



Fishes Identification Guide

for

**ChesMMAP and NEAMAP
Diet Analysis Studies**

Chesapeake Bay Multispecies Monitoring and Assessment Program
Northeast Area Monitoring and Assessment Program

03/31/2022

This book is a compilation of identification resources for fishes found in stomach samples. By no means is it a complete list of all possible prey types. It is simply what has been found in past ChesMMAP and NEAMAP diet studies. A copy of this document is stored in both the ChesMMAP and NEAMAP lab network drives in a folder called ID Guides, along with other useful identification keys, articles, documents, and photos. If you want to see a larger version of any of the images in this document you can open the original file for the photo by navigating to the appropriate subfolder within the Fisheries Gut Lab folder.

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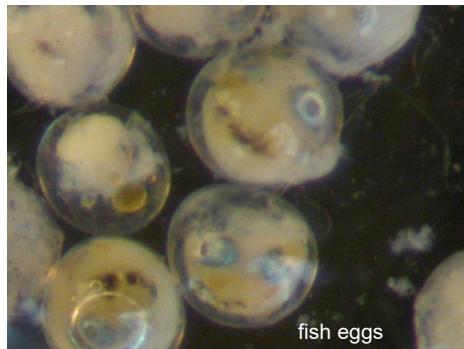
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5000 unidentified fish
0796 unidentified bony fish
1116 unidentified elasmobranch
1092 unidentified larval fish
0529 fish scales
0567 fish eggs
1098 skate eggs



Order Petromyzontiformes

Family Petromyzontidae

0100 *Petromyzon marinus*, sea lamprey



Petromyzon marinus
Stiff, cartilaginous mouthparts

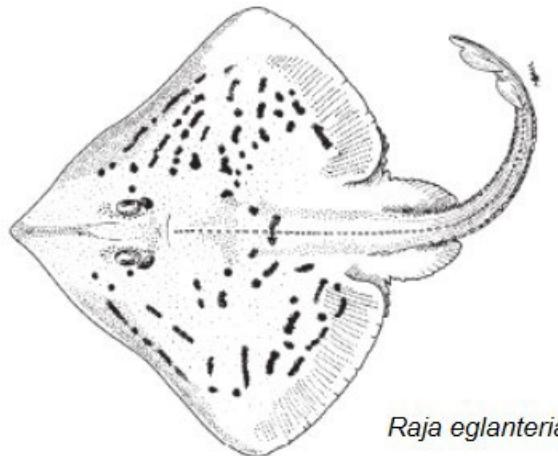


Order Rajiformes

Family Rajidae

0181 *Raja spp.*, (i.e.—*R. eglanteria*, clearnose skate)

1069 *Leucoraja spp.*, (i.e.—*L. erinacea*, little skate and *L. ocellata*, winter skate)



Raja eglanteria



Leucoraja spp. juveniles

Juvenile Skate - Family Rajidae

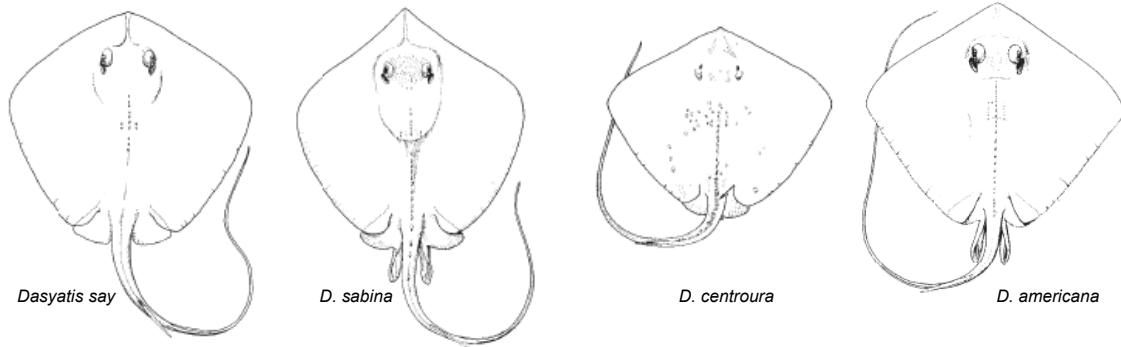
**Found in the stomach of a
summer flounder in the
Rhode Island Sound Fall 2016**



Order Myliobatiformes

Family Dasyatidae

0178 *Dasyatis* spp.

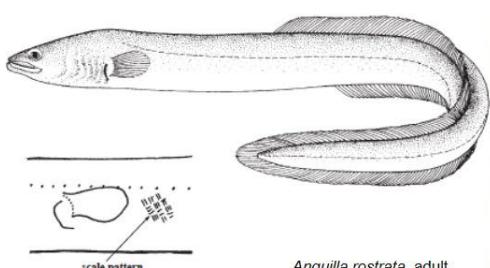


Order Anguilliformes

1062 unidentified eel

Family Anguillidae

0060 *Anguilla rostrata*, American eel



Anguilla rostrata, juvenile. Fresh specimens of glass eels are transparent

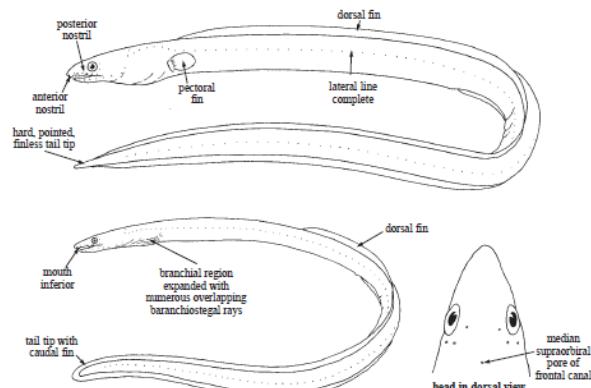


Anguilla rostrata, transitioning from leptocephalus larva to glass eel stage. Leptocephali can be quite long.

Order Anguilliformes (continued)

Family Ophichthidae

1082 unidentified snake eel



Family Congridae

0190 *Conger oceanicus*, oceanic conger eel



Order Clupeiformes

Family Engraulidae

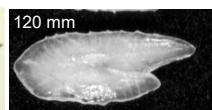
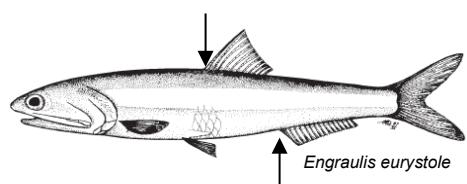
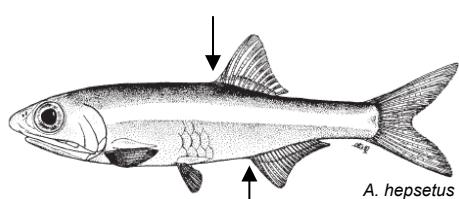
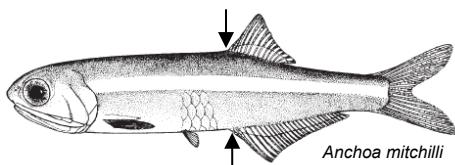
1056 unidentified anchovy

0399 *Anchoa spp.*

0103 *Anchoa mitchilli*, bay anchovy – very common

0102 *Anchoa hepsetus*, striped anchovy

0937 *Engraulis eurystole*, silver anchovy



Anchovies

If you're experienced, you've seen a lot of *A. mitchilli* such that you can identify it simply from what species was eating it and the shiny look of it in the stomach, even if highly digested. Remember anchovies are a schooling fish, so if you've identified an anchovy and there's more fish parts in the same stomach, it's reasonably safe to assume it's all anchovy prey.

Note that striped anchovy are much less commonly encountered than bay anchovy, and silver anchovy is very rare.

Order Clupeiformes (continued)

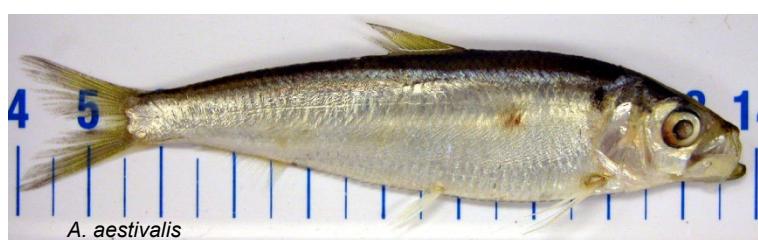
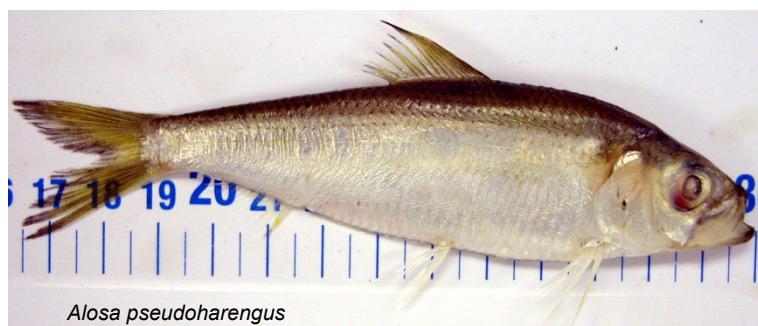
Family Clupeidae

0916 unidentified herring/shad/menhaden

0256 *Alosa* spp., river herrings

0026 *Alosa pseudoharengus*, alewife – gut cavity not black

0027 *Alosa aestivalis*, blueback herring – look for black gut cavity

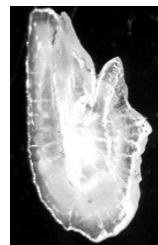
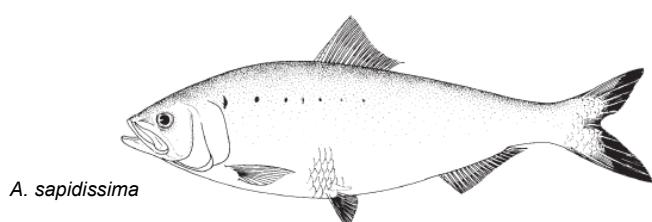
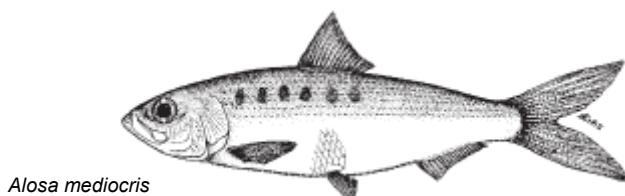


14a. Peritoneum silvery to pale grey; dorsum greyish green; eye diameter greater than snout length *Alosa pseudoharengus*

14b. Peritoneum sooty or black; dorsum distinctly blue; eye diameter less than snout length *Alosa aestivalis*

0028 *Alosa mediocris*, hickory shad

0030 *Alosa sapidissima*, American shad



15a. Jaw teeth present; gill rakers on lower limb of anterior arch less than 25; lower jaw projecting beyond upper when mouth closed *Alosa mediocris*

15b. Jaw teeth minute or absent in adults; gill rakers on lower limb of anterior arch more than 30; lower jaw not projecting beyond upper when mouth closed *Alosa sapidissima*

Order Clupeiformes (Clupeidae continued)

0037 *Brevoortia tyrannus*, Atlantic menhaden — very common



Menhaden

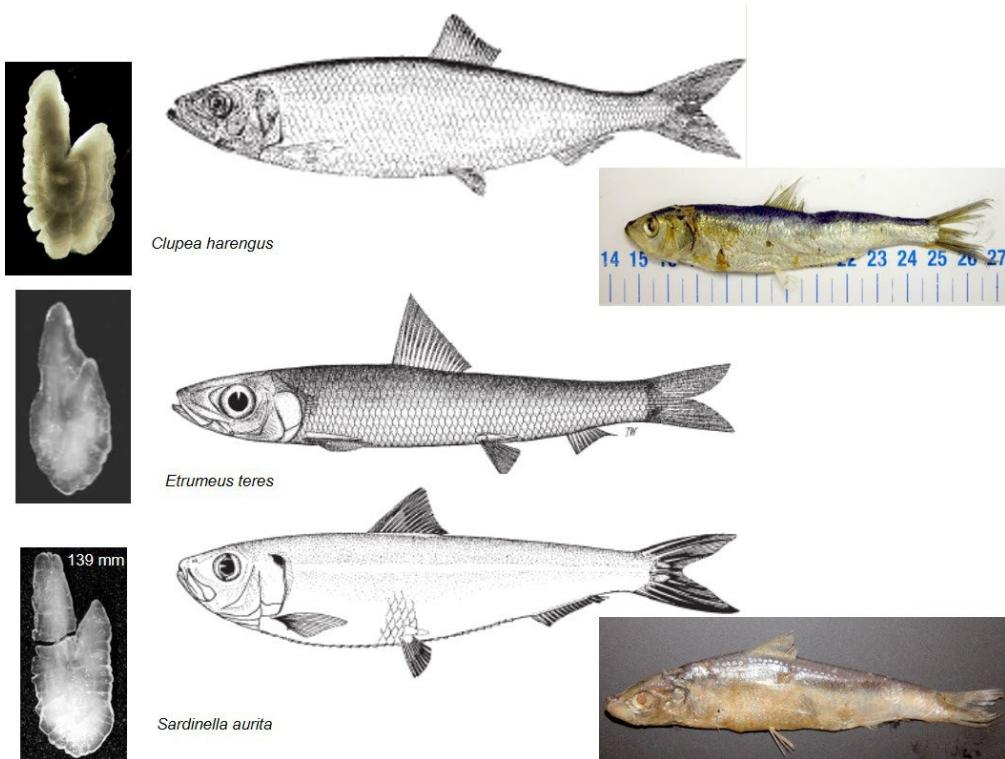
- Look for the lightbulb-shaped gizzard among digested fish parts
- Look for narrow, filamentous, bristle-like rib bones, typical of menhaden remains
- You'll often find whole vertebral columns of menhaden in larger fish stomachs
- If you're experienced, you've seen a lot of *B. tyrannus* such that you can identify it simply from what species was eating it and the oily/greasy look of it in the stomach, even if highly digested. Remember menhaden are a schooling fish, so if you've identified a menhaden and there's more fish parts in the same stomach, it's reasonably safe to assume it's all the same.

Order Clupeiformes (Clupeidae continued)

0029 *Clupea harengus*, Atlantic herring

0076 *Etrumeus teres*, round herring

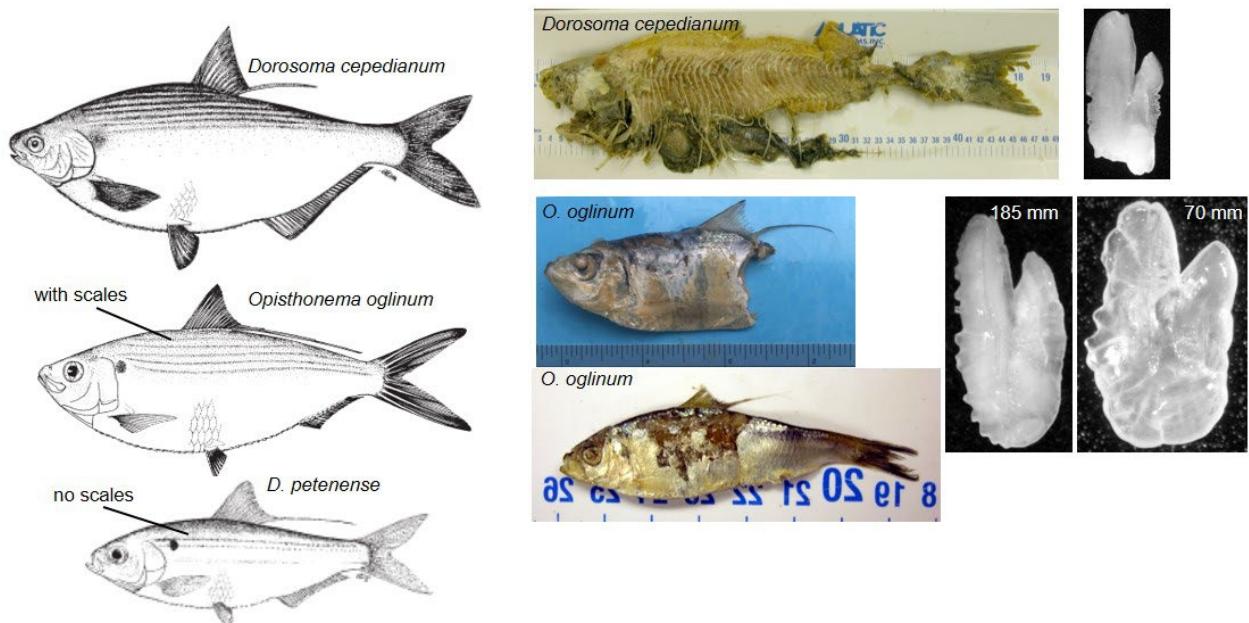
0992 *Sardinella aurita*, Spanish sardine



0051 *Dorosoma cepedianum*, gizzard shad

0275 *Dorosoma petenense*, threadfin shad

0038 *Opisthonema oglinum*, Atlantic thread herring



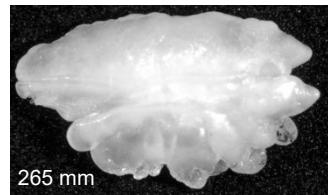
Order Aulopiformes

Family Synodontidae

0189 *Synodus foetens*, inshore lizardfish



Synodus foetens



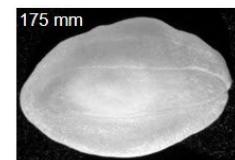
Order Ophidiiformes

Family Ophidiidae

1093 *Ophidion spp.*

0229 *Ophidion marginatum*, striped cusk eel

0437 *Ophidion grayi*, blotched cusk eel



O. grayi



Order Gadiformes

Family Gadidae

0053 *Urophycis spp.* – hard to distinguish between *U. regia* and *U. chuss* without long, filamentous fin ray

0070 *Urophycis regia*, spotted hake

0015 *Urophycis chuss*, red hake

0006 *Merluccius bilinearis*, silver hake

0197 *Enchelyopus cimbrius*, fourbeard rockling



Urophycis regia

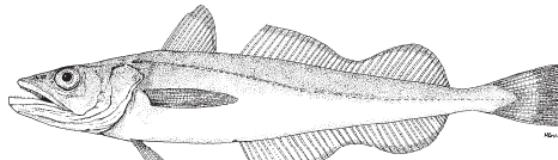


Urophycis chuss

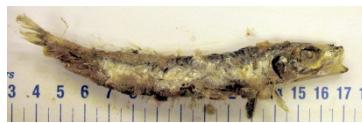
240mm



120 mm



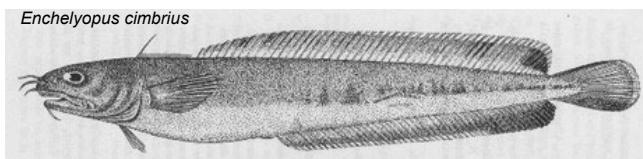
Merluccius bilinearis



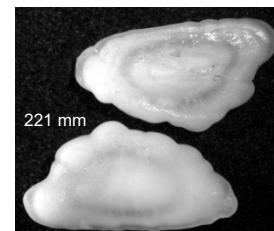
230 mm



117 mm



Enchelyopus cimbrius



221 mm

Order Batrachoidiformes

Family Batrachoididae

0154 *Opsanus tau*, oyster toadfish



Opsanus tau



Order Atheriniformes

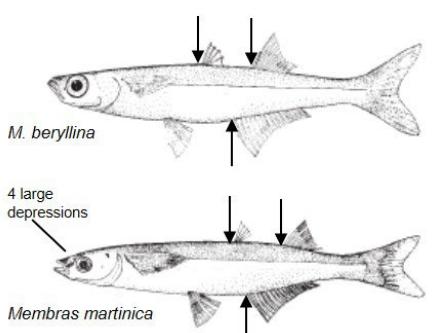
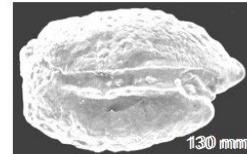
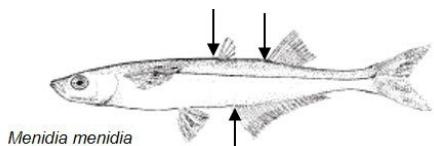
Family Atherinopsidae

0155 *Menidia* spp.

0150 *Menidia menidia*, Atlantic silverside

0149 *Menidia beryllina*, inland silverside

0148 *Membras martinica*, rough silverside



Silversides

Menidia spp. look a lot like anchovies with a distinctively wide shiny silver lateral line, but it's very rare to find them in our samples. They school in the surf zone and seagrass. While anchovies have a distinctive subterminal/inferior mouth with snout protruding far beyond the jaw, silversides have an upturned small terminal mouth. Silversides have 2 dorsal fins, while anchovies have only 1.

Order Beloniformes

Family Belonidae

0924 unidentified needlefish

0196 *Strongylura marina*, Atlantic needlefish

0909 *Tylosurus crocodilus*, houndfish

Strongylura marina



relatively short
snout length

Tylosurus crocodilus



Order Cyprinodontiformes

Family Fundulidae – while ubiquitous in marsh/intertidal habitats, we rarely find the fishes commonly called minnows in our stomach samples.

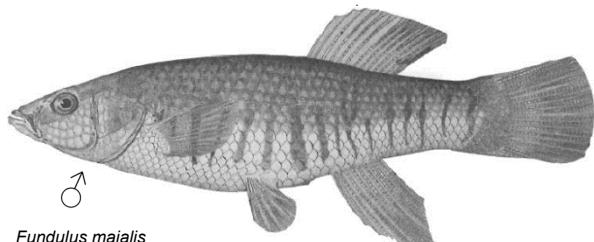
0560 *Fundulus* spp.

0124 *Fundulus majalis*, striped killifish

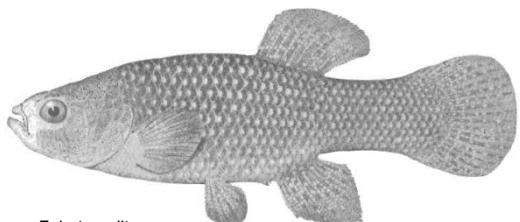
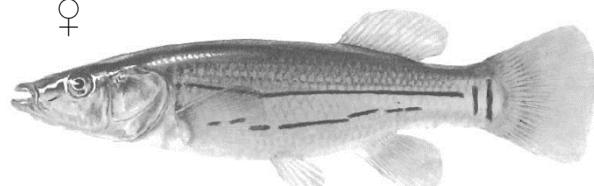
0122 *Fundulus heteroclitus*, mummichog

0121 *Fundulus diaphanus*, banded killifish

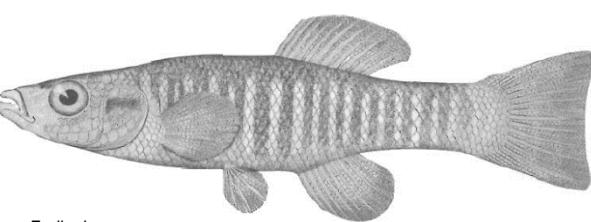
0120 *Cyprinodon variegatus*, sheepshead minnow



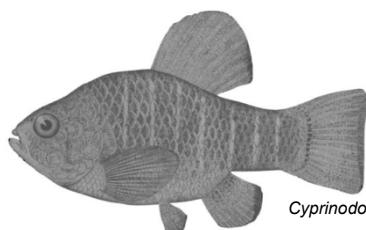
Fundulus majalis



F. heteroclitus



F. diaphanus



Cyprinodon variegatus



Order Gasterosteiformes

Family Gasterosteidae

0127 *Apeltes quadracus*, fourspine stickleback



Family Syngnathidae

1055 unidentified pipefish/seahorse – distinctive armored body holds up well in stomachs

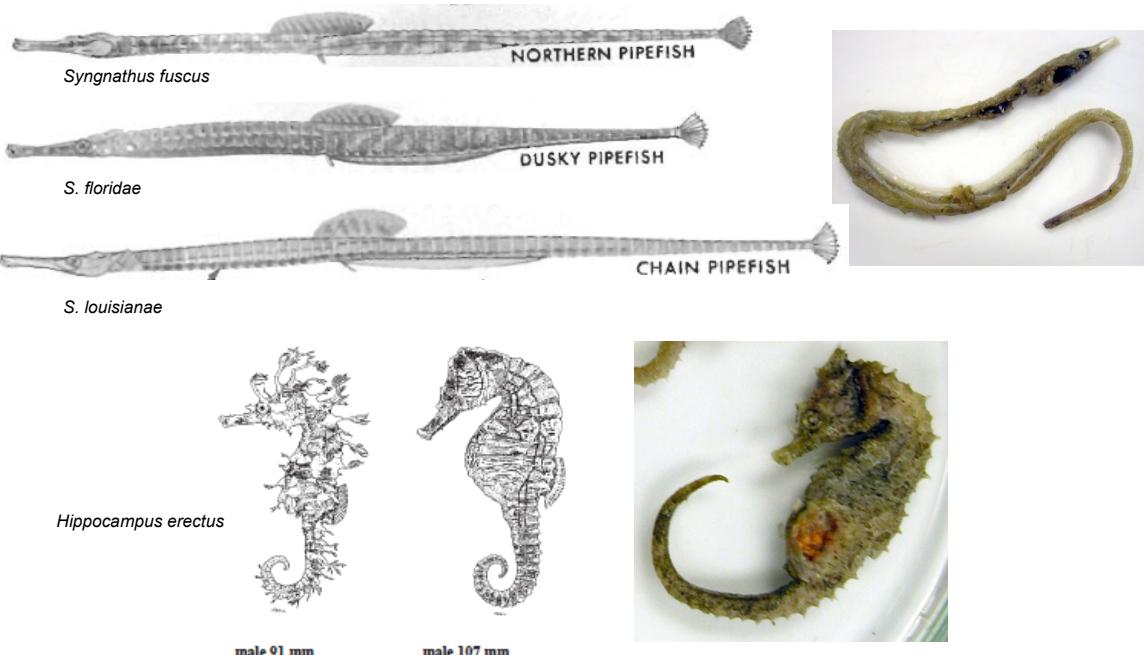
0156 *Syngnathus* spp.

0131 *Syngnathus fuscus*, northern pipefish

0130 *Syngnathus floridae*, dusky pipefish

0326 *Syngnathus louisianae*, chain pipefish

0129 *Hippocampus erectus*, lined seahorse



Order Gobiesociformes

Family Gobiesocidae

0153 *Gobiesox strumosus*, skilletfish



Order Scorpaenidae

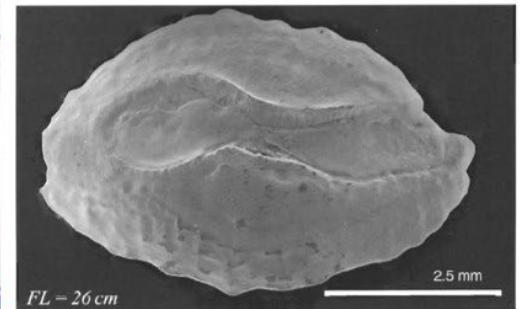
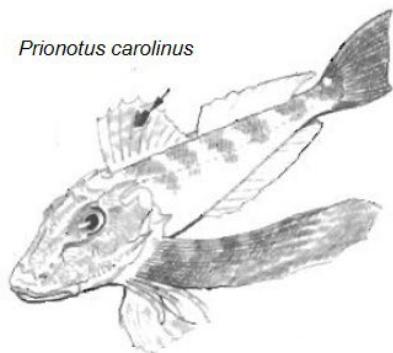
Family Triglidae

0023 *Prionotus* spp. — otoliths looks different between the 2 species

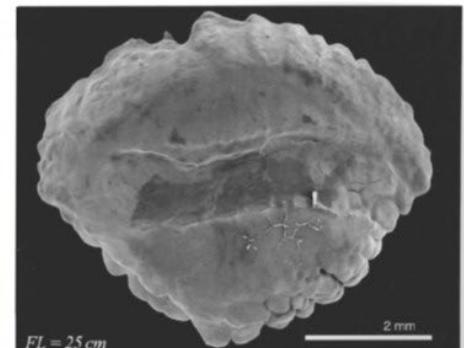
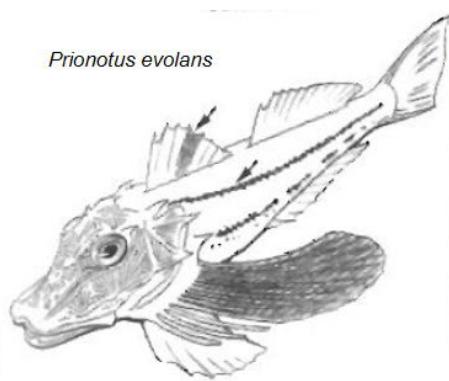
0071 *Prionotus carolinus*, northern searobin

0072 *Prionotus evolans*, striped searobin

Prionotus carolinus



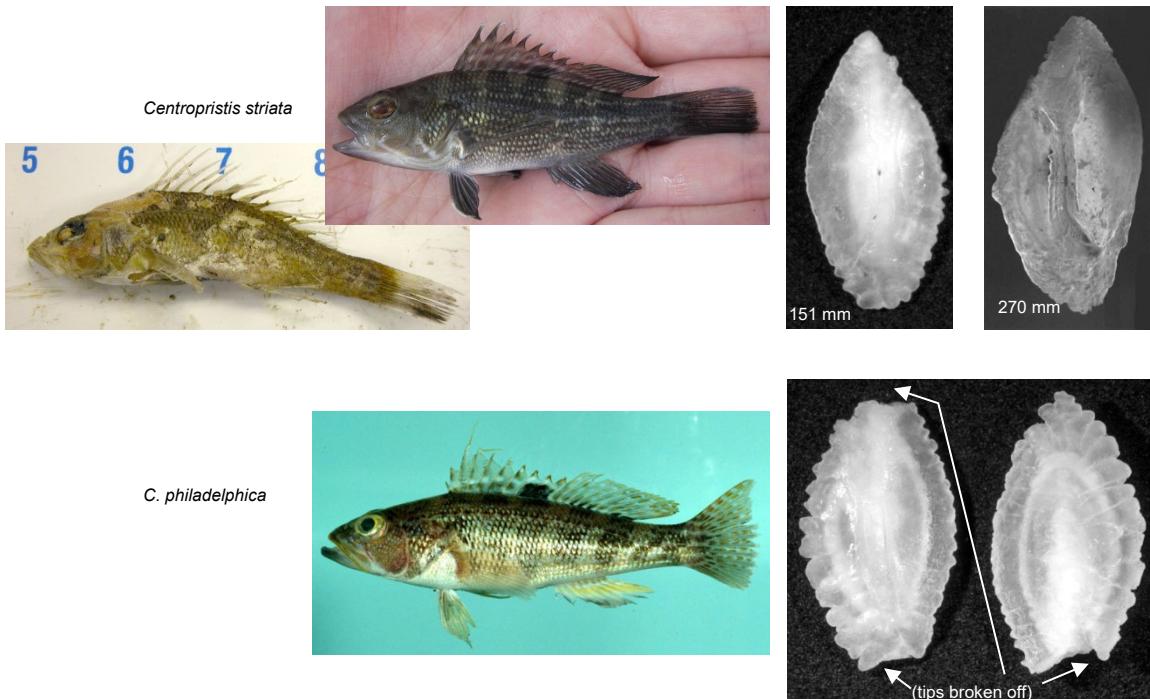
Prionotus evolans



Order Perciformes

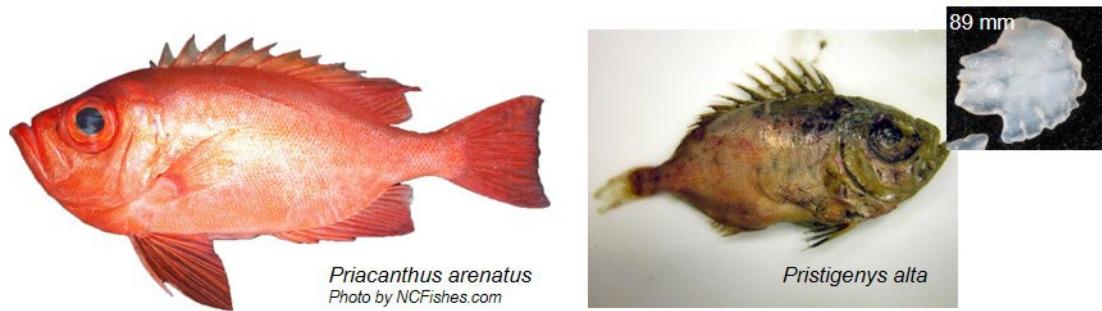
Family Serranidae

- 0087 unidentified seabasses
0002 *Centropristes striata*, black seabass
0260 *Centropristes philadelphica*, rock seabass



Family Priacanthidae

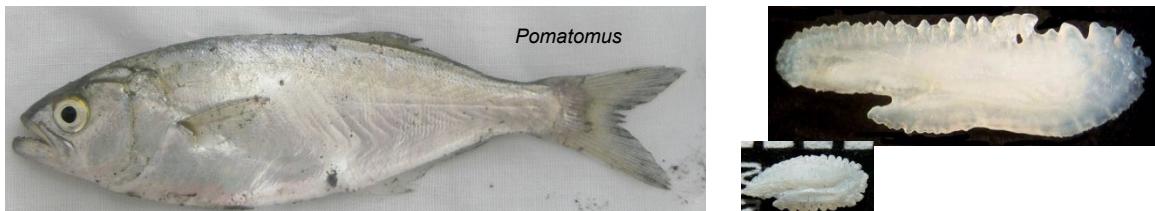
- 0339 *Priacanthus arenatus*, bigeye
0340 *Pristigenys alta*, short bigeye



Order Perciformes (continued)

Family Pomatomidae

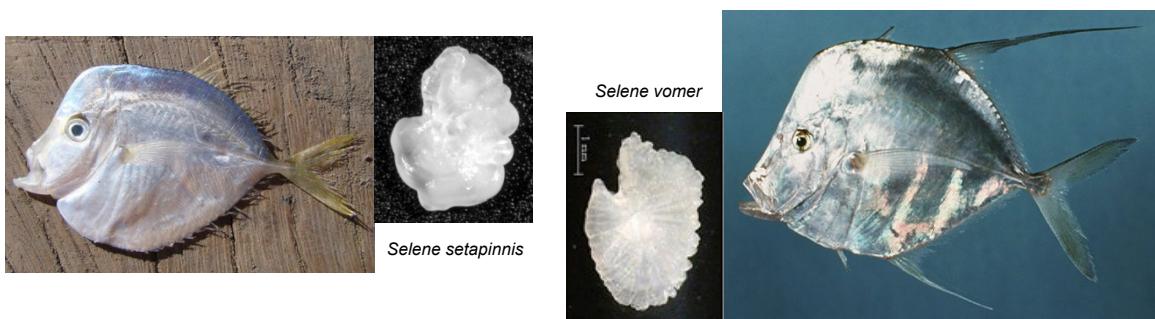
0009 *Pomatomus saltatrix*, bluefish



Family Carangidae

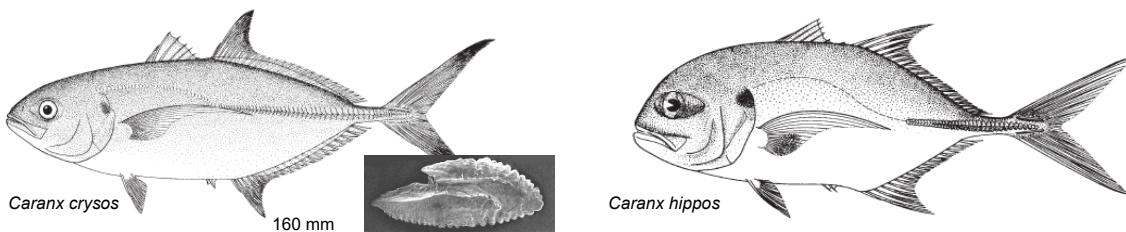
0211 *Selene setapinnis*, Atlantic moonfish

0207 *Selene vomer*, lookdown

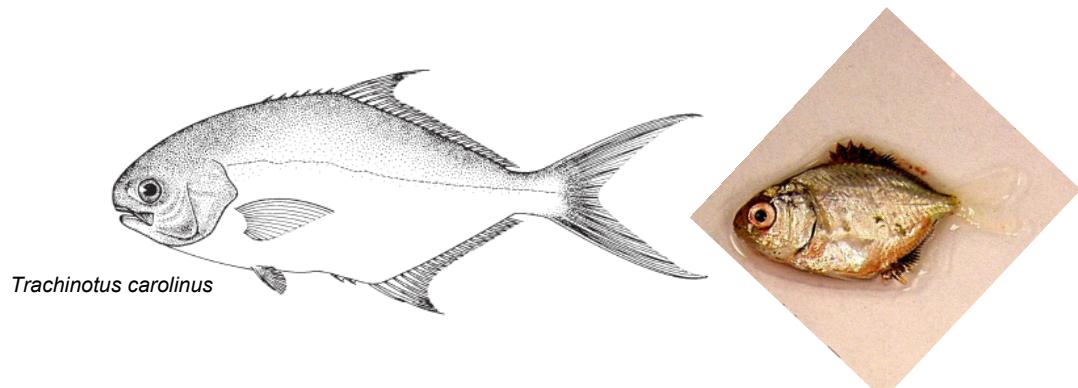


0203 *Caranx cryos*, blue runner

0204 *Caranx hippos*, crevalle jack



0061 *Trachinotus carolinus*, Florida pompano

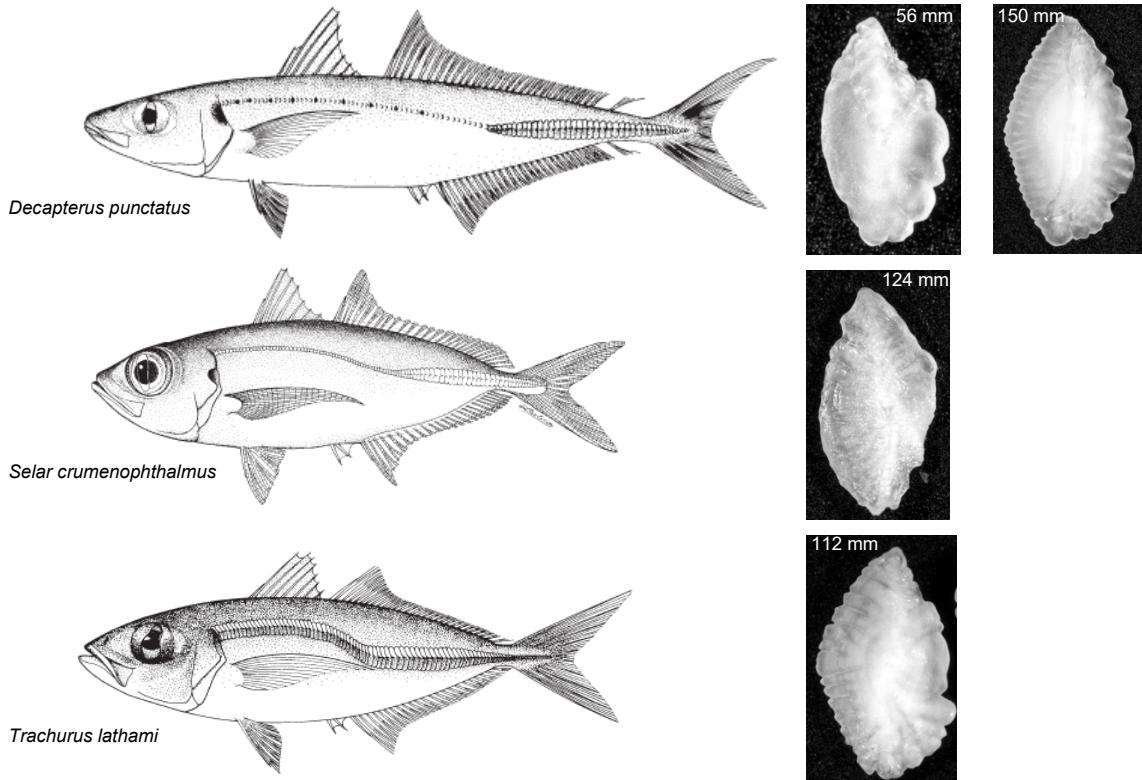


Order Perciformes (Carangidae continued)

0205 *Decapterus punctatus*, round scad

0206 *Selar crumenophthalmus*, bigeye scad

0210 *Trachurus lathami*, rough scad



Family Chaetodontidae

0217 *Chaetodon ocellatus*, spotfin butterflyfish

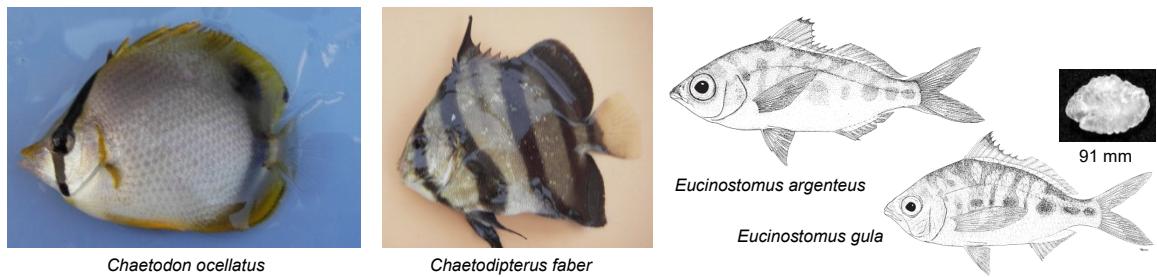
Family Ephippidae

0064 *Chaetodipterus faber*, Atlantic spadefish

Family Gerreidae

0285 *Eucinostomus argenteus*, spotfin mojarra

0353 *Eucinostomus gula*, silver jenny



Order Perciformes (continued)

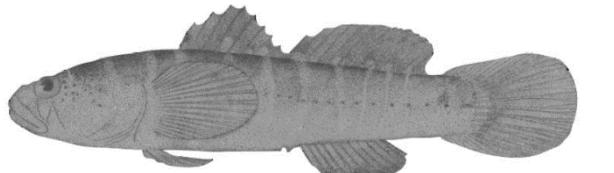
Family Gobiidae

0281 unidentified goby

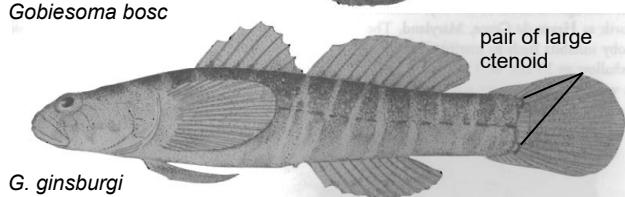
0581 *Gobiosoma bosc*, naked goby

0145 *Gobiosoma ginsburgi*, seaboard goby

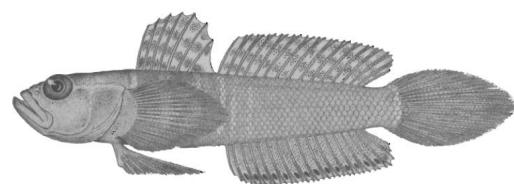
0139 *Microgobius thalassinus*, green goby



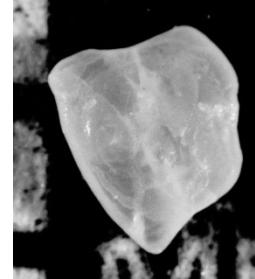
Gobiosoma bosc



G. ginsburgi



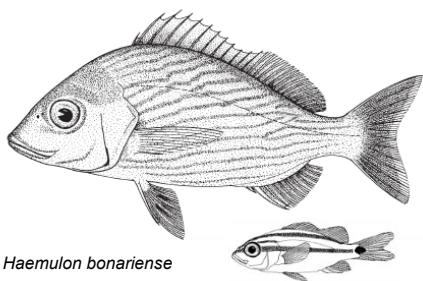
Microgobius thalassinus



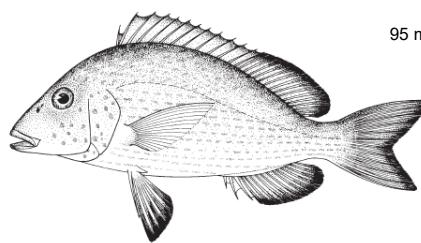
Family Haemulidae

0408 *Haemulon bonariense*, black grunt

0059 *Orthopristis chrysoptera*, pigfish

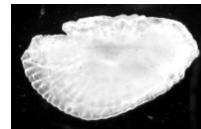


Haemulon bonariense



Orthopristis chrysoptera

95 mm

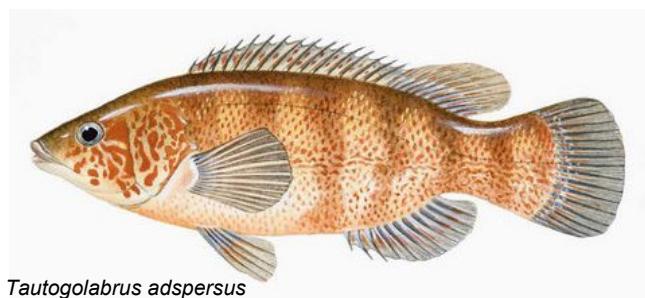


Order Perciformes (continued)

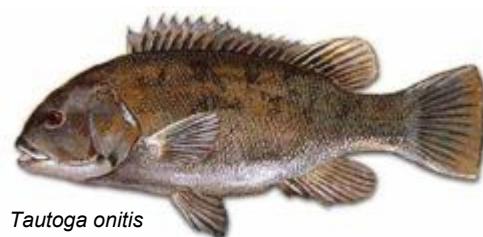
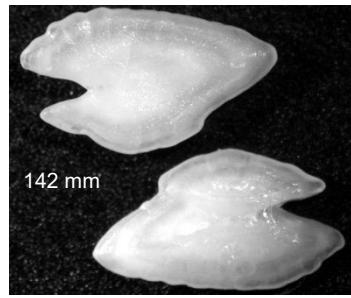
Family Labridae

0218 *Tautogolabrus adspersus*, cunner

0055 *Tautoga onita*, tautog



Tautogolabrus adspersus



Tautoga onitis



Family Mugilidae

0232 *Mugil curema*, white mullet



Mugil curema

Family Ammodytidae

0491 *Ammodytes spp.*, sand lances



Ammodytes spp.



Order Perciformes (continued)

Family Blenniidae

0146 *Chasmodes bosquianus*, striped blenny

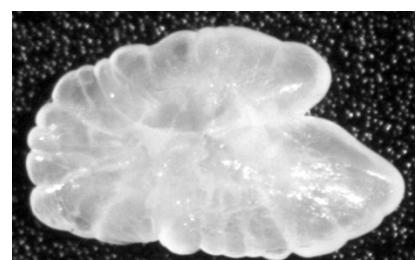
0147 *Hypsoblennius hentzi*, feather blenny



Chasmodes bosquianus



Hypsoblennius hentzi



Family Moronidae

0031 *Morone saxatilis*, striped bass

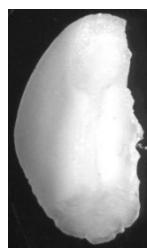
0032 *Morone americana*, white perch



Morone saxatilis



M. americana



Order Perciformes (continued)

Family Sciaenidae

0963 unidentified croaker/drum

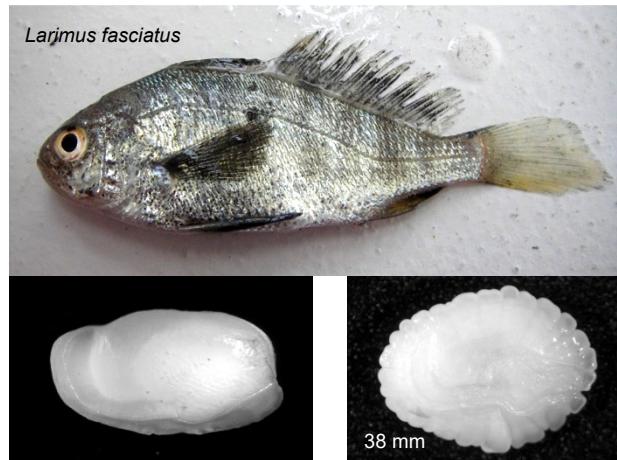
0005 *Micropogonias undulatus*, Atlantic croaker

0033 *Leiostomus xanthurus*, spot



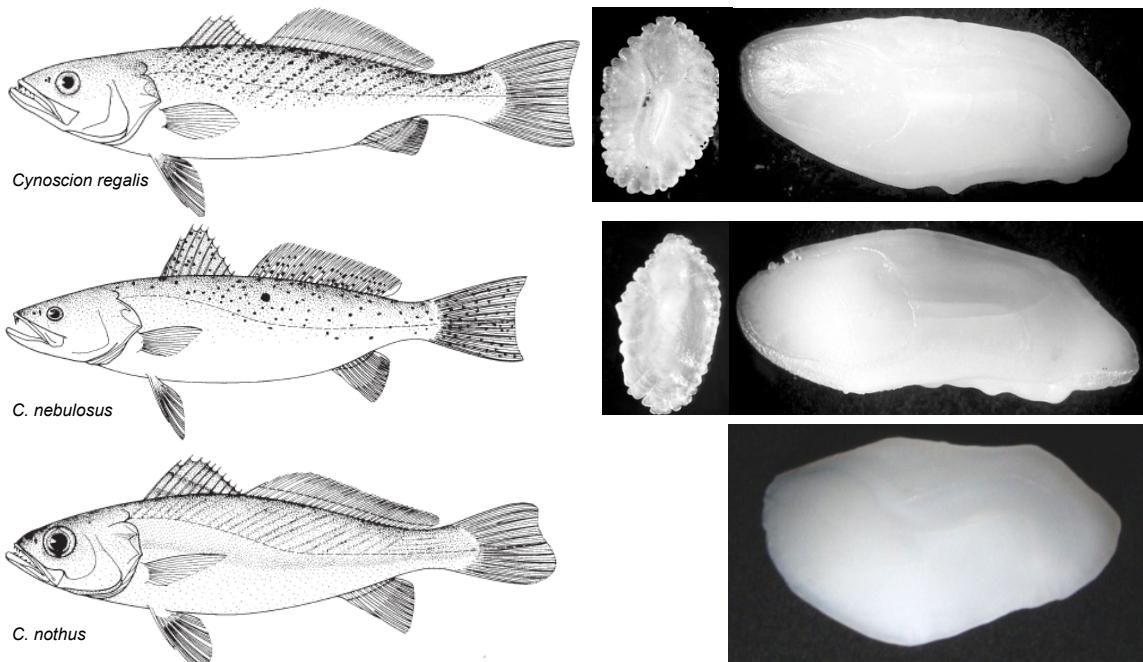
0213 *Bairdiella chrysoura*, silver perch

0214 *Larimus fasciatus*, banded drum

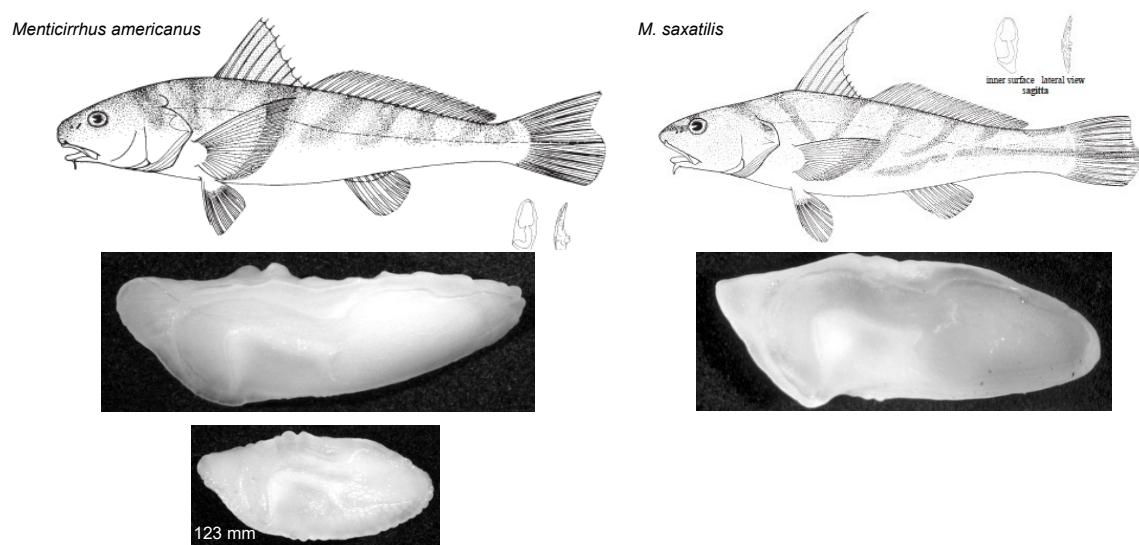


Order Perciformes (Sciaenids continued)

- 0007 *Cynoscion regalis*, weakfish
0058 *Cynoscion nebulosus*, spotted seatrout
0359 *Cynoscion nothus*, silver seatrout



- 0013 *Menticirrhus* spp.
0057 *Menticirrhus americanus*, southern kingfish
0056 *Menticirrhus saxatilis*, northern kingfish

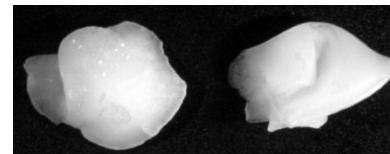
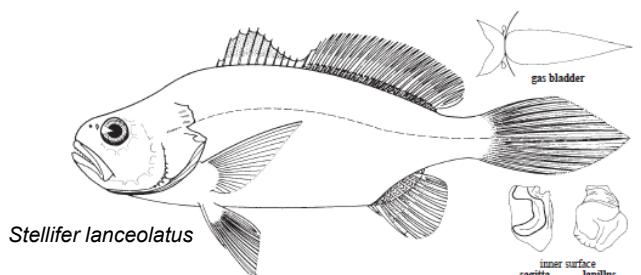
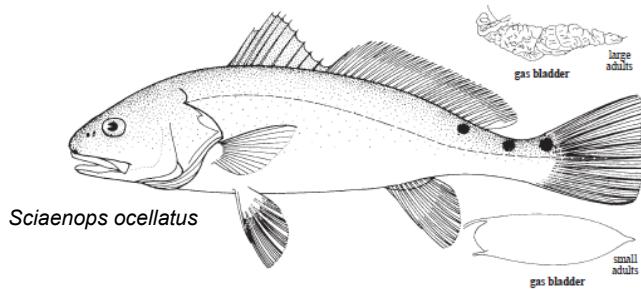
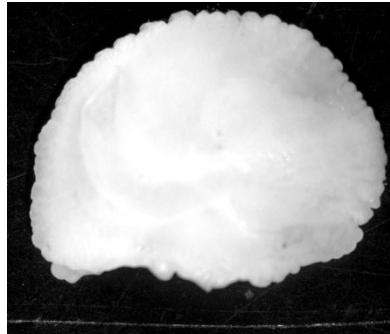
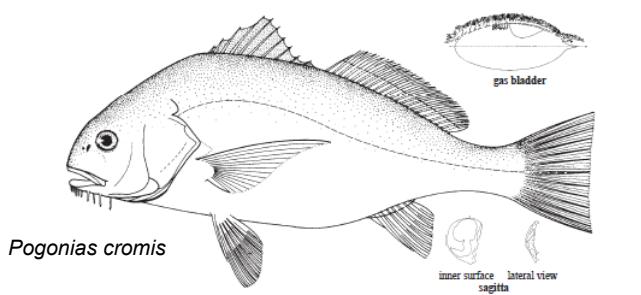


Order Perciformes (Sciaenids continued)

0034 *Pogonias cromis*, black drum

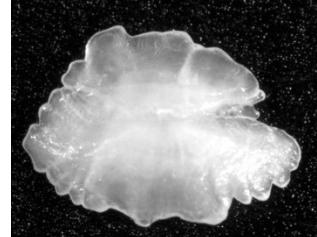
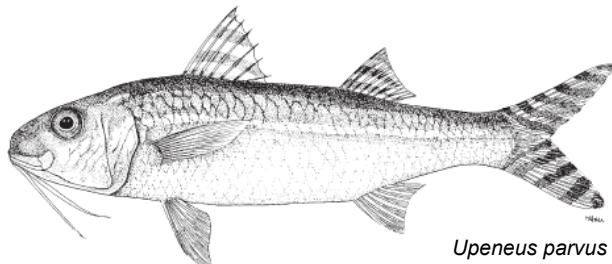
0035 *Sciaenops ocellatus*, red drum

0215 *Stellifer lanceolatus*, star drum



Family Mullidae

0387 *Upeneus parvus*, dwarf goatfish



Upeneus parvus

Order Perciformes (continued)

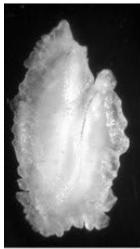
Family Sparidae

1096 unidentified sparids

0001 *Stenotomus chrysops*, scup – very common

0216 *Lagodon rhomboides*, pinfish

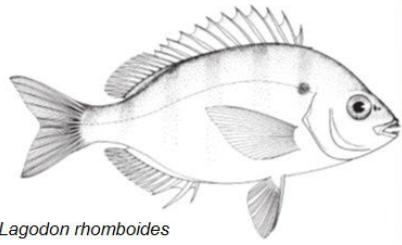
0054 *Archosargus probatocephalus*, sheepshead



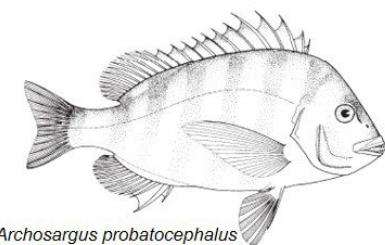
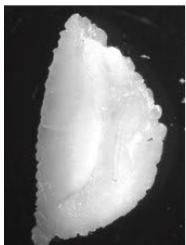
Stenotomus chrysops



Stenotomus chrysops skull



Lagodon rhomboides



Archosargus probatocephalus

Order Perciformes (continued)

Family Sphyraenidae

0230 *Sphyraena borealis*, northern sennet
0365 *Sphyraena guachancho*, guaguanche



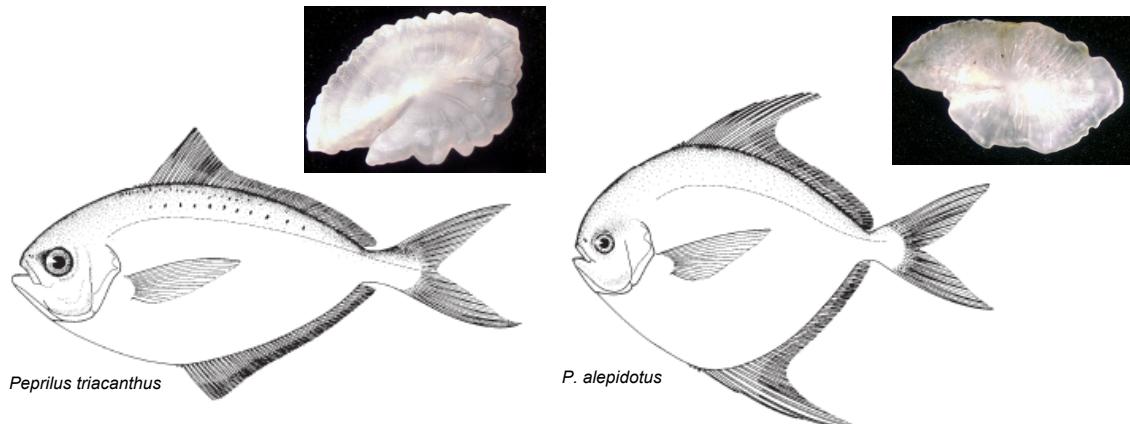
Family Trichiuridae

0219 *Trichiurus lepturus*, Atlantic cutlassfish



Family Stromateidae

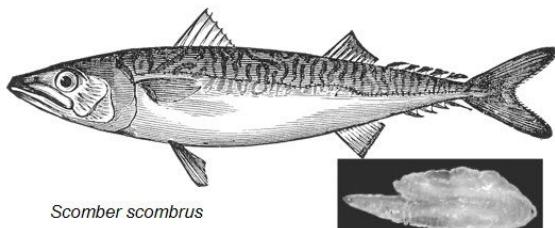
0004 *Peprilus triacanthus*, butterfish – very common
0011 *Peprilus alepidotus*, harvestfish



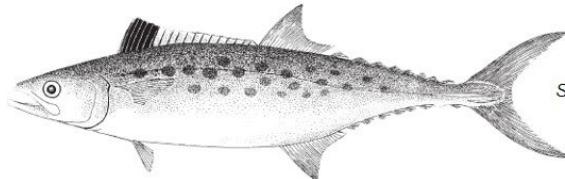
Order Perciformes (continued)

Family Scombridae

- 0043 *Scomber scombrus*, Atlantic mackerel
0042 *Scomberomorus maculatus*, Spanish mackerel



Scomber scombrus



Scomberomorus maculatus

Family Uranoscopidae

- 0225 *Astroscopus guttatus*, northern stargazer



Astroscopus guttatus



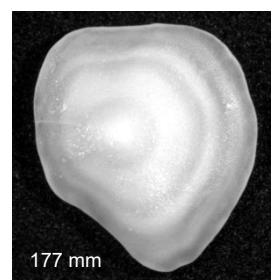
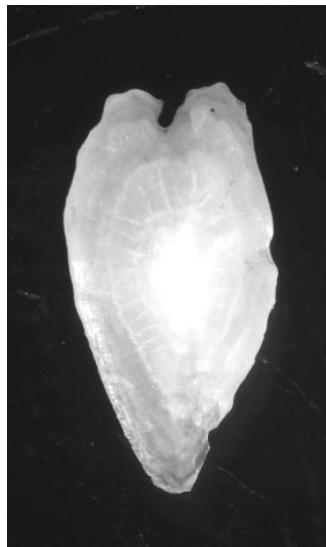
Order Pleuronectiformes

Family Paralichthyidae

0003 *Paralichthys dentatus*, summer flounder

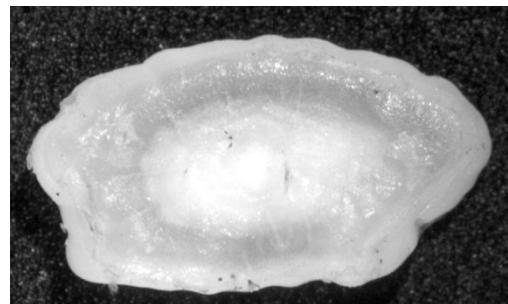
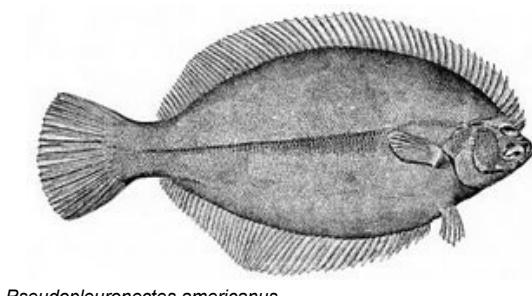
0236 *Etropus microstomus*, smallmouth flounder – very common

1023 *Etropus spp.*



Family Pleuronectidae

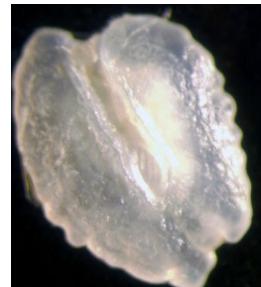
0044 *Pseudopleuronectes americanus*, winter flounder



Order Pleuronectiformes (continued)

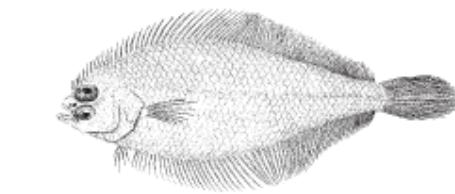
Family Scophthalmidae

0063 *Scophthalmus aquosus*, windowpane



Family Bothidae

0247 *Citharichthys arctifrons*, gulf stream flounder



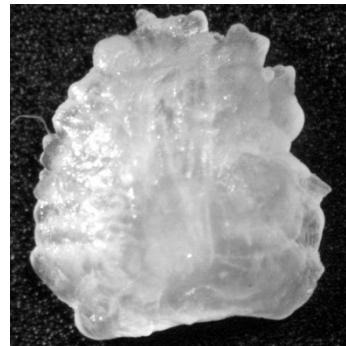
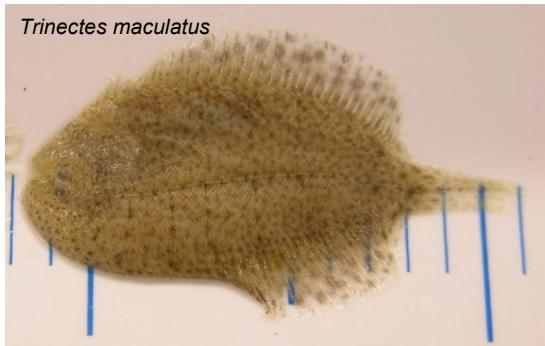
Citharichthys arctifrons



Order Pleuronectiformes (continued)

Family Achiridae

0151 *Trinectes maculatus*, hogchoker



Family Cynoglossidae

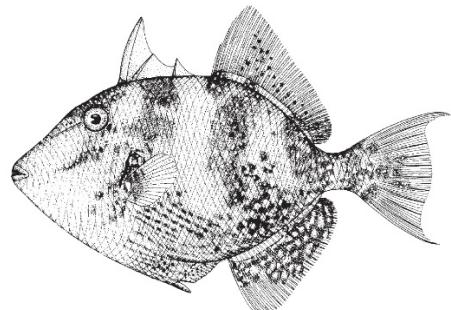
0152 *Sympodus plagiusa*, blackcheek tonguefish



Order Tetraodontiformes

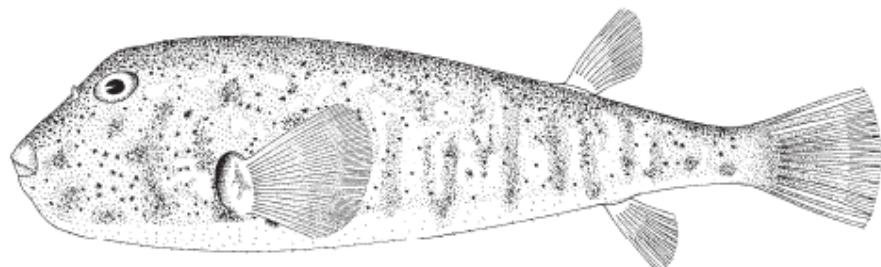
Family Balistidae

0085 *Balistes spp.*
0239 *Balistes capriscus*, gray triggerfish

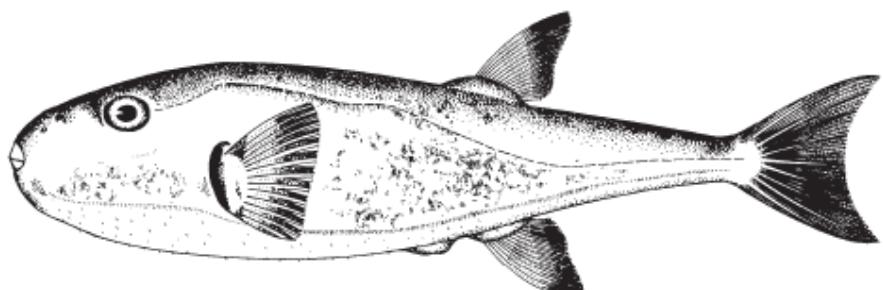


Family Tetraodontidae

0050 *Sphoeroides maculatus*, northern puffer
0079 *Lagocephalus laevigatus*, smooth puffer



Sphoeroides maculatus



Lagocephalus laevigatus