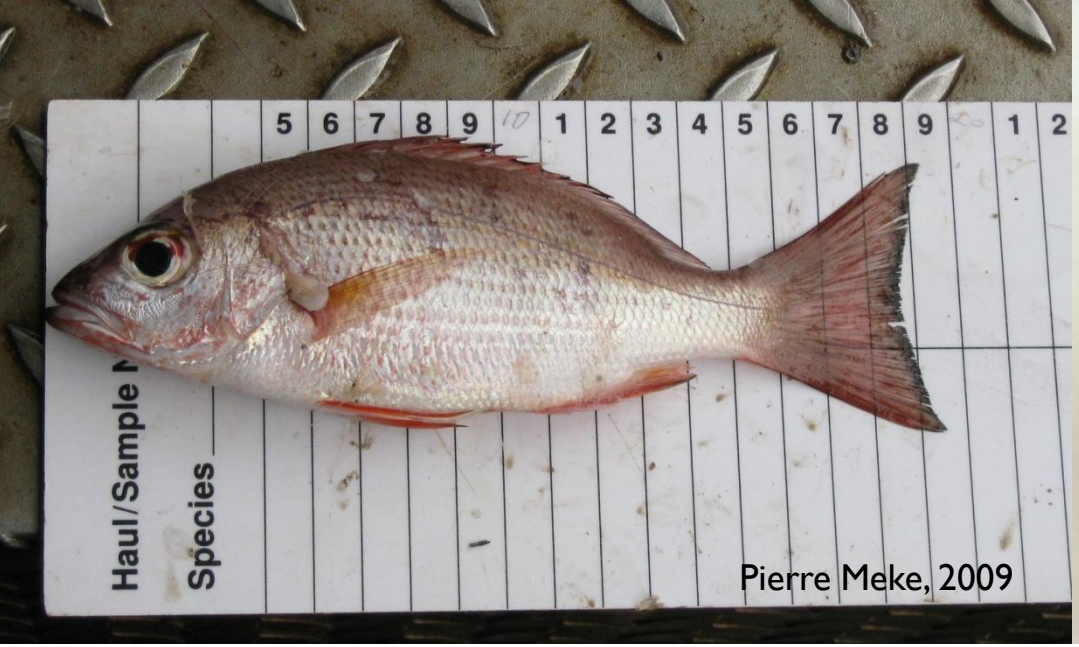
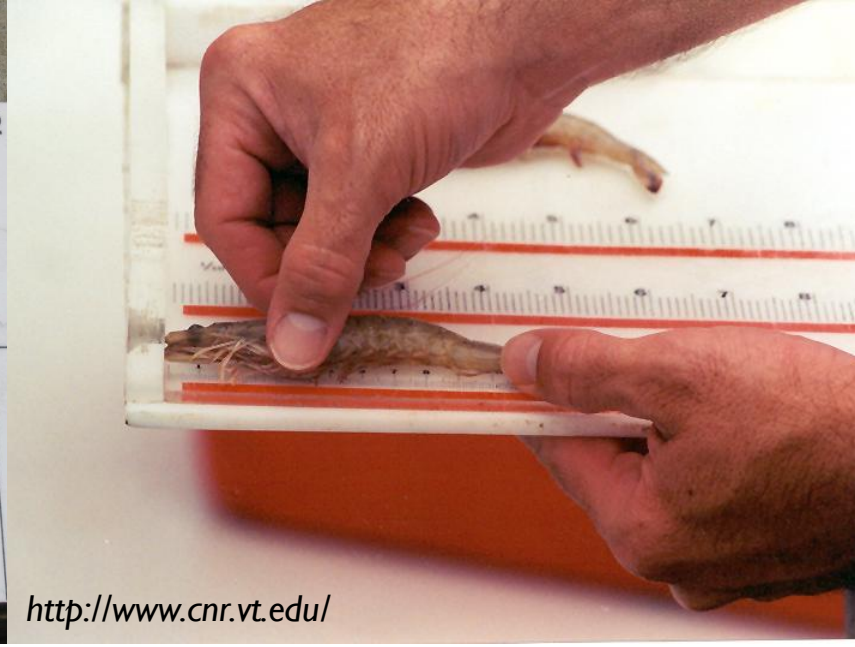




Biological Data – Specimen Collection, Tags, Identification

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

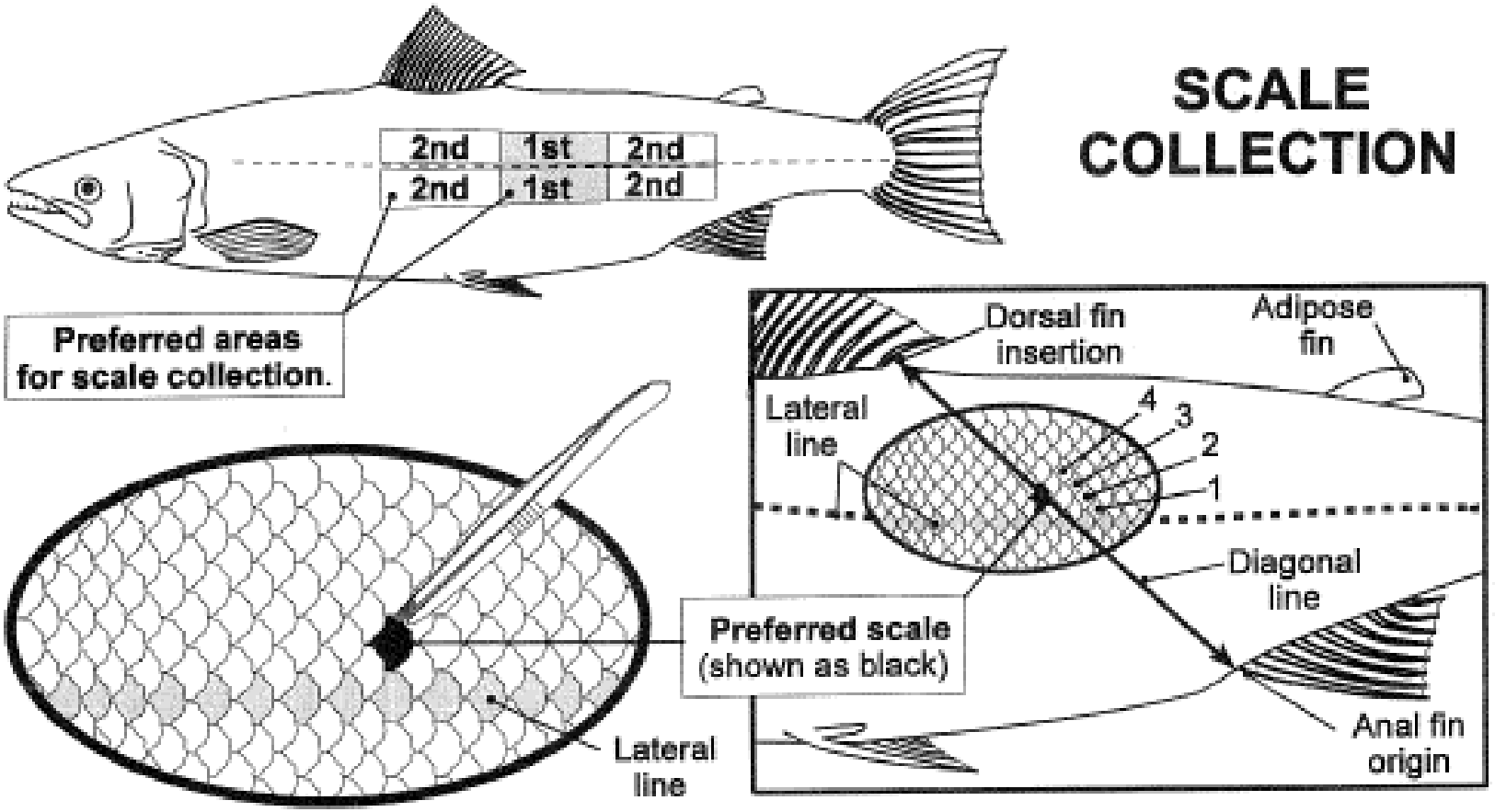


Image from Hanrahan et al.(1997)

Age structures

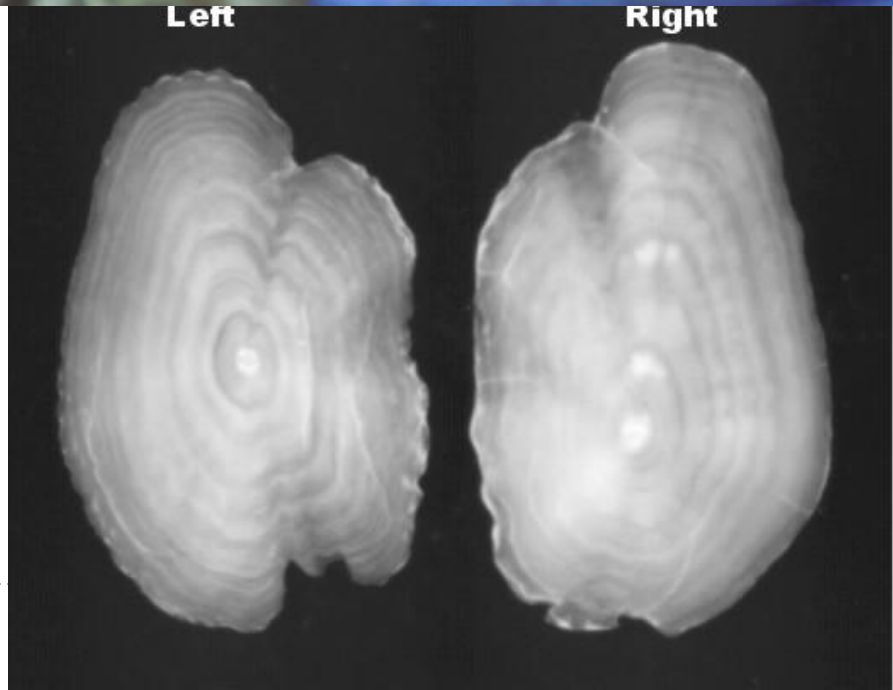
- Scales
- Spines / rays

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

http://www.fla-keys.com

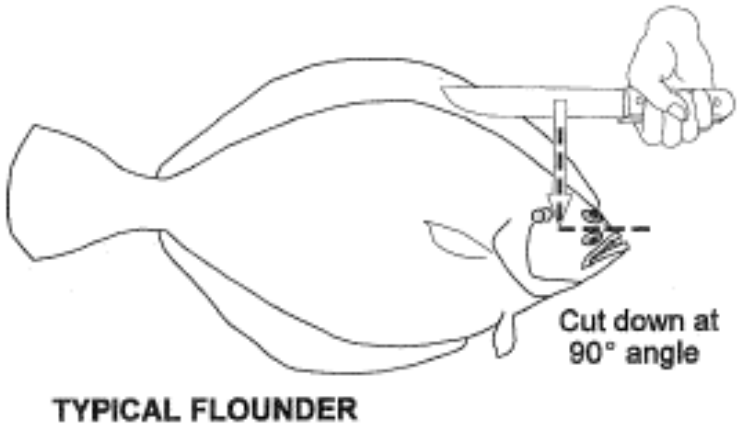
Age structures

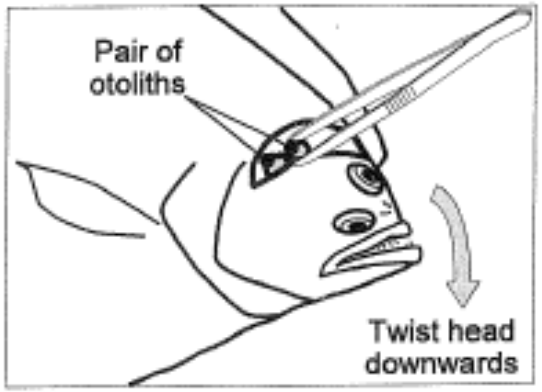
- Scales
- Spines / rays
- Otoliths

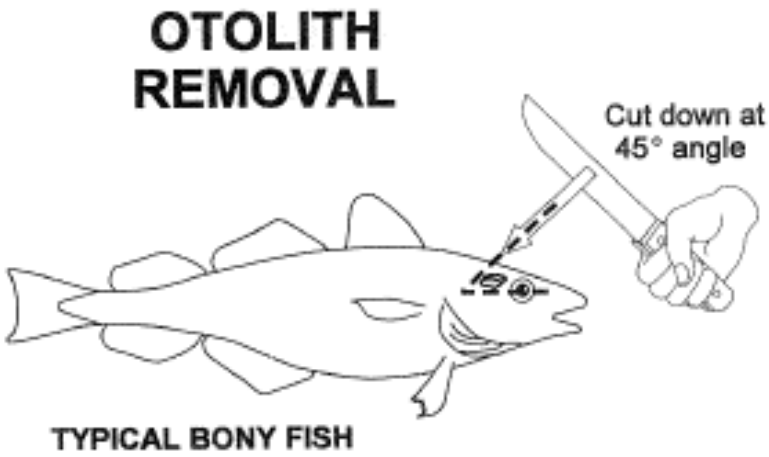


Age structures

- Scales
- Spines / rays
- Otoliths







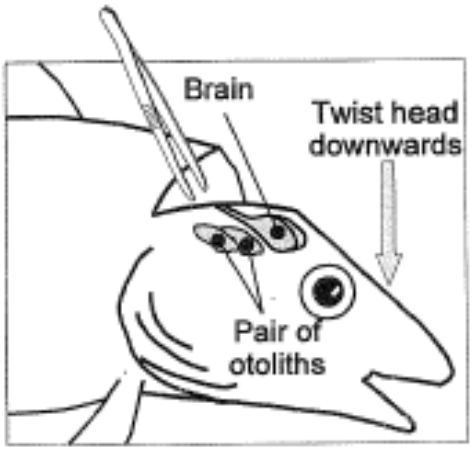


Image from Hanrahan et al.(1997)

Age structures

- Scales
- Spines / rays
- Otoliths

Age structures

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

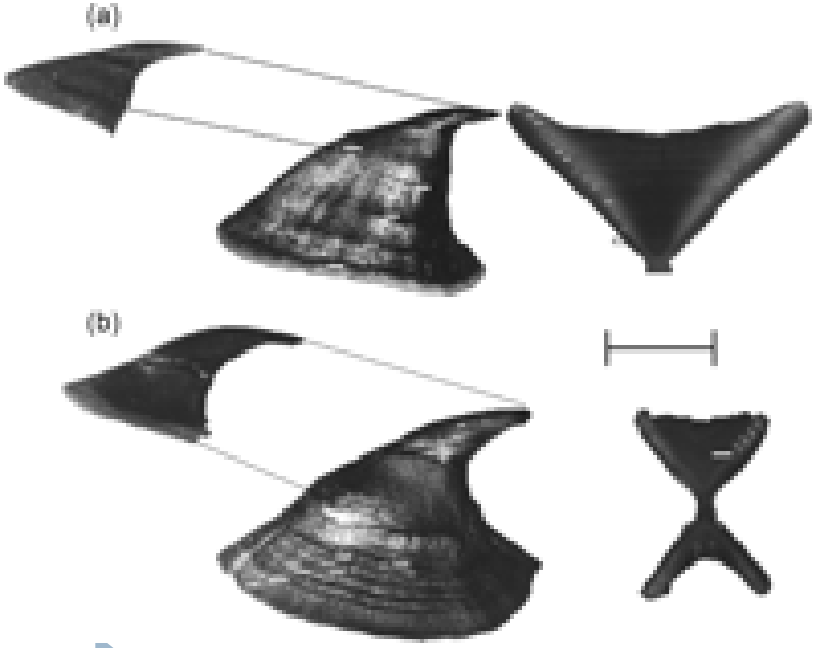


Image from Arkhipkin et al. 2008

Image :S. Campana, Bedford Institute of Oceanography, Canada, h*ttp://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

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

Sex:

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

Tags

- Atlantic bluefin tuna – tagging data

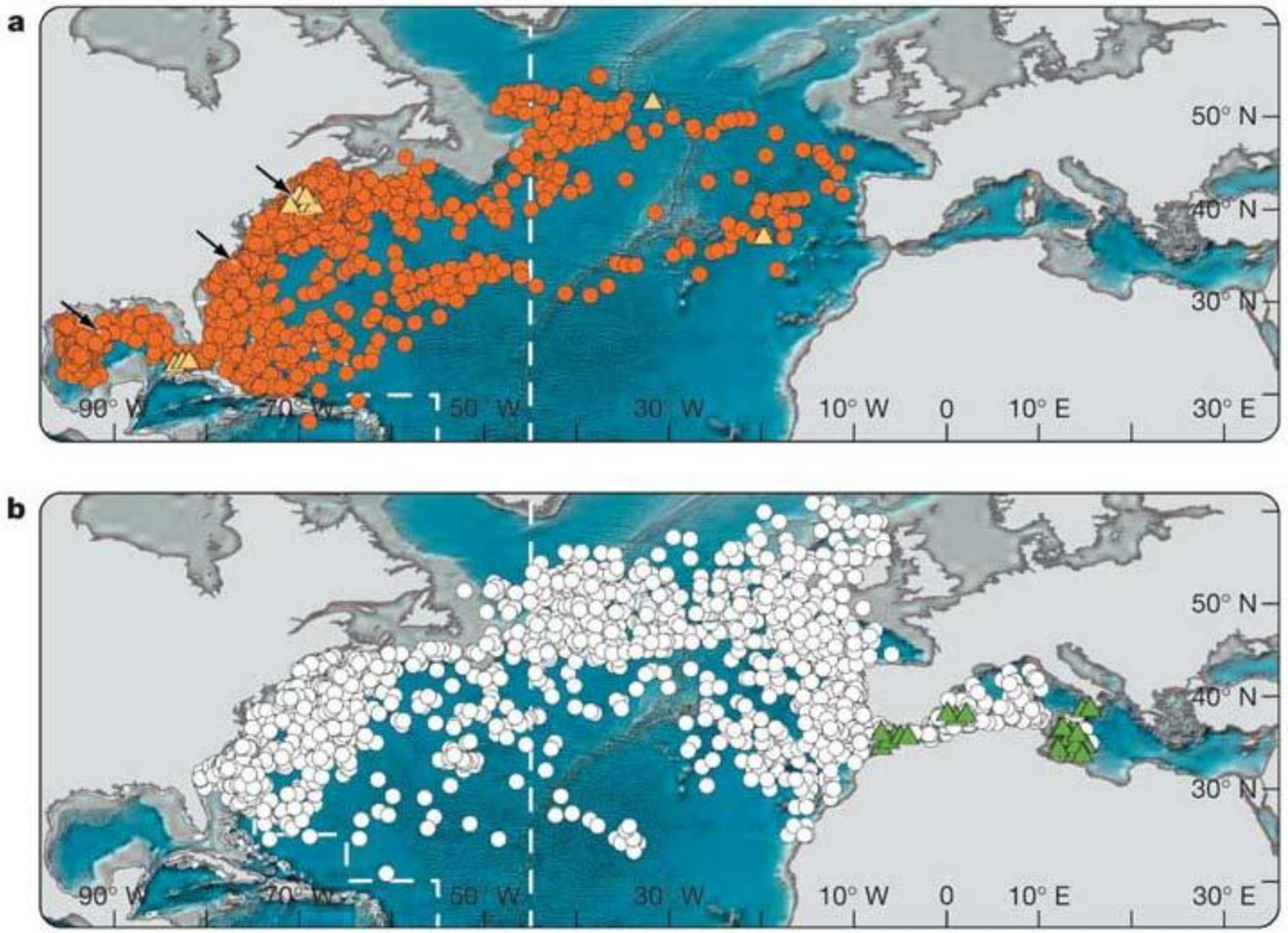
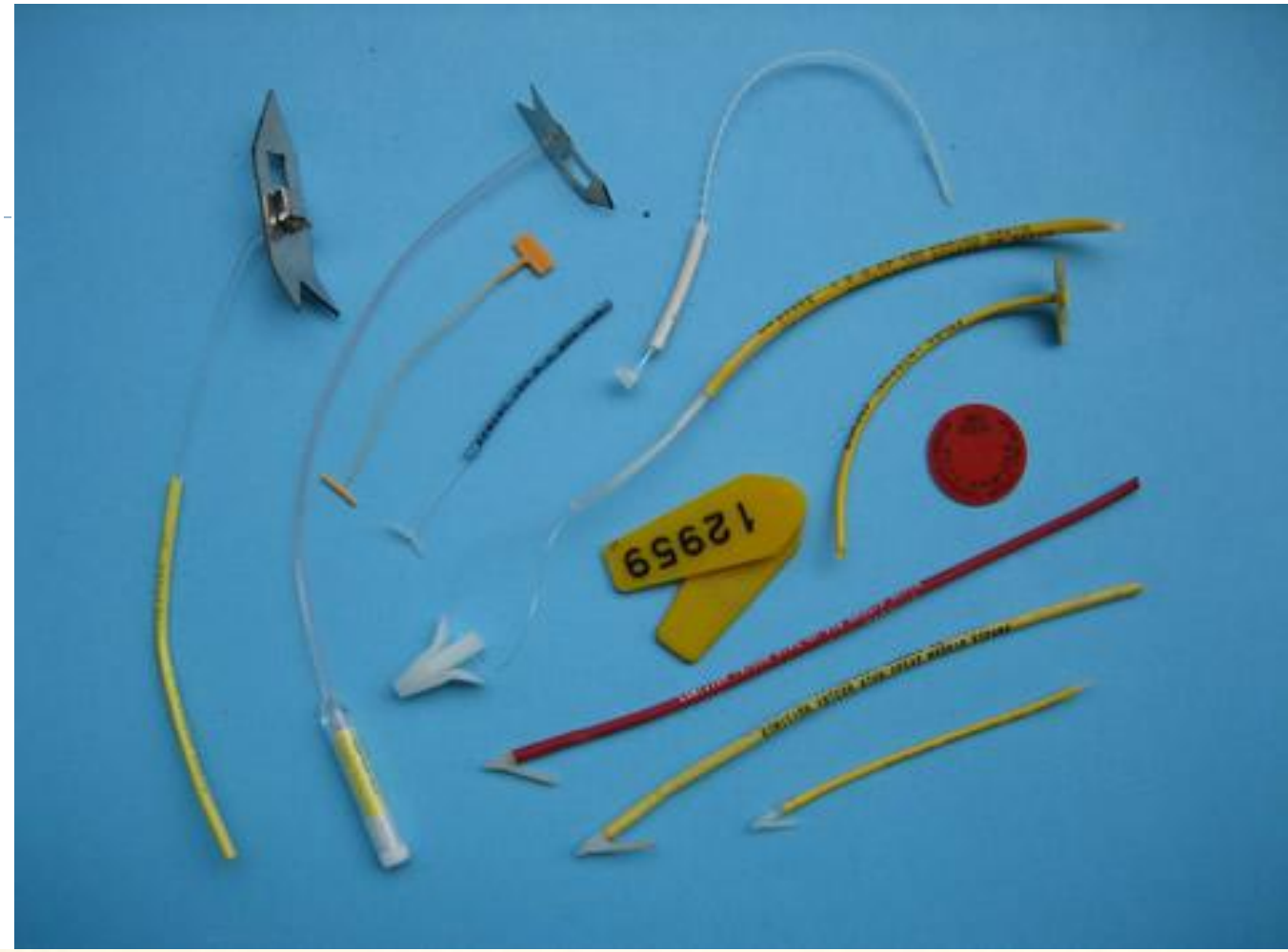
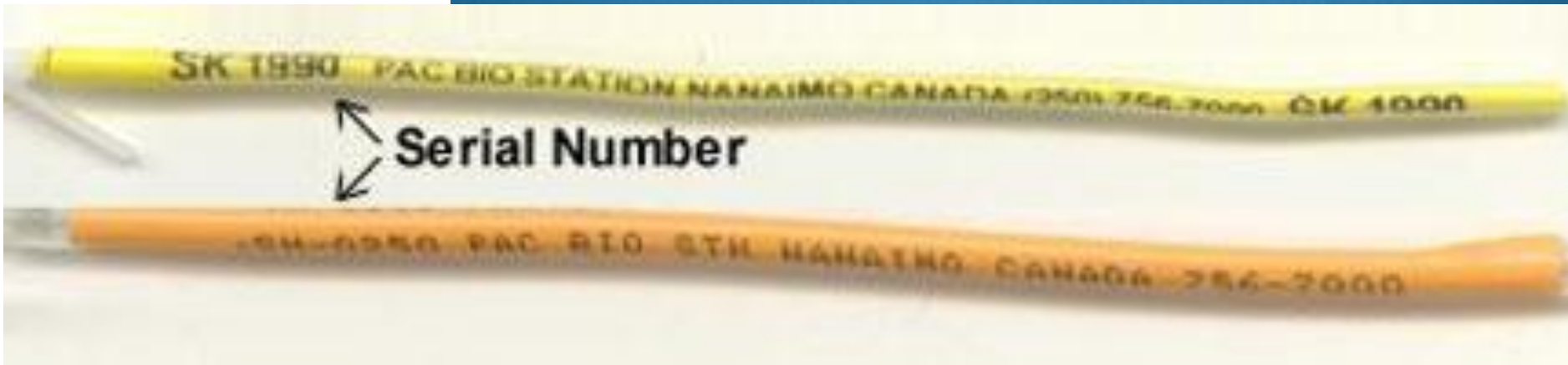


Image from Block et al. 2005

Tags

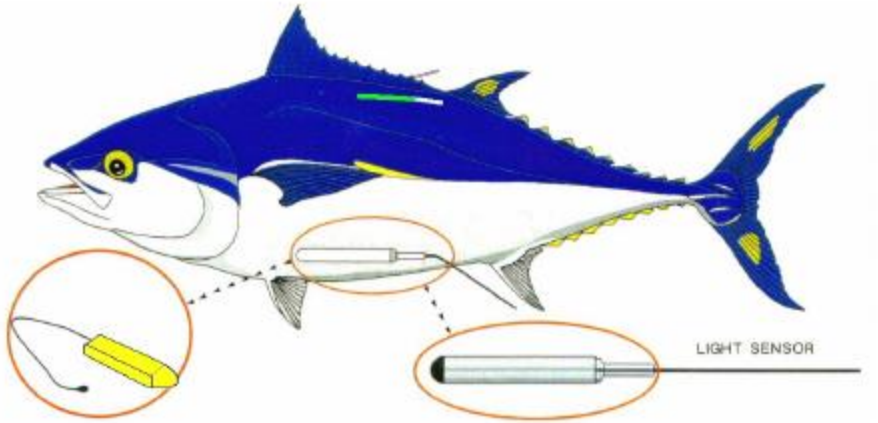
- Conventional





Tags

- Conventional
- Electronic
  - Archival

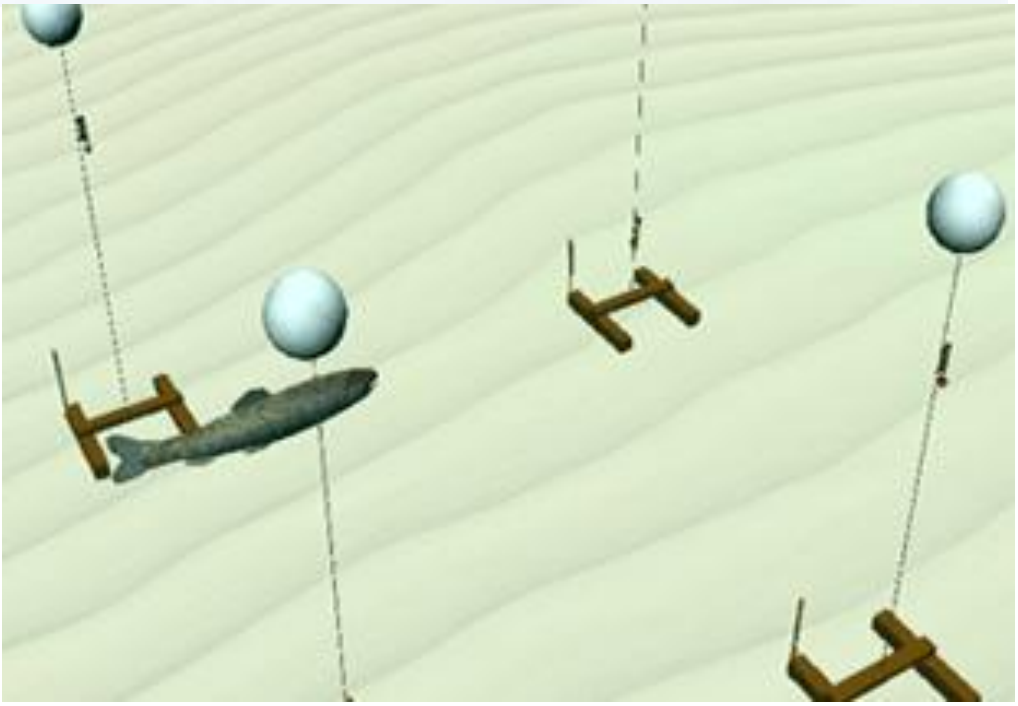


Drawing from Anon. (2008)

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

Tags

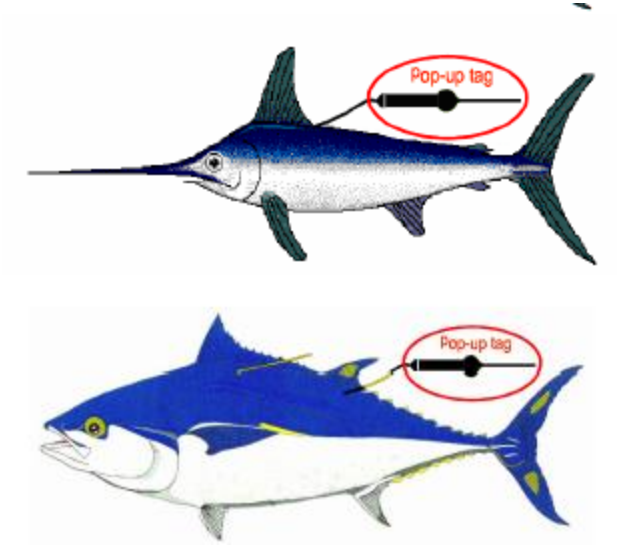
- Conventional
- Electronic
  - Archival
  - Acoustic



http://www.htisonar.com/

Tags

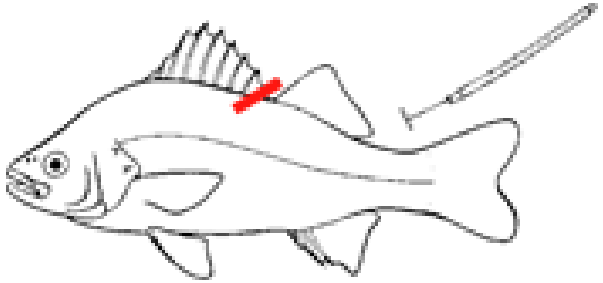
- Conventional
- Electronic
  - Archival
  - Acoustic
  - Pop-up



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,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

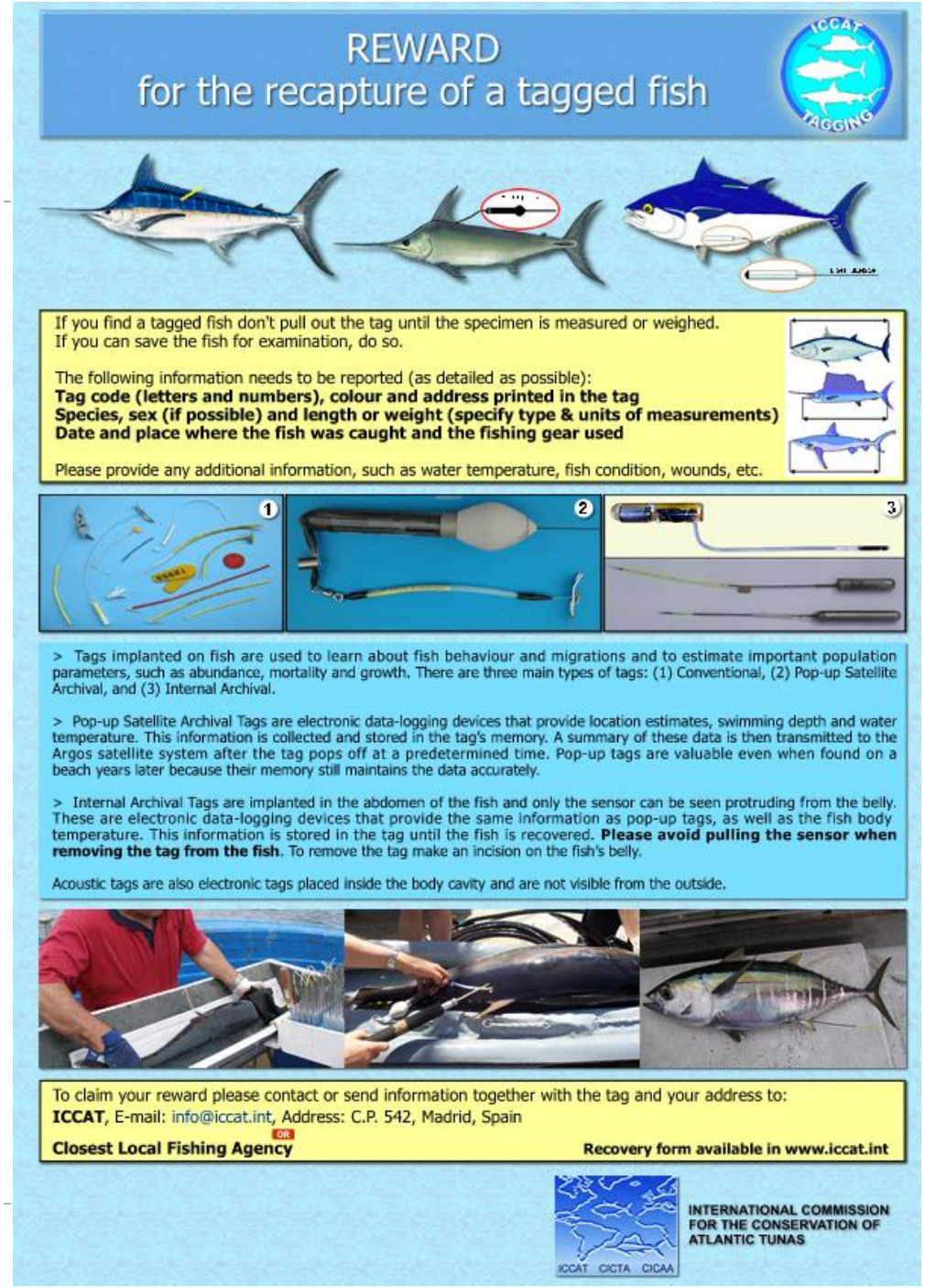
02	Total
32	Body
34	Carapace length (lobster)
37	Carapace length (crab)
38	Carapace width (crab)

Weight types (combine # & letter)

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

Comments

Tag rewards


REWARD
for the recapture of a tagged fish
ICCAT TAGGING
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.
1
2
3
> 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
OR
Closest Local Fishing Agency
Recovery form available in www.iccat.int
INTERNATIONAL COMMISSION FOR THE CONSERVATION OF ATLANTIC TUNAS
ICCAT CICTA CICAA

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

Scorpaenidae 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):_____

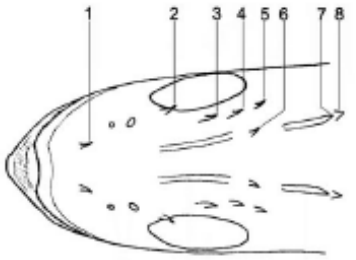
Check box for presence/absence

	Present	Absent
Occipital pit		
Palatine teeth		

Describe color :_____

Head spine strength (circle one) WEAK STRONG

Circle the numbers of all head spines present



Fin spine & ray counts:

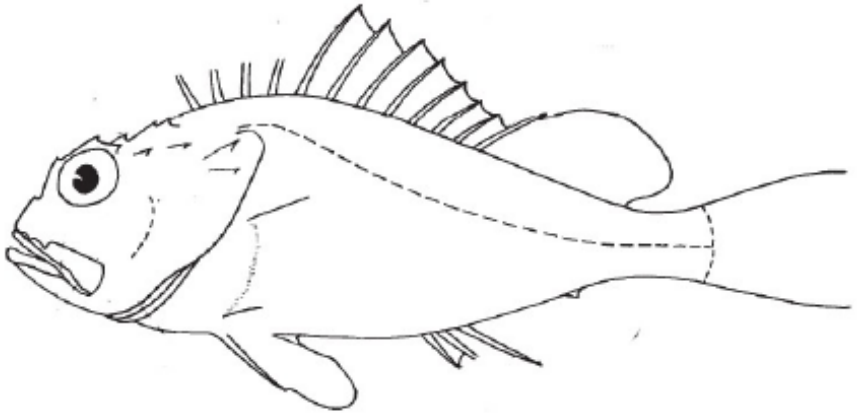
	Spines	Rays
Dorsal		
Anal		

Pelvic fin rays (circle one) BRANCHED UNBRANCHED

Total count: _____# free of membrane:_____

Suborbital spines—count:_____

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 and draw in 2nd spine
5. Suborbital spines (on cheek)
6. Preopercular spines
7. Cirri (skin flaps) on head



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?
Paris 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

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