Pelvic fin position (circle one)

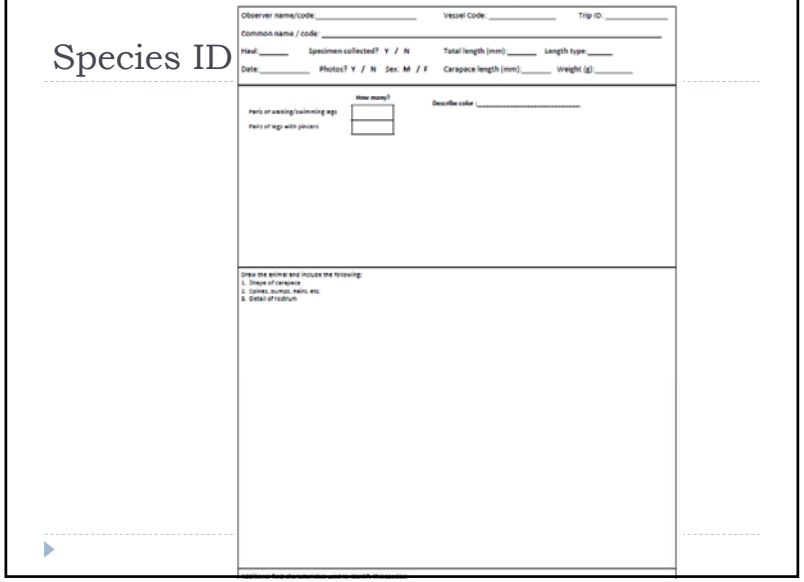
How many? Spines/Rays: Dorsal fins; Anal

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, dirt, barbells, etc.

Additional field characteristics used to identify this species:

Species ID


Crustacean Species Description

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

Common name / code:_____

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

Date:_____ Photos? Y / N Sex: M / F Carapace length (mm):_____ Weight (g):_____

How many?

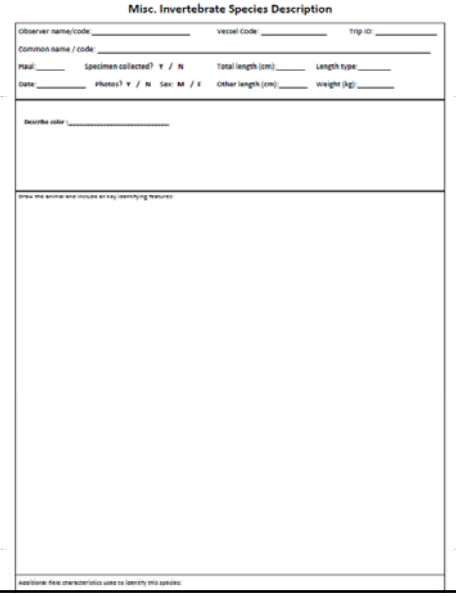
Pairs of walking/swimming legs

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

Species ID


Misc. Invertebrate Species Description

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

Common name / code:_____

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

Date:_____ Photos? Y / N Sex: M / F Other length (cm):_____ Weight (kg):_____

Describe color:_____

Draw the animal and include all key identifying features:

Additional field characteristics used to identify this species:

Activity

- Use information on handout to complete a Specimen collection, Tag and Species ID form
- 10 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 are the components of a species ID form for Scorpaenidae

Activity – Biological Sampling (Part 2)

Name:

On this haul you collected a fish that you encountered for the first time, otoliths from one of the discard species and 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 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.

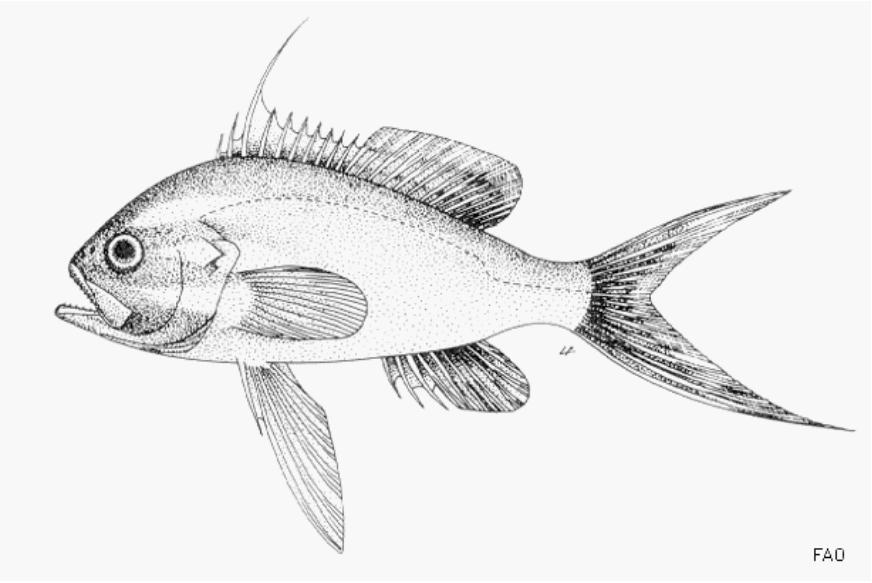


Image: Schneider (1990)

Specimen Collection

Observer code	Vessel code	Trip ID

Date (dd/mm/yy)	Haul

Species Name	Code	Spec. Type	Specimen #	Sex	Mat.	Length	Weight	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	Set No.	

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
- ☐ Yellow
- ☐ Red
- ☐ Orange
- ☐ Metal
- ☐ Other

Who found tag?

Name:

Address:

Phone/email:

Where was tag found?

- ☐ During fishing
- ☐ During offload

Date:

Location:

Fish Information

Species code	Length type	Length	Weight type	Weight	Sex (M,F,I,U)

Structures collected?

- ☐ Otoliths
- ☐ Scales
- ☐ Other:_____

Length types (combine # & 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 (combine # & 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 code	Length type	Length	Weight type	Weight	Sex (M,F,I,U)

Structures collected?

- ☐ Carapace
- ☐ Eggs
- ☐ Other:_____

Length types

02 Total
32 Body
34 Carapace length (lobster)
37 Carapace length (crab)
38 Carapace width (crab)

Weight types (combine # & letter)

Blank - no weight **A** Actual
01 Whole **E** Estimated
99 Other, describe in comment

Comments

Misc. Fish Species Description

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

Common name / code: _____

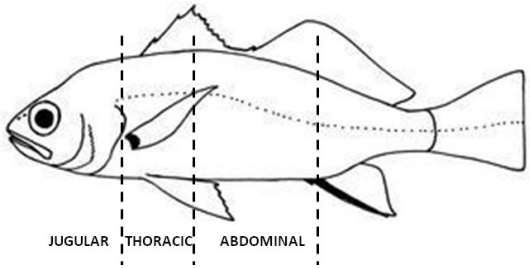
Haul:_____ Specimen collected? **Y / N** Total length (cm):_____

Date:_____ Photos? **Y / N** Sex: **M / F** Fork length (cm):_____ Weight (kg):_____

Check box for presence/absence

	Present	Absent
Adipose fin		
Pelvic fins		
Chin barbel		

Pelvic fin position (circle one)



	How many?	Spines/Rays
Dorsal fins		
Anal		/

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: