

Species Identification Manual

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Seattle, Washington

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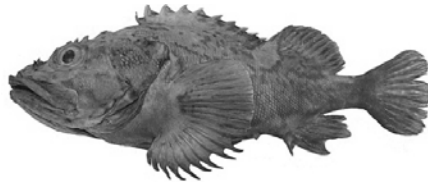
WANTED!

Confirmation Required!

The following species have not been confirmed in Alaskan waters or are extremely rare and require further confirmation.

For confirmation you must either return with a SPECIMEN (S) or PHOTOS (P). Any time a specimen is required, photos should also be taken, but if only photos are required a specimen does not need to be collected.

Any species not listed in the guide or any species encountered out of range also require confirmation (specimen or photo depending on the species).



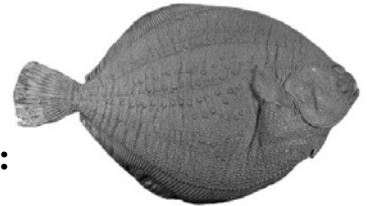
ROCKFISHES:

Aleutian Scorpionfish (S)
Broadbanded Thornyhead (S)
Copper Rockfish (S)
Pygmy Rockfish (S)
Stripetail Rockfish (S)
Yellowmouth Rockfish (P)



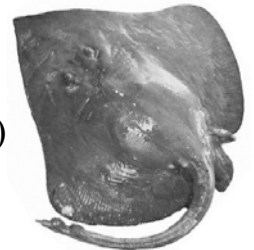
OTHERS:

Arctic Cod (S)
Atlantic Salmon (S)
Brown Cat Shark (S)
All Sharks (P)



FLATFISHES:

C-O SOLE (S)
Curlfin Sole (S)
Roughscale Sole (S)
Pacific Sanddab (S)
Sakhalin Sole (S)
Sand Sole (P)*
Southern Rock Sole (S)**



SKATES:

Deepsea (S)
Roughshoulder (S)

(S) = Collect a specimen

(P) = Photos required

***Documentation NOT required for Sand Soles in the Gulf of Alaska**

****Documentation required ONLY for SRS in the Bering Sea north of 56°**

Fish Identification: Methods and Definitions

The figures and accompanying glossary of terms in the following pages are taken from Miller and Lea's *Guide to the Coastal Marine Fishes of California*, and are designed as an introduction and reference to the terminology used in identifying fishes. Although we cannot cover all the terminology used to describe fish anatomy, we have tried to include the most important and commonly encountered terms. The terminology figured here is reasonably standardized among a variety of identification aids that observers may use.

This introduction to terminology is designed especially for observers who have not taken courses in ichthyology. To the extent possible, observers should attempt to familiarize themselves with the methods and definitions presented in the figures prior to the laboratory sessions, and ask the laboratory instructor questions regarding problems with terms and methods during the lecture and lab sessions.

The identification keys that follow the introductory section have been developed by NMFS staff specifically to meet the needs of groundfish observers. These keys are designed to guide observers to the expected level of identification for each species group, and to provide all the information necessary to distinguish a specimen in hand from all similar species that are likely to be encountered.

Accurate and consistent identification of fishes and crabs requires a good working knowledge of anatomical characteristics and their terminology, as well as methods of measurement and counting used in field guides and keys. All observer trainees are required to demonstrate a level of proficiency in fish and crab identification by passing an exam prior to deployment. Familiarization with the field identification materials contained in this manual is a necessary step in the development of the identification skills that all groundfish observers need to produce high-quality data.

GLOSSARY AND INDEX TO ILLUSTRATED GLOSSARY

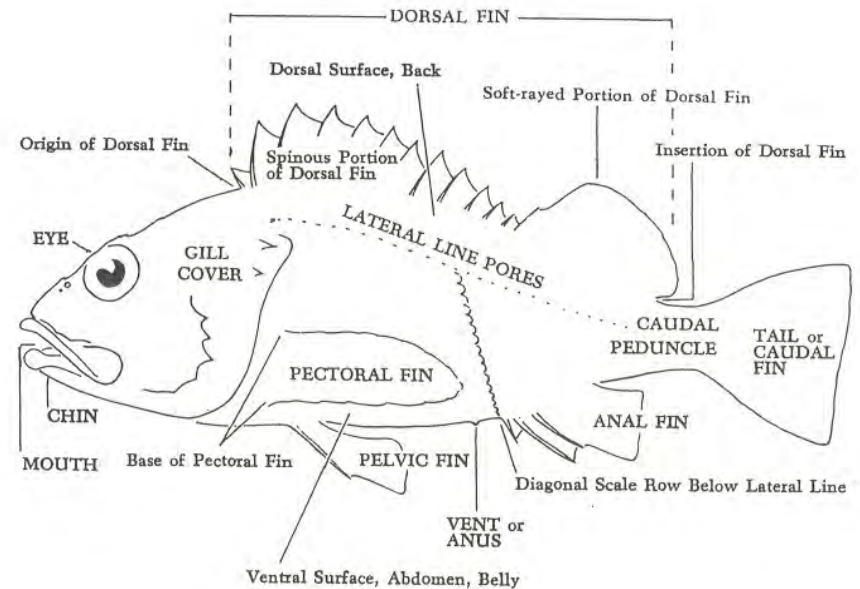
ABDOMEN: belly, Figure 1.
 ABDOMINAL: pelvic fin placement, Fig. 5a.
 ADIPOSE: fin, Figure 6l., fatty.
 ANADROMOUS: an ocean fish that spawns in freshwater.
 ANAL FIN: Figure 1.
 ANTERIOR: toward the head.
 ANUS: vent, Figure 1.
 AXIL, AXILLA: Figure 3.
 BAR: A vertical band.
 BARBEL: An elongate, fleshy appendage.
 BASE: (of fin) Figure 2.
 BEAK: Figure 10d.
 BELLY: area covering viscera.
 BIFID: with two points.
 BRANCHIOSTEGALS: Figure 3.
 BREAST: Figure 4a.
 CANINE: (teeth) Figure 8c.
 CAUDAL FIN: Figure 1.
 CAUDAL PEDUNCLE: Figures 1, 2.
 CHIN: Figure 1.
 CIRRHUS: a thin, usually fringed flap, Figure 3.
 COMPRESSED: (body form) Figure 9d.
 CONCAVE: depressed inward, Figure 9f.
 CONVEX: bulging outward, Figure 9d.
 CONTIGUOUS: adjoining, Figure 6j.
 CONTINUOUS: (fins) Figure 6i.
 DEEP, DEPTH: (body form) Figure 9d.
 DENTIGEROUS: with small teeth.
 DEPRESSED: (body form) Figure 9e; held down, pressed onto body.
 DORSAL FIN: Figures 1, 6i,j.
 EEL-LIKE: (body form) figure 9a.
 ELEVATED: above, Figure 3.
 ELONGATE: (body form) Figure 9a, 9b.
 EYE: (orbit) Figures 1, 3.
 FILAMENTOUS: threadlike, Figure 3.
 FIN: (shapes) Figure 6.
 FINLET: Figure 6k.
 FLAP: a thick extension of skin, Figure 3.
 FORKED: (tail shape) Figure 6e.
 GILL: rakers, cavity, arch, filaments; Figure 7; membrane Figure 4.

GILL COVER: Figures 1, 3, 4a.
 HEAD: Figure 3.
 HYPURAL: (bone in tail) Figures 2, 6k.
 INCISED: notched, Figure 3.
 INCISOR: (teeth) Figure 8d.
 INDENTED: (tail form) Figure 6a.
 INFERIOR: (mouth form) Figure 10c.
 INNER: (fin ray placement) Figure 5c.
 INSERTION: posterior attachment of a fin to body, Figure 1.
 ISOLATED: not connected by a membrane.
 ISTHMUS: Figure 4.
 JAWS: Figure 10.
 KEEL: Figure 6k.
 LATERAL LINE: Figure 1.
 LENGTH: Figure 2.
 LIPS: Figures 3, 10e,f.
 LONGITUDINAL: lengthwise, horizontal.
 MANDIBLE: lower jaw, Figure 8b.
 MAXILLARY: upper jaw, Figures 3, 8a.
 MEMBRANE: thin connective tissue.
 MOLARLIKE: (teeth) Figure 8e.
 MOUTH: Figures 1, 10.
 MULTIFID: With many points.
 NAKED: without scales or rays, Figure 6h.
 NOSTRIL: Figure 3.
 OBSOLETE: nearly gone or missing.
 OPERCULUM, OPERCLE: Figs. 3, 7.
 ORBIT, ORBITAL: Figure 3.
 ORIGIN: anterior attachment of a fin to body, Figure 1.
 OVATE: (body form) Figure 9c.
 OVERHANGING: (snout form) Figure 10c.
 PALATINE: (bone and teeth) Figure 8a.
 PAPILLAE: short, broad-based fleshy protuberances.
 PECTORAL: (fin and girdle) Figures 1, 5c.
 PELVIC: (fin and girdle) Figures 1, 5.
 POINTED: (tail form) Figure 6f,g.
 PORE: a sensory organ in skin.
 POSTERIOR: toward the tail.
 PROJECTING: ahead of, Figure 10a.

FISHES OF CALIFORNIA

PYLORIC CAECAE: fleshy appendages attached to posterior end of stomach.
 RAKER: (gill) Figure 7.
 RAYS: (in fins) Figure 2.
 ROUNDED: (tail form) Figure 6b.
 SCUTE: thickened, hardened scale on midline of belly.
 SHIELD: thickened, hardened scale on lateral line or sides.
 SHOULDER: (girdle) Figure 5c, pectoral.
 SIMPLE: not divided.
 SNOUT: Figures 3, 10b,c.
 SOFT-RAY: Figure 2.
 SPINE: Figures 2, 3.
 SPINULATED: with minute spines or hooks.
 SQUARE: (tail form) straight, Figure 6d.

STRIATED: with close-set lines or grooves.
 STRIPE: lengthwise or horizontal line.
 SUBORBITAL STAY: Figure 3.
 TAIL: Figures 1, 6.
 TERMINAL: at the end, Figure 10e.
 THORACIC: (fin placement) Figure 5b.
 TONGUE: Figure 8b.
 TRUNCATE: Figure 9c.
 TUBULAR: (snout form) Figure 10b.
 UNITED: joined, Figure 4b.
 UPPER JAW: Figure 8a.
 VENT: Figure 1.
 VENTRAL: lower surface, pelvic fin.
 VERTICAL: upright, as bar or band on sides.
 VOMER: (bone, teeth) Figure 8a.
 WIDTH: (body form) Figure 9d.

FIGURE 1. A spiny-rayed fish, *Sebastes*, naming fins and general body areas.

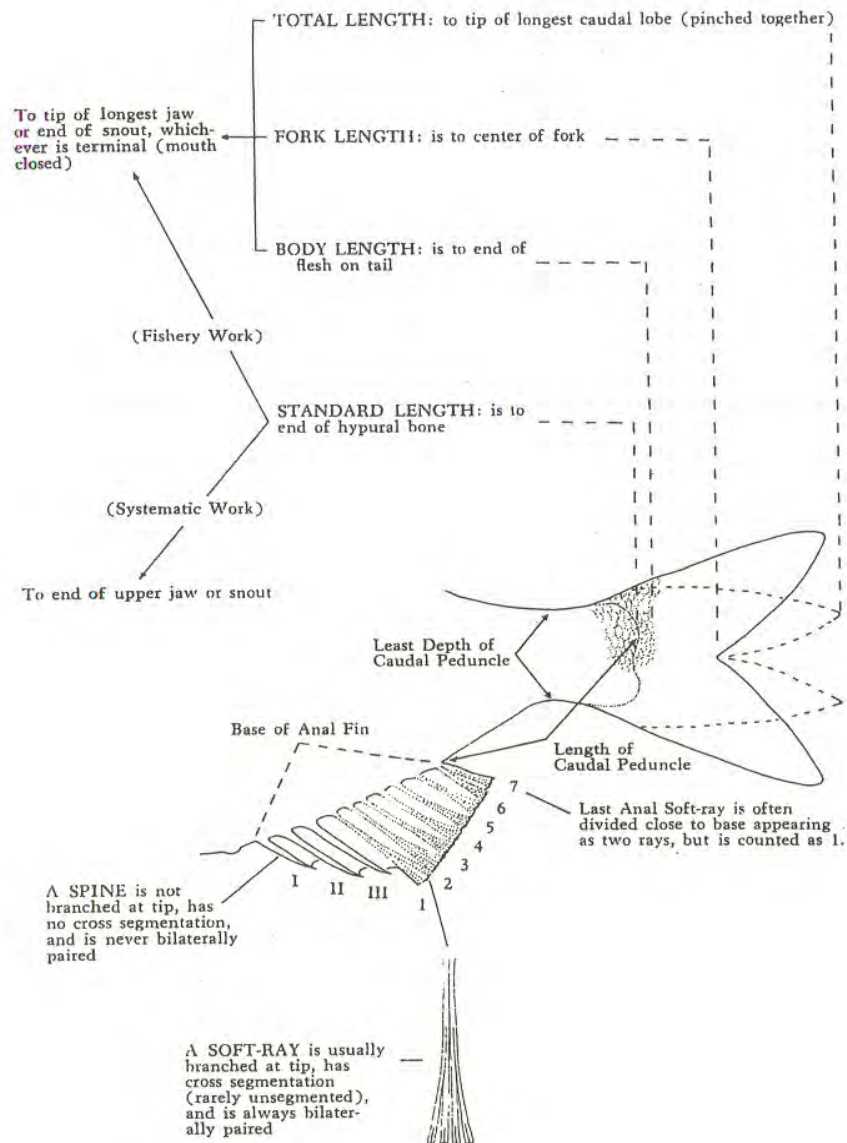


FIGURE 2. Tail area of a rockfish, *Sebastes*, showing lengths, fin ray construction, and other structures.

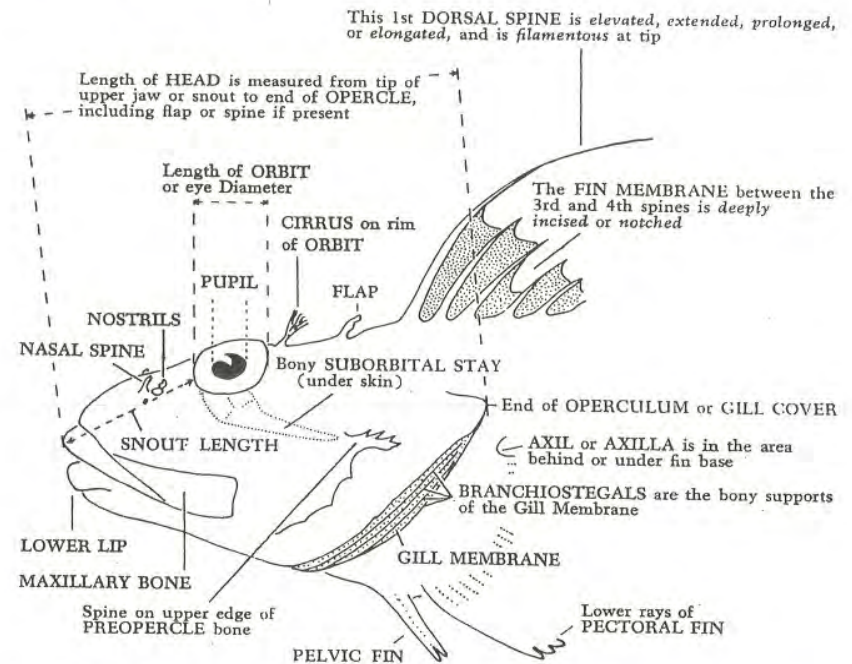


FIGURE 3. A hypothetical sculpin showing some head and fin structures.

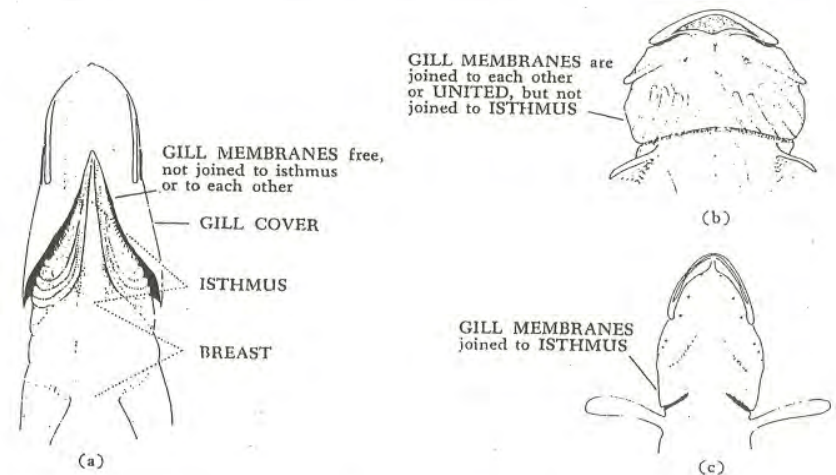


FIGURE 4. Gill membranes and their attachment (Ventral view of: a, *Spirinchus starksi*; b, *Clinocottus globiceps*; c, *Anoplarchus purpureus*).

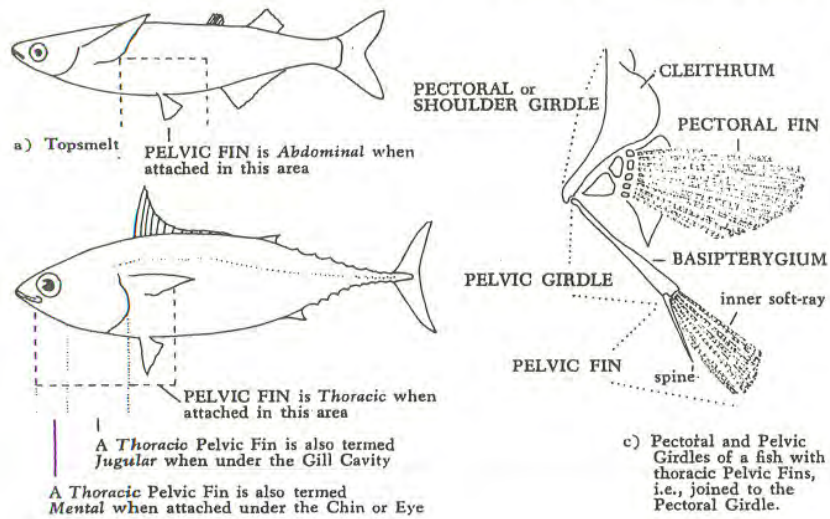


FIGURE 5. Abdominal and thoracic fin placement and construction.

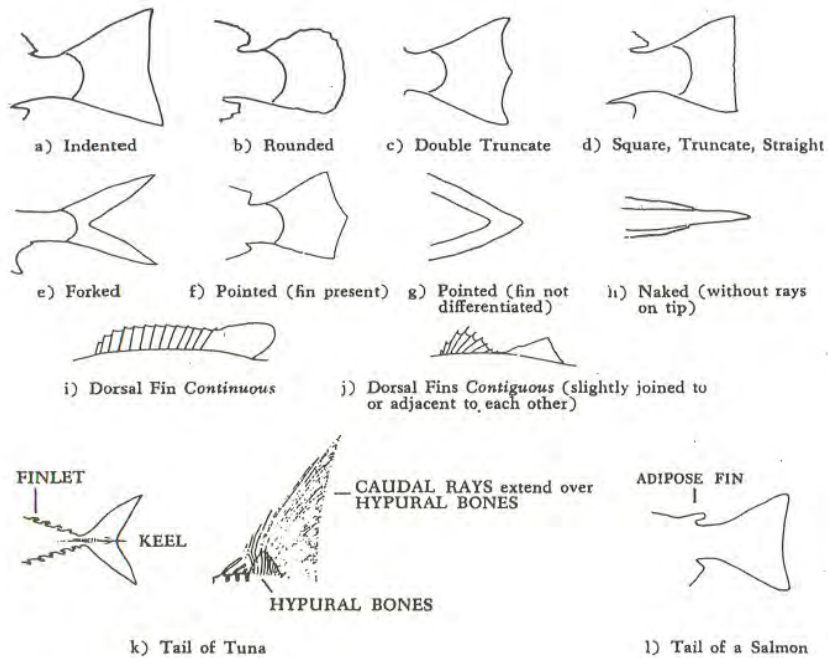


FIGURE 6. Tail and dorsal fin shapes and construction.

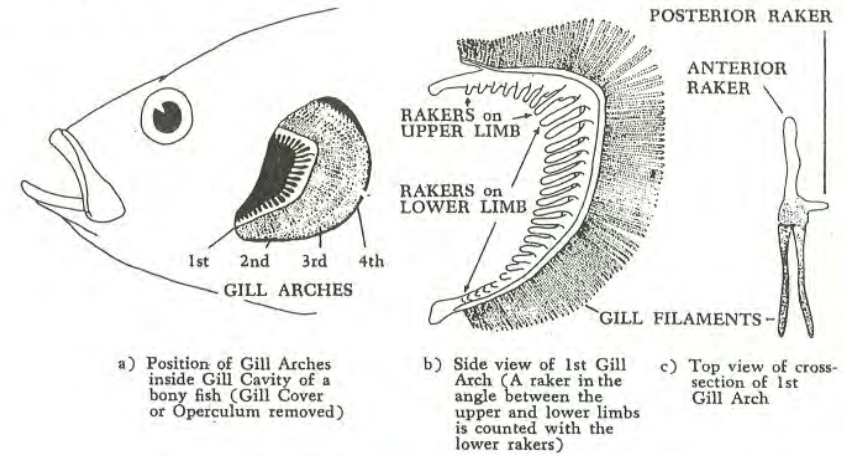


FIGURE 7. Gill rakers and gill arches of a bony fish.

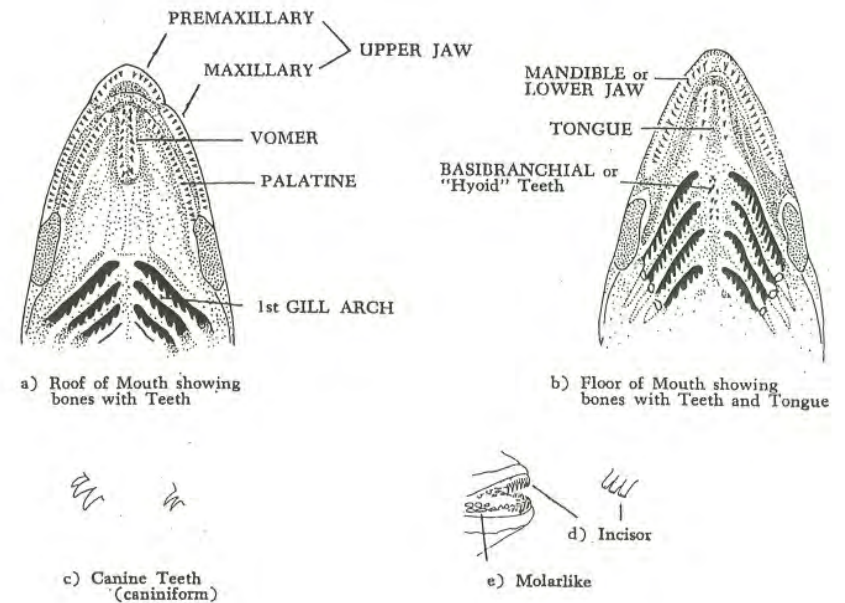


FIGURE 8. Bones and teeth inside mouth or bucal cavity.

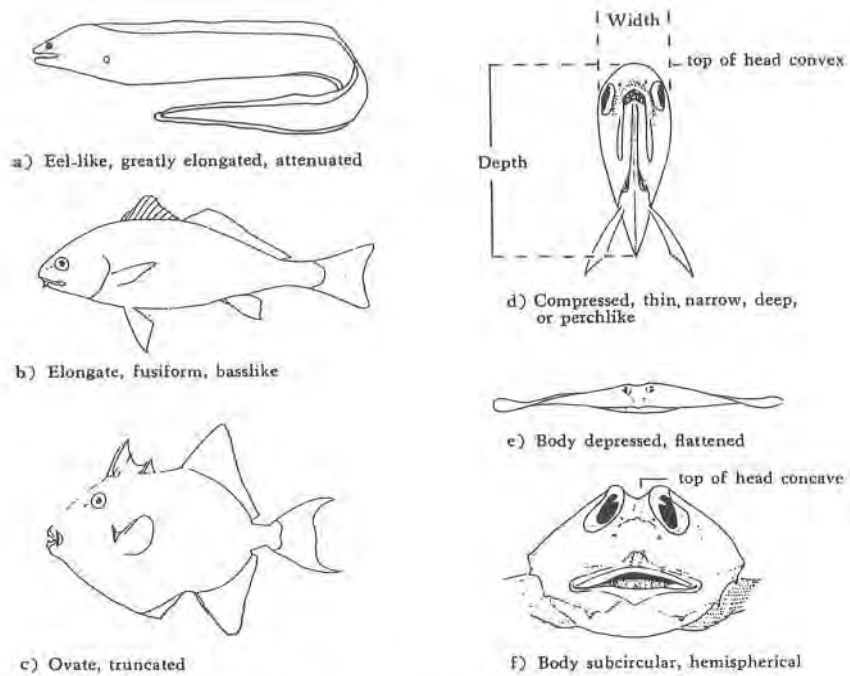


FIGURE 9. Some body forms of fishes.

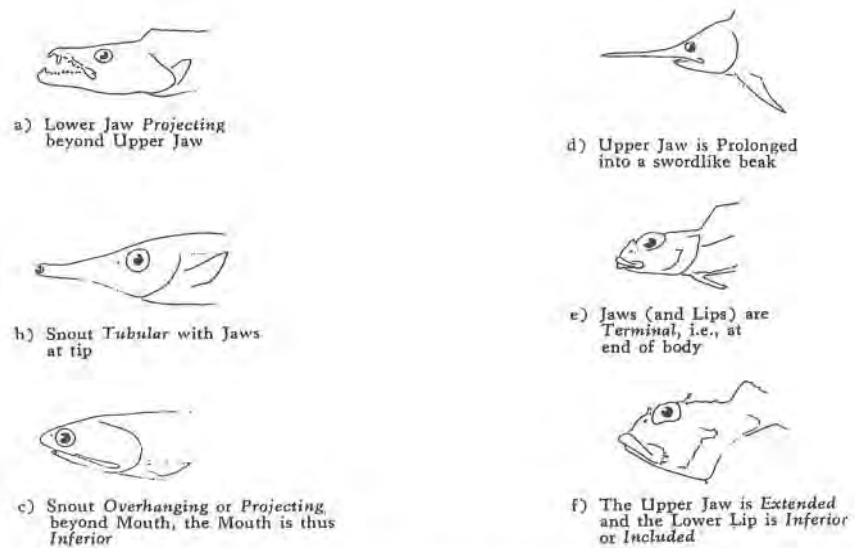
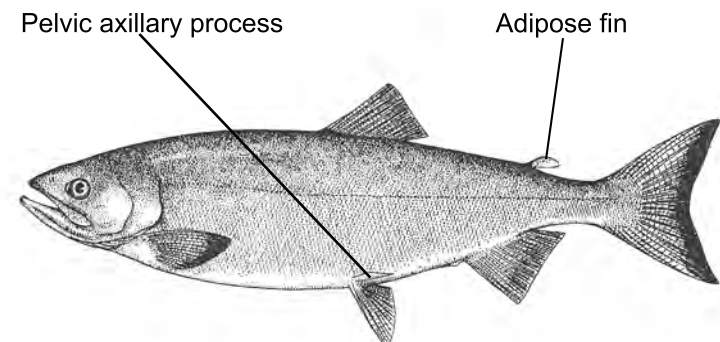


FIGURE 10. Terminology of mouth and snout forms.

Fish and Squid Measurement

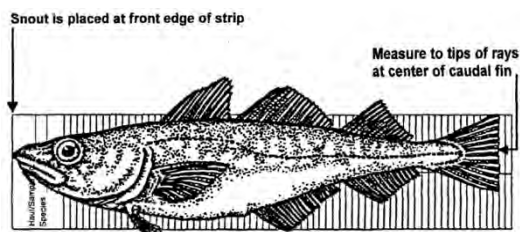
See the “Fish Measurement and Specimen Collection” chapter of the Manual for more details if needed.

Measuring Fish

For most fish we use **FORK LENGTH**: the length from the tip of the snout to the middle of the tail.

1. Position the plastic strip on the NMFS aluminum board. The labeled end should be toward the lip of the board.
2. Lay the fish flat on the plastic measuring strip directly on the center line.
3. Close the jaws. Align the fish snout against the lip of the aluminum board.
4. Fan out the caudal fin and find the middle rays.
5. Record the length either with a tally mark on the length strip or directly on the Deck Form.

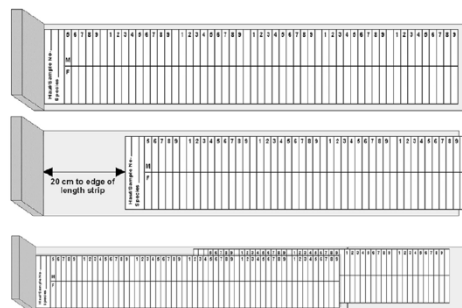
Important: If the fork length falls on a printed line on the strip, re-measure the fish. If the length is still on the line, use the lower centimeter measure.



Measuring Large Fish

When measuring a fish larger than the plastic measuring strip you may use one of the following methods:

1. Offset the plastic strip by 10, 20, or 30 cm. *You must use the NMFS issued tape measure to offset the length strip.* Fill in the 10 cm increments accordingly.
2. Use two measuring strips. Position the first on the aluminum board flush against the metal lip. Place the second strip under the first one and line them up at a blank 10 cm place. Label the 10 cm increments accordingly.
3. Use the NMFS issued tape measure. Always measure in a straight line placing the tape under or next to the fish, not over it. Only use this method if you are unable to use the plastic measuring strips.
 - a. Always lay the fish on top of the tape measure to avoid a curvilinear length.
 - b. Round your measurement to the nearest cm using standard rounding rules, *with an exception at 0.5 cm in which case you must round down.* (See Manual Chapter 13)

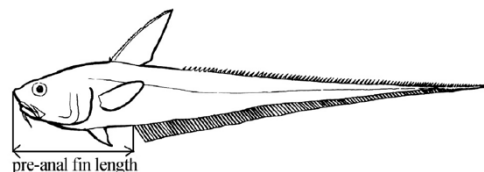


Measuring Skates

For skates we use **TOTAL LENGTH**: the length from the tip of the snout to the tip of the tail with the ventral surface of the skate down.

Measuring Giant Grenadier

For Giant Grenadier we use **PRE-ANAL FIN LENGTH (PAFL)**: the length from the tip of the snout to the insertion of the first anal fin ray, immediately posterior to the anus. This is the standard for Giant Grenadiers because their tails are frequently broken when caught.



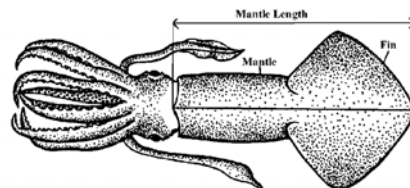
Measuring Sharks

For sharks we use **NATURAL LENGTH**: the length from the tip of the snout to the posterior margin of the longest caudal fin lobe (upper lobe) with the fin in its natural position.

When measuring sharks, safety is first priority. Never attempt to obtain a measurement from a live shark. Always keep your hands away from the shark's mouth and be aware of unexpected movements.

Measuring Squid

For squid we use **MANTLE LENGTH**: the length from the center edge of the mantle to the tip of the fin.



TIPS FOR USING THE SPECIES IDENTIFICATION GUIDE

ARRANGEMENT AND USE OF THE GUIDE

The Species Identification Guide is a collection of dichotomous keys and guides: keys to families, sculpins, flatfishes, cods, salmon, skates, and crabs, and guides to rockfishes, corals, and invertebrates.

Each dichotomous key is essentially a chain of decisions the observer has to make regarding the presence, absence, or condition of morphological characters. The guide to rockfishes is not dichotomous, but is designed to be used in conjunction with the rockfish flowchart to conduct a process of elimination, successively narrowing the pool of candidate species based on suites of morphological characters.

To successfully use the guide, the observer must read it carefully and be familiar with the characters that the key or guide is referencing. Fish identification training covers the basics of the morphological terminology used in the guide; however, for any unfamiliar terms the observer should reference the “Methods and Definitions” section at the beginning of the guide and diagrams that preface several of the keys.

SOME HELPFUL HINTS FOR EACH SECTION

Family-level key

The family-level key includes many, but not all, of the families of fishes represented in the northern Gulf of Alaska, Aleutian Islands, and Bering Sea. This is where you should start if you can’t confidently place your fish in one of the groups for which we have a key. Because the family-level key divides nearly all the fishes of the area into family groups, the diversity of shape and form is considerable. Thus, characters used in the key are often not very subtle (e.g., absences of pelvic fins, number of dorsal fins, body length, etc.). Success with the family key is predicated on a careful reading of the couplets and an understanding of the terminology that describes these morphologically varied groups.

Key to Sculpins

Alaska’s marine waters are home to over 80 species of sculpins. Groundfish observers typically encounter only a fraction of these species, and are only required to identify a small subset of them to species level. To identify sculpins, observers must be familiar with a series of characters that are often subtle and require some familiarity to interpret. The following are important characters used in the key, the states of which must be clearly identified for the key to be used successfully:

- **Broadly connected dorsal fin versus separate or adjacent dorsal fins.** Taxa with broadly connected fins (i.e., Irish lords), have what appears to be a single, continuous dorsal fin. If unsure, it’s best to choose separate or adjacent.
- **Presence of an anal scale row.** This is an important character for the identification of the longfin Irish lord. Unfortunately, scales in this row, positioned directly above and parallel to the long axis of the anal fin, are **SMALL** or, in some cases **MINUTE**. It’s important to look carefully and try to **FLUFF THE SCALES WITH FORCEPS OR A SMALL KNIFE**.
- **Minute prickles.** This diagnostic character of bigmouth sculpin is often misinterpreted or overlooked. In this species the body is **ENTIRELY** covered by **SMALL WART-LIKE BUMPS**.
- **Stellate scales.** These scales, present above the lateral line only in **PLAIN AND WARTY SCULPINS**, resemble the individual scales of a starry flounder in that they are isolated scales with **MANY MINUTE SPINES** distributed all around the circumference of the scale, not just on the posterior margin.

Key to Flatfishes

Our key to flatfishes works well, and nearly all the species can be diagnosed by a relatively small suite of discrete characters. Because the key divides the species into major groups, you should focus on the following characters:

- Symmetrical versus asymmetrical placement of pelvic fins on the abdominal ridge.
- Presence of tuberculate (very rough) scales.
- Presence of an accessory dorsal branch (ADB) of the lateral line
- Presence of an anal spine: a pointed bone projecting from the body anterior to the anal fin
- Size of mouth: where the maxilla ends relative to the ventral eye
- Degree to which the lateral line arches over the pectoral fin.

Important: Several species in the key are diagnosed, at least in part, by gill-raker count. It's imperative that the count be taken from **BOTH THE BLIND SIDE AND EYED SIDE** of the fish. In the case that there is a discrepancy, **USE THE HIGHER COUNT**. In addition, even the smallest element on the gill arch must be counted as a gill raker. Counting both sides, using the higher count, and being sure to find all the element on the arches are especially important when identifying rock soles.

Key to Cods and Hakes

The cod key is rather straightforward, covering only six species. The characters important for the identification of species in this key include:

- Number of dorsal and anal fins.
- Relative length of jaws
- Size of the chin barbel relative to the diameter of the pupil.
- Morphology of the lateral line, whether broken or solid, wavy or straight.
- Anus placement relative to the dorsal fins.

Key to Salmon

Salmon in marine waters can be difficult to identify to species. The characters used to diagnose the species are subtle and in some cases variable. The best character complex for the identification of these species is the presence or absences of spots and silver washing on the caudal fin.

- Other characters that may be helpful include the pink salmon's small scales, Chinook's often black mouth, Sockeye's high number of gill rakers, and Chum's narrow caudal peduncle.

Key to Skates

The species of skates encountered in our fishing area are generally easily diagnosed by combinations of unique, discrete characters. The following are characters that establish major divisions within the key:

- **Snout firm versus flexible:** If the snout can be bent and rolled on itself (like one would roll up a carpet), the snout is considered flexible. Note, that a firm snout can be broken, and the shape of the cartilaginous elements in the snout region must also be assessed.
- **Presence or absence of thorn groups:** It is very important that the thorn groups be correctly identified. Refer to the schematic diagram at the front of the skate key. Note **DISC THORNS ARE ANY AND ALL THORNS ON THE DISC** i.e., scapular, nuchal, and middorsal thorns.
- **Ventral color:** ventral surface dark means the ventral side of the disk is **ABOUT THE SAME COLOR** as the dorsal side. Ventral surface light means the ventral surface is much lighter than the dorsal surface

Important: The Bering skate displays an unusual degree of morphological variation. Although diagnosed as having scapular thorns, Bering skates may be missing scapular thorns or all disc thorns. These specimens are commonly misidentified as mud skates. However, the two species can be distinguished by the mud skate's smaller and more rounded disc and longer tail, which can be quantified by comparing the precaudal length to the tail length. Refer to the skate diagram to make sure these measurements are taken properly.

Rockfish Guide

For tips on using the Rockfish Guide refer to the second page of the rockfish guide

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KEY TO JAWLESS AND CARTILAGINOUS FISHES ENCOUNTERED IN THE NORTHEAST PACIFIC GROUNDFISHERY (Agnatha and Chondrichthyes)

August 2024

- 1 Mouth without jaws; one median nostril; body more or less cylindrical; no paired fins or scales; 7-15 pore-like gill openings 2
- 1 Jaws present; nostrils paired; paired pelvic and/or pectoral fins present; gill openings usually as slits, or covered by a flap-like operculum; body in a wide variety of shapes, with or without scales 3

- 2(1) Gill openings 10-15; barbels around mouth and nostrils.

Hagfishes (Myxiniidae)
(max length: 82 cm)



- 2 Gill openings 7; no barbels around mouth and nostrils.

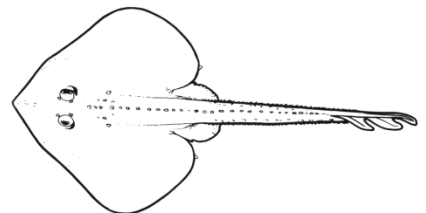
Lampreys (Petromyzontidae)
(max length: 85 cm)



- 3(1) Gill openings 5 to 7, on sides or underside of head; body without overlapping scales, frequently with rough denticles 4

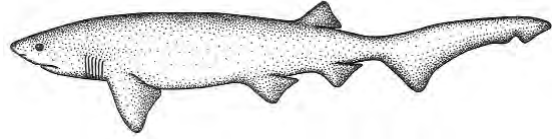
- 3 One gill opening on each side of head, covered by an operculum 12

- 4(3) Body flat (dorsoventrally compressed); pectoral fins large, giving the body a horizontal disc shape.....
.....**Skates** (Rajiformes; see separate key)



- 4 Body round in cross section; pectoral fins do not define the shape of the body as a disc.....**Sharks** (Selachii)..... .5

- 5(4) Six gill openings on each side of head;
single dorsal fin.
Sixgill Shark (*Hexanchus griseus*)
(max length: 4.80 meters)



- 5 Five gill openings on each side of head; two dorsal fins 6

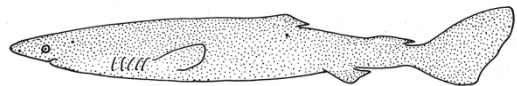
- 6(5) Anal fin absent (no ventral fin posterior to anus) 7

- 6 Anal fin present..... 8

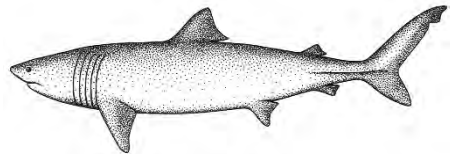
- 7(6) Spine at origin of each dorsal fin; first dorsal fin larger
than second; pectoral fins large and pointed; caudal fin
with two distinct lobes.
Spiny Dogfish Shark (*Squalus suckleyi*)
(max length: 110 cm)



- 7 No spine at origin of dorsal fins; first and second
dorsal fin about same size; pectoral fins small
and rounded; caudal in flap-like, without two
distinct lobes.
Pacific Sleeper Shark (*Somniosus pacificus*)
(max length: 4.4 meters)

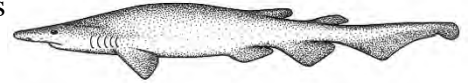


- 8(6) Gill openings highly elongate, extending from dorsal
surface of head nearly to ventral midline of body;
teeth very small, flattened; body very large, usually
5 m (15 ft) or more in length.
Basking Shark (*Cetorhinus maximus*)
(max length: 12.2 meters)



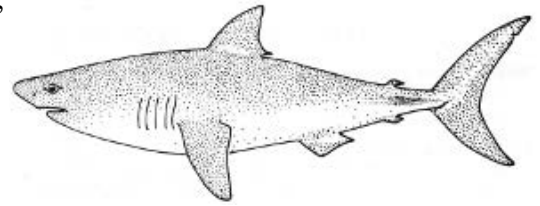
- 8 Gill openings restricted to side of head; teeth relatively large and sharp 9

- 9(8) Front of first dorsal fin posterior to front of pelvic fins
caudal fin weakly developed.
Brown Cat Shark (*Apristurus brunneus*)
(max length: 74 cm)



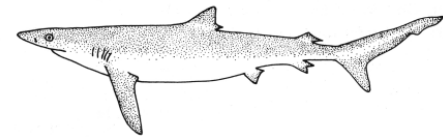
- 9 Front of first dorsal fin anterior to front of pelvic fins; caudal fin well developed;
maximum length >1 m..... 10

- 10(9) Robust, heavy body; head somewhat cone-shaped;
upper and lower caudal lobes nearly equal in size;
pectoral fins short and broad; secondary keel
on caudal peduncle; gill slits white.
Salmon Shark (*Lamna ditropis*)
(max length: 3.1 meters)



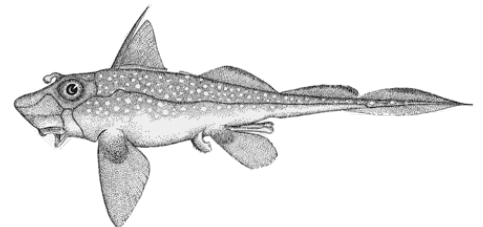
- 10 Not as above; body slender, or body robust with upper lobe of caudal fin larger than
lower, or body robust with caudal lobes nearly equal, secondary keel absent, gill slits
gray 11

- 11(10) Slender, elongate body; head flattened; upper caudal lobe
larger than lower lobe but shorter than body length;
pectoral fins long and narrow, 2 times length of first dorsal fin.
Blue Shark (*Prionace glauca*)
(max length: 3.8 meters)



- 11 Not as above; body robust or slender with short pectoral fins, less than 2 times length of
first dorsal fin; or pectoral fins long and upper caudal lobe extremely elongate, about
equal to body length..... **Shark unidentified (Selachii)**

- 12(3) Operculum without bones; first dorsal fin with long,
sharp spine; teeth fused to form a grinding plate;
mouth inferior; caudal fin continuing to a point.
Spotted Ratfish (*Hydrolagus colliei*)
(max length: 63 cm)



- 12 Operculum a bony flap; fins erectile and flexible, supported by rays that are usually
joined by membranes **Bony fishes (Osteichthyes; next page)**

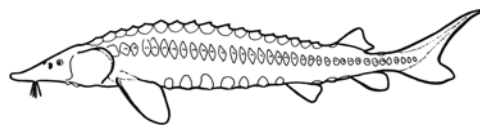
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KEY TO FAMILIES OF BONY FISHES ENCOUNTERED IN THE NORTHEAST PACIFIC GROUNDFISHERY (Osteichthyes)

August 2024

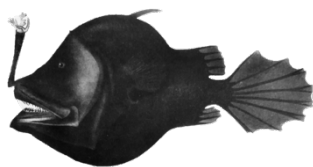
This key does not include all fish species found in Alaskan waters. Specimens not found in this key should be identified as “Roundfish unidentified” and retained.

- 1 Caudal fin with dorsal lobe supported by an upward extension of the vertebral column and distinctly larger than ventral lobe; five well-separated rows of bony plates arranged longitudinally along body; mouth inferior, protrusible, preceded by 4 prominent barbels in a transverse row.
Sturgeons (Acipenseridae)
(max length: 3.2 meters)

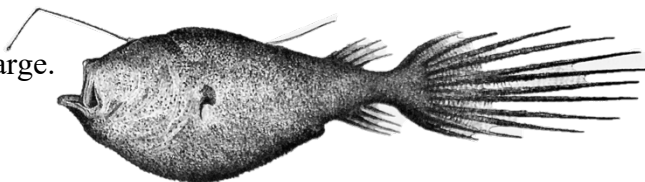


- 1 Caudal fin not with an obviously enlarged dorsal lobe supported by vertebral column; without 5 rows of bony plates along body; mouth not preceded by 4 barbels..... 2
- 2(1) Body compressed asymmetrically with both eyes on same side of head and eyed side of body more strongly pigmented **Flatfishes** (see separate key)
- 2 Body shape variable but symmetrical; one eye on each side of head; color similar on both sides..... 3
- 3(2) A movable, jointed, protrusible organ on anterior part of head modified as a fishing lure 4
- 3 No specialized fishing lure on anterior part of head 5

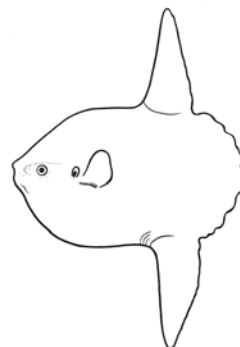
- 4(3) Skin smooth; size small.
Dreamers (Oneirodidae)
(max length: 23 cm)



- 4 Skin covered with conical spines; size large.
Sea Devils (Ceratiidae)
(max length: 86 cm)



- 5(3) Body truncate (abruptly ending just behind the dorsal and anal fins), laterally compressed and deep; dorsal and anal fins thin, narrow and high; no rayed caudal fin.
Ocean Sunfishes (Molidae)
(max length: 2.7 meters)



- 5 Body and anal fins not as above; caudal fin (when present) with rays..... 6

- 6(5) Pelvic fins absent or buried in flesh..... 7

- 6 Pelvic fins present (may be small or modified to form a ventral sucking disc)..... 18

- 7(6) Body extremely elongate, total length more than 40 times body depth; jaws long and strongly curved.
Snipe Eels (Nemichthyidae)
(max length: 200 cm)



- 7 Body moderately elongate or not elongate, total length less than 20 times body depth..... 8

- 8(7)** Lateral line high on body, near dorsal fin; caudal fin forked; elongate raised fleshy ridge on either side of ventral midline; scales minute; standard length 8-12 times body depth.
Sand Lances (Ammodytidae)
(max length: 28 cm)



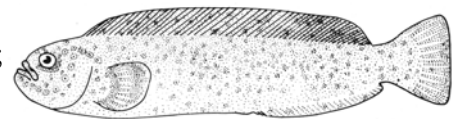
- 8** Lateral line (if present) not near dorsal fin; no raised fleshy ridge on either side of ventral midline; body elongate or not; caudal fin forked or not **9**

- 9(8)** Caudal fin slightly forked; body limp and laterally compressed; skin smooth, scaleless; eye small.
Ragfish (*Ikosteus aenigmaticus*; adult)
(max length: 2.1 meters)



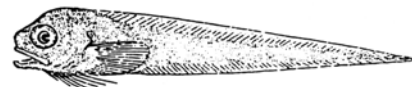
- 9** Caudal fin not forked; body robust and moderately compressed or not compressed..... **10**

- 10(9)** Large conspicuous pores with white borders on head, especially near jaw and eye; fins smooth and rounded; mouth directed upward; dorsal fin long.
Prowfish (*Zaprora silenus*)
(max length: 100 cm)



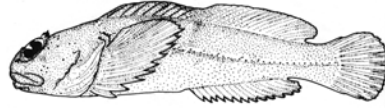
- 10** Pores on head not conspicuous, without white borders; fins not smoothly rounded..... **11**

- 11(10)** Gill openings small and pore-like, not extending below uppermost 15-16 rays of pectoral fin; skin loose and delicate.
Snailfishes (Liparidae; in part)
(max length: 39 cm)



- 11** Gill openings slit-like and not restricted to level of origin of uppermost 15-16 rays of pectoral fin; skin not loose and delicate..... **12**

- 12(11) Body robust; preopercle with hooked spine; distinct caudal peduncle.....
Sculpins (Cottidae; in part; see separate key)



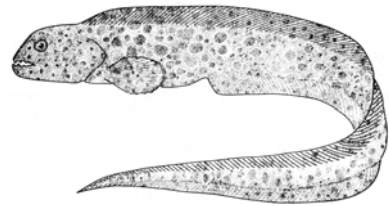
- 12 No distinct spine on preopercle; body elongate..... 13

- 13(12) Caudal fin continuous with dorsal and anal fins; no distinct caudal peduncle; body more or less tapering to a point..... 14

- 13 Caudal fin distinct (may be partially attached to dorsal and anal fins); body not tapering to a point 15

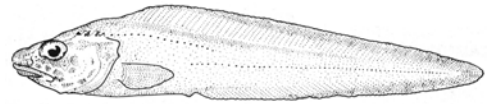
- 14(13) Teeth large and conical, developed as crushing molars at back of mouth; dorsal fin composed entirely of spines; body covered with large black spots, on juveniles spots edged in white.

Wolf-eel (*Anarrhichthys ocellatus*)
(max length: 203 cm)



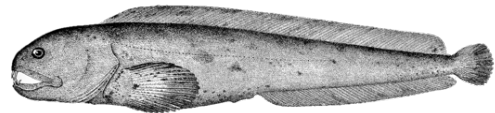
- 14 Teeth not as described above; dorsal fin composed entirely of soft rays; color uniform or speckled with tiny black spots.

Eelpouts (Zoarcidae; in part)
(max length: 86 cm)



- 15(13) Teeth developed as large canines in front of mouth, and as crushing molars in back.

Bering Wolffish (*Anarhichas orientalis*)
(max length: 124 cm)



- 15 Teeth small, not developed as described above.....16

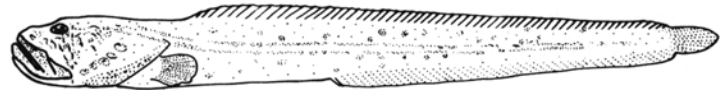
- 16(15)** Lateral line absent; dorsal fin spines soft and flexible; distance from anal fin origin to caudal fin base less than distance from snout to anal fin origin
Gunnels (Pholidae; in part)
(max length: 46 cm)



- 16** One or more lateral line(s) composed of faint pores; dorsal fin spines stiff; distance from anal fin origin to caudal fin base greater than distance from snout to anal fin origin **17**

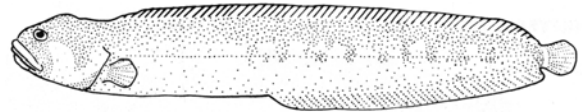
- 17(16)** Mouth strongly upturned, with lower jaw projecting; eyes high on head; pits on side of head and along lower jaw; head depressed, broad, flat on top, without crest of cirri; one lateral line.

Wrymouths (Cryptacanthodidae)
(max length: 123 cm)



- 17** Mouth horizontal or slightly upturned; eyes on side of head; no pits on head or lower jaw; head laterally compressed; 1 or 4 lateral lines; species with 1 lateral line also with a crest of cirri on top of head

Pricklebacks (Stichaeidae; in part)
(max length: 70 cm)



- 18(6)** Pelvic fins abdominal, with insertion well back on the body (at least 1/3 of distance from pectoral fin to anal fin)..... **19**

- 18** Pelvic fins thoracic, with insertion closer to pectoral fin than anal fin (may be small or modified to form a ventral sucking disc) **38**

- 19(18)** Photophores or luminescent organs present (may be round or elongate), usually arranged in rows along abdomen and/or along base of anal fin **20**

- 19** Photophores and luminescent organs absent..... **25**

20(19) Adipose fin absent..... 21

20 Adipose fin present 23

21(20) Several large photophores forming elongate transverse bars across abdomen; tube-like projection directed posteriorly above pectoral fin.

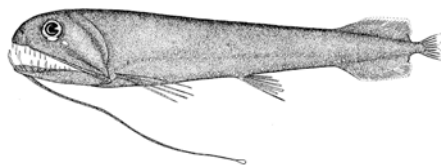
Tubeshoulders (Platytroctidae)
(max length: 28 cm)



21 Photophores small and round or absent; no tubelike projection above pectoral fin 22

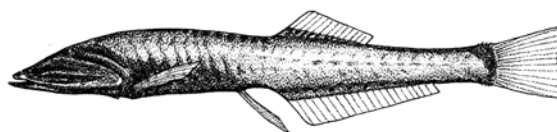
22(21) Teeth in jaws prominent; dorsal fin placed very far back, leaving extremely short caudal peduncle.

Dragonfishes (Melanostomiinae)
(max length: 46 cm)



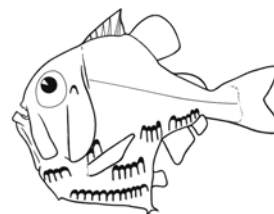
22 Teeth in jaws small; dorsal fin about mid-body.

Bristlemouths (Gonostomatidae)
(max length: 15 cm)



23(20) Body strongly compressed; several series of enlarged, vertically elongate photophores on ventral side of body.

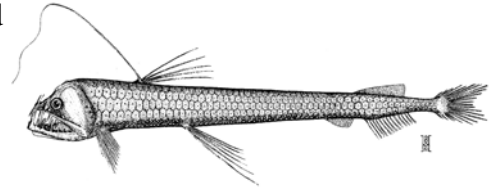
Hatchetfishes (Sternoptychidae)
(max length: 8 cm)



23 Body moderately compressed; photophores on sides of body (if present) not enlarged..... 24

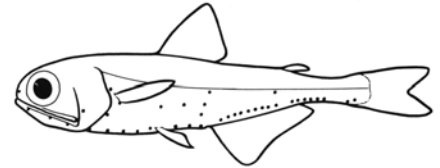
- 24(23)** Teeth extremely large; dorsal fin placed far forward on body, its first ray greatly prolonged; dorsal and ventral adipose fin present; ventral adipose fin anterior to anal fin; small round photophores arranged in two rows along lower body.

Pacific Viperfish (*Chauliodus macouni*)
(max length: 30 cm)



- 24** Teeth small or moderate in size; dorsal fin about midbody, its first ray not greatly prolonged; ventral adipose fin absent; small round photophores arranged in rows or patches along lower body or on caudal peduncle.

Lanternfishes (Myctophidae)
(max length: 21 cm)

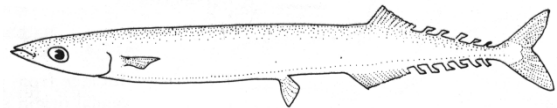


25(19) Adipose fin absent..... **26**

25 Adipose fin present **30**

- 26(25)** Pelvic axillary process (a modified scale found at the base of the pelvic fin) absent; dorsal fin followed by 5-6 finlets.

Pacific Saury (*Cololabis saira*)
(max length: 44 cm)



26 Pelvic axillary process present; dorsal fin not followed by finlets. **27**

- 27(26)** Pelvic fin anterior to dorsal fin; mouth very large and inferior; upper jaw longer than lower jaw.

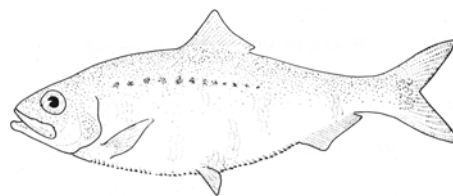
Northern Anchovy (*Engraulis mordax*)
(max length: 25 cm)



27 Pelvic fin below dorsal fin; mouth moderate in size, terminal – **Herrings**..... **28**

- 28(27)** Body deep and compressed; ventral scales forming prominent sharp ridge at ventral midline; a row of dark spots on body.

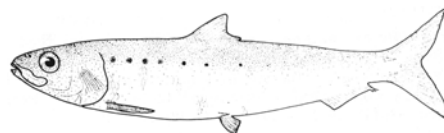
American Shad (*Alosa sapidissima*)
(max length: 76 cm)



- 28** Body elongate, nearly cylindrical; ventral scales only slightly more prominent than surrounding scales, not forming a sharp ridge **29**

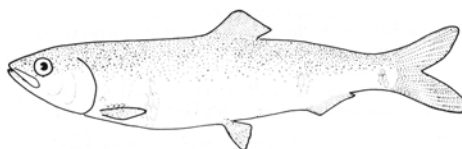
- 29(28)** One or two rows of dark spots on body; last anal ray elongate.

Pacific Sardine (*Sardinops sagax*)
(max length: 41 cm)



- 29** No spots on body; last anal ray not elongate.

Pacific Herring (*Clupea pallasii*)
(max length: 46 cm)



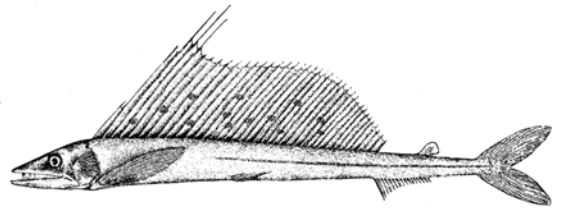
- 30(25)** Dorsal fin absent; mouth very large, with strongly projecting lower jaw and prominent symphyseal knob; 8-10 large dagger-like teeth in two rows on roof of mouth, numerous smaller teeth on jaws.

Daggertooth (*Anotopterus nikparini*)
(max length: 146 cm)



- 30** Dorsal fin present; mouth small or large, but without strongly projecting lower jaw; prominent symphyseal knob absent; 2-4 large dagger-like teeth on roof of mouth, or dagger-like teeth absent **31**

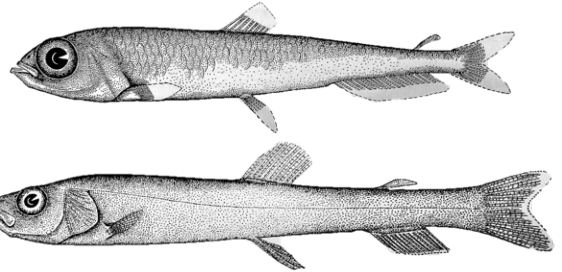
- 31(30)** Dorsal fin sail-like (long base, rays very long), brittle and easily damaged; teeth prominent.
Lancetfish (*Alepisaurus ferox*)
(max length: 2.3 meters)



- 31** Dorsal fin not sail-like (with moderate base and rays) **32**

- 32(31)** Eye relatively small, diameter less than 1/3 head length; mouth large, maxilla reaching to mid-orbit or nearly to mid-orbit **33**

- 32** Eye large, diameter about 1/3 head length; mouth small, maxilla not reaching mid-orbit, barely reaching anterior edge of orbit.
Deepsea smelts (Bathylagidae)
(max length: 25 cm)



- 33(32)** Anus well forward of anal fin, just behind pelvic fins; body slender; head narrow and pointed..... **34**

- 33** Anus directly anterior to anal fin; body robust or slender; head blunt or moderately pointed..... **35**

- 34(33)** Head laterally compressed; interorbital width much less than body depth; eye round; anal fin with 20-50 rays.
Barracudinas (Paralepididae)
(max length: 50 cm)



- 34** Head nearly round in cross-section; interorbital width nearly equal to body depth; eye oval; anal fin with fewer than 20 rays.
Paperbones (Notosudidae)
(max length: 32 cm)

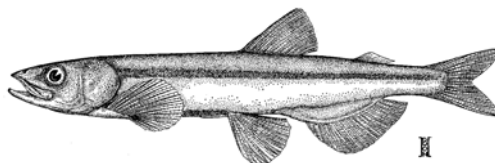


35(33) Pelvic axillary process present..... **Salmons** (Salmonidae; see separate key)

35 Pelvic axillary process absent.....**Smelts** (Osmeridae)..... **36**

36(35) Adipose fin rectangular, attached along its entire length; teeth small, of uniform size; scales very small, >170 along lateral line.

Capelin (*Mallotus villosus*)
(max length: 25 cm)



36 Adipose fin rounded, attached only in front; teeth small to large, canines may be present or absent; scales moderate, < 80 along lateral line..... **37**

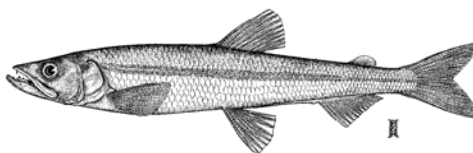
37(36) Opercle with distinct striations; pelvic fin origin anterior to dorsal fin origin; gill rakers less than 25.

Eulachon (*Thaleichthys pacificus*)
(max length: 26 cm)

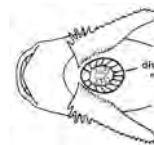


37 Opercle without striations; pelvic fin origin posterior to dorsal fin origin; gill rakers more than 25; 2 large canine teeth on roof of mouth, teeth on tongue.

Rainbow Smelt (*Osmerus mordax*)
(max length: 34 cm)



38(18) Pelvic fins fused, modified to form ventral adhesive disc, may be small or obscured by lower pectoral fin rays **39**

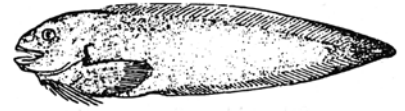


38 Pelvic fins separate, not modified to form adhesive disc..... **40**

- 39(38)** Caudal fin continuous with dorsal and anal fins, may or may not taper to a point; no distinct caudal peduncle; body laterally compressed from anus to caudal fin; skin loose, with underlying flesh soft and gelatinous; pelvic disk may be small and/or obscured by lower pectoral fin rays.

Snailfishes (Liparidae; in part)

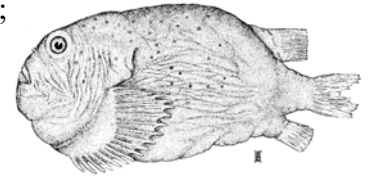
(max length: 74 cm)



- 39** Caudal fin not continuous with dorsal and anal fins; caudal peduncle distinct; body not laterally compressed but spherical; skin may be covered with large conical tubercles; pelvic disk large.

Lumpsuckers (Cyclopteridae)

(max length: 45 cm)



40(38) Dorsal and anal fins continuous with caudal fin **41**

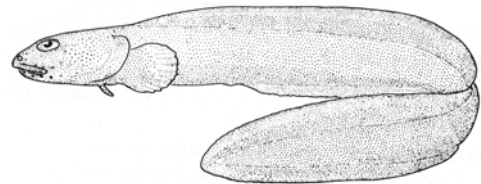
40 Dorsal and anal fins not continuous with caudal fin **43**

41(40) Two dorsal fins; single barbel on lower jaw **42**

- 41** One dorsal fin; barbel on lower jaw absent.

Eelpouts (Zoarcidae; in part)

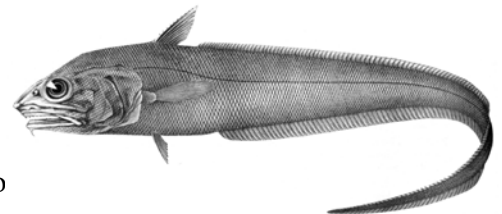
(max length: 86 cm)



- 42(41)** Pelvic fin short, not extending to anus; mouth large, with maxilla extending to or beyond posterior margin of eye.

Giant Grenadier (*Albatrossia pectoralis*)

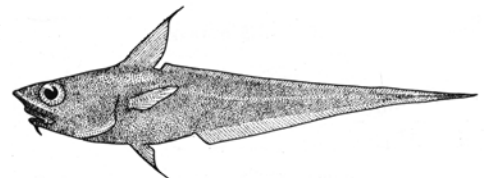
(max length: 67 cm pre-anal fin length; 2.2 meters to



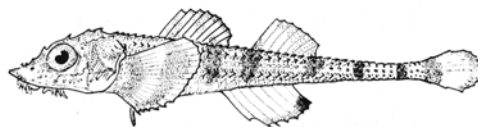
- 42** Pelvic fin elongate, extending to or beyond anus; mouth small to medium, with maxilla not extending to posterior margin of eye.

Grenadier unidentified (Macrouridae)

(max length: 140 cm)



- 43(40) Body completely encased in bony plates.
Poachers (Agonidae)
(max length: usually less than 38 cm)



- 43 Body not completely encased in bony plates, although rows of bony or horny plates may be present 44

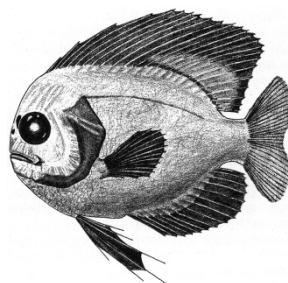
- 44(43) Three separate dorsal fins; two separate anal fins **Cods** (Gadidae; see separate key)

- 44 One or two dorsal fins; one anal fin..... 45

- 45(44) A single dorsal fin (or two connected dorsal fins)..... 46

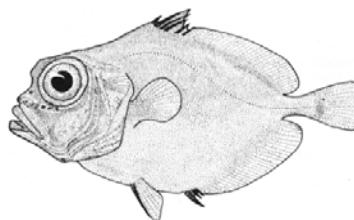
- 45 Two separate dorsal fins 59

- 46(45) Second and subsequent spines of dorsal fin elongated, forming mane extending nearly to caudal fin (dorsal and anal fin may be recessed into a sheath along base of the fin); pelvic fin rays greatly elongate; snout blunt.
Manefish (*Caristius macropus*)
(max length: 39 cm)



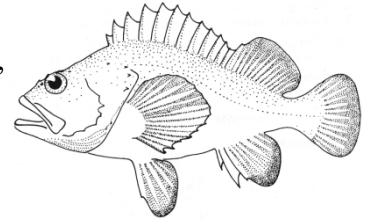
- 46 Dorsal fin not modified as above; pelvic fins may be elongate or not; snout blunt or otherwise 47

- 47(46) Eye round and very large, its diameter more than 1/3 head length; body strongly compressed; juveniles with rows of horny protuberances on body.
Oreo (*Alloctytus folletti*)
(max length: 47 cm)



- 47 Eye diameter less than 1/3 head length or oval; no horny protuberances on body..... 48

- 48(47)** Anal fin with 3 strong spines; dorsal fin with 12-17 (rarely 19) stiff spines; body deep and robust; spines on opercle, preopercle, and usually elsewhere on head.....
.....**Rockfishes** (Scorpaenidae; see separate key)

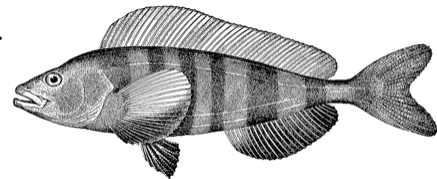


- 48** Fish not as described above **49**

- 49(48)** Caudal fin deeply forked or crescent-shaped..... **50**

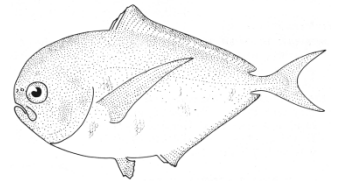
- 49** Caudal fin rounded, truncate, or slightly forked **52**

- 50(49)** Five lateral lines; body with green and yellow vertical bars.
Atka Mackerel (*Pleurogrammus monopterygius*)
(max length: 69 cm)

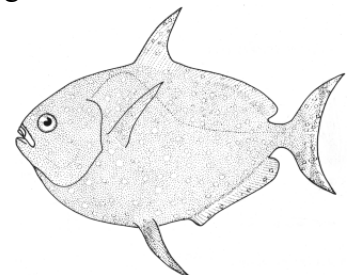


- 50** One lateral line; body without vertical bars..... **51**

- 51(50)** Color uniform gray or brown (including fins); lateral line with a curve over the pectoral fin; size moderate.
Pomfrets (Bramidae)
(max length: 61 cm)

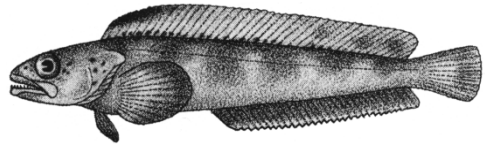


- 51** Body deep and compressed, color gray with white spots, fins bright red; lateral line with a high arch almost reaching the dorsal fin; often very large (>1 m).
Opah (*Lampris guttatus*)
(max length: 123 cm)



- 52(49)** Dorsal and anal fins long, nearly even in height for their full length; conspicuous small pores on top of head and/or preopercle; caudal fin completely separate from dorsal and anal fins; dorsal fin of soft flexible spines and rays.

Ronquils (Bathymasteridae)
(max length: 38 cm)



- 52** Body and fins not as described above..... **53**

- 53(52)** Body elongate and laterally compressed, total length 7 or more times body depth; spines and rays of dorsal and anal fins nearly equal in length..... **54**

- 53** Body robust and round in cross-section or compressed and deep, total length 5 times body depth or less; spines and rays of the dorsal and/or anal fins of variable length..... **55**

- 54(53)** Dorsal fin with stout, sharp spines; distance from snout to anus less than distance from anus to caudal fin base; pelvic fins small, with 1 spine and 3–4 soft rays.

Pricklebacks (Stichaeidae; in part)
(max length: 70 cm)



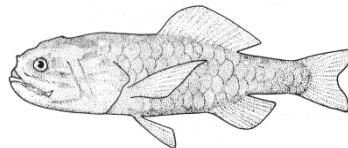
- 54** Dorsal fin with soft flexible spines; distance from snout to anus *usually* greater than distance from anus to caudal fin base; pelvic fins minute, with 1 spine and 1 soft ray.

Gunnels (Pholidae; in part)
(max length: 30 cm)



- 55(53)** Lateral line absent; dorsal fin with short base, placed well back on body; head heavily sculptured with ridges, crests, and spines.

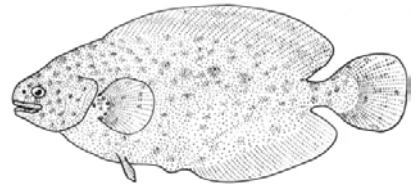
Bigscales (Melamphaidae)
(max length: 19 cm)



- 55** At least one lateral line present; dorsal fin with long base; head not heavily sculptured, although spines and cirri may be present on head **56**

- 56(55)** Dorsal and anal fins composed entirely of soft rays; caudal fin rounded; body deep and laterally compressed; single lateral line on each side.

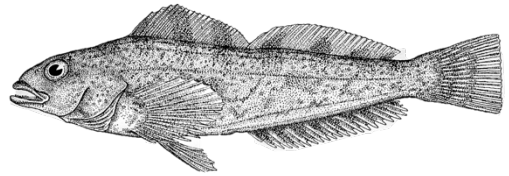
Ragfish (*Icosteus aenigmaticus*; immature)
(max length: 42 cm)



- 56** Dorsal fin composed of spines and soft rays; caudal fin truncate; body generally cylindrical, not compressed; one to five lateral lines on each side **57**

- 57(56)** Four or five lateral lines on each side.

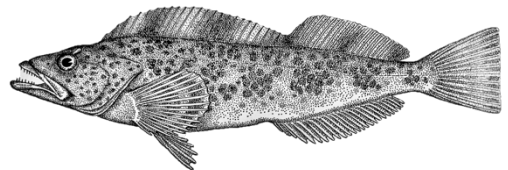
Greenling unidentified (Hexagrammidae)
(max length: 63 cm)



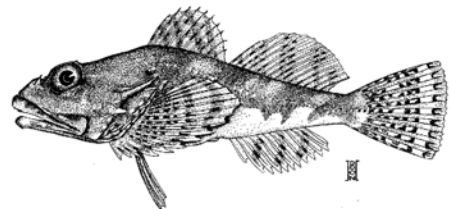
- 57** One lateral line on each side **58**

- 58(57)** Body completely covered with scales; spines in fins soft and flexible; head without spines; mouth large, with large conical teeth.

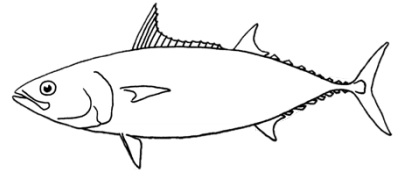
Lingcod (*Ophiodon elongatus*)
(max length: 152 cm)



- 58** Scales reduced to tiny spines (spinules) or arranged in distinct rows; dorsal fin with 6-17 spines, often stout and sharp; gill cover and head usually with spines, frequently well developed; teeth never large and conical **Sculpins** (Cottidae; in part; see separate key)

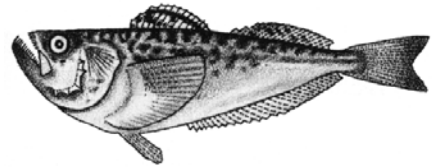


- 59(45)** Second dorsal and anal fin followed by 5 or more finlets;
second dorsal fin shorter than first.
Mackerels and Tunas (Scombridae)
(max length: 3.0 meters)



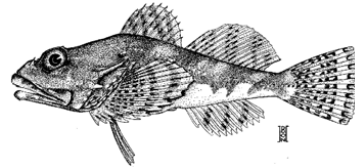
- 59** No finlets following second dorsal or anal fin..... **60**

- 60(59)** Fleshy fringes on both lips; body compressed and deep;
mouth directed upward.
Sandfishes (Trichodontidae)
(max length: 31 cm)



- 60** No fringes on lips; body round in cross-section; mouth nearly horizontal..... **61**

- 61(60)** Spines and/or cirri usually present on head; pectoral fin base extending anteriorly below opercle..... **Sculpins** (Cottidae; in part; see separate key)



- 61** No spines or cirri on head; pectoral fin base approximately vertical, not extending anteriorly below opercle **62**

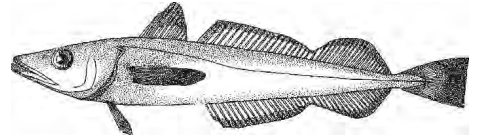
- 62(61)** Body slender and anal fin long: length of anal fin base 2-3 times greater than body depth at start of dorsal fin, base of anal fin covering >80% of distance between anus and caudal fin; caudal peduncle narrow, its depth less than orbit width..... **63**

- 62** Body robust and anal fin short: length of anal fin base less than or equal to body depth at start of dorsal fin, base of anal fin covering <60% of distance between anus and caudal fin; caudal peduncle wide, its depth greater than orbit width **64**

- 63(62)** Pelvic fins not elongate, much shorter than pectoral fins; second dorsal fin and anal fin *both* clearly indented; lower jaw longer than upper jaw, chin barbel absent.

Pacific Hake (*Merluccius productus*)

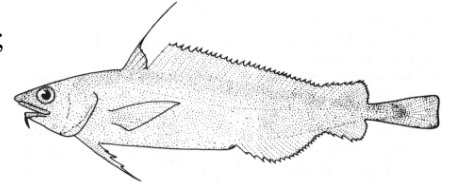
(max length: 92 cm)



- 63** Pelvic fins elongate, equal to or longer than pectoral fins; second dorsal fin not strongly indented; if anal fin strongly indented then upper jaw much longer than lower jaw and chin barbel present *or* if anal fin not indented then lower jaw slightly longer than upper jaw and chin barbel absent.

Codlings (Moridae)

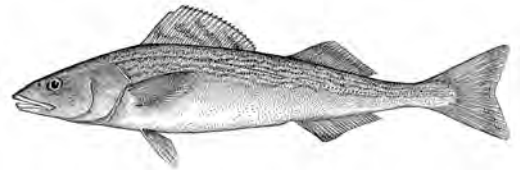
(max length: 84 cm)



- 64(62)** Color uniformly gray to black, without blotches; dorsal fins separated by more than twice eye diameter; second dorsal-fin base approximately equal in length to anal-fin base.

Sablefish (Blackcod) (*Anoplopoma fimbria*)

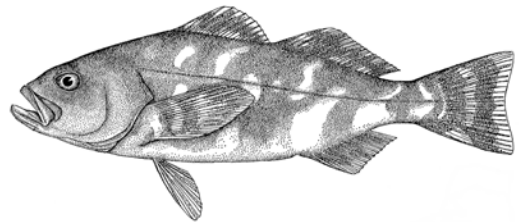
(max length: 138 cm)



- 64** Color gray to black with conspicuous white blotches and spots; dorsal fins very close together, separated by less than eye diameter; second dorsal-fin base clearly longer than anal-fin base.

Skilfish (*Erilepis zonifer*)

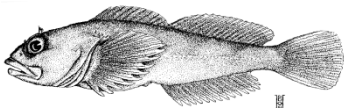
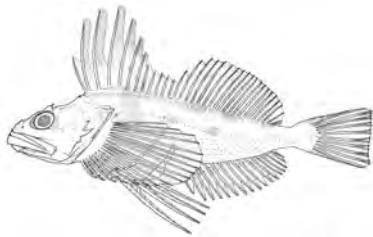
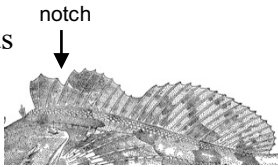
(max length: 188 cm)



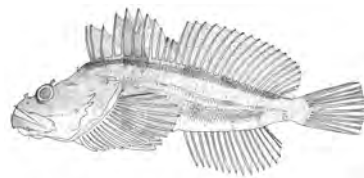
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KEY TO SELECTED NORTH PACIFIC SCULPINS

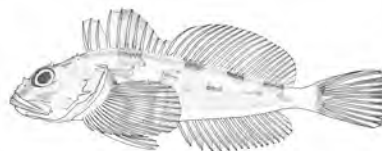
Figures from *Pacific Fishes of Canada* (1973) and *Fishes of Alaska* (2002)
August 2024

- 1 Spinous and soft dorsal fins broadly connected..... 2
- 1 Spinous and soft dorsal fins separate or adjacent 6
- 2(1) Broad band of scales (3-8 rows) at base of dorsal fin and another band below lateral line .
(*Hemilepidotus*)..... 3
- 2 Scales not arranged in two broad bands.
Sculpin Unidentified 
- 3(2) Scales of ventral band much smaller than those of dorsal band;
dorsal scale band consisting of 3-4 rows of scales; spinous
dorsal fin not distinctly notched in females, with two deep
notches in males.
Butterfly Sculpin (*Hemilepidotus papilio*)
Bering Sea, North of Pribilofs
(max length: 40 cm; max weight: <2 kg) 
- 3 Scales of ventral band approximately the same size as other bands
dorsal scale band consisting of 4-8 rows of scales; spinous
dorsal fin distinctly notched..... 4 
- 4(3) Anal scale row present as a single row of scales directly above
anal fin; pelvic fins elongate *only* in mature males; size small,
not larger than 29 cm total length.
Longfin Irish Lord (*Hemilepidotus zapus*)
Aleutian Islands only
(max length: 29 cm; max weight: <2 kg) 
- 4 Anal scale row absent; pelvic fins not elongate..... 5

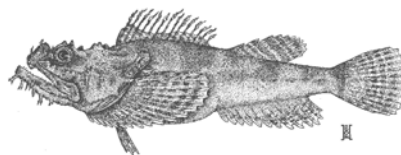
- 5(4) Branchiostegal membranes and lower body peppered with small brown spots; color generally red to brown.
Red Irish Lord (*Hemilepidotus hemilepidotus*)
 Gulf of Alaska, eastern Aleutian Islands, southern Bering Sea
 (max length: 51 cm; max weight: <2 kg)



- 5 Branchiostegal membranes and lower body uniform white to yellow; color generally yellow to brown, occasionally with red blotches.
Yellow Irish Lord (*Hemilepidotus jordani*)
 Western Gulf of Alaska, Aleutian Islands, Bering Sea
 (max length: 53 cm; max weight: 2.4 kg)



- 6(1) Entire head and body covered with minute prickles; head large, broad and depressed, with numerous cirri.
Bigmouth Sculpin (*Hemitripterus bolini*)
 Gulf of Alaska, Aleutian Islands, Bering Sea
 (max length: 82 cm; max weight: 13.2 kg)



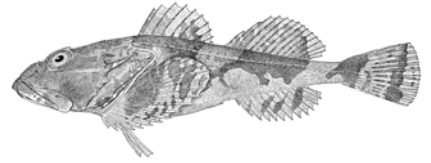
- 6 Head and body not entirely covered with minute prickles, or if covered with minute prickles then head small, narrow and compressed..... 7
- 7(6) Upper preopercular spine long and relatively straight and nail-like..... 8
- 7 Upper preopercular spine not as above: may be short or if long may be hooked or serrated or branched..... 10

8(7) Round, stellate scales with numerous minute spines *present* above lateral line..... 9

- 8 Stellate scales *absent* above lateral line, spinate scales may be present; dorsal surface of body with prominent dark saddles; at least one continuous band of color on caudal fin with dark pigment on both fin rays and fin membranes.

Great Sculpin (*Myoxocephalus polyacanthocephalus*)

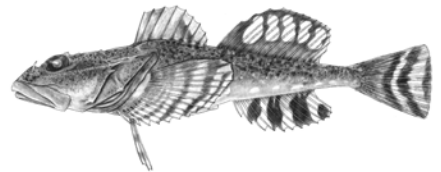
Western Gulf of Alaska, Aleutian Islands, Bering Sea
(max length: 82 cm; max weight: 9.9 kg)



- 9(8) Bands on caudal fin continuous with dark pigment on both fin rays and membranes; dorsal surface of body with irregular dark spots and blotches, not bands or saddles; ventral surface not brightly colored.

Plain Sculpin (*Myoxocephalus jaok*)

Western Gulf of Alaska, Bering Sea
(max length: 60 cm; max weight: 3.6 kg)



- 9 Bands on caudal fin interrupted: dark pigment *only on fin rays* no pigment on fin membranes; dorsal surface of body with prominent dark saddles; ventral surface often brightly colored (may be yellow, orange, or green).

Warty Sculpin (*Myoxocephalus verrucosus*)

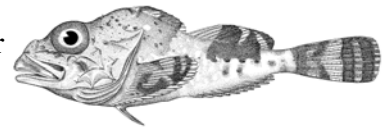
Bering Sea only
(max length: 58 cm; max weight: 2.9 kg)



- 10(7) Skin on body loose, without conspicuous scales, prickles, or cirri; upper preopercular spine short and straight.

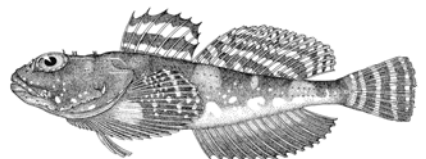
Darkfin Sculpin (*Malacocottus zonurus*)

Gulf of Alaska, Aleutian Islands, Bering Sea
(max length: 29 cm; max weight: 0.74 kg)



- 10 Skin on body not as described above: skin tight or with scales, prickles or cirri; upper preopercular spine short or if elongate, then hooked or branched.

Sculpin Unidentified



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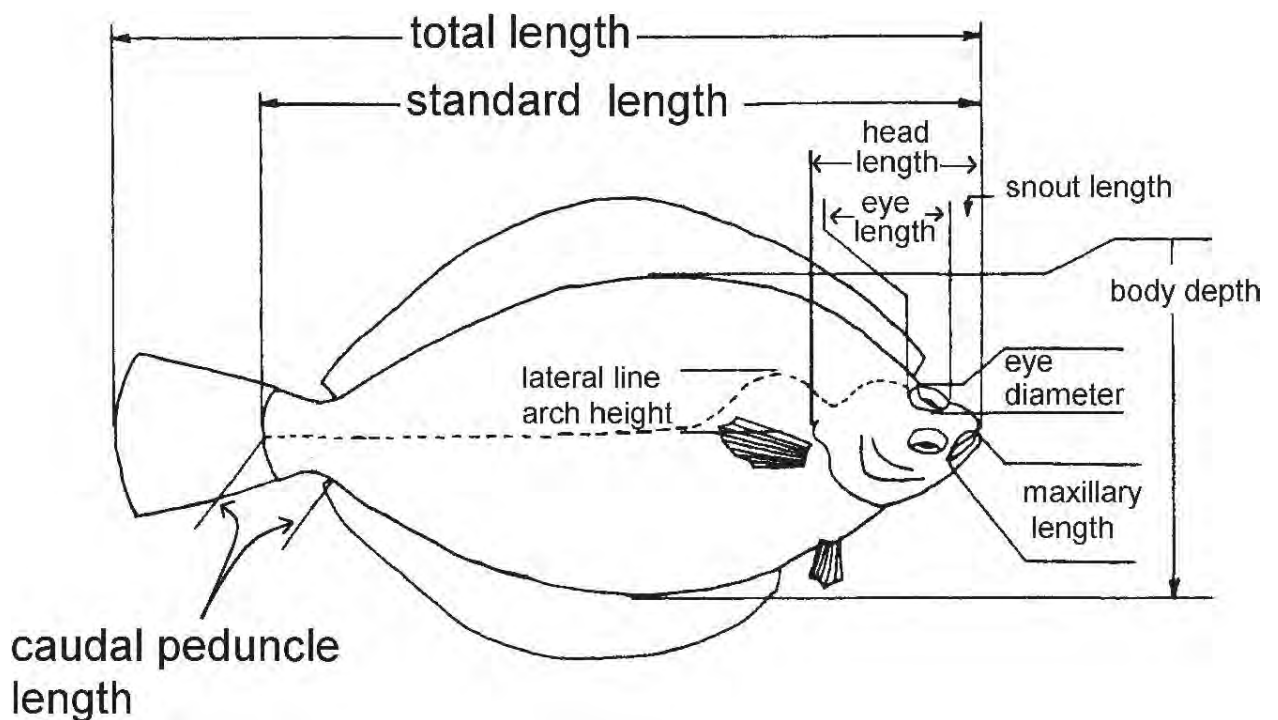
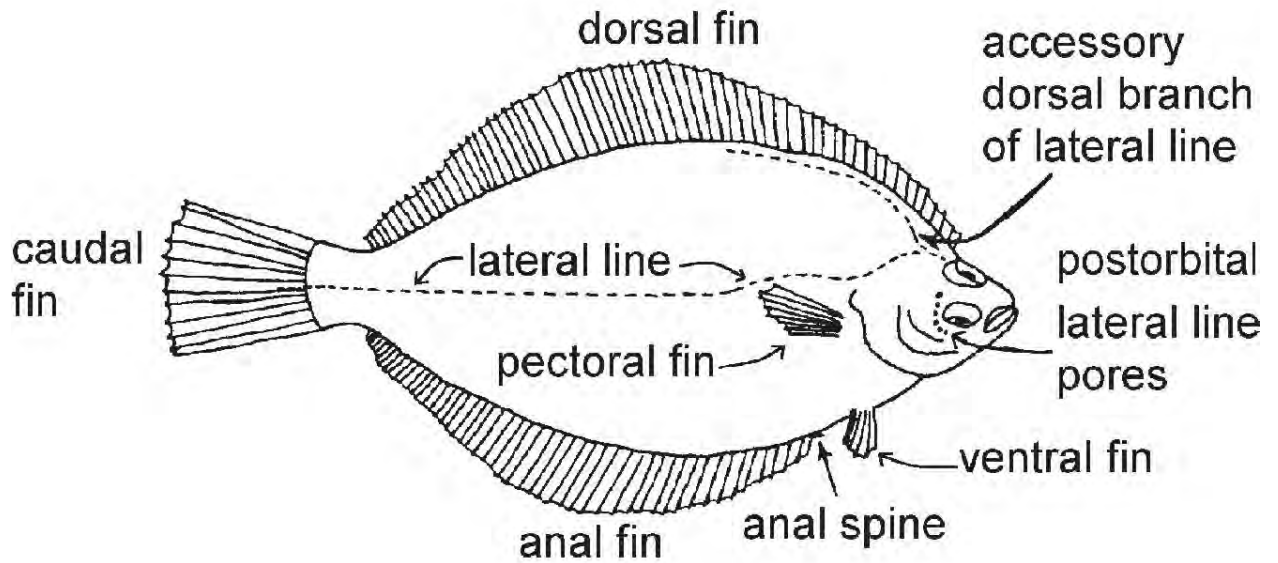
KEY TO THE FLATFISHES OF ALASKA

Original version by

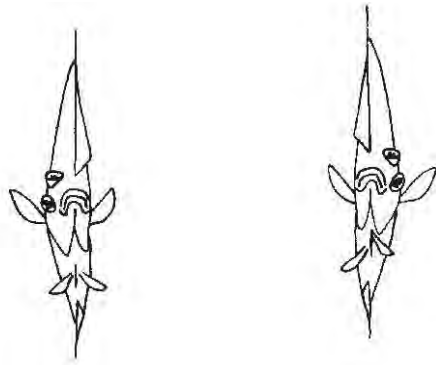
J. W. Orr, D. C. Baker, and M. A. Brown

Figures from *A Systematic Monograph of the Flatfishes* (Norman, 1934) except Deepsea Sole from *Miller and Lea's Guide to the Coastal Marine Fishes of California*, Second Edition (Miller, 2020)

Updated 2024



- 1 Eyes typically on right side of head; pelvic fins symmetrically placed along abdominal ridge.
Right-eyed Flounders.....2



Right-eyed
Symmetric Pelvics

True Left-eyed
Asymmetric Pelvics

- 1 (1) Eyes typically on left side of head; pelvic fins asymmetrically placed along abdominal ridge.

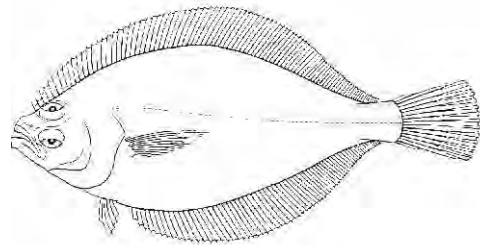
Left-eye Flounders

Pacific Sanddab

Citharichthys sordidus

Bering Sea to Central California

(max length: 41 cm)



- 2 (1) Large tuberculate scales appearing as star-shaped or round bony knobs on large areas of eyed side 3

- 2 Large tuberculate scales typically absent but may be present on anterior portion of eyed side..... 4

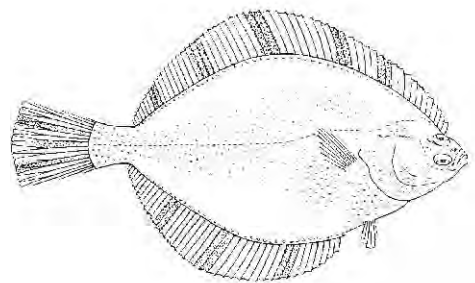
- 3 (2) Dorsal, anal, and caudal fins with bold black and white or yellow stripes; scattered, star-shaped tuberculate scales on both eyed and blind sides; often left-eyed.

Starry Flounder

Platichthys stellatus

Arctic to Southern California

(max length: 91 cm)



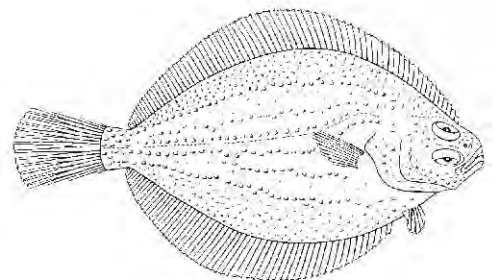
- 3 All fins uniformly brown; eyed side completely covered with rounded tuberculate scales, largest in 6 vague rows, blind side smooth; uncommon, deep-water.

Roughscale Sole

Clidoderma asperrimum

Bering Sea to Oregon

(max length: 62 cm)



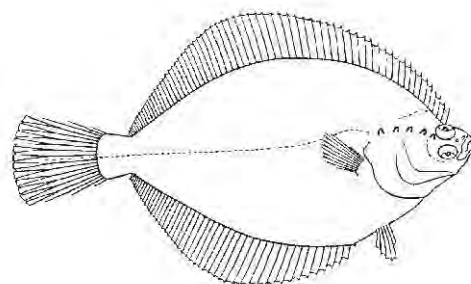
- 4 (2) Eyed side with 4 to 7 large bony cones behind upper orbit; blind side bright yellow.

Alaska Plaice

Pleuronectes quadrituberculatus

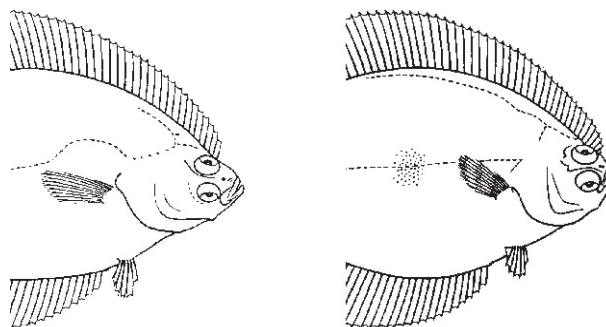
Bering Sea to Southeast Alaska

(max length: 75 cm)



- 4 Eyed side with fewer than 4 large bony cones, usually none; blind side not bright yellow (except in Longhead Dab)..... 5

- 5(4) Accessory dorsal branch (ADB) of the lateral line present 19

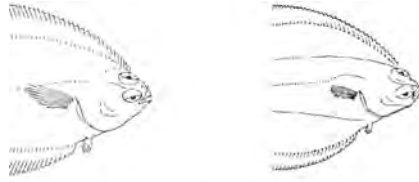


- 5 Accessory dorsal branch (ADB) absent..... 6

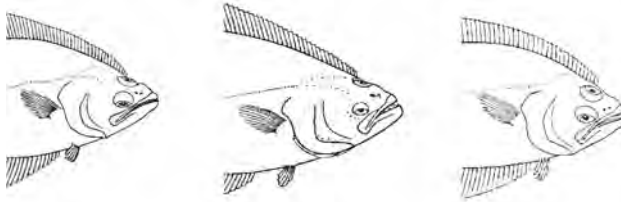
- 6(5) Anal spine present, can be felt just anterior to anal fin base..... 11

- 6 Anal spine absent, cannot be felt just anterior to anal fin base..... 7

- 7(6) Mouth small, maxilla does not extend to mid-orbit; teeth small 10



- 7 Mouth large, maxilla extends to mid-orbit or beyond; teeth large 8



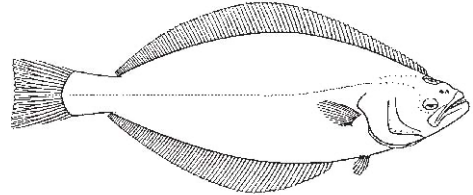
- 8 (7) Preopercle angled, "L"-shaped; prominent, fang-like teeth on roof of mouth; dorsal fin origin posterior to orbit; scales small and smooth; blind side dark grey.

Greenland Turbot

Reinhardtius hippoglossoides

Arctic to Baja California

(max length: 130 cm)



- 8 Preopercle rounded; no prominent teeth on roof of mouth; dorsal fin origin anterior to orbit or at midorbit; scales large and rough; blind side off-white..... 9

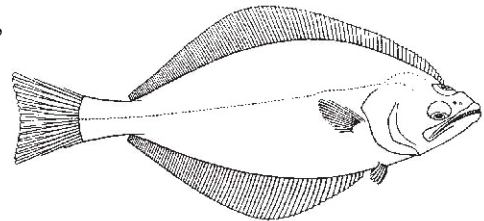
- 9 (8) Gill rakers: count on **upper part of second arch** = 2, total count on first arch more than 14; dorsal eye embedded on dorsal ridge, visible from blind side.

Arrowtooth Flounder

Atheresthes stomias

Bering Sea to Southern California

(max length: 110 cm)



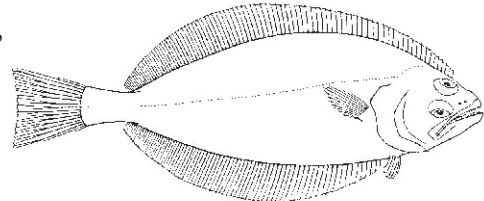
- 9 Gill rakers: count on **upper part of second arch** = 1, total count on first arch less than 14; dorsal eye on side of body, not visible from blind side.

Kamchatka Flounder

Atheresthes evermanni

Bering Sea to Northern Gulf of Alaska

(max length: 110 cm)



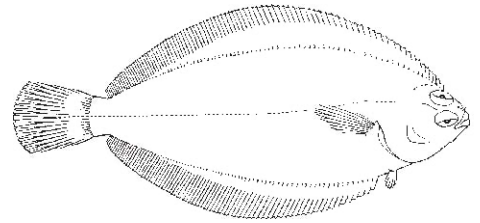
- 10 (7) Caudal fin of moderate size, with posterior margin straight or slightly rounded; eyed side brown with some dark spots.

Dover Sole

Microstomus pacificus

Bering Sea to Baja California

(max length: 85 cm)



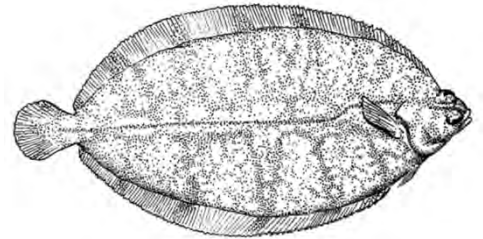
- 10 Caudal fin small and circular; eyed side brown to maroon, with blue to white mottling, forming vague broad bars.

Deepsea Sole

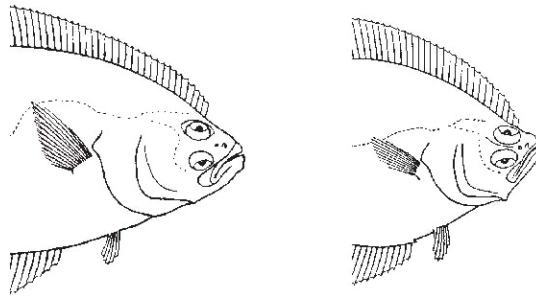
Embassichthys bathybius

Bering Sea to Southern California

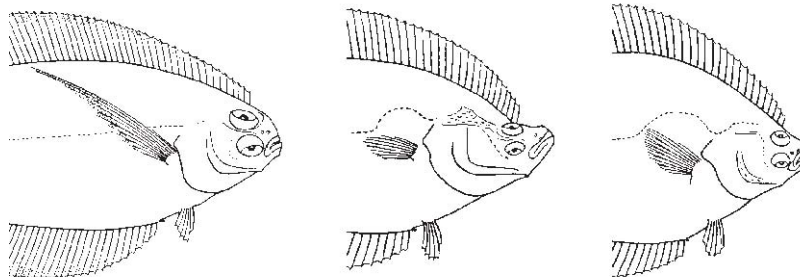
(max length: 55 cm)



- 11 (6) Mouth moderate to large, maxilla extends to mid-orbit or beyond 15

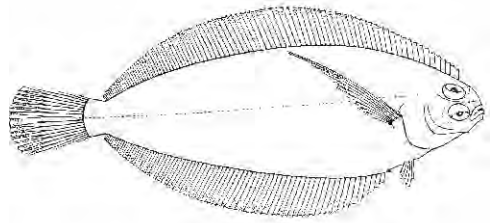


- 11 Mouth small, maxilla does not extend to mid-orbit 12

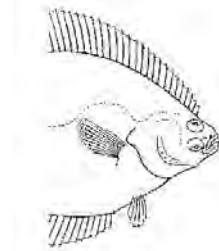


- 12(11)** Lateral line straight or with slight curve; pectoral fin on eyed side black, longer than head length.

Rex Sole *Glyptocephalus zachirus*
Bering Sea to Baja California
(max length: 61 cm)

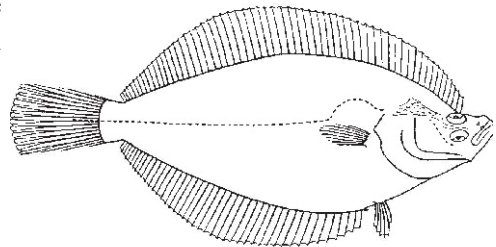


- 12** Lateral line with moderate to high arch; pectoral fin not elongate.....**13**



- 13(12)** Dorsal margin of head strongly concave; blind side bright yellow; head elongate, at least 30% standard length; orbit length less than 20% head length; postocular ridge large and triangular with rough patches.

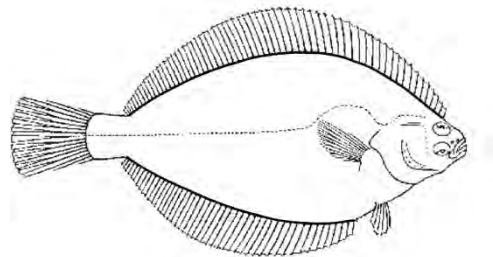
Longhead Dab *Limanda proboscidea*
Bering Sea
(max length: 41 cm)



- 13** Dorsal margin of head convex or slightly concave; blind side white; head length less than 30% standard length; orbit length greater than 20% head length; postocular ridge smooth..... **14**

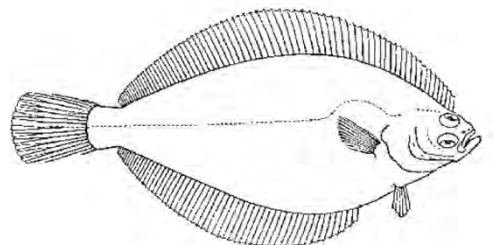
- 14 (13)** Dorsal and anal fins washed with yellow, black lines at base; blind side snowy white.

Yellowfin Sole
Limanda aspera
Bering Sea to British Columbia
(max length: 50 cm)



- 14** Dorsal and anal fins brownish, without black lines at base; blind side off-white.

Sakhalin Sole
Limanda sakhalinensis
Bering Sea
(max length: 35 cm)

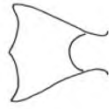


- 15 (11)** Lateral line with high arch over pectoral fin; caudal fin forked or doubly truncate; 16 or more pectoral rays; body shape elongate diamond; white or light brown spots on eyed side in juveniles.

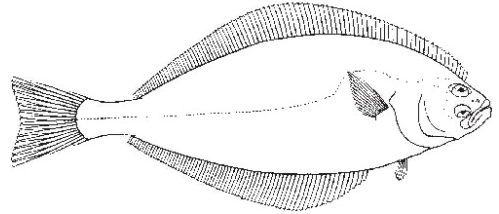
Pacific Halibut

Hippoglossus stenolepis

Bering Sea to Baja California
(max length: >250 cm)



Double truncate
caudal fin



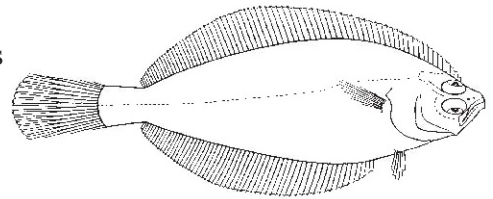
- 15** Lateral line slightly curved or straight; caudal fin pointed or truncate; less than 16 pectoral rays; body slender or elliptical **16**

- 16(15)** Scales unusually large (> 3 mm) and deciduous (fall off easily); body slender, its depth approximately 1/3 standard length; caudal peduncle long and slender, its length 1.5 times its depth.

Slender Sole

Lyopsetta exilis

Northern Gulf of Alaska to Baja California
(max length: 35 cm)



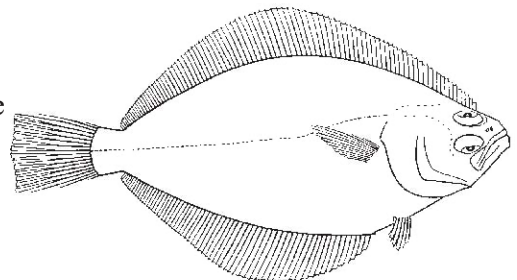
- 16** Scales relatively small, adherent; body elliptical and deep, its depth >40% standard length; caudal peduncle short, its length approximately equal to its depth **17**

- 17 (16)** Caudal membranes pigmented; interorbital space wide and flat, with 4 to 5 scale rows.

Petrale Sole

Eopsetta jordani

Northern Gulf of Alaska to Baja California
(max length: 75 cm)



- 17** Caudal membranes unpigmented; interorbital space narrow with or without ridge, with 0 to 3 scale rows **18**

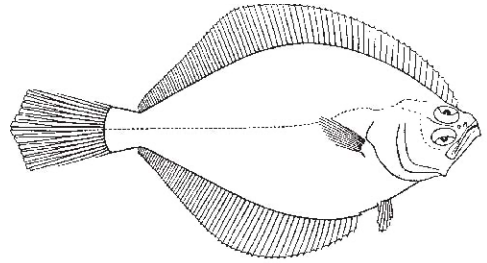
- 18 (17) Gill rakers: lower part of first arch, more than 14; total count on first arch, 17 or more, typically at least 20; with narrow ridge between orbits.

Flathead Sole

Hippoglossoides elassodon

Bering Sea to Central California

(max length: 56 cm)



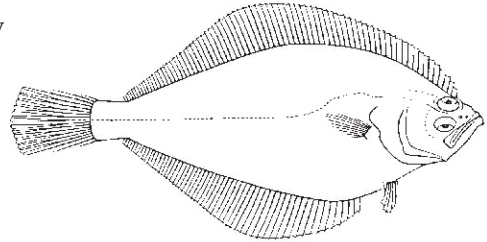
- 18 Gill rakers: lower part of first arch, less than 13; total count on first arch, 17 or less; usually with narrow flat space between orbits, otherwise with ridge.

Bering Flounder

Hippoglossoides robustus

Bering Sea

(max length: 52 cm)



- 19 (5) Accessory dorsal branch (ADB) of lateral line long, extending at least half the standard length; anterior 4–12 dorsal fin rays inserted on blind side....20



- 19 Accessory dorsal branch (ADB) of lateral line medium or short, extending less than half the standard length; anterior portion of dorsal fin not extending onto blind side..... 21

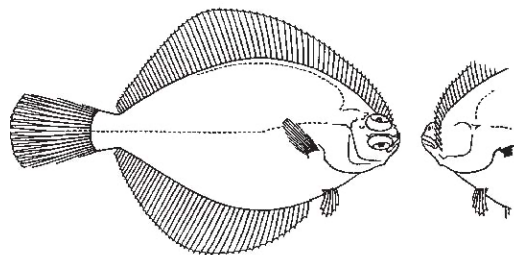
- 20 (19) Anterior 9–12 dorsal fin rays inserted on blind side; dorsal fin extending below end of maxilla; eyed side and caudal fin uniformly brown.

Curlfin Sole

Pleuronichthys decurrens

Southeast Alaska to Baja California

(max length: 45 cm)



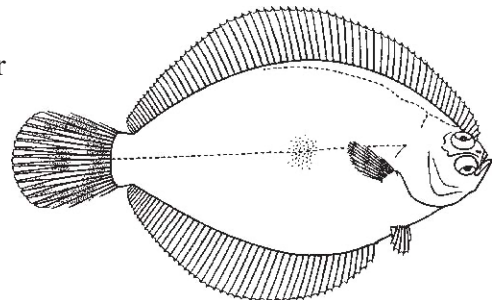
- 20 Anterior 4–6 dorsal rays inserted on blind side; dorsal fin extending to upper lip; distinct dark spot at center of body on eyed side; caudal fin with a dark reverse "C" at base and a large dark spot forming an "O."

C-O Sole

Pleuronichthys coenosus

Southeast Alaska to Baja California

(max length: 36 cm)



- 21 (19) Lateral line straight to low arch; ADB medium, extending to or beyond posterior end of operculum 23



- 21 Lateral line with high arch over pectoral fin; ADB short, not extending beyond posterior end of operculum 22

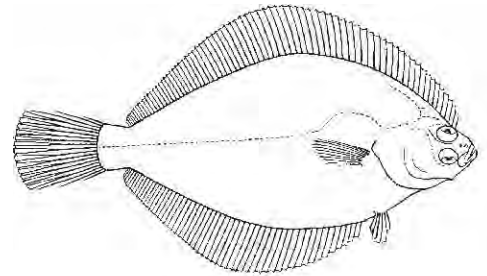
- 22(21) Gill rakers 7 or more on lower part of first arch, typically slender and pointed; blind side uniform creamy white, without glossy white highlights.

Northern Rock Sole

Lepidopsetta polyxystra

Bering Sea to Puget Sound

(max length: 69 cm)



- 22 Gill rakers 6 or fewer on lower part of first arch, typically broad and blunt; blind side typically with glossy white highlights corresponding to muscle bands, especially on anterior portion of body.

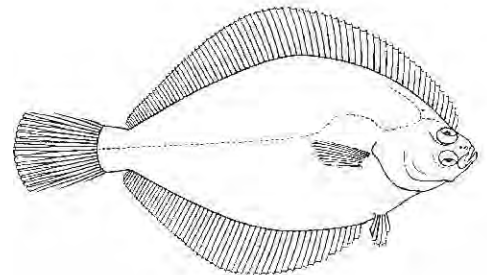
Southern Rock Sole

Lepidopsetta bilineata

Southern Bering Sea to Baja California

(max length: 58 cm)

***Retain any southern rock soles identified in the Bering Sea north of 56°N.**



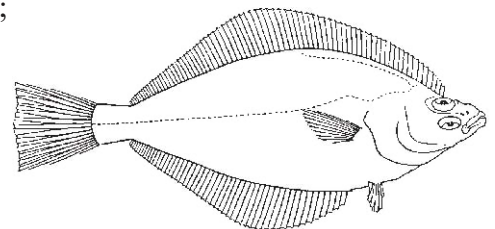
- 23 (21) Eye visible from blind side; mouth strongly asymmetrical, maxilla on blind side longer than maxilla on eyed side; do not extend onto rays of dorsal and anal fins; scales cycloid, body with a smooth, shiny appearance.

English Sole

Parophrys vetulus

Bering Sea to Baja California

(max length: 62 cm)



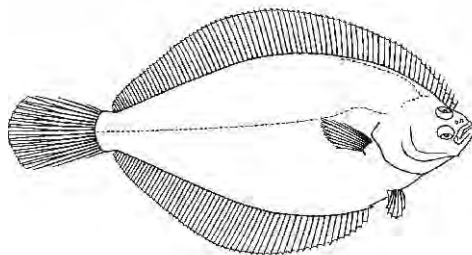
- 23 Eye not visible from blind side; mouth slightly asymmetrical; scales do extend onto rays of dorsal and anal fins; scales ctenoid, giving body a rough appearance 24

- 24 (23)** First 4–8 dorsal rays not long or free from membrane; mouth small, maxilla typically extending to anterior edge of orbit; lateral line with low arch; body uniform light brown, often with yellowish fins.

Butter Sole

Isopsetta isolepis

Southern Bering Sea to Southern California
(max length: 55 cm)

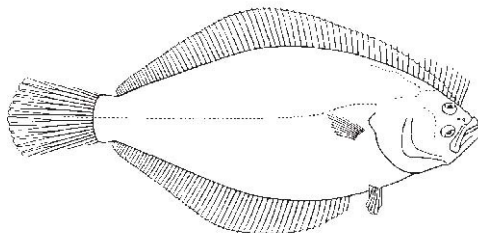


- 24** First 4–8 dorsal rays long and mostly free from membrane; mouth large, maxilla typically extending to midorbit or beyond; lateral line with slight curve; body medium brown and speckled.

Sand Sole

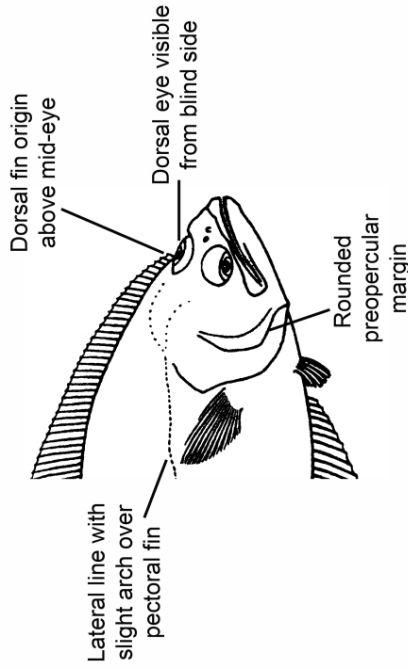
Psettichthys melanostictus

Southern Bering Sea to Southern California
(max length: 63 cm)



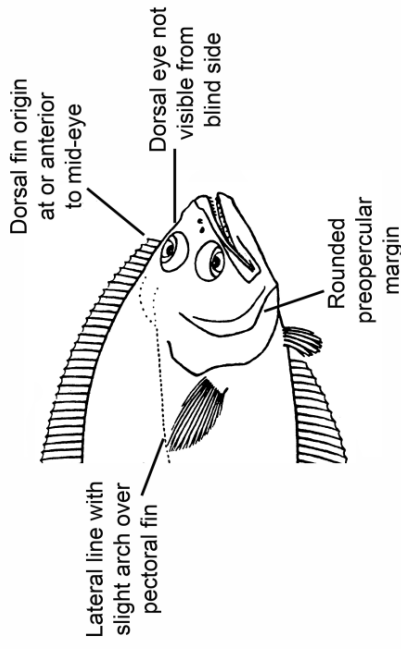
***Photographic documentation required for any sand soles identified in the Bering Sea.**

ARROWTOOTH FLOUNDER



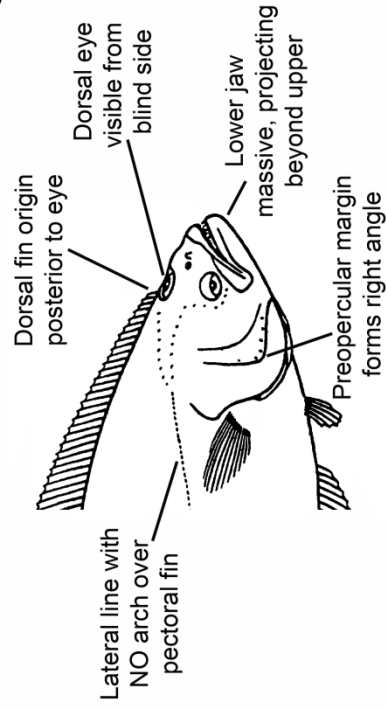
scales relatively large, ragged looking
blind side off white
gill rakers on first arch 14-17
gill rakers on upper part of second arch 2

KAMCHATKA FLOUNDER



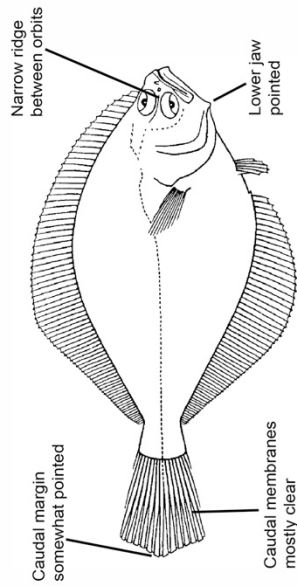
scales relatively large, ragged looking
blind side off white
gill rakers on first arch 11-14
gill rakers on upper part of second arch 1

GREENLAND TURBOT

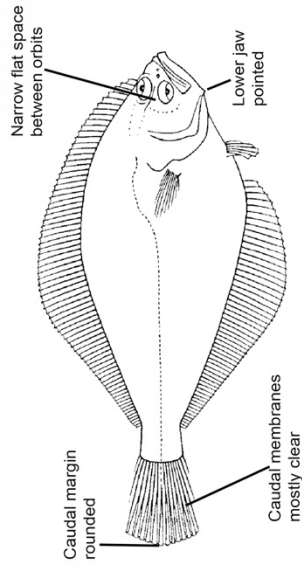


scales relatively small, smooth looking
blind side dark gray, but variable
large sharp teeth on roof of mouth

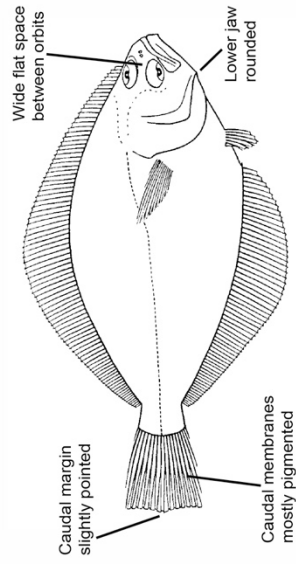
FLATHEAD SOLE



BERING FLOUNDER



PETRALE SOLE



	FLATHEAD SOLE	BERING FLOUNDER	PETRALE SOLE
Gill rakers on first arch*	≥ 17	≤ 17	> 17
Gill rakers on lower part of first arch*	≥ 14	≤ 14	≥ 14
Geographic range	AI, BS, GOA	BS	GOA
Depth range	0-1000 m	Usually < 100 m	0-500 m
Rows of teeth in upper jaw	1	1	2 (small)

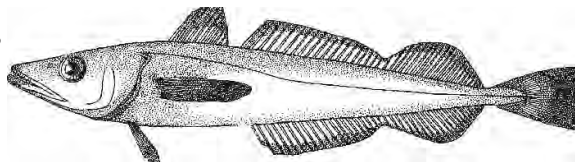
*Gill raker count is the primary and most reliable characteristic for differentiating Flathead Sole vs Bering flounder.

KEY TO THE CODS AND HAKES OF ALASKA

Figures from FAO Species Catalogue, Vol. 10 (1990)

Updated August 2024

- 1 Dorsal fins 2, second dorsal fin base long, second dorsal fin clearly indented; anal fin 1, base long covering most of the body between anus and caudal fin; chin barbel absent; lower jaw longer than upper.



Pacific Hake

Merluccius productus

Gulf of California to Gulf of Alaska

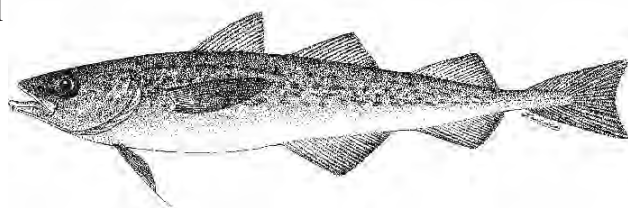
(max length: 92 cm; max weight: 4.2 kg)

- 1 Dorsal fins 3; anal fins 2; chin barbel present, although minute in some species 2

- 2(1) Lower jaw longer than upper jaw; chin barbel minute or absent, its length much less than pupil length, usually not discernable 3

- 2 Upper jaw longer than lower jaw; chin barbel small to large, its length greater than or equal to pupil length, always discernable 4

- 3(2) Caudal fin truncate or slightly forked; lateral line interrupted at origin of second dorsal and posterior; body mottled or blotched dorsally; fins grey to brown.



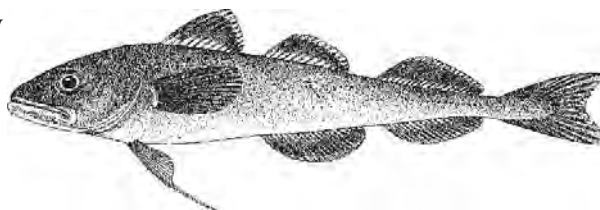
Pollock

Gadus chalcogrammus

Central California to Bering Sea

(max length: 95 cm; max weight: 5.2 kg)

- 3 Caudal fin deeply forked, with rounded lobes; lateral line broken, forming wavy curves; body with small, dark spots dorsally.



Arctic Cod

Boreogadus saida

Bering Sea

(max length: 25 cm; max weight: <1 kg)

4(2) Barbel thin and small, barbel length much less than diameter of orbit, about equal to diameter of *pupil* 5

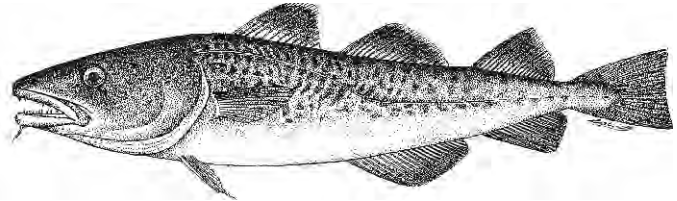
4 Barbel fleshy and long, barbel length greater than or equal to the diameter of orbit.

Pacific Cod

Gadus macrocephalus

Southern California to Bering Sea

(max length: 120 cm; max weight: 22 kg)



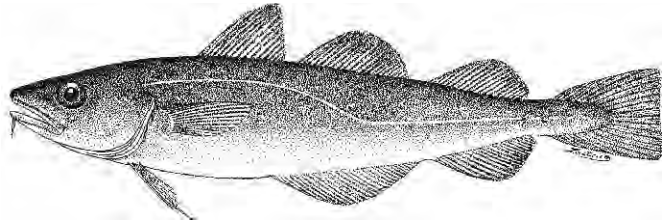
5(4) Anus positioned under first dorsal fin; lateral line interrupted only on caudal peduncle.

Pacific Tomcod

Microgadus proximus

Central California to South Bristol Bay

(max length: 40 cm; max weight: <1 kg)



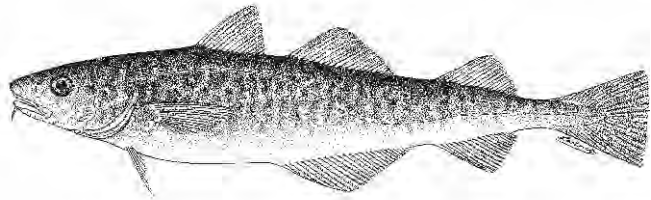
5 Anus positioned between first and second dorsal fins or under second dorsal fin; lateral line interrupted at about origin of second dorsal fin and posterior.

Saffron Cod

Eleginus gracilis

Gulf of Alaska to Bering Sea

(max length: 55 cm; max weight: <1 kg)



KEY TO THE SALMONIDS OF THE EASTERN NORTH PACIFIC

Figures from *A Field Guide to Coastal Fishes from Alaska to California*
(V. Kells, L. A. Rocha, L. G. Allen)

- 1 One or more large dark blotches on operculum; several X-shaped spots on body; mouth generally small, with jaw extending to about middle of eye
Atlantic Salmon (*Salmo salar*)
Not from Alaska*
(max length: 150 cm)



***Retain any Atlantic Salmon identified anywhere in Alaskan waters.**

- 1 Opercle without large dark blotches; spots on body, if present, round or irregular in shape, not X-shaped; mouth generally large, extending beyond eye..... 2

- 2(1) Numerous small densely packed, irregularly shaped spots on body, head, and fins; caudal fin slightly forked, emarginate, or truncate, with dark spots along rays on upper and lower lobe (10-13 per ray), and often with silver streaks along middle rays; anal fin rays 8-12.
Steelhead (Rainbow Trout) (*Oncorhynchus mykiss*)
Japan to California, Bering Sea
(max length: 78 cm)



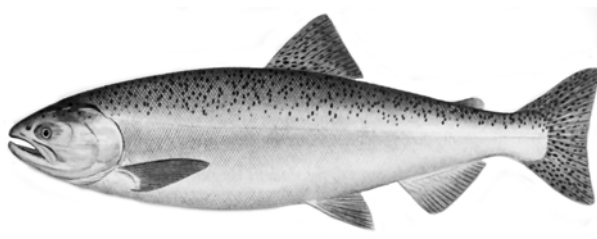
- 2 Few or no spots on body below the lateral line; caudal fin distinctly forked, with or without spots and silvering; anal fin rays 13-19 3

- 3(2) Caudal fin with uniform silver wash extending nearly to tips of rays, usually with spots on both lobes (may be difficult to distinguish), 4-8 per ray; mouth black at base of teeth; dark spots on back.

Chinook (King) Salmon (*Oncorhynchus tshawytscha*)

Japan to California, Bering Sea

(max length: 145 cm)



- 3 Caudal fin with or without silver wash, if present extending only 2/3 to 3/4 of fin length; caudal fin with or without spots, if present either 1-4 blotches per ray or spots limited to upper lobe; mouth not black at base of teeth (but may be mottled or gray); dark spots on back present or absent..... 4

- 4(3) Caudal fin without silver wash; caudal fin with oval blotches on both lobes, 1-4 per ray; scales small, 170 or more along lateral line, more than 30 scale rows between lateral line and dorsal fin; dark blotches on back.

Pink (Humpback) Salmon (*Oncorhynchus gorbuscha*)

Japan to California, Bering Sea

(max length: 80 cm)



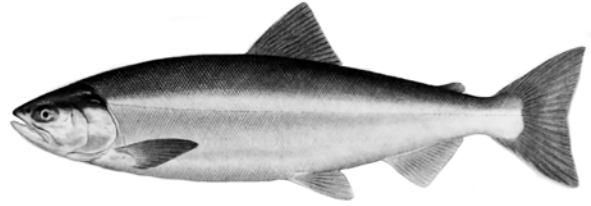
- 4 Caudal fin with or without silver wash; caudal fin without oval blotches, but may have small rounded spots on upper lobe; scales large, fewer than 155 along lateral line, 30 or fewer scale rows between lateral line and dorsal fin; dark spots on back present or absent..... 5

- 5(4) Caudal fin uniform dark without spots or silver; gill rakers long and thin, 28-40 rakers on first arch; body without spots, typically dark above and lighter below, head appears capped with dark.

Sockeye (Red) Salmon (*Oncorhynchus nerka*)

Japan to California, Bering Sea

(max length: 85 cm)



- 5 Caudal fin with spots and/or silver; gill rakers short and stout, 28 or fewer rakers on first arch; body with or without spots but without two-toned appearance 6

- 6(5) Caudal fin with discrete silver streaking on rays but not on membranes, streaks extending about 1/2 length of rays, caudal fin without spots; body without distinct spots on dorsal surface; caudal peduncle long and slender, its depth about 14 into standard length; teeth on lower edge of maxilla cannot be felt with mouth closed.

Chum (Dog) Salmon (*Oncorhynchus keta*)

Japan to California, Bering Sea

(max length: 110 cm)



- 6 Caudal fin with silver wash on both rays and membranes, extending about 3/4 length of rays, caudal fin usually with no spots but rarely spots present only on upper lobe; body with dark spots on dorsal surface; caudal peduncle short and thick, its depth about 11 into standard length; teeth on lower edge of maxilla can be felt with mouth closed.

Coho (Silver) Salmon (*Oncorhynchus kisutch*)

Japan to California, Bering Sea

(max length: 108 cm)



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ATLANTIC SALMON

(*Salmo salar*)

- (1) large dark spots on operculum
- (2) black x-shaped spots on back
- (3) narrow caudal peduncle
- (4) large scales
- (5) truncate caudal fin



spots on operculum

NOTE: If found, bring back the entire fish.



STEELHEAD TROUT

(*Oncorhynchus mykiss*)

- (1) many small black spots on body and fins
- (2) thick caudal peduncle
- (3) caudal fin truncate to weakly forked
- (4) dark spots along all caudal rays

PINK SALMON (*Oncorhynchus gorbuscha*)

- (1) scales small, 170 or more along lateral line, >30 rows between lateral line and dorsal fin
- (2) large oval blotches on both lobes of caudal fin
- (3) some spotting on back



mouth not a distinctive characteristic



blotches on both lobes and a dull gray background



scale size comparison between pink and Chinook salmon

CHINOOK SALMON (*Oncorhynchus tshawytscha*)

(1) mouth black at base of teeth (2) caudal fin with spots on both lobes and silver wash (3) irregular shaped but distinct black spots on back (4) dorsal area greenish-blue and black, silvery on sides



mouth black at base of teeth



faint spotting on both lobes



distinct spots on dorsum



prominent spots on both lobes

SOCKEYE SALMON (*Oncorhynchus nerka*)

(1) no spots or silver on caudal fin (2) dorsum blue-black, without spots (3) gill rakers long, thin, >28 on first arch



long, thin gill rakers



mouth not a distinctive characteristic



no distinct spots on dorsum and blue-black color



no spots or silver on caudal fin

CHUM SALMON (*Oncorhynchus keta*)

(1) no spots on caudal fin (2) discrete silver streaks on caudal rays for half the length, not on membranes (3) no distinct spots on dorsal surface or caudal fin



mouth not a distinctive characteristic



silver streaks on rays, but not on the membranes



no distinct spots on dorsal surface

COHO SALMON (*Oncorhynchus kisutch*)

(1) caudal fin typically with no spots, rarely with spots only on upper lobe (2) silver wash on caudal rays AND membranes, extending about 3/4 length (3) dark spots on dorsal surface (4) gums white at base of teeth



silver on rays and membranes,
no spots



distinct black rim and whitish
color at base of teeth



spots on dorsal
surface



white at base of teeth



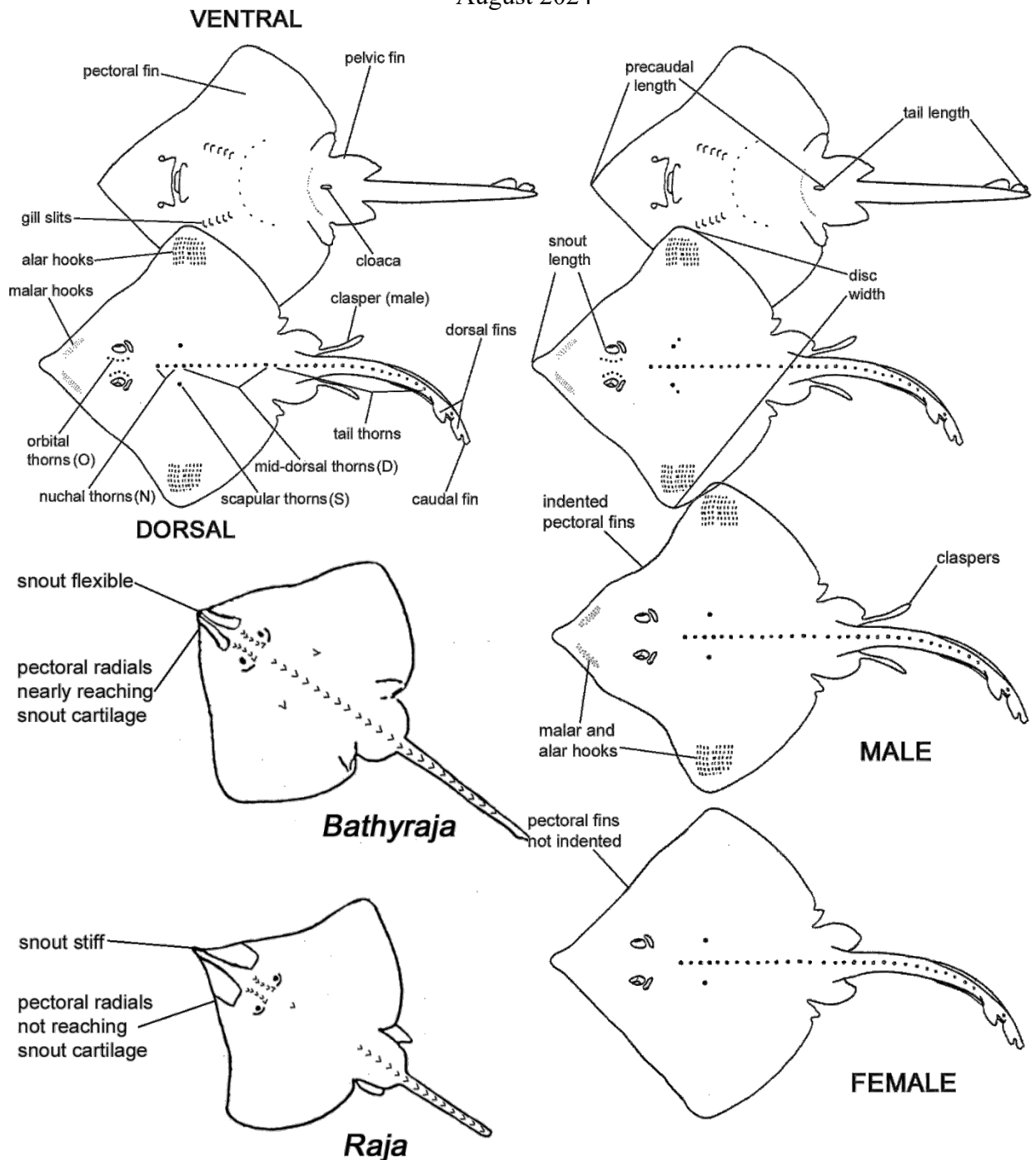
black at base of teeth



faint spots on upper lobe and
silver wash on rays and membranes

KEY TO THE SKATES (RAJIFORMES) OF ALASKA

August 2024



Information and Images from:

Stevenson, D.E., J.W. Orr, G.R. Hoff, and J.D. McEachran. 2007

Field guide to sharks, skates, and ratfish of Alaska. Alaska Sea Grant College Program,
University of Alaska Fairbanks

Mecklenburg, C. W., T.A. Mecklenburg, and L. K. Thorsteinson. 2002.

Fishes of Alaska. American Fisheries Society

1 Snout firm to tip (may be broken); pectoral fin rays not reaching close to tip of snout, creating squared off “windows” beside snout.....(genus *Raja*).....2

1 Snout flexible, especially near tip; pectoral fin rays nearly reach tip of snout, leaving narrow crescent-shaped “windows” beside snout.....(genus *Bathyraja*).....4

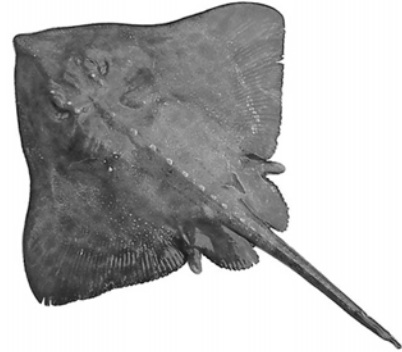
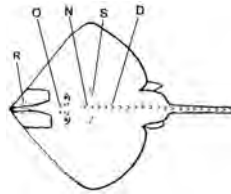
2(1) Two or three pairs of scapular thorns; small rostral thorns present on dorsal surface near tip of snout.

***Roughshoulder Skate (*Raja badia*)**

Bering Sea to California

Depth: 700–1270 fm (1280–2322 m)

(max length: 112 cm)



2 Scapular and rostral thorns absent 3

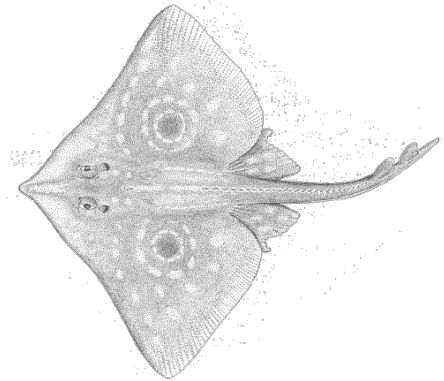
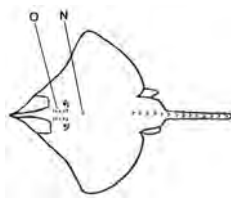
3(2) Base of pectoral fin with large ocellus surrounded by ring of light spots; ventral surface nearly white; body diamond-shaped; posterolateral margin of pelvic fin slightly concave.

Big Skate (*Raja binoculata*)

SE Bering Sea to California

Depth: 8–437 fm (16–800 m)

(max length: 244 cm)



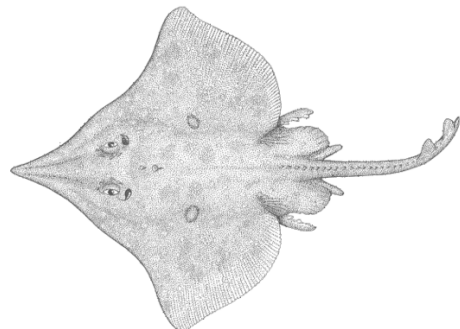
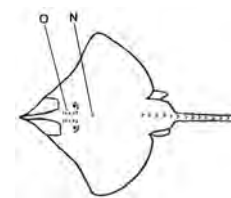
3 Base of pectoral fin with ring of dark pigment; ventral surface dark; body elongate with very long snout; posterolateral margin of pelvic fin deeply notched.

Longnose Skate (*Raja rhina*)

Bering Sea to California

Depth: 13–370 fm (24–675 m)

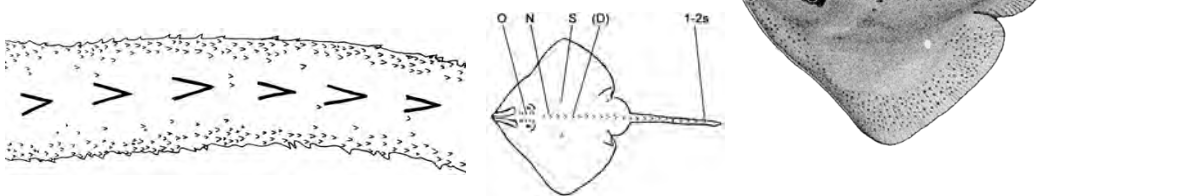
(max length: 180 cm)



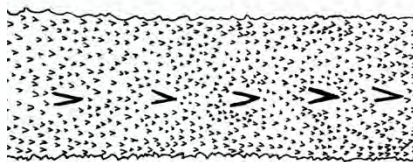
- 4(1) Scapular thorns present, ventral surface light 5
- 4 Scapular thorns absent, ventral surface light or about same color as dorsal surface 7

- 5(4) Denticles absent from area surrounding tail thorns; orbital thorns may be present; ventral surface light.

Alaska Skate (*Bathyraja parmifera*)
Aleutian Islands, Bering Sea, Gulf of Alaska
Depth: 9–330 fm (17–600 m)
(max length: 179 cm)

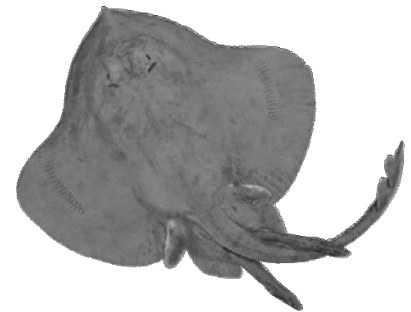
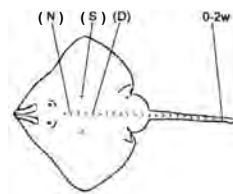


- 5 Denticles surrounding tail thorns; orbital thorns absent..... 6



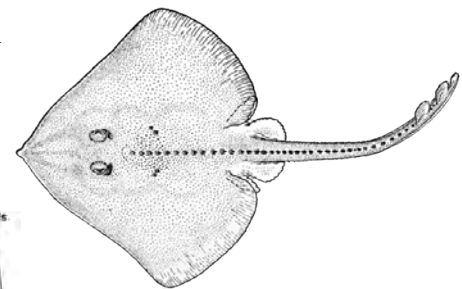
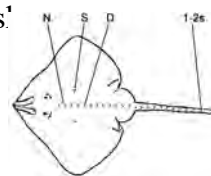
- 6(5) Mid-dorsal row of thorns usually interrupted; thorns on disc significantly reduced in some specimens; tail thorns reduced along length of tail, 0-2 reduced thorns between dorsal fins; dorsal surface brown; ventral surface white.

Bering Skate (*Bathyraja interrupta*)
Bering Sea to California
Depth: 14–755 fm (26–1380 m)
(max length: 89 cm)



- 6 Mid-dorsal row of thorns continuous (may be worn down in older specimens); tail thorns not reduced along length of tail, 1–2 strong thorns between dorsal fins; dorsal surface gray; ventral surface light.

Aleutian Skate (*Bathyraja aleutica*)
Aleutian Islands, Bering Sea, Gulf of Alas'
Depth: 15–520 fm (29–950 m)
(max length: 177 cm)



- 7(4) Ventral surface typically white, or light with dusky blotches 8
- 7 Ventral surface predominantly dark, about the same color as dorsal surface..... 9

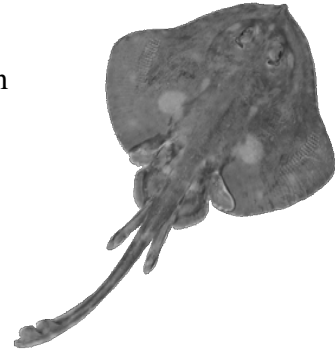
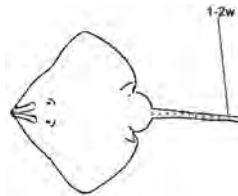
- 8(7) All disc thorns absent; dorsal surface in life brown, often with black and/or yellowish blotches; ventral surface of disc creamy white, tail light or dark but without a distinct line.

Mud Skate (*Bathyraja taranetzi*)

Aleutian Islands, Bering Sea

Depth: 9–690 fm (17–1263 m)

(max length: 77 cm)



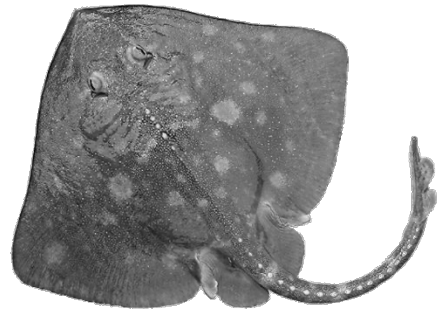
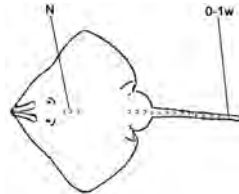
- 8 Nuchal thorns present; dorsal surface gray with white blotches; ventral surface of disc light and blotchy, with dark tail typically separated from lighter disk by a distinct line.

Whiteblotched Skate (*Bathyraja maculata*)

Aleutian Islands, Bering Sea

Depth: 40–656 fm (73–1200 m)

(max length: 147 cm)



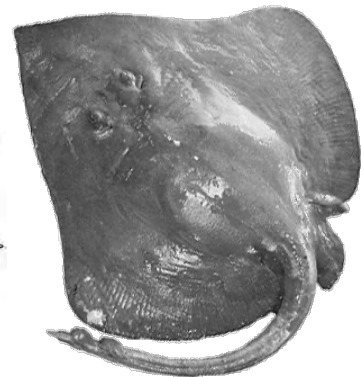
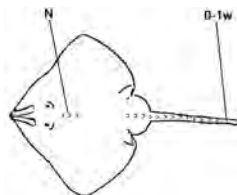
- 9(7) Fine denticles on VENTRAL surface (underside) of disc and tail

***Deepsea Skate (*Bathyraja abyssicola*)**

Japan to California, Bering Sea

Depth: 198–1588 fm (362–2905 m)

(max length: 157 cm)



- 9 Ventral surface of disc and tail smooth..... 10

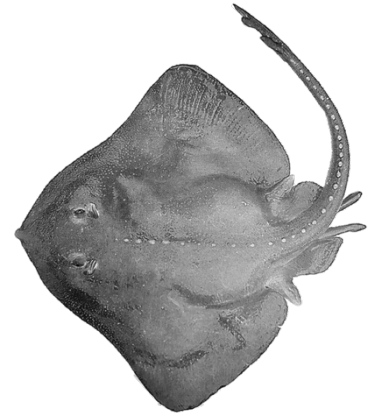
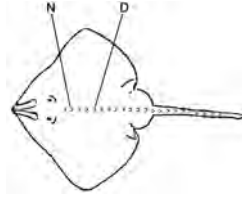
10(9) Mid-dorsal thorns present

Commander Skate (*Bathyraja lindbergi*)

Bering Sea, Aleutian Islands, Japan

Depth: 87–656 fm (160–1200 m)

(max length: 121 cm)



10 Mid-dorsal thorns absent..... 11

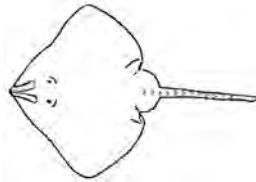
11(10) Nuchal thorns absent; dorsal surface uniformly dark brown to black

Roughtail Skate (*Bathyraja trachura*)

Japan to California, Bering Sea

Depth: 116–822 fm (213–1504 m)

(max length: 94 cm)



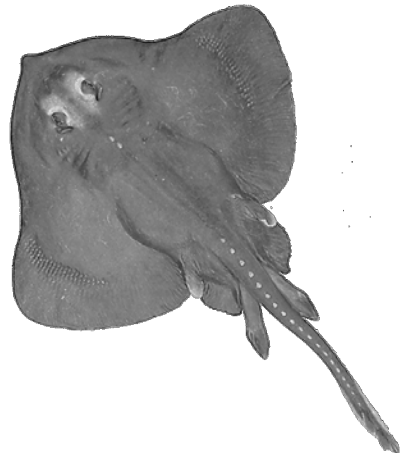
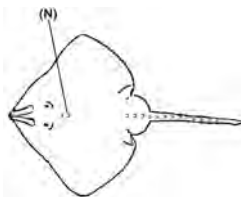
11 Nuchal thorns present; dorsal surface dark, usually with white patches between eyes

Whitebrow Skate (*Bathyraja minispinosa*)

Japan to California, Bering Sea

Depth: 87–776 fm (160–1420 m)

(max length: 92 cm)



***Confirmation is required for Roughshoulder and Deepsea skates, as well as any skate not found in this key or any skate found out of range.**

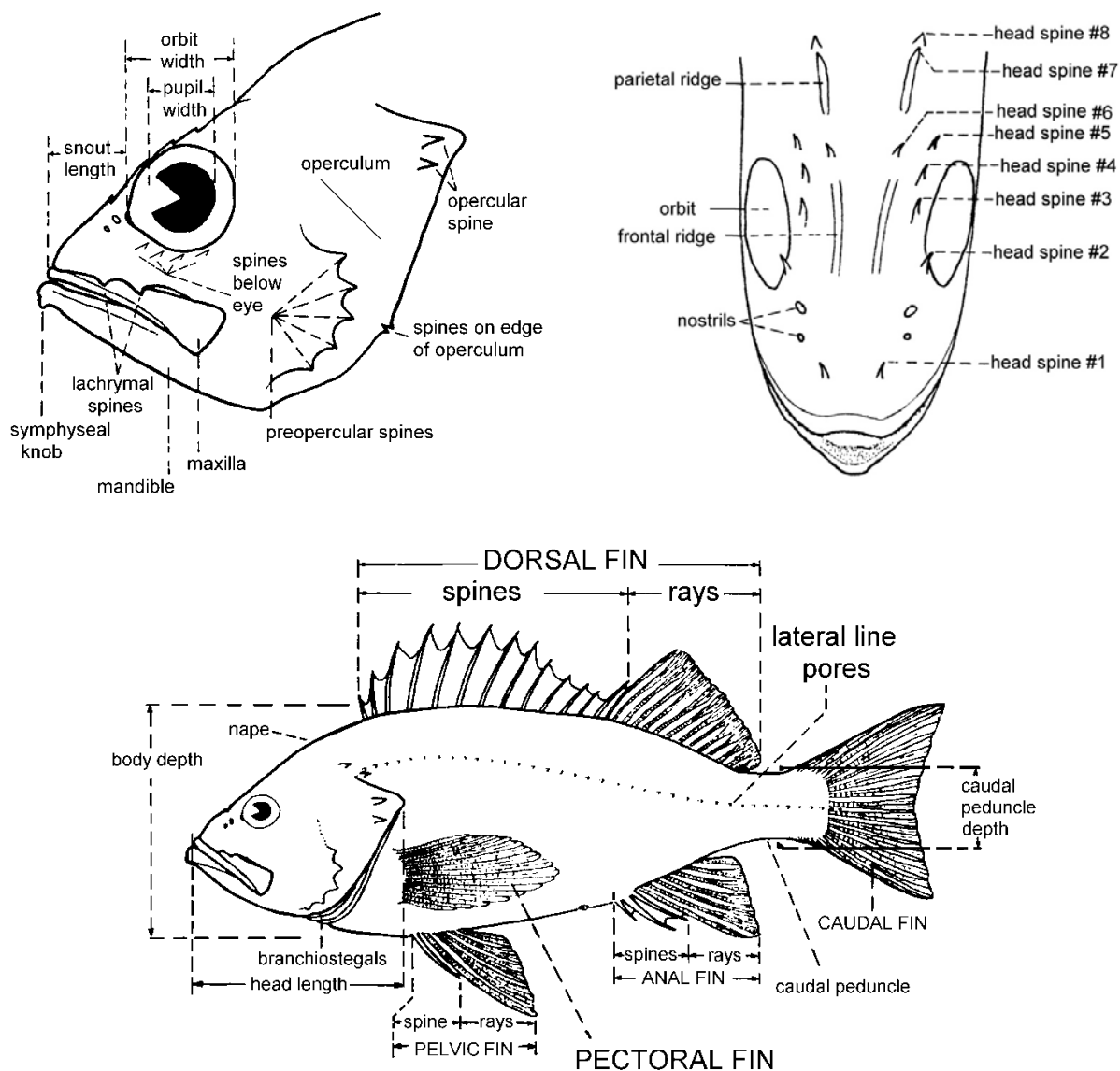
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Field Guide to the Rockfishes (Scorpaenidae) of Alaska

Extracted from:

Orr, J. W., M. A. Brown, and D. C. Baker. 2000. Guide to rockfishes (Scorpaenidae) of the genera *Sebastes*, *Sebastolobus*, and *Adelosebastes* of the Northeast Pacific Ocean, second edition. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-117, 47p.

Updated August 2024



TIPS FOR USING THE ROCKFISH FIELD GUIDE

Rockfishes are a difficult group of species to identify. It is often the case that a rockfish in hand possess distinctive characters of several species. Because of this, it is difficult to produce a dichotomous key for rockfishes. Instead, it is important to make species identification based on the **WEIGHT OF EVIDENCE**. In other words, multiple characters need to be taken into account for each species identification. To do this tally up the number of characters the fish you are trying to identify shares with each of the likely species (plural) and choose the species that shares the most characters. It may be a tie. In that case, go for the most distinctive and less variable characters. Once a provisional identification has been made, it is often helpful to spend some time **REVIEWING ADDITIONAL CHARACTERS** for that species and comparing with those mentions in the **SIMILAR SPECIES** sections.

The following should be taken into account when using the rockfish guide:

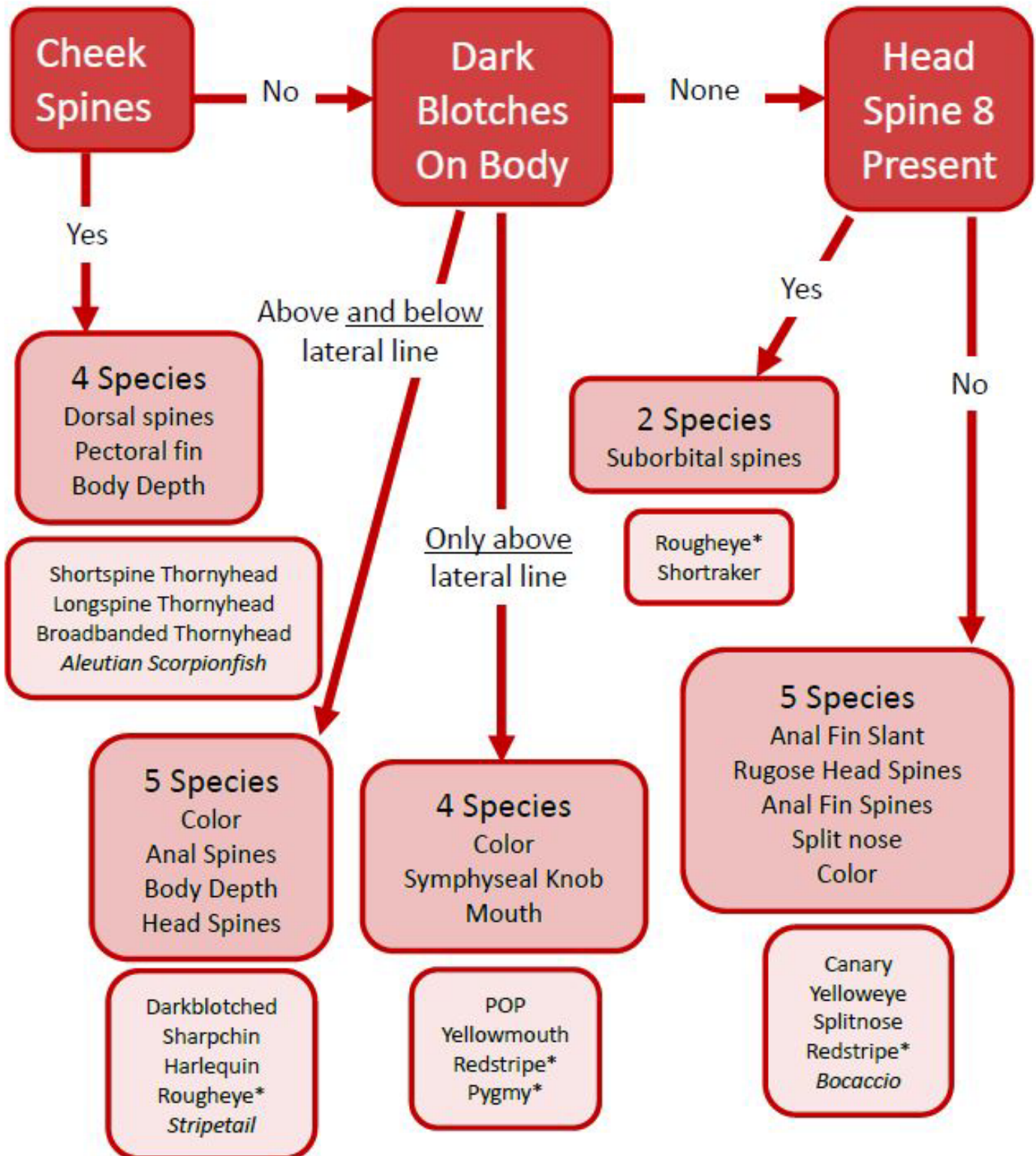
- **ALWAYS TAKE A SYSTEMATIC APPROACH.** Don't flip wildly through the guide looking for a characters you've recognized in the fish in hand. This is a recipe for quick confusion. Instead, follow the flowchart to narrow down to a few candidate species and compare from there.
- **DO NOT PICTURE KEY.** Matching the specimen in hand to the picture in the guide does not work. Rockfishes are too variable—no one picture could capture the variation of a species.
- No matter how sure you are of your ID, **ALWAYS READ THE "SIMILAR SPECIES" SECTION.**
- Use the number of **HEAD SPINES FOR RED CATEGORY ROCKFISHES**, rely less on peritoneum color.
- Use **PERITONEUM COLOR FOR BLACK CATEGORY ROCKFISHES**, rely less on head spine count

Steps for Identifying Rockfish

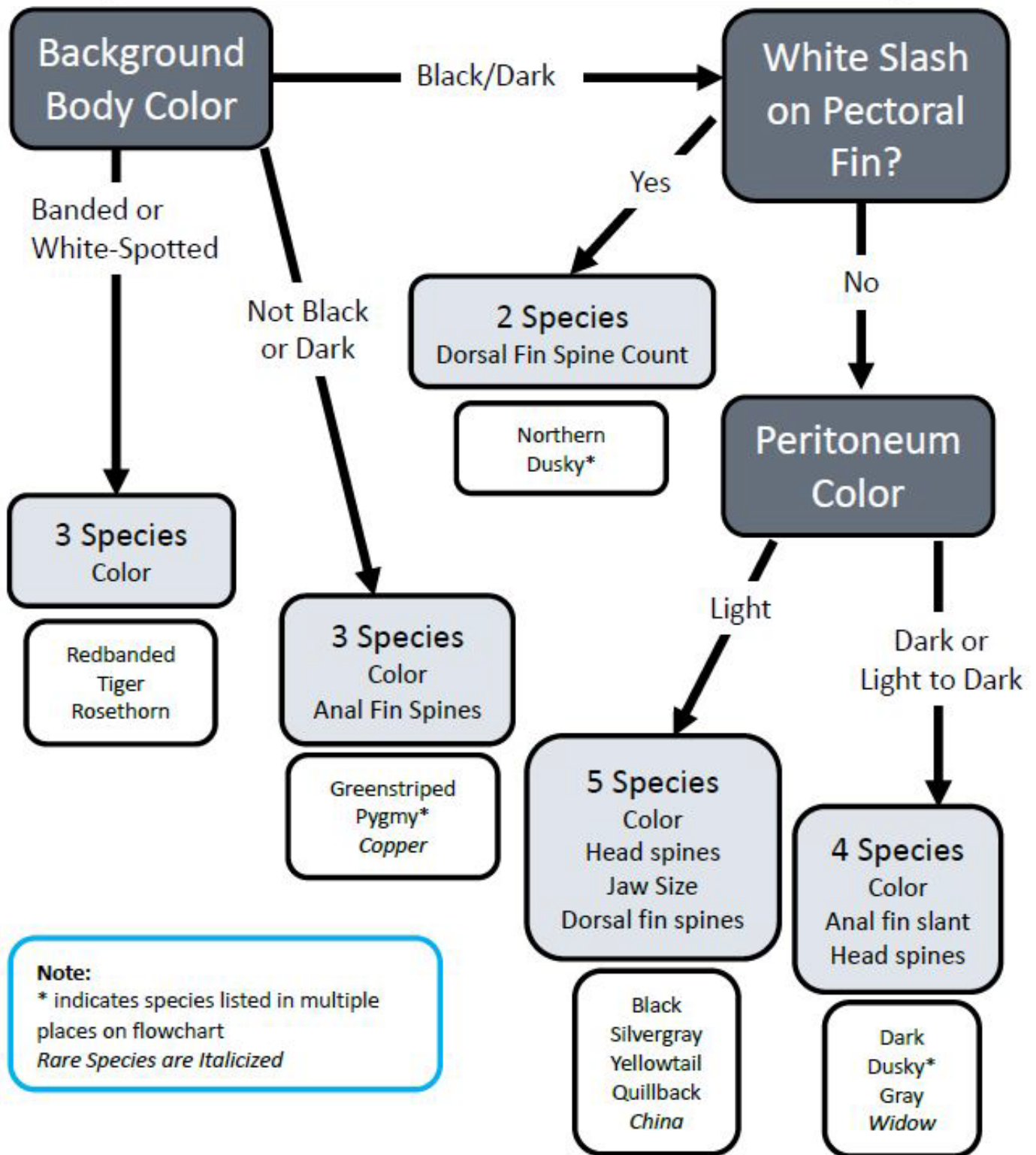
1. Select the appropriate color category
 - a. **Red category** rockfishes have a background color that is predominately red, orange, yellow, or pink. Within the red color category there may be some dark (brown to black) blotches present on the body and the extent of this blotching is a useful characteristic.
 - b. **Non-Red rockfishes** are rockfish in any of the remaining color categories which are the Black category, Banded category, White-spotted category, or Other category.
 - i. **Black category** rockfishes have a background color that is predominately dark, either brown to black or dark olive green.
 - ii. **Banded category** rockfishes have 4–6 discrete vertical bands of color on the side of the body.
 - iii. **White-spotted** rockfishes have a red background with distinct white spots on the dorsum.
 - iv. **Other category** rockfishes have a predominately light (whitish) background color with some other light color (light copper or green) on top of the background color.
2. Follow the appropriate flow chart for the selected color category. Answering the questions on the flowchart will narrow down the options, leaving you with between 2 and 5 potential species.
3. Go to the correct section of the Field Guide and compare the characters listed on the flowchart to the character state for each potential species. Use the weight of evidence to assess which species has the most matching characters to the fish in hand. *Review the Similar Species text to be certain of your ID.*

Red Rockfish Flowchart

See Reverse
for notes



Non-Red Rockfish Flowchart



LIST OF SPECIES

RED CATEGORY

CHEEK SPINES PRESENT

Shortspine thornyhead	<i>Sebastolobus alascanus</i>60
Longspine thornyhead	<i>Sebastolobus altivelis</i>60
Broadbanded thornyhead	<i>Sebastolobus macrochir</i> 61
Aleutian scorpionfish	<i>Adelosebastes latens</i>61

DARK BLOTCHES ONLY ABOVE LATERAL LINE

Pacific ocean perch	<i>Sebastes alutus</i>62
Redstripe rockfish	<i>Sebastes proriger</i> 62
Yellowmouth rockfish	<i>Sebastes reedi</i> 63
Pygmy rockfish	<i>Sebastes wilsoni</i> 63

DARK BLOTCHES ABOVE AND BELOW LATERAL LINE

Darkblotched rockfish	<i>Sebastes crameri</i> 64
Sharpchin rockfish	<i>Sebastes zacentrus</i> 64
Harlequin rockfish	<i>Sebastes variegatus</i>65
Stripetail rockfish	<i>Sebastes saxicola</i> 65

NO DARK BLOTCHES

Shortraker rockfish	<i>Sebastes borealis</i> 66
Rougeye rockfish	<i>Sebastes aleutianus</i> 66
Yelloweye rockfish	<i>Sebastes ruberrimus</i> 67
Canary rockfish	<i>Sebastes pinniger</i> 67
Splitnose rockfish	<i>Sebastes diploproa</i> 68
Bocaccio	<i>Sebastes paucispinis</i>68

OTHER COLOR CATEGORY

BANDED OR WHITE-SPOTTED

Redbanded rockfish	<i>Sebastes babcocki</i> 69
Tiger rockfish	<i>Sebastes nigrocinctus</i> 69
Rosethorn rockfish	<i>Sebastes helvomaculatus</i> ...70

OTHER

Greenstriped rockfish	<i>Sebastes elongatus</i> 71
Copper rockfish	<i>Sebastes caurinus</i> 71

BLACK CATEGORY

PERITONEUM NOT LIGHT

Northern rockfish	<i>Sebastes polyspinis</i> 72
Dusky rockfish	<i>Sebastes variabilis</i> 72
Dark rockfish	<i>Sebastes ciliatus</i> 73
Widow rockfish	<i>Sebastes entomelas</i> 74
Gray rockfish	<i>Sebastes glaucus</i> 74

PERITONEUM LIGHT

Black rockfish	<i>Sebastes melanops</i> 73
Yellowtail rockfish	<i>Sebastes flavidus</i> 75
Silvergray rockfish	<i>Sebastes brevispinis</i> 75
Quillback rockfish	<i>Sebastes maliger</i> 76
China rockfish	<i>Sebastes nebulosus</i> 76

Body color: Bright red to pink, often w/ dusky to black areas on fins and body, dark spot on posterior part of spinous dorsal fin.

Maximum length: 81 cm

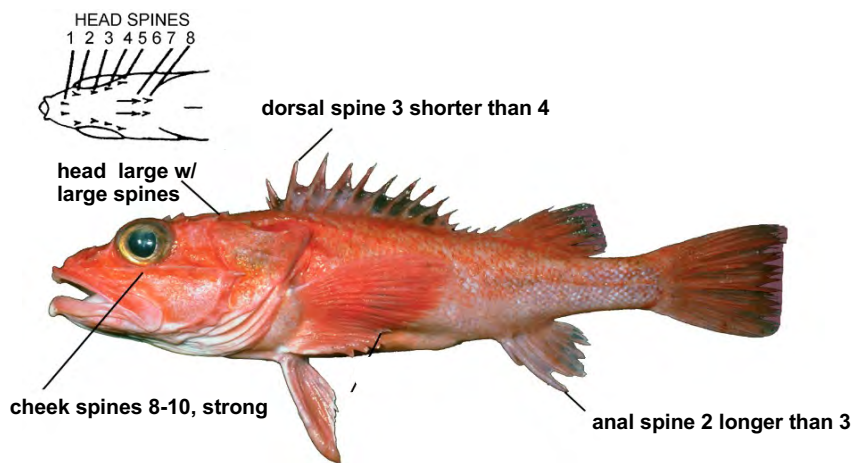
Peritoneum color: light w/ spots

Maximum depth: 834 fm (1524 m)

Head Spines: strong

Common depth: 55-465 fm (100-850 m)

Distribution: Bering Sea – Aleutian Islands – Gulf of Alaska



SHORTSPINE THORNYHEAD *Sebastolobus alascanus*

Similar species:

Longspine Thornyhead - dorsal spine 3 much longer than 4; gill chamber mostly black; dorsal spines typically 15 (typically 16 in Shortspine Thornyhead).

Broadbanded Thornyhead - lower pectoral rays highly branched, thickened at base of ray, and elongate, nearly the same length as rays of upper pectoral; body deeper.

Aleutian Scorpionfish (genus *Adelosebastes*) - cheek spines 1-2, weak; lower pectoral rays fingerlike; head spines very large; body deep.

Other Rockfishes (genus *Sebastes*) - cheek spines absent; pectoral fin wedge-shaped w/out notch; body deep; dorsal spines 12-15 (15-18 in Shortspine Thornyhead).

RED

CHEEK SPINES PRESENT

SHORTSPINE THORNYHEAD

Body color: Bright red w/ black areas on fins and body, dark spot on posterior part of spinous dorsal fin; gill chamber mostly dark.

Maximum length: 39 cm

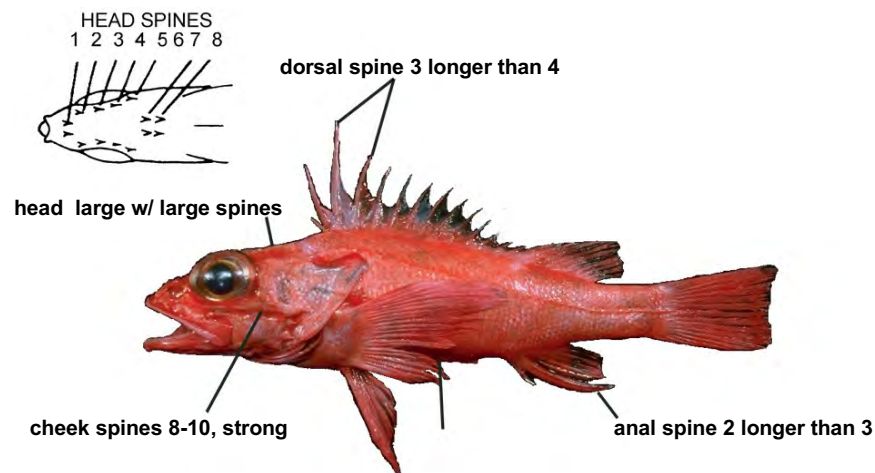
Peritoneum color: light w/ spots

Maximum depth: 960 fm (1755 m)

Head Spines: strong

Common depth: 167-971 fm (305-1775 m)

Distribution: Gulf of Alaska



LONGSPINE THORNYHEAD *Sebastolobus altivelis*

Similar species:

Shortspine Thornyhead - dorsal spine 3 shorter than 4; gill chamber mostly pale; dorsal spines typically 16 (typically 15 in Longspine Thornyhead).

Broadbanded Thornyhead - lower pectoral rays highly branched, thickened at base of ray, and elongate, nearly the same length as rays of upper pectoral; body deeper.

Aleutian Scorpionfish (genus *Adelosebastes*) - cheek spines 1-2, weak; lower pectoral rays fingerlike; head spines very large; body deep.

Other Rockfishes (genus *Sebastes*) - cheek spines absent; pectoral fin wedge-shaped w/out notch; body deep; dorsal spines 12-15 (15-17 in Longspine Thornyhead).

RED

CHEEK SPINES PRESENT

LONGSPINE THORNYHEAD

Body color: Bright red-orange to pink; membranes between posterior-most dorsal spines black.

Maximum length: 41 cm

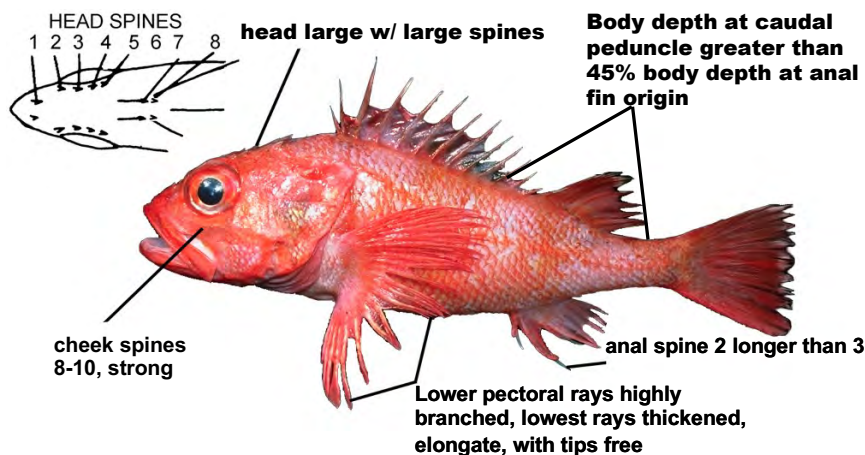
Maximum depth: 438 fm (800 m)

Common depth: 82-274 fm (150-500 m)

Distribution: Bering Sea

Peritoneum color: light

Head Spines: strong



BROADBANDED THORNYHEAD *Sebastes macrochir*

Similar species:

Shortspine Thornyhead - lower pectoral fin rays not highly branched; body less deep; caudal peduncle depth >45% body depth at anal-fin origin (<45% in Broadbanded Thornyhead).

Longspine Thornyhead - lower pectoral rays not highly branched; body less deep.

Aleutian Scorpionfish (genus *Adelosebastes*) - cheek spines 1-2, weak; lower pectoral rays fingerlike; head spines very large; body deep.

Other Rockfishes (genus *Sebastes*) - cheek spines absent; pectoral fin rounded, lacking notch; dorsal spines 12-15 (14-16 in Broadbanded Thornyhead).

RED

CHEEK SPINES PRESENT

BROADBANDED THORNYHEAD

Body color: Bright crimson red; dusky mottling on back forming 3 faint saddles; ventral pectoral rays pink; dusky area on dorsal-most pectoral rays.

Maximum length: 41 cm

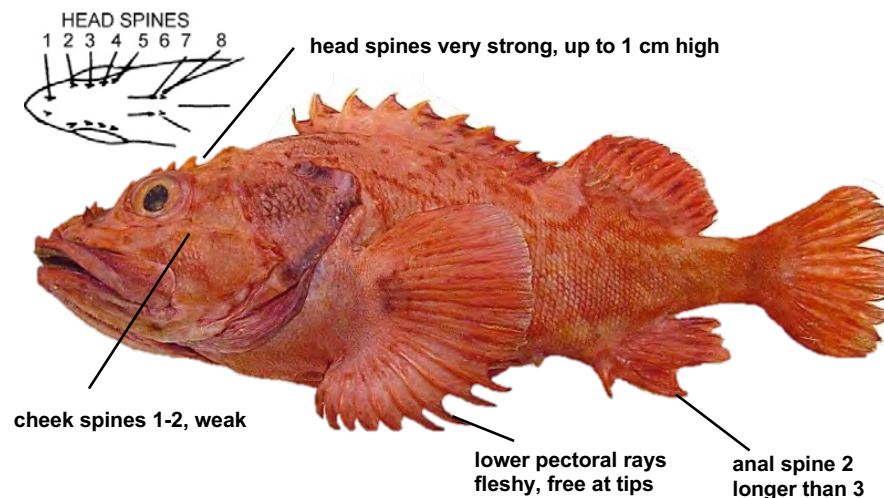
Maximum depth: 657 fm (1200 m)

Common depth: >356 fm (>650 m)

Distribution: Aleutian Islands

Peritoneum color: gray w/ black spots

Head Spines: strong



ALEUTIAN SCORPIONFISH

Adelosebastes latens

Similar species:

Thornyheads (genus *Sebastes*) - cheek spines 5-10, strong; dorsal spines 15-17 (12-13 in Aleutian Scorpionfish).

Other Rockfishes (genus *Sebastes*) - cheek spines absent; pectoral fin rounded, lacking notch, wedge-shaped (slightly notched in Aleutian Scorpionfish); lower jaw equal to or longer than upper jaw (shorter than upper jaw in Aleutian Scorpionfish).

RED

CHEEK SPINES PRESENT

ALEUTIAN SCORPIONFISH

Body color: Light red, including fins; dark rectangular blotch(es) on back under soft dorsal fin and on caudal peduncle.

Maximum length: 55 cm

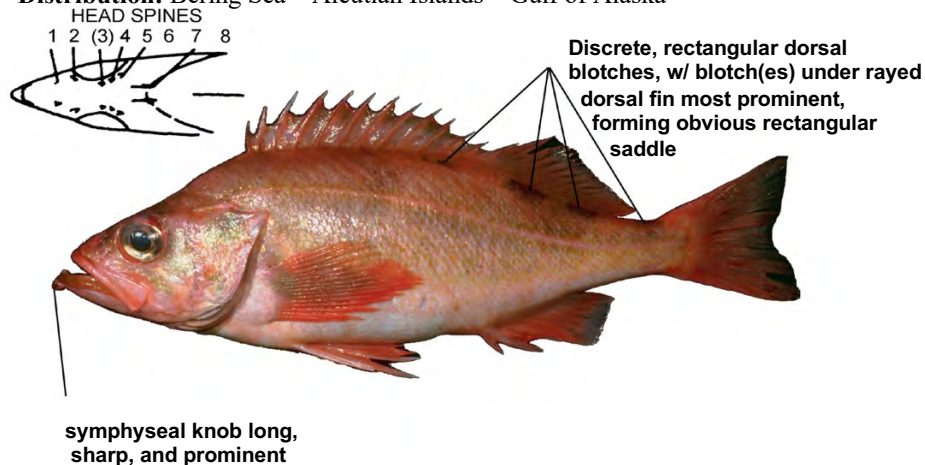
Peritoneum color: dark

Maximum depth: 451 fm (825 m)

Head Spines: weak

Common depth: 55-192 fm (100-350 m)

Distribution: Bering Sea – Aleutian Islands – Gulf of Alaska



PACIFIC OCEAN PERCH

Sebastes alutus

Similar species:

Yellowmouth RF - symphyseal knob weaker, rounded; yellow, red, and black blotches inside mouth; specimens <40 cm w/ discrete opercular blotch, diffuse dorsal blotches; 57-67 scales below lateral line (43-55 in POP).

Sharpchin RF - dorsal blotches large w/ at least one extending across lateral line; forked bar radiates from eye; head spines strong and count differs; anal spine 2 longer than 3; dorsal rays typically 14 (typically 15 in POP); anal rays typically 7 (typically 8 in POP); pectoral rays typically 17 (typically 18 in POP).

Redstripe RF - lateral line light, contrasted by dark mottling above and below; head spine count typically differs.

Northern RF - dorsal spines typically 14; dark bars radiate posteriorly from eye; pectoral fin w/ oblique pink slash on ventral portion; head spine count differs.

RED

BLOTCHES ONLY ABOVE LL

PACIFIC OCEAN PERCH

Body color: Light red, mottled w/ olive dorsally and flushed w/ yellow on lower sides; lateral line in a clear, light-red zone, bordered by dark olivaceous mottling; lips blackened.

Maximum length: 52 cm

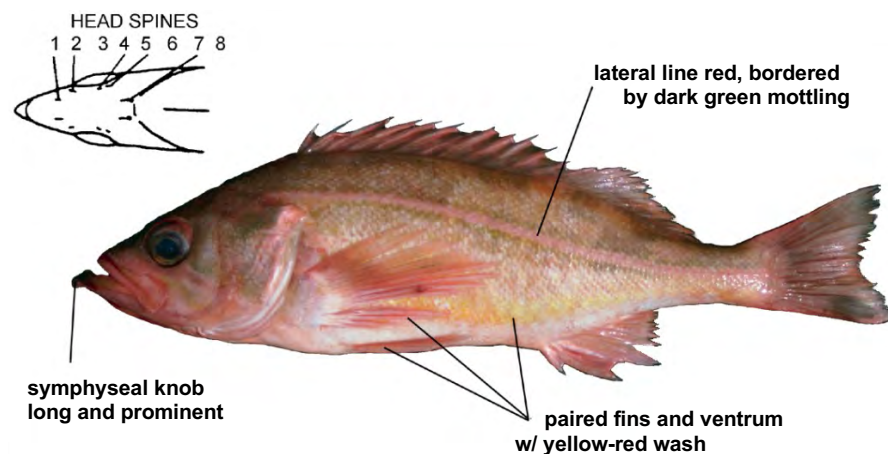
Peritoneum color: dark

Maximum depth: 233 fm (425 m)

Head Spines: weak

Common depth: 55-164 fm (100-300 m)

Distribution: Bering Sea – Aleutian Islands – Gulf of Alaska



REDSTRIPE ROCKFISH

Sebastes proriger

Similar species:

Yellowmouth RF - symphyseal knob weaker, rounded; yellow and black blotches inside pinkish mouth; diffuse dark dorsal blotches (green mottling in Redstripe RF).

Northern RF - dorsal spines typically 14 (13 in Redstripe RF); dark bars radiate posteriorly from eye; pink slash on ventral portion of pectoral fin; head spine count differs.

Sharpchin RF - dorsal blotches large w/ at least one extending across lateral line; forked bar radiates posteriorly from eye; head spines strong and count differs; anal spine 2 longer 3 (equal in length in Redstripe RF).

Pacific Ocean Perch - lateral line not bordered by mottling; head spine count typically differs.

RED

BLOTCHES ONLY ABOVE LL

REDSTRIPE ROCKFISH

Body color: Red intermixed w/ yellow-orange (or black in individuals < 40 cm); diffuse olivaceous mottling on back; mouth w/ yellow, red and black blotches on whitish background.

Maximum length: 51 cm

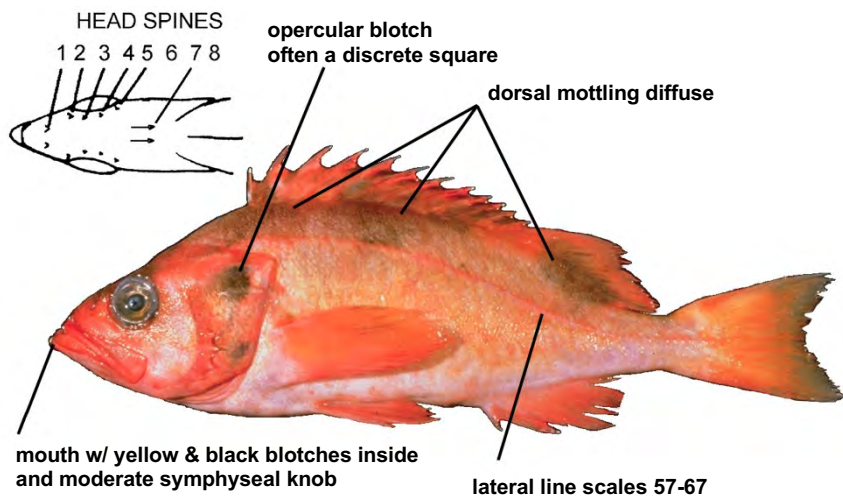
Peritoneum color: silver w/black dots

Maximum depth: 200 fm (366 m)

Head Spines: weak

Common depth: 65-180 fm (120-330 m)

Distribution: Gulf of Alaska



YELLOWMOUTH ROCKFISH

Sebastes reedi

Similar species:

Pacific Ocean Perch - symphyseal knob sharp, elongate; no yellow blotches inside mouth; dorsal blotches discrete, opercular blotch diffuse; 49-55 lateral line scales.

Redstripe RF - lateral line light, contrasted by dark mottling above and below; head spine count differs; gill rakers 36-43 (30-36 in Yellowmouth RF).

Sharpchin RF - dorsal blotches large w/ at least one extending across lateral line; forked bar radiates posteriorly from eye; head spines strong and count differs; 43-50 scales below lateral line; anal spine 2 longer than 3.

Rougheye RF, Shortraker RF, and Blackgill RF - head spines strong and count differs; 32-55 scales below lateral line; 0-8 spines below eye.

RED

BLOTCHES ONLY ABOVE LL

YELLOWMOUTH ROCKFISH

Body color: Light brown, flushed w/ red; about 4 dark blotches along base of dorsal fin; a brownish-red stripe below lateral line.

Maximum length: 28 cm

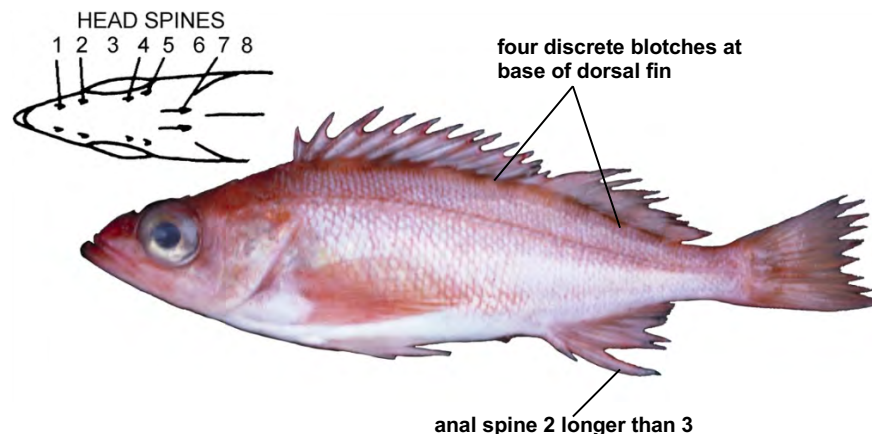
Peritoneum color: dark

Maximum depth: 150 fm (274 m)

Head Spines: strong

Common depth: 16-150 fm (30-274 m)

Distribution: Gulf of Alaska



PYGMY ROCKFISH

Sebastes wilsoni

Similar species:

Pacific Ocean Perch - symphyseal knob sharp, elongate; head spines weak and count differs; anal spine 2 shorter than 3.

Sharpchin RF - dorsal blotches extend below lateral line; symphyseal knob sharp and prominent; strong dark stripes extend posterior to eye.

RED

BLOTCHES ONLY ABOVE LL

PYGMY ROCKFISH

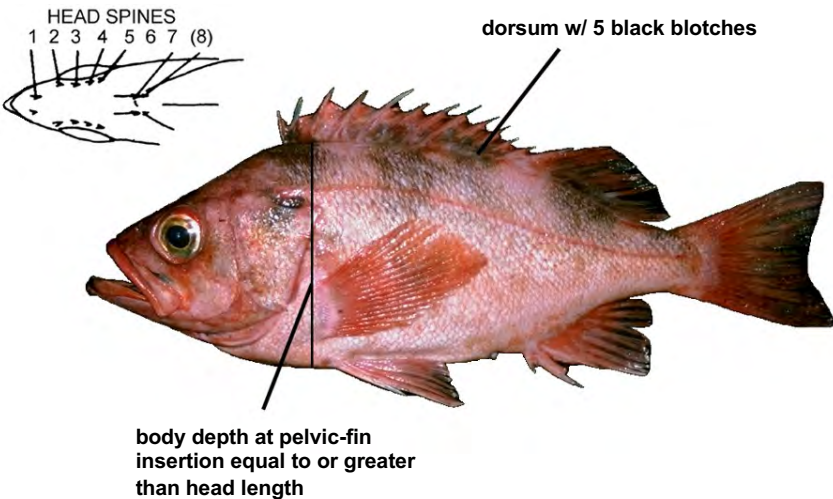
Body color: Reddish w/ five discrete black blotches on back, extending across lateral line.

Maximum length: 58 cm

Maximum depth: 328 fm (600 m)

Common depth: 55-192 fm (100-350 m)

Distribution: Bering Sea – Aleutian Islands – Gulf of Alaska



DARKBLOTCHED ROCKFISH

Sebastes crameri

Similar species:

Sharpchin RF - symphyseal knob prominent; edge of operculum smooth (1-2 spines in Darkblotched RF); anal spine 2 longer than 3; head spines stronger and count differs.

Harlequin RF - posterior two-thirds of lateral line clear; dorsal fin blackish; anal spine 2 longer than 3; head spines stronger and count differs.

Pacific Ocean Perch - dorsal blotches do not extend below lateral line; symphyseal knob elongate, sharp; head spines weaker and count typically differs.

Yellowmouth RF - yellow blotches inside mouth; dorsal blotches diffuse and do not extend below lateral line; head spines stronger and count differs.

RED

BLOTCHES ABOVE + BELOW LL

DARKBLOTCHED ROCKFISH

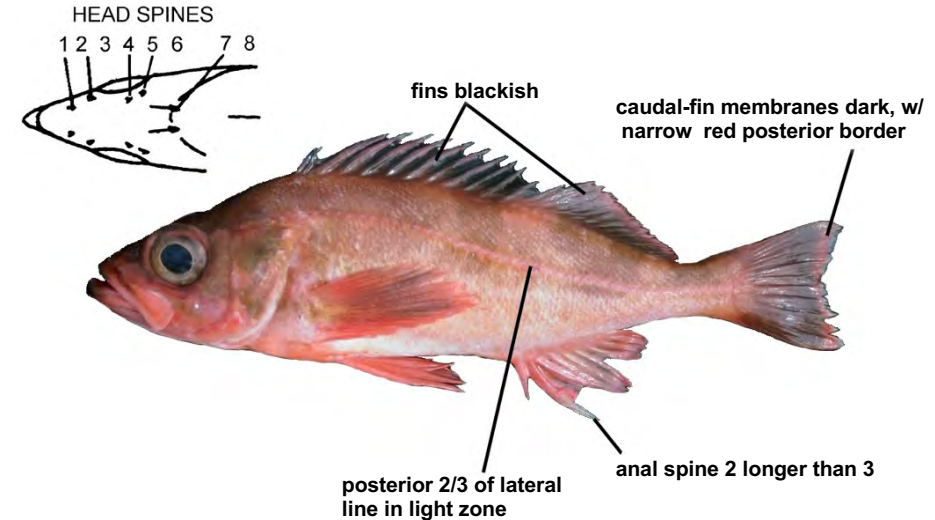
Body color: Pink to dark red, w/ dark blotches; posterior two-thirds of lateral line clear.

Maximum length: 41 cm

Maximum depth: 305 fm (558 m)

Common depth: 55-192 fm (100-350 m)

Distribution: Bering Sea – Aleutian Islands – Gulf of Alaska



HARLEQUIN ROCKFISH

Sebastes variegatus

Similar species:

Sharpchin RF - lateral line pigmented, dorsal blotches cross w/o break; symphyseal knob prominent; dorsal and caudal fin membranes reddish.

Redstripe RF - lateral line clear for its entire length, olive mottling dorsally and ventrally; anal spine 2 equal to or shorter than 3; head spines weak.

Darkblotched RF - body w/ 4 or 5 distinct dark blotches crossing lateral line; body deep, depth > head length; head spine count differs; anal spine 2 shorter than 3.

Pacific Ocean Perch - body w/ small discrete dorsal blotches at base of fin; head spines weak and count differs; symphyseal knob prominent (moderate in Harlequin RF).

RED

BLOTCHES ABOVE + BELOW LL

HARLEQUIN ROCKFISH

Body color: Light red w/ several vague, dark brown blotches on back w/ at least one blotch extending below lateral line.

Maximum length: 49 cm

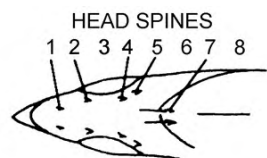
Maximum depth: 243 fm (444 m)

Common depth: 82-164 fm (150-300 m)

Distribution: Aleutian Islands – Gulf of Alaska

Peritoneum color: dark

Head Spines: strong



Dark forked bar from eye to operculum

symphyseal knob strong & sharp

anal spine 2 longer than 3

SHARPCHIN ROCKFISH

Sebastes zacentrus

Similar species:

Harlequin RF - symphyseal knob moderate; dorsal fin black; posterior two-thirds of lateral line clear.

Darkblotched RF - symphyseal knob weak; head spine count differs; anal spine 2 shorter than 3.

Pacific Ocean Perch - head spines weak and typically differ in count; dorsal blotches do not extend below lateral line; blotch on operculum; operculum edge w/ spines.

Yellowmouth RF - symphyseal knob weaker; yellow blotches inside mouth; dorsal blotches diffuse, do not extend below lateral line; operculum edge w/ spines; blotch on operculum.

RED

BLOTCHES ABOVE + BELOW LL

SHARPCHIN ROCKFISH

Body color: Yellow-pink w/ light green; several vague, dusky blotches on back, these darker in young; green streaks on membranes of caudal fin, at least on upper portion.

Maximum length: 41 cm

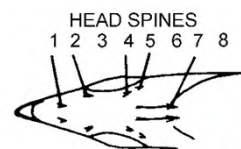
Maximum depth: 299 fm (547 m)

Common depth: 55-192 fm (100-350 m)

Distribution: Gulf of Alaska

Peritoneum color: dark

Head Spines: strong



caudal-fin membranes w/ green streaks

eye large (orbit length 2.9-3.2 into head length)

anal spine 2 longer than 3

STRIPETAIL ROCKFISH

Sebastes saxicola

Similar species:

Sharpchin RF - body w/ discrete, dark brown blotches (blotches lighter and more diffuse in Stripetail RF); operculum w/ forked bar; caudal fin w/ dusky streaks (broken green streaks in Stripetail RF).

Splitnose RF - strong notch in upper jaw; green streaks in caudal fin absent; body uniform rose-red.

RED

BLOTCHES ABOVE + BELOW LL

STRIPETAIL ROCKFISH

Body color: Red on back, becoming pink on sides, often w/ vague spots and traces of dusky bars; fins reddish, w/ black on tips; inside of mouth red-black to red-white; posterior part of lateral line often light. (See occasional dark phase in inset photo.)

Maximum length: 100 cm

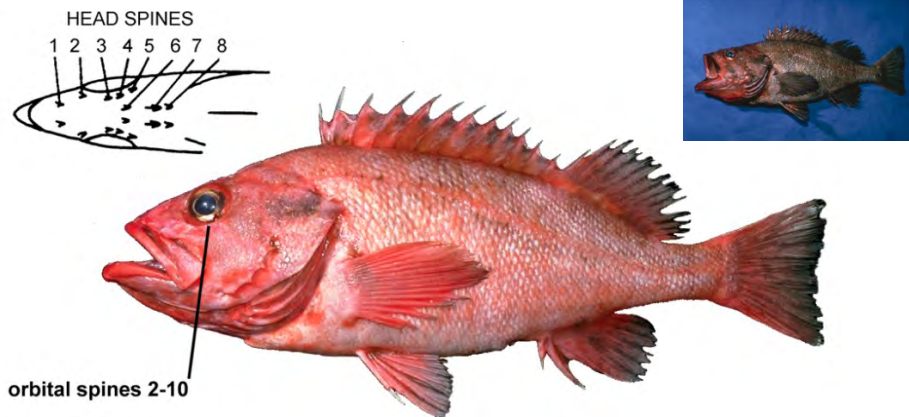
Peritoneum color: light w/ dots

Maximum depth: 479 fm (875 m)

Head Spines: strong

Common depth: 55-246 fm (100-450 m)

Distribution: Bering Sea – Aleutian Islands – Gulf of Alaska



ROUGHEYE ROCKFISH

Sebastes aleutianus

Similar species:

Shortraker RF - 0 or rarely 1 eye spine; body pink to orange-pink, typically w/o dark color on body; specimens >40 cm w/ gill rakers on first arch 3 times longer than width (5-6 times in Rougheye RF); head spine 6 typically absent.

Pacific Ocean Perch - head spines weak and differ in count; discrete dark blotches at base of dorsal fin; symphyseal knob prominent.

Sharpchin RF - discrete dorsal blotches w/ at least one crossing lateral line; prominent symphyseal knob; head spines differ in count; anal spine 2 longer than 3.

Yelloweye RF - body bright yellow-orange (reddish in young <28 cm); head spines rugose w/ multiple points and count differs.

RED

NO BLOTCHES; HS 8 PRESENT

ROUGHEYE ROCKFISH

Body color: Pink to orange-pink; fins reddish, typically edged w/ black; dusky red bars may be present on dorsum, these may be prominent in young specimens.

Maximum length: 121 cm

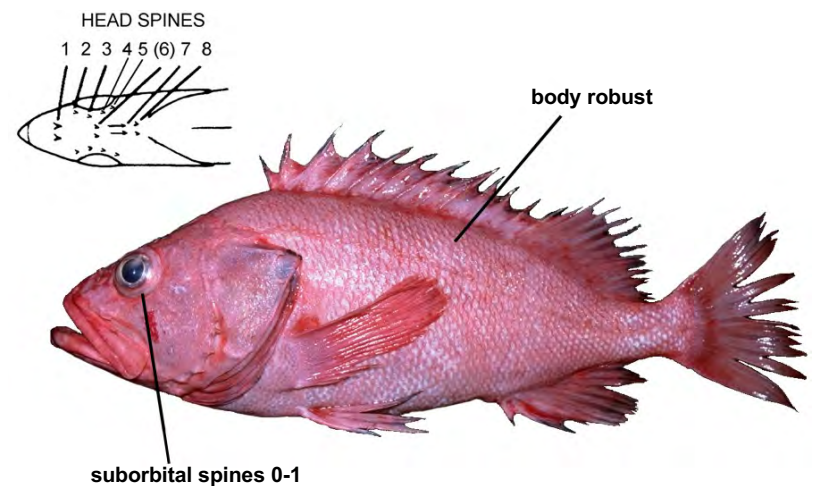
Peritoneum color: light w/ black dots

Maximum depth: 479 fm (875 m)

Head Spines: strong

Common depth: 55-328 fm (100-600 m)

Distribution: Bering Sea – Aleutian Islands – Gulf of Alaska



SHORTRAKER ROCKFISH

Sebastes borealis

Similar species:

Rougheye RF - 2-10 spines below eye; body typically red w/ black mottling; gill rakers on first arch longer in individuals > 40 cm.

Pacific Ocean Perch - head spines weak and differ in count; prominent symphyseal knob; discrete dorsal blotches at base of dorsal fin; body shape slender.

Sharpchin RF - symphyseal knob prominent; discrete blotches w/ at least one crossing lateral line; head spines differ in count; anal spine 2 longer than 3.

Redbanded RF - body w/ five bands crossing lateral line; head spine count differs; anal spine 2 longer than 3; peritoneum dark.

RED

NO BLOTCHES; HS 8 PRESENT

SHORTRAKER ROCKFISH

Body color: Red on back, bright orange-yellow on sides, most fins w/ black on tips. Young <28 cm red w/ whitish stripe along lateral line, another shorter stripe between lateral line and belly surface, fins w/ blackened tips (see inset photo).

Maximum length: 98 cm

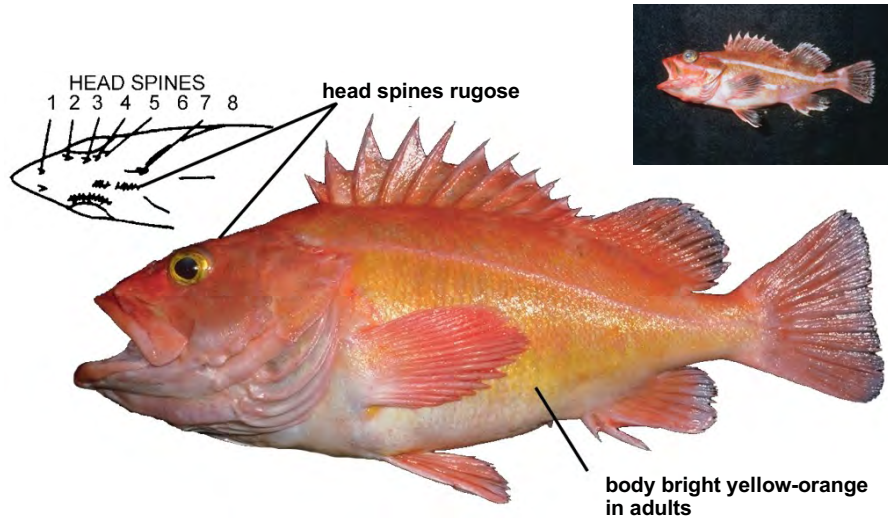
Peritoneum color: light

Maximum depth: 260 fm (475 m)

Head Spines: strong

Common depth: 27-219 fm (50-400 m)

Distribution: Aleutian Islands – Gulf of Alaska



YELLOW EYE ROCKFISH

Sebastes ruberrimus

Similar species:

Canary RF - body mottled gray dorsally w/ orange; anal fin pointed w/ strong anterior slant (rounded w/ posterior slant in Yelloweye RF); gill rakers 40-45 (25-30 in Yelloweye RF).

Rougheye RF, Shortraker RF - body red w/ various dark mottling; 0-8 spines below eye.

Body color: Olive-gray w/ bright orange, fins orange.

Maximum length: 76 cm

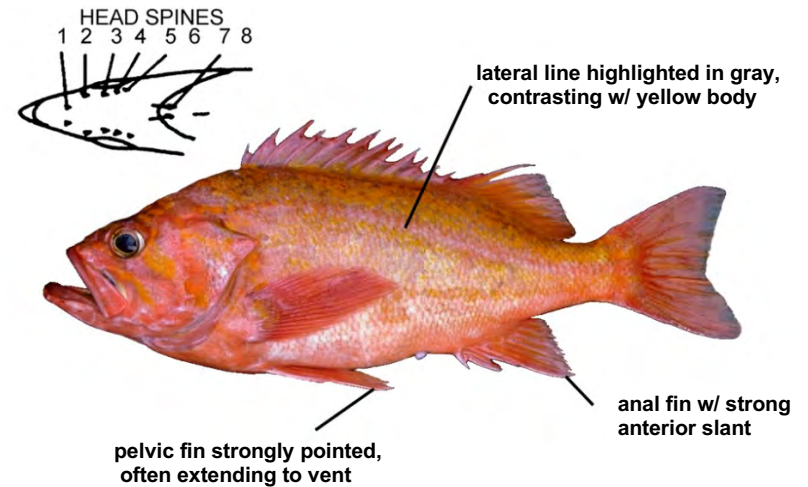
Peritoneum color: light

Maximum depth: 233 fm (425 m)

Head Spines: weak to strong

Common depth: 27-137 fm (50-250 m)

Distribution: Gulf of Alaska



CANARY ROCKFISH

Sebastes pinniger

Similar species:

Vermilion RF - body and fins red; underside of lower jaw rough w/ exposed scales (jaw smooth in Canary RF); gill rakers 35-43 (40-45 in Canary RF).

Yelloweye RF - head spines rugose; body orange-red to orange-yellow w/o olive-gray mottling; anal-fin margin rounded.

Rougheye RF, Shortraker RF - body red w/ various black mottling; 0-8 spines below eye; anal-fin margin perpendicular.

RED

NO BLOTCHES; HS 8 ABSENT

YELLOW EYE ROCKFISH

RED

NO BLOTCHES; HS 8 ABSENT

CANARY ROCKFISH

Body color: Uniform rose-red.

Maximum length: 45 cm

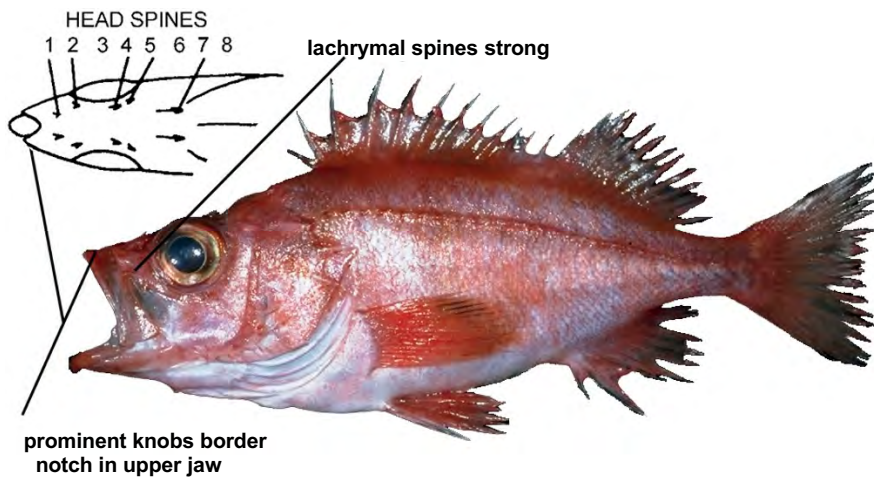
Maximum depth: 438 fm (800 m)

Common depth: 82-246 fm (150-450 m)

Distribution: Gulf of Alaska

Peritoneum color: dark

Head Spines: strong



SPLITNOSE ROCKFISH

Sebastes diploproa

Similar species:

Stripetail RF - body yellow-pink w/ green; dorsal blotches present; notch in upper jaw absent.

RED

NO BLOTCHES; HS 8 ABSENT

SPLITNOSE ROCKFISH

Body color: Olive-brown dorsally becoming pink to red ventrally; specimens less than 10 inches (25 cm) w/ small brown spots on sides.

Maximum length: 99 cm

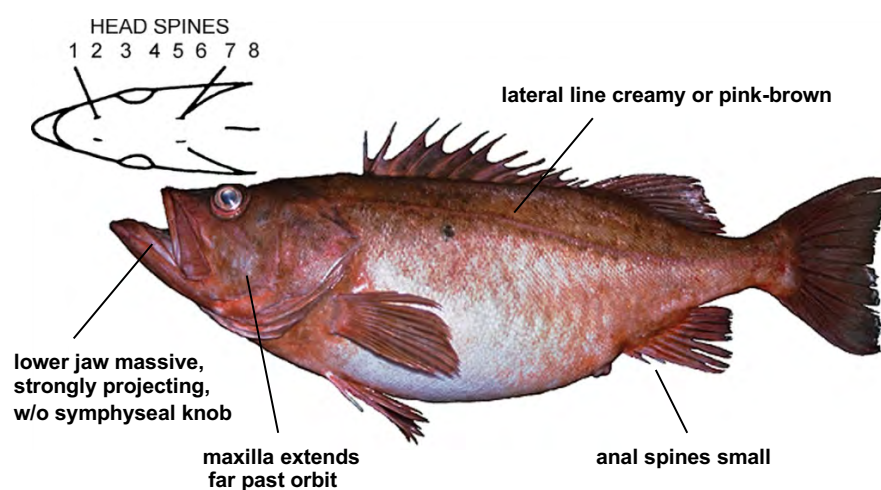
Maximum depth: 260 fm (475 m)

Common depth: 27-137 fm (50-250 m)

Distribution: Gulf of Alaska

Peritoneum color: light

Head Spines: weak



BOCACCIO

Sebastes paucispinis

Similar species:

Silvergray RF - body dark gray dorsally, light ventrally; gill rakers 33-36 (28-31 in Bocaccio); dorsal rays 15-17 (13-15 in Bocaccio); scales below lateral line 58-70 (72-90 in Bocaccio); symphyseal knob present; anal spines not small.

RED

NO BLOTCHES; HS 8 ABSENT

BOCACCIO

Body color: Light pink w/ several broad vertical dark-red bands on body; bands faded in large specimens.

Maximum length: 71 cm

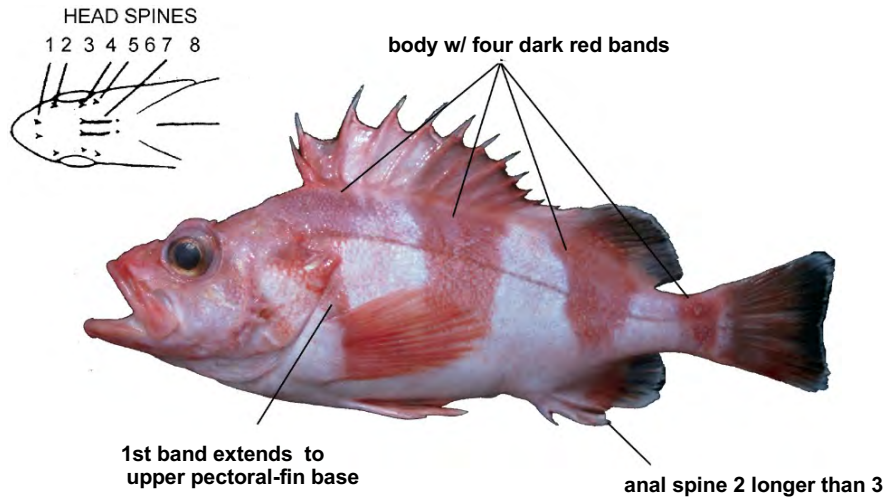
Maximum depth: 343 fm (625 m)

Common depth: 82-219 fm (150-400 m)

Distribution: Bering Sea – Aleutian Islands – Gulf of Alaska

Peritoneum color: dark

Head Spines: strong



REDBANDED ROCKFISH

Similar species:

Tiger RF - all head spines present; body red w/ black or crimson bars; anal spine 2 equal to or shorter than 3.

Shortraker RF - body typically uniform pink to orange-pink occasionally w/ faint darker red bands above lateral line; head spine count differs; anal spine 2 shorter than 3; peritoneum light w/ black dots; pored lateral line scales 28-32 (42-51 in Redbanded RF).

Sebastes babcocki

Body color: Light red to orange w/ several broad, vertical black-red bands on body; in young specimens, tips of ventral and anal fins blackened.

Maximum length: 61 cm

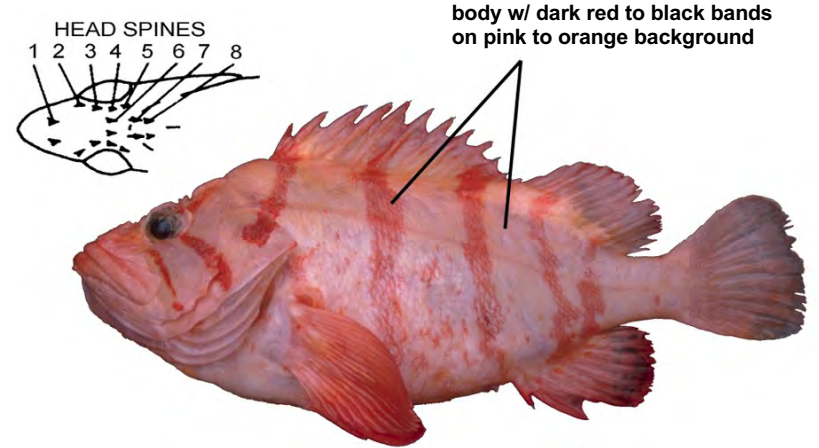
Maximum depth: 150 fm (274 m)

Common depth: 30-150 fm (55-274 m)

Distribution: Gulf of Alaska

Peritoneum color: light

Head Spines: strong



TIGER ROCKFISH

Similar species:

Redbanded RF - red bands on light pink background; head spine 6 and 8 absent.

Sebastes nigrocinctus

BANDED

REDBANDED ROCKFISH

BANDED

TIGER ROCKFISH

Body color: Orange-yellow w/ light olivaceous mottling on back; 4 or 5 clear, white blotches, bordered w/ light pink or orange on upper part of body; dusky area on opercle; fins pink, w/ some yellow-green.

Maximum length: 43 cm

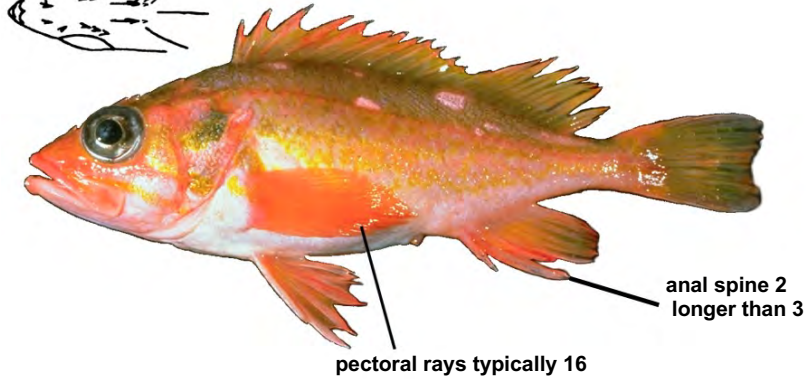
Maximum depth: 300 fm (549 m)

Common depth: 55-192 fm (100-350 m)

Distribution: Gulf of Alaska

Peritoneum color: dark to gray w/ spots

Head Spines: strong



ROSETHORN ROCKFISH

Sebastes helvomaculatus

Similar species:

None in Alaskan waters.

WHITE-SPOTTED RED

ROSETHORN ROCKFISH

Body color: Pink w/ four mottled, horizontal green stripes on sides of pinkish body.

Maximum length: 49 cm

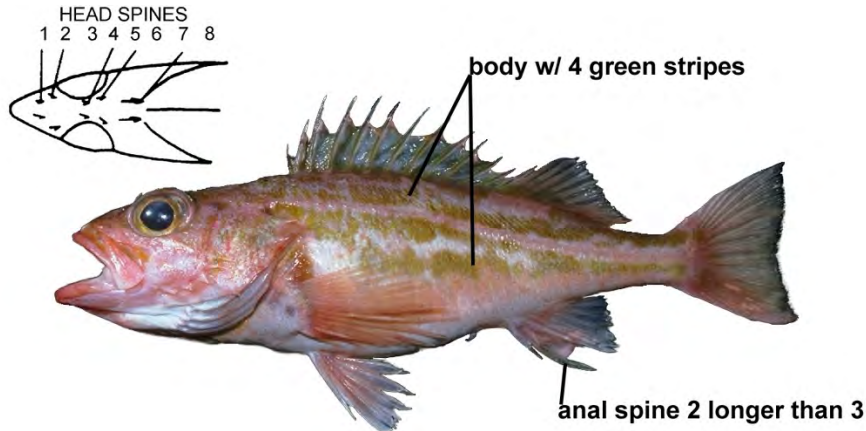
Maximum depth: 269 fm (491 m)

Common depth: 55-137 fm (100-250 m)

Distribution: Gulf of Alaska

Peritoneum color: dark

Head Spines: strong



GREENSTRIPED ROCKFISH

Sebastes elongatus

Similar species:

Redstripe RF - lateral line light red bordered by two mottled green stripes; anal spine 2 shorter than 3; head spines weak.

OTHER

GREENSTRIPED ROCKFISH

Body color: Dark brown to olive, washed w/ copper-pink and often splashed w/ dull yellow; posterior lateral line and lower sides usually white in fresh specimens, becoming copper-pink on prolonged exposure.

Maximum length: 66 cm

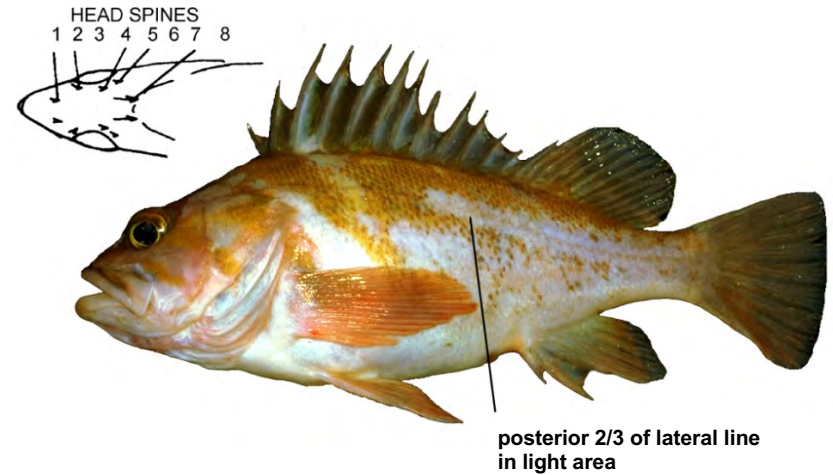
Maximum depth: 100 fm (183 m)

Common depth: <55 fm (<100 m)

Distribution: Gulf of Alaska

Peritoneum color: light

Head Spines: strong



COPPER ROCKFISH

Sebastes caurinus

Similar species:

Quillback RF - anal rays typically 7 (typically 6 in Copper RF); cheeks and breast w/ small spots.

OTHER

COPPER ROCKFISH

Body color: Dark gray-green on reddish background; red-orange flecks and fine green spots on body; red-orange to white ventrally; oblique light band on lower portion of pectoral fin.

Maximum length: 48 cm

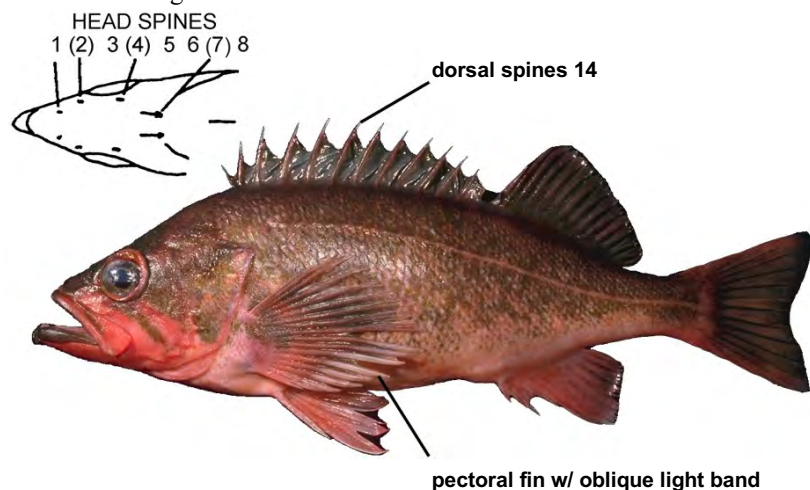
Peritoneum color: dark or light to dark

Maximum depth: 342 fm (625 m)

Head Spines: weak

Common depth: 27-164 fm (50-300 m)

Distribution: Bering Sea – Aleutian Islands – Gulf of Alaska



NORTHERN ROCKFISH

Sebastes polyspinis

Similar species:

Dusky RF - body gray to greenish-brown; light patch on pectoral fin faint; dorsal spines typically 13.

Pacific Ocean Perch - body red w/ discrete dorsal blotches; symphyseal knob sharp, elongate (moderate in Northern RF); head spine 5 present; dorsal spines typically 13.

Redstripe RF - mottled olive-green stripes above and below light red lateral line; head spine count differs; dorsal spines typically 13; head spine 5 present.

Harlequin RF - head spines strong and spine 5 is present; anal spine 2 longer than 3 (shorter in Northern RF); dorsal blotches prominent; posterior two-thirds of lateral line light; dorsal spines typically 13.

Sharpchin RF - body red w/ dorsal blotches; head spines strong and differ in count; anal spine 2 longer than 3; dorsal spines typically 13.

BLACK

WHITE SLASH ON PECTORAL

NORTHERN ROCKFISH

Body color: Variable, gray to greenish brown on back and sides, darker blotches under soft dorsal fin, occasionally lighter tan on back and sides (see inset); ventral sides and pectoral and pelvic fins tinged w/ pink; orange-red-brown flecks on sides.

Maximum length: 65 cm

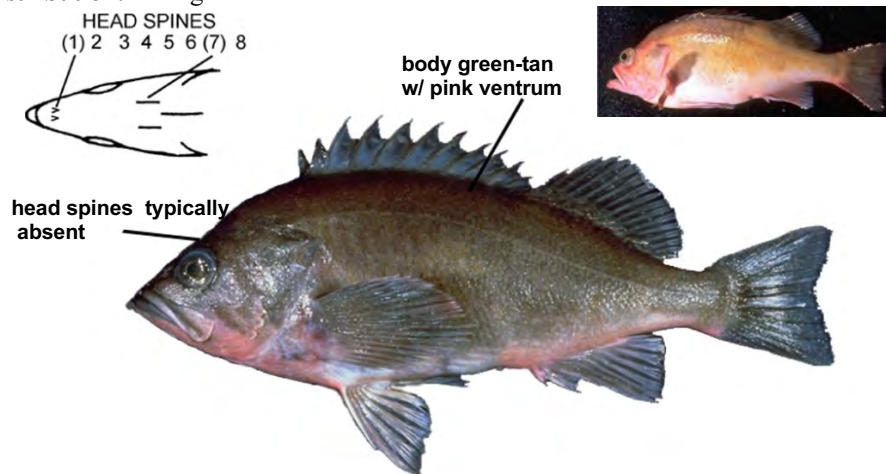
Peritoneum color: light to dark

Maximum depth: 287 fm (525 m)

Head Spines: weak

Common depth: 55-164 fm (100-300 m)

Distribution: Bering Sea – Aleutian Islands – Gulf of Alaska



DUSKY ROCKFISH

Sebastes variabilis

Similar species:

Dark RF - symphyseal knob small; peritoneum jet black; body uniform black or dark blue.

Black RF - anal-fin margin rounded w/ anterior slant; peritoneum light; spinous dorsal fin often w/ black spots; mandibular pores reduced (evident in Dusky RF); head spine count differs, spine 4 typically present.

Yellowtail RF - peritoneum light; head spine count differs; body w/ brassy wash; fins dusky yellow; dorsal rays typically 14 (typically 15 in Dusky RF).

Northern RF - typically 14 dorsal spines (typically 13 in Dusky RF); oblique light band on lower portion of pectoral fin (faint in Dusky RF).

Widow RF - anal-fin margin w/ strong posterior slant; head spine count differs; maxilla extends anterior to midorbit (maxilla extends to beyond midorbit in Dusky RF).

DUSKY ROCKFISH

Body color: Uniform black to dark blue on back and sides, darker mottling below posterior spinous dorsal and anterior soft dorsal fins; slightly lighter on belly.

Maximum length: 55 cm

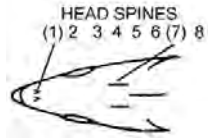
Peritoneum color: dark

Maximum depth: 84 fm (153 m)

Head Spines: weak

Common depth: <55 fm (<100 m)

Distribution: Bering Sea – Aleutian Islands – Gulf of Alaska



head spines typically absent



body uniform blue-black

DARK ROCKFISH

Sebastes ciliatus

Similar species:

Black RF - symphyseal knob obsolete; peritoneum white; body with light blotches at dorsal base and white belly; head spine count differs, spine 4 typically present; anal fin rounded (typically perpendicular in Dark RF).

Dusky RF - symphyseal knob larger; peritoneum light to dark; body typically tan, always light pink on belly.

BLACK

PERITONEUM NOT LIGHT

DARK ROCKFISH

Body color: Black on back, becoming gray mottled w/ black on sides, whitish ventrally; pelvic fins light, other fins dark.

Maximum length: 64 cm

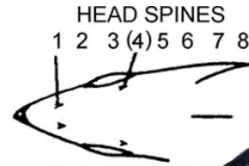
Peritoneum color: light

Maximum depth: 200 fm (366 m)

Head Spines: weak

Common depth: <110 fm (<200 m)

Distribution: Bering Sea – Aleutian Islands – Gulf of Alaska



symphyseal knob obsolete



anal-fin margin rounded

BLACK ROCKFISH

Sebastes melanops

Similar species:

Dusky RF - body color gray to greenish brown; anal-fin margin perpendicular; symphyseal knob present; mandibular pores evident (reduced in Black RF); head spines typically absent.

Dark RF - body color uniform dark onto belly (light belly on Black RF); peritoneum dark (light in Black RF); anal-fin margin perpendicular; mandibular pores evident (reduced in Black RF); head spines typically absent.

Yellowtail RF - body color brassy; fins washed w/ yellow; anal-fin margin perpendicular; head spine count differs.

Widow RF - body color dusky brown; anal-fin margin w/ strong posterior slant; head spine count differs; mouth smaller, extending anterior to midorbit (beyond midorbit in Black RF); pectoral rays typically 18 (typically 19 in Black RF).

BLACK

PERITONEUM LIGHT

BLACK ROCKFISH

Body color: Uniform dusky-brown w/ traces of light yellow-red; fins brown to black, membranes of pectoral, pelvic, and anal fins black. Specimens < 10 in (25cm) w/ vague streaks of orange.

Maximum length: 68 cm

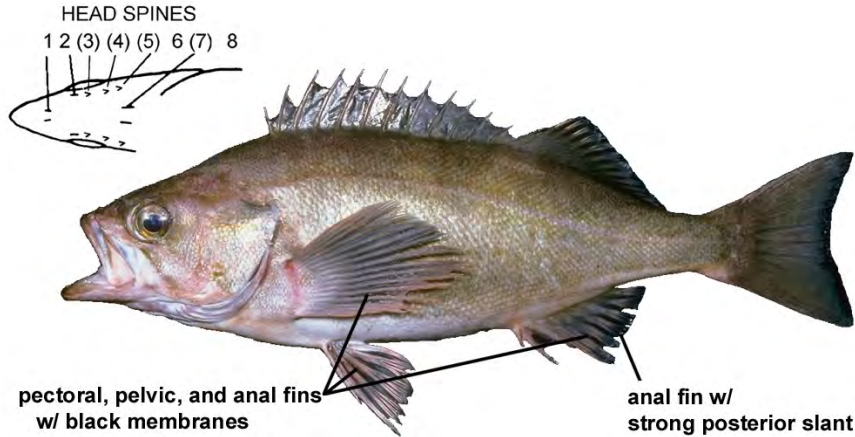
Maximum depth: 205 fm (375 m)

Common depth: 55-192 fm (100-350 m)

Distribution: Gulf of Alaska

Peritoneum color: dark

Head Spines: weak



WIDOW ROCKFISH

Sebastes entomelas

Similar species:

Yellowtail RF - mouth large, maxilla extends beyond midorbit (maxilla extends anterior to midorbit in Widow RF); body brassy w/ yellow fins; anal-fin margin perpendicular; peritoneum light.

Black RF - mouth large, maxilla extends beyond midorbit (maxilla extends anterior to midorbit in Widow RF) body dusky gray to black; anal-fin margin rounded; pectoral rays typically 19 (typically 18 in Widow RF).

Dusky and Dark RF - mouth large, maxilla extends beyond midorbit (maxilla anterior to midorbit in Widow RF); body deep; anal-fin margin perpendicular.

BLACK

PERITONEUM NOT LIGHT

WIDOW ROCKFISH

Body color: Black to gray w/ yellow mottling; three dark bars radiate posteriorly from eye.

Maximum length: 59 cm

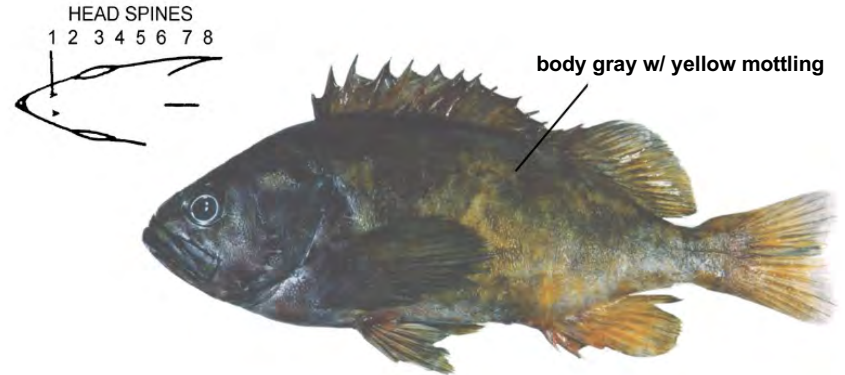
Maximum depth: 301 fm (550 m)

Common depth: <100 fm (<183 m)

Distribution: Aleutian Islands

Peritoneum color: dark

Head Spines: weak



GRAY ROCKFISH

Sebastes glaucus

Similar species:

Dark RF - body dark blue-black; pectoral rays typically 18 (typically 19 in Gray RF).

Dusky RF - body tan to dark; symphyseal knob moderate to small (symphyseal knob absent in Gray RF); pectoral rays typically 18 (typically 19 in Gray RF).

Black RF - body black to gray, white ventrally; body slender (robust in Gray RF); head spine count differs; peritoneum typically light; head spine count typically differs.

Yellowtail RF - symphyseal knob strong (absent in Gray RF); peritoneum light.

BLACK

PERITONEUM NOT LIGHT

GRAY ROCKFISH

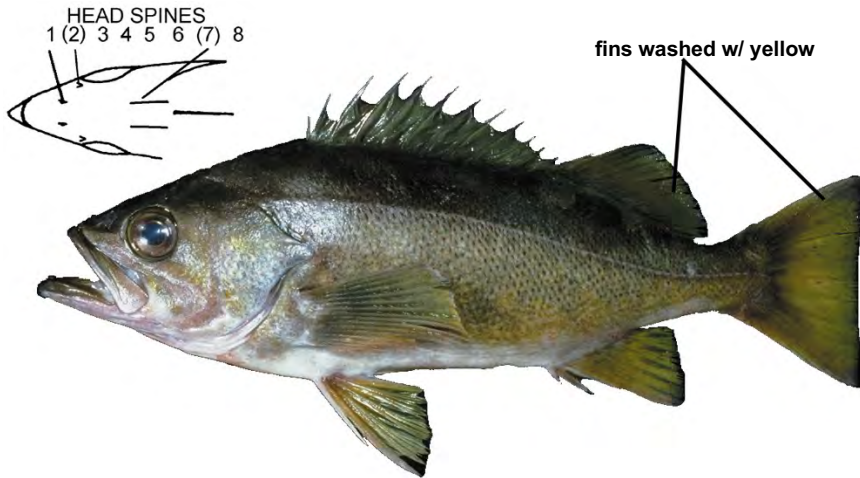
Body color: Grayish brown w/ brassy yellow wash becoming light gray on side and white ventrally; sides finely speckled w/ brown; several vague light blotches on back; fins dusky yellow.

Maximum length: 66 cm

Maximum depth: 300 fm (549 m)

Common depth: 27-137 fm (50-250 m)

Distribution: Gulf of Alaska



YELLOWTAIL ROCKFISH

Sebastes flavidus

Similar species:

Widow RF - anal fin w/ strong posterior slant (perpendicular in Yellowtail RF); body color dusky brown; pectoral, pelvic, and anal fins w/ black membranes (dusky in Yellowtail RF); mouth small, maxilla to midorbit (well past midorbit in Yellowtail RF).

Dusky RF - peritoneum gray (light in Yellowtail RF); dorsal rays 15-16 (typically 14 in Yellowtail RF); fin membranes dark.

Dark RF - peritoneum dark (light in Yellowtail RF); dorsal rays 15-16 (typically 14 in Yellowtail RF); fin membranes dark.

Black RF - anal-fin margin rounded; body color black to blue-black, white ventrally; pectoral rays typically 19 (typically 18 in Yellowtail RF).

BLACK

PERITONEUM LIGHT

YELLOWTAIL ROCKFISH

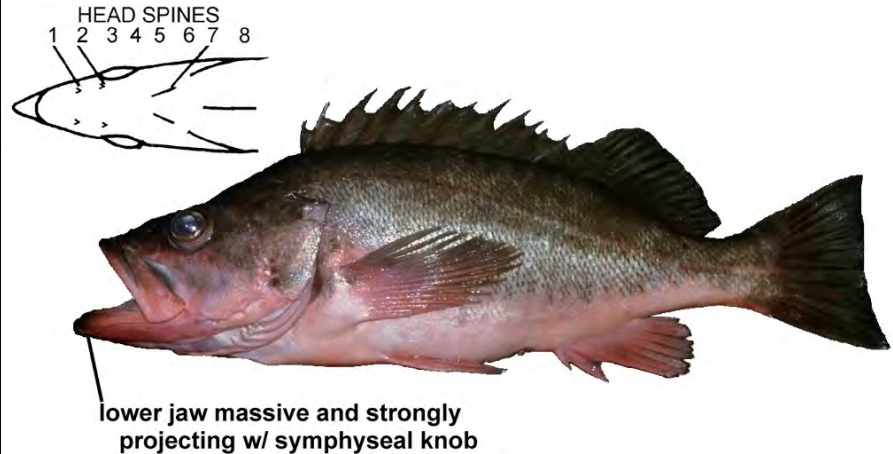
Body color: Dark gray-green to black on back becoming silver on sides and abruptly red-orange to white ventrally; lips blackened; lower portions of pectoral, anal, and pelvic fins washed w/ red-orange to pink.

Maximum length: 76 cm

Maximum depth: 205 fm (375 m)

Common depth: 55-164 fm (100-300 m)

Distribution: Bering Sea – Aleutian Islands – Gulf of Alaska



SILVERGRAY ROCKFISH

Sebastes brevispinis

Similar species:

Bocaccio - body reddish; symphyseal knob absent; anal spines small; head spine count differs; gill rakers 27-32 (33-36 in Silvergray RF); anal rays typically 8 (7 in Silvergray).

Dusky RF - head spines typically absent; body deeper; body brown to tan.

Yellowtail RF - body brassy w/ yellow fins; head spine count differs; body deeper.

BLACK

PERITONEUM LIGHT

SILVERGRAY ROCKFISH

Body color: Gray to brown mottled w/ yellow on anterior portion of body, and w/ orange-brown spotting on lower anterior of body; fins dark, except anterior portion of spinous dorsal fin, which is splashed w/ yellow.

Maximum length: 66 cm

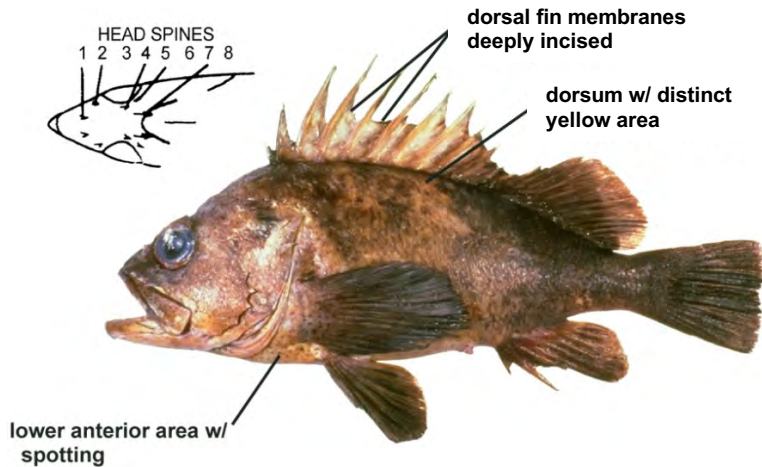
Peritoneum color: light

Maximum depth: 150 fm (274 m)

Head Spines: strong

Common depth: 5-80 fm (9-147 m)

Distribution: Gulf of Alaska



QUILLBACK ROCKFISH

Sebastes maliger

Similar species:

Copper RF - anal rays typically 6 (typically 7 in Quillback RF); posterior 2/3 of lateral line in light area.

China RF - body black w/ yellow stripe along lateral line and across nape; dorsal-fin margin not deeply incised.

BLACK

PERITONEUM LIGHT

QUILLBACK ROCKFISH

Body color: Blue-black mottled w/ yellow; a broad, irregular yellow stripe present, whitish or bluish-white spotting on body; fins dark.

Maximum length: 47 cm

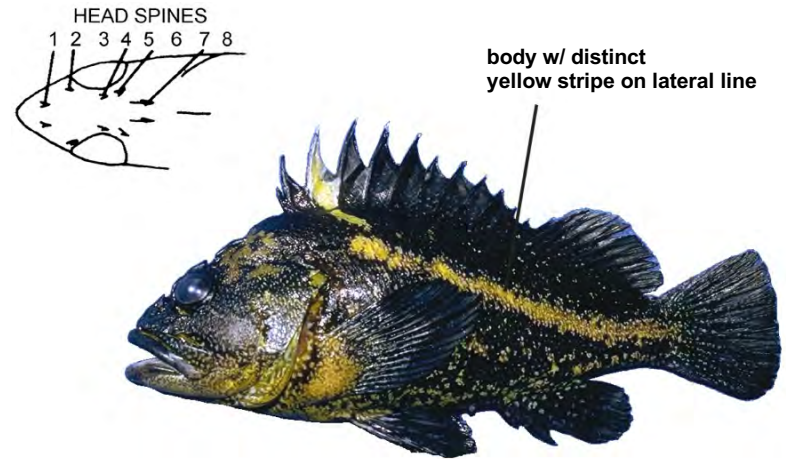
Peritoneum color: light

Maximum depth: 70 fm (128 m)

Head Spines: strong

Common depth: 10-50 fm (18-92 m)

Distribution: Gulf of Alaska



CHINA ROCKFISH

Sebastes nebulosus

Similar species:

Quillback RF - body brown w/ yellow mottling; dorsal-fin margins deeply incised.

Copper RF - body copper to brown dorsally with white on lower sides and belly.

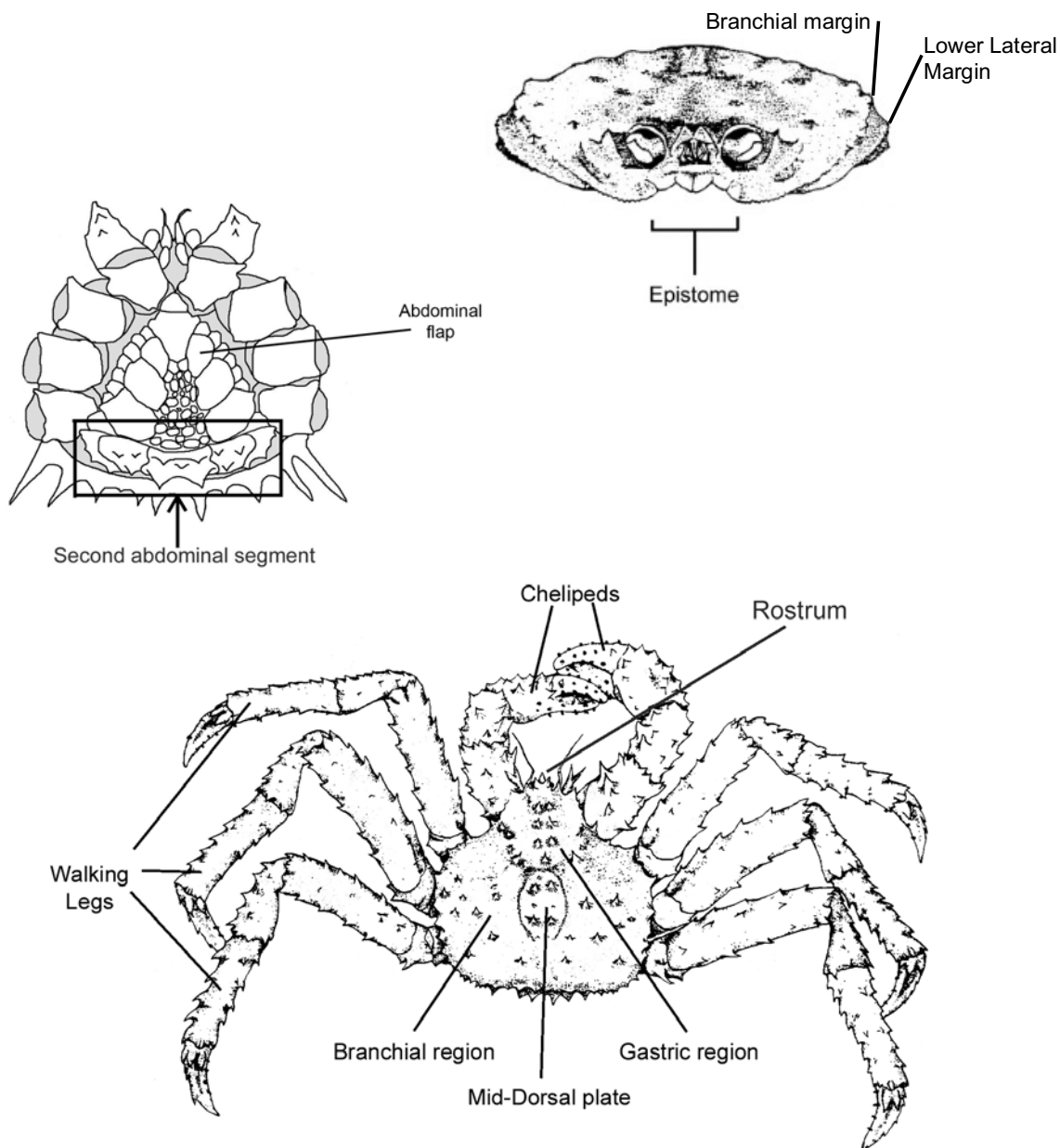
BLACK

PERITONEUM LIGHT

CHINA ROCKFISH

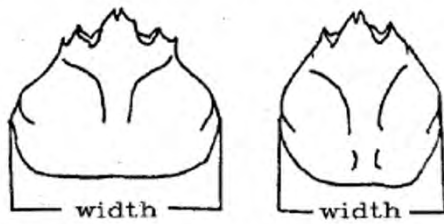
KEY TO THE CRABS OF ALASKA FOUND IN COMMERCIAL FISHERIES

August 2024



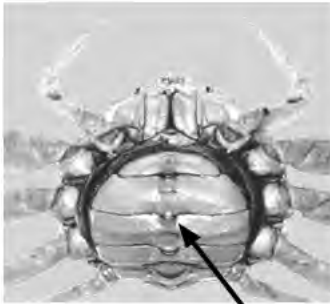
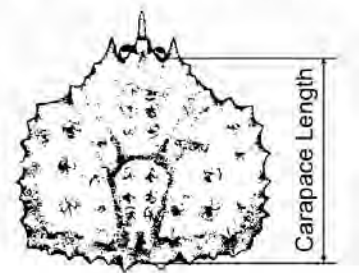
****This key does not include all crab species found in Alaskan waters. Specimens not fitting this key should be identified as “crab unident” and retained.**

Tanner crab measurement



Carapace width at lower lateral margin

King crab measurement



Mature Female Tanner Crab (many eggs)



Immature Female Tanner Crab (no eggs)



Male Tanner Crab

Figure 12-2: Male and Female Tanner Crab (arrows indicate abdominal flap)



Figure 12-1: Male and female king crab (arrows and lines indicate abdominal flap)

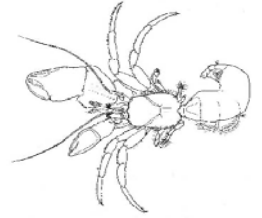
Sex Determination of Crab and Checking for Eggs

The shape of the abdominal flap indicates the sex of Tanner and king crab. Refer to Figure 12-1 and Figure 12-2 for images depicting the differences between the abdominal flap shape of mature male and female crab.

Female king and Tanner crab have an abdominal flap that is rounded at the lower lateral margins. By lifting the flap slightly, you can determine if females are carrying eggs.

Male king and Tanner crabs have a V or U-shaped abdominal flap that does not cover the bottom of the carapace. When immature, the abdominal flap is shaped like a finger. When male crabs are mature, the abdominal flap is V-shaped in king crabs and U-shaped in Tanner crabs.

- 1 Abdomen soft and curled; tail fan modified for use as anchor within hollow objects; third pair of walking legs reduced and usually hidden
Hermit crabs (Family Paguridae)
 Bering Sea, Aleutians, GOA (0-250 m)

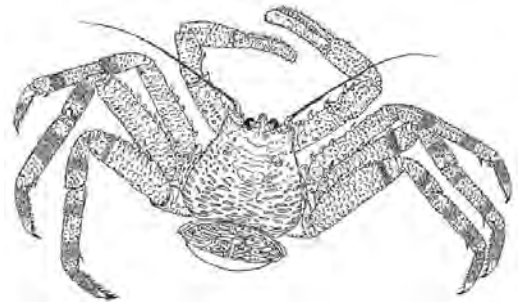


- 1 Abdomen with calcified plates, or if soft then not curled; tail fan not modified as above; third pair of walking legs not reduced or hidden 2

- 2(1) Three pairs walking legs in addition to chelipeds (claws)..... 3

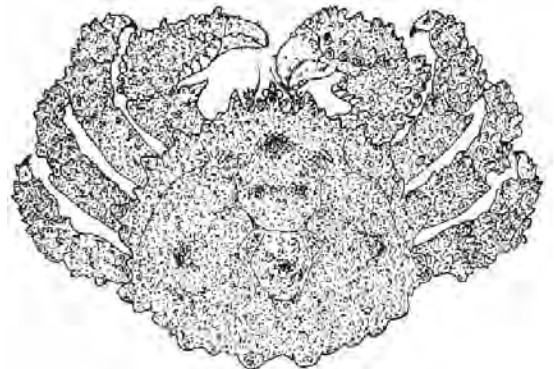
- 2 Four pairs walking legs in addition to chelipeds (claws) 12

- 3(2) Carapace, chelipeds, and walking legs covered with scale-like prominences, forming long fused transverse ridges on carapace; legs with burgundy or brick-red bands
Scaled Crab (*Placetron wosnessenskii*)
 Bering Sea, Aleutians, GOA (0-250 m)



- 3 Chelipeds, walking legs, and usually carapace covered with spines, warty protuberances, or hairs 4

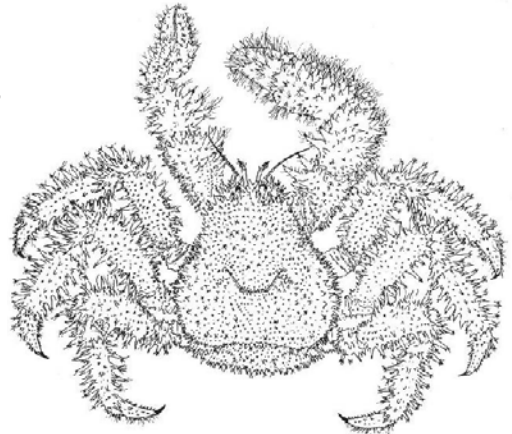
- 4(3) Body box-shaped, with short stubby legs that can be folded tightly against body to form a solid mass; breathing port formed between cheliped and first leg when legs and claws tucked against body
Box crabs (Genus *Lopholithodes*)
 Aleutians, GOA (50-700 m)



- 4 Body not box-shaped, legs long..... 5

- 5(4) Body covered with small spines, appearing fuzzy; abdomen not segmented or calcified, forming a soft, membranous pouch

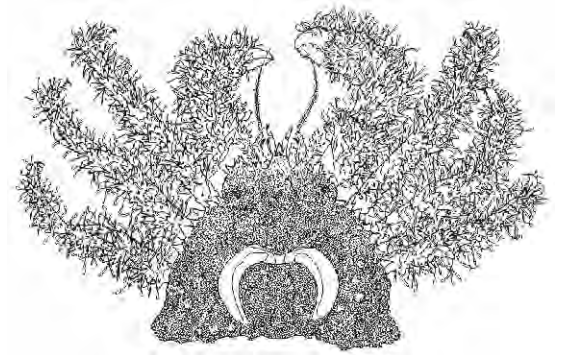
Fuzzy crabs (*Acantholithodes* and *Hapalogaster*)
Bering Sea, Aleutians, GOA (10-240 m)



- 5 Abdomen clearly segmented, covered with calcified plates6

- 6(5) Carapace somewhat triangular, with a smooth round ball-like area surrounded by deep semicircular grooves

Rhinoceros Crab (*Rhinolithodes wosnessenskii*)
Aleutians, western GOA (20-200 m)

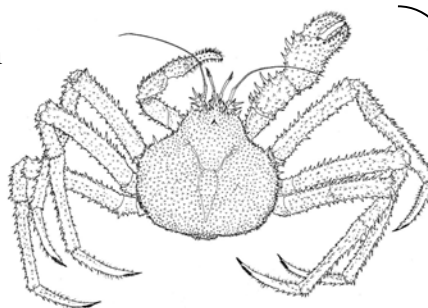


- 6 Carapace outline generally oval, without deep semicircular grooves 7

- 7(6) Second abdominal segment covered by one plate; carapace with spines or tubercles; one prominent spine on carapace posterior to rostrum.....Genus *Paralomis* 8

- 7 Second abdominal segment covered by 3–5 plates; carapace with spines; no single prominent spine posterior to rostrum.....King crabs 9

- 8(7) Carapace covered with spines;
walking legs angular in cross-section
Paralomis multispina
Bering Sea, Aleutians (250-1400 m)

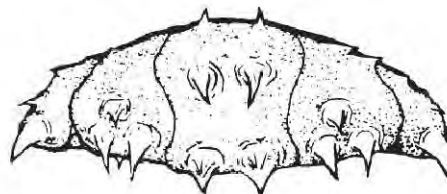
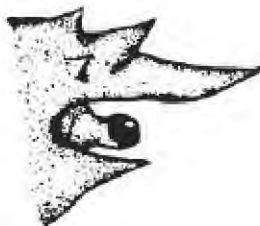
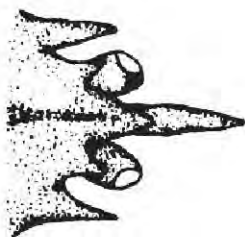


One plate
on second
abdominal
segment

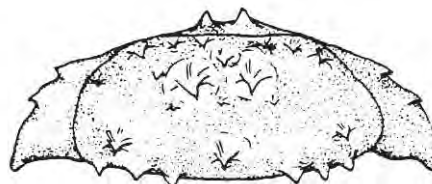
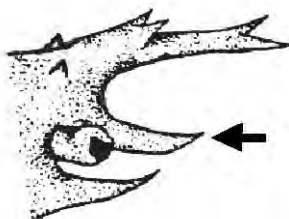
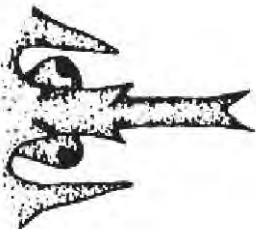
- 8 Carapace somewhat smooth, covered with small
rounded tubercles, resulting in a braille-like
texture; spines mainly confined to margins of
carapace; walking legs flattened
Paralomis verrilli
Bering Sea, GOA (1200-1500 m)



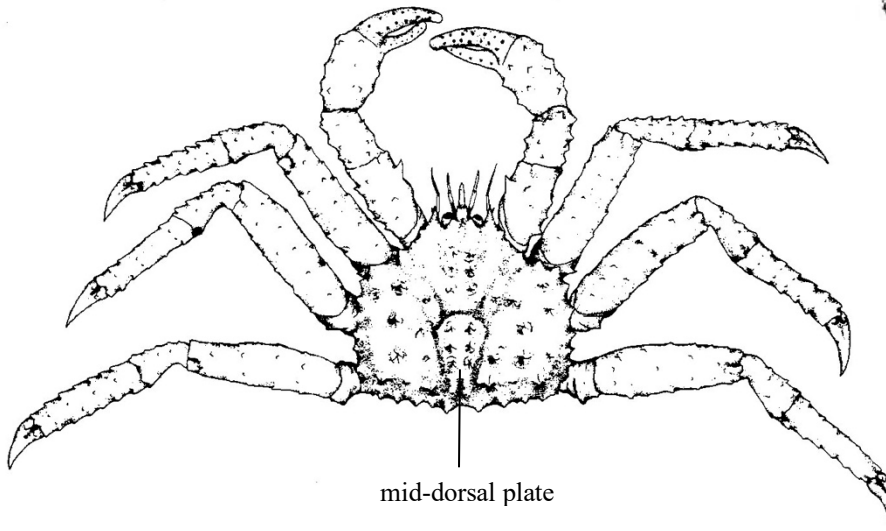
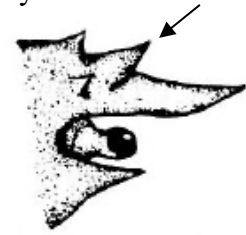
- 9(7) Second abdominal segment covered by 5 plates; rostrum ending in a single thorn-like
spine; ventral rostrum spine absent..... 10



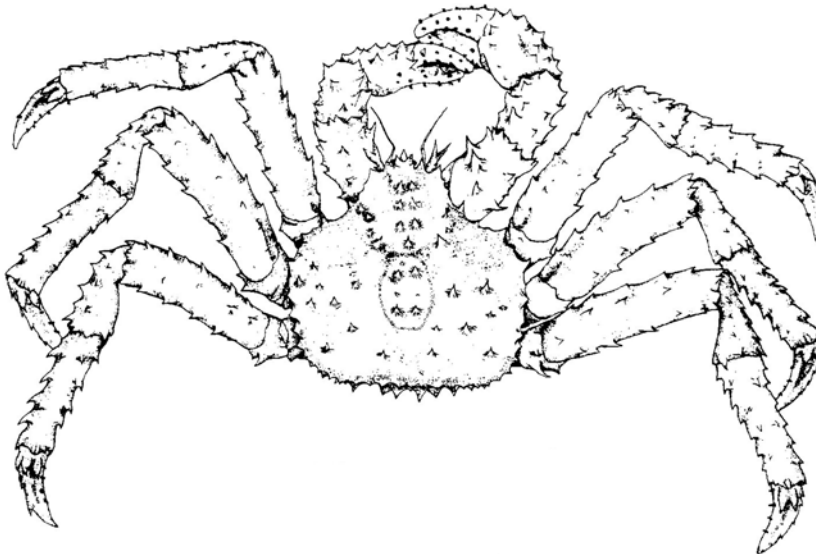
- 9 Second abdominal segment covered by 3 plates; rostrum forked; strong ventral rostrum
spine present 11



- 10(9)** 3 pairs of prominent spines on mid-dorsal plate; rostrum long, usually with terminal median dorsal spine followed by pair of spines; color red to purple
Red King Crab (*Paralithodes camtschaticus*)
Bering Sea, Aleutians, GOA (0-300 m)



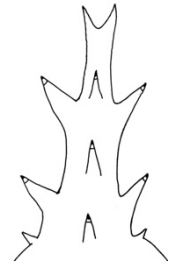
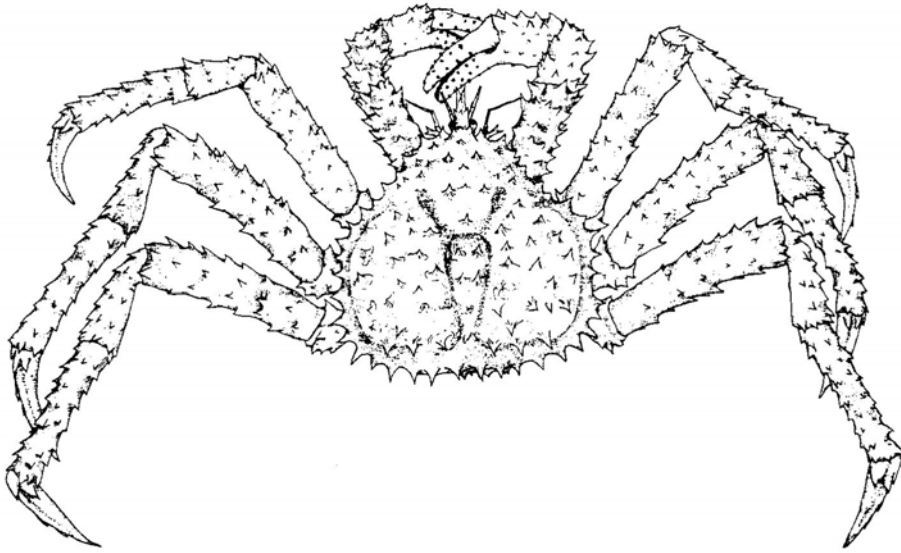
- 10** 2 pairs of prominent spines on mid-dorsal plate; rostrum short, commonly with terminal pair of dorsal spines; color blue or purple
Blue King Crab (*Paralithodes platypus*)
Bering Sea, Aleutians, western GOA (20-400 m)



- 11(9) Spines on lateral margins of carapace approximately equal in size with those on dorsal surface of carapace; rostrum with 9-10 spines in a 2-1-2-1-2-1 pattern with a median spine anterior to each pair of dorsal rostrum spines; color brown to golden brown.

Golden or Brown King Crab (*Lithodes aequispina*)

Bering Sea, Aleutians, GOA (50-700 m)

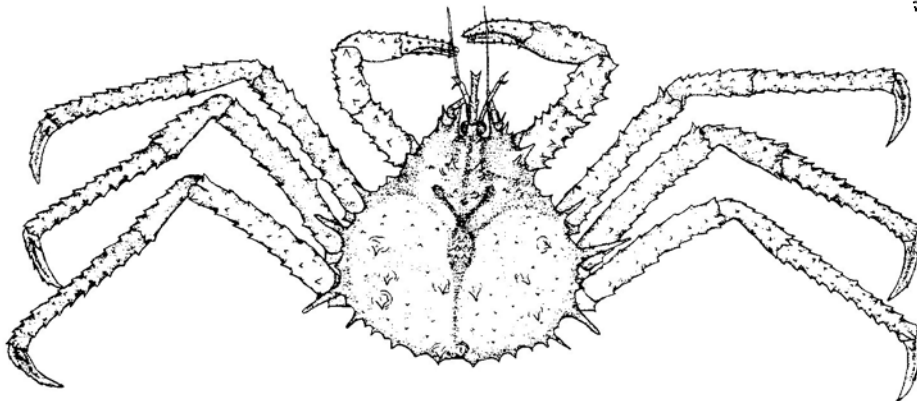


Dorsal view of rostrum showing spine pattern

- 11 Spines on lateral margins of carapace notably longer than those on dorsal surface of carapace; rostrum with 7 spines, no median spine anterior to each pair of dorsal rostrum spines; color pink to scarlet red

Couesi King Crab (*Lithodes couesi*)

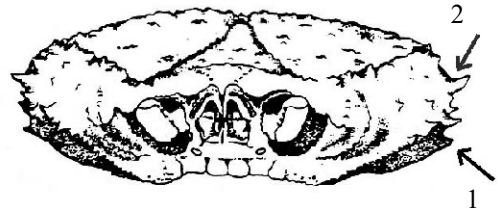
Bering Sea, Aleutians, GOA (200-1500 m)



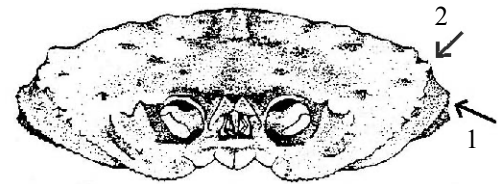
12(2) Carapace round to oval, with spines or low tubercles arranged in triangular shape on carapace.....Tanner crabs..... 13

12 Carapace guitar-shaped, triangular, hexagonal, or oval without spines or low tubercles arranged in triangular shape on carapace..... .16

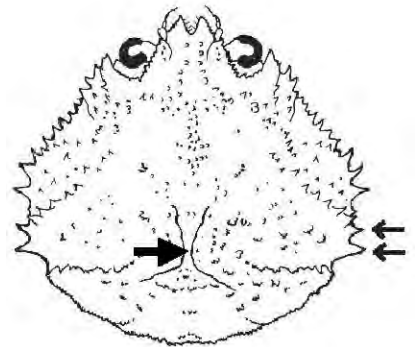
13(12) Lower lateral margin of carapace (1) not protruding beyond margin of branchial region (2); branchial ridges prominent, composed of spines; dorsal surface of carapace with shallow or deep notch in center.....14



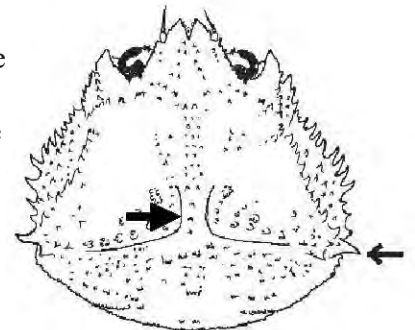
13 Lower lateral margin of carapace (1) protruding beyond margin of branchial region (2); branchial ridges not prominent, composed of low tubercles; dorsal surface of carapace without notch in center.....15



14(13) Branchial regions of carapace separated by deep, narrow groove; branchial ridges U-shaped, with two spines at bottom of U-shape at margin of carapace
Tanneri Tanner Crab (*Chionoecetes tanneri*)
 Bering Sea, Aleutians, GOA (20-1500 m)



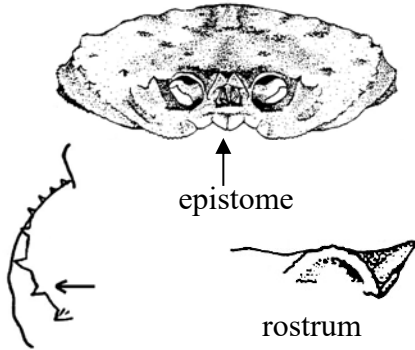
14 Branchial regions of carapace separated by shallow groove and central ridge of spines; branchial ridges V-shaped, with one spine at bottom of V-shape at margin of carapace
Angulatus Tanner Crab (*Chionoecetes angulatus*)
 Bering Sea, Aleutians, GOA (75-1500 m)



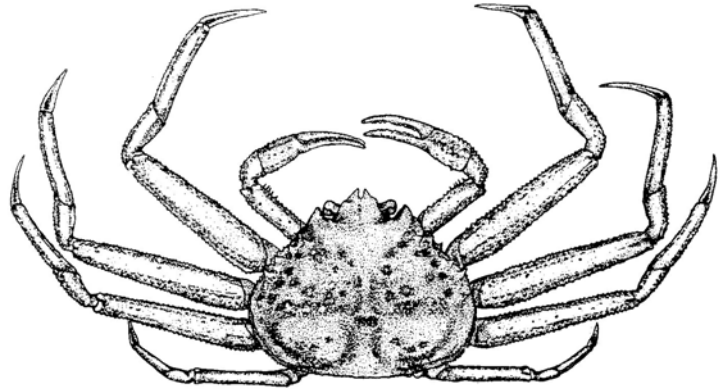
- 15(13)** Epistome M-shaped; carapace width greater than carapace length; rostral spines sharply pointed and tilted upward; lateral spines in row above carapace margin unequal in size and spacing; eyes usually red

Bairdi Tanner Crab (*Chionoecetes bairdi*)

Bering Sea, Aleutians, GOA (5-800 m)



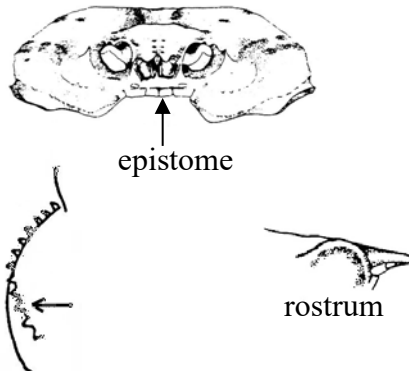
Lateral spines



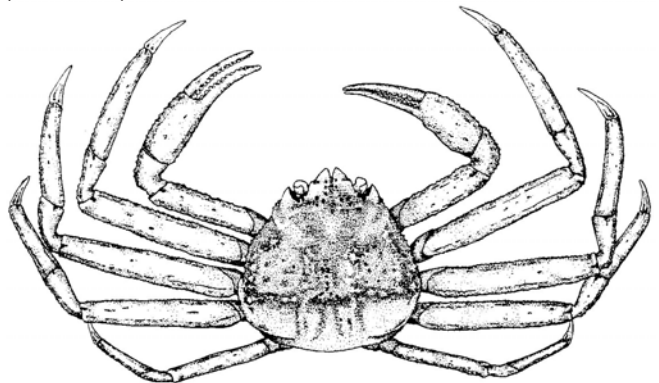
- 15** Epistome nearly horizontal; carapace width and length about equal; rostral spines rounded and nearly horizontal; lateral spines in row above carapace margin uniform in size and spacing; eyes usually greenish

Opilio Tanner Crab (*Chionoecetes opilio*)

Bering Sea, Aleutians, western GOA (5-800 m)



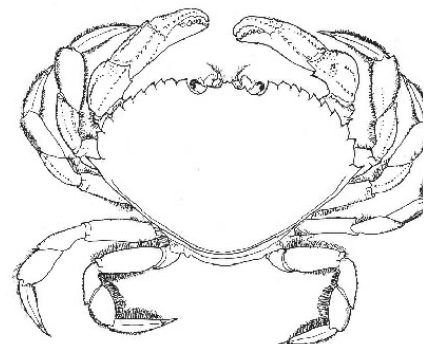
Lateral spines



- 16(12)** Carapace oval, with smooth dorsal surface; 10 spines on each side of the eyes on front margin of carapace; claw tips white

Dungeness Crab (*Cancer magister*)

SE Bering Sea, GOA (5-500 m)



- 16** Carapace hexagonal, triangular, or guitar-shaped..... **17**

17(16) Carapace generally hexagonal, covered with bristle-like hairs..... 18

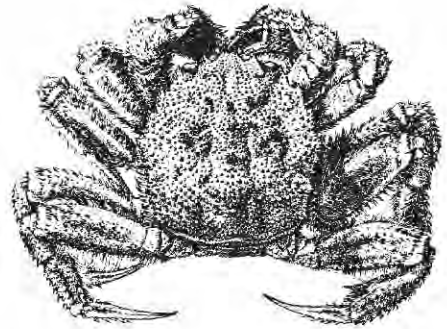
17 Carapace acutely triangular or guitar-shaped; carapace and legs may be decorated, but not covered with bristle-like hairs..... 19

18(17) Seven lateral spines posterior to eye that generally point forward; carapace weakly hexagonal; tips of claws light in color.

Korean Horsehair Crab (*Erimacrus isenbeckii*)

Bering Sea, Aleutians,

GOA from Kodiak west (20-400 m)

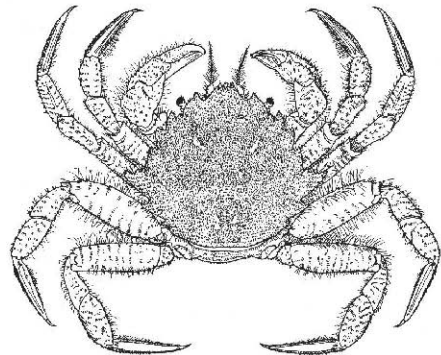


18 Six lateral spines posterior to eye that generally point outward; carapace strongly hexagonal; tips of claws black.

Telmessus Crab (*Telmessus cheiragonus*)

Bering Sea, Aleutians west to Atka,

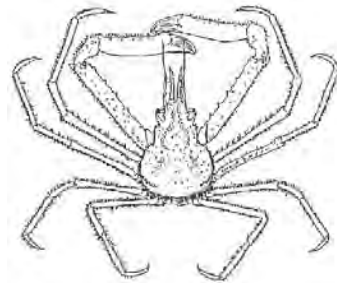
GOA from Kodiak west (0-300 m)



19(17) Carapace acutely triangular, teardrop-shaped; rostral spines long, slender, parallel; body and legs usually profusely decorated with kelp, hydroids, sponges, etc.

Decorator Crab (*Oregonia gracilis*)

Bering Sea, Aleutians, GOA (10-1000 m)



19 Carapace guitar-shaped; rostral spines short, triangular; body and legs not profusely decorated (carapace may have some decoration)

Lyre crabs (Genus *Hyas*)

Bering Sea, Aleutians, GOA (10-900 m)



CORALS

Hydrocorals (Anthoathecatae) – code 815

Depth: 0–440+ fm (0–800+ m)

Colonial corals with a hard inflexible calcareous skeleton. Colonies may be up to one meter tall but are often highly fragmented on deck as they are extremely fragile.



Stony corals (Scleractinia) – code 816

Depth: 19–1367 fm (35–2500 m)

Small solitary ‘cup’ corals with a hard calcareous skeleton.



Gorgonians (Gorgonacea) – code 817

Depth: 5–1640 fm (9–3000 m)

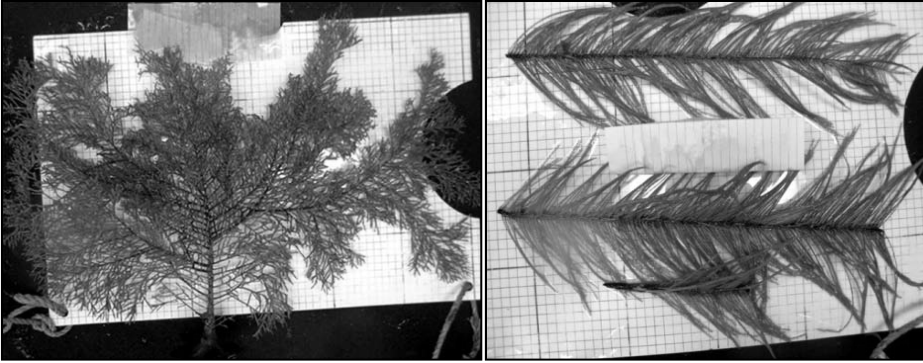
Colonial corals that may be bushy or uniplanar and quite large (more than 1 m tall or wide), resembling small trees, fans, or bushes. Internal skeleton is firm but flexible and may be ‘woody’ (dark protein material) or calcified (white bone-like) to some degree.



Black corals (Antipatharia) – code 818

Depth: only found below 218 fm (400 m), most species only found below 437 fm (800 m)

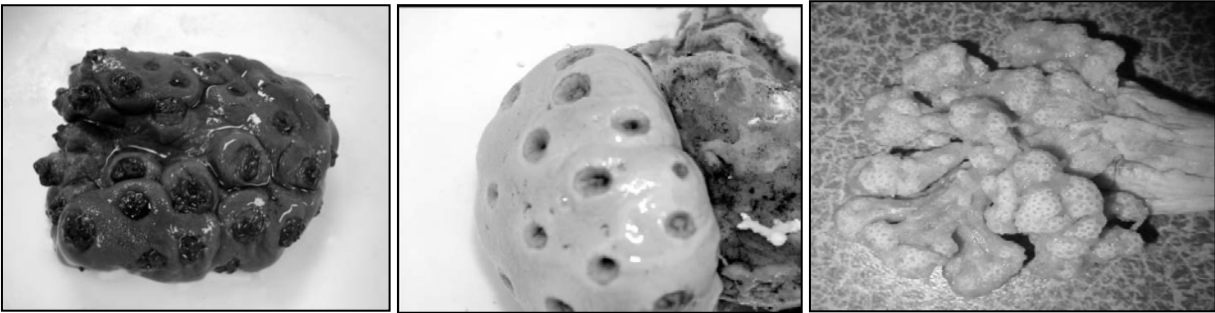
Axial skeleton black or dark brown, highly flexible and covered with small thorn-like projections. Live specimens covered with a **mucus-rich** soft tissue with small non-retractable polyps.



Soft corals (Alcyonacea) – code 819

Depth: 10–1093 fm (20–2000 m)

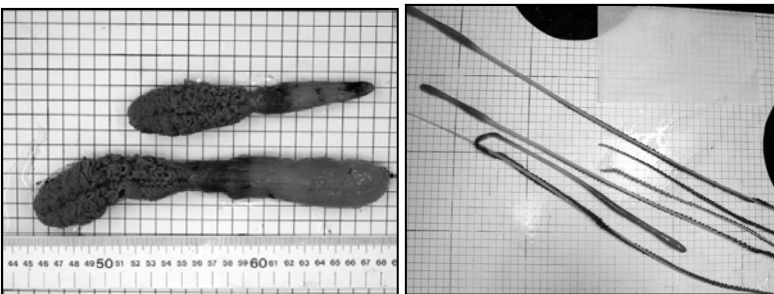
Colonies have fleshy bodies without an axial skeleton, usually resembling mushrooms, berries, or cauliflower.



Sea pens and sea whips (Pennatulacea) – code 58

Depth: 13–3280 fm (25–6000 m)

Colonies consist of an elongated fleshy stalk supported by an internal stiff calcium carbonate rod.

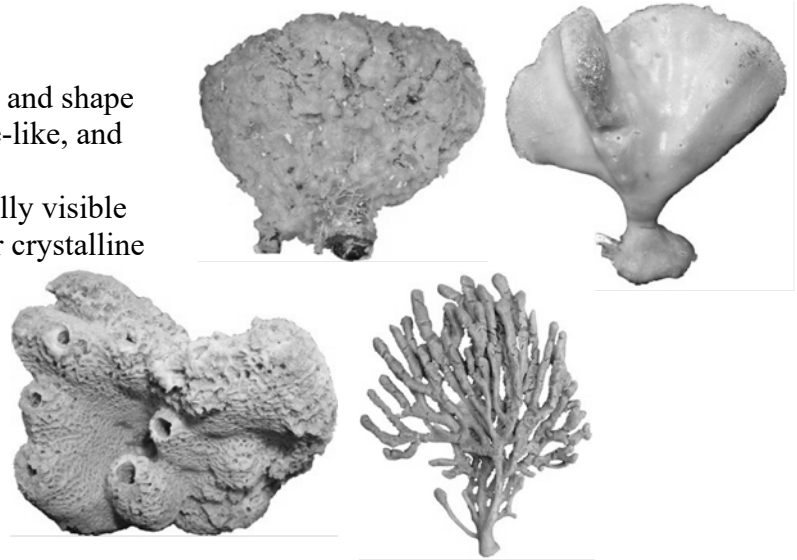


OTHER INVERTEBRATES

This section is a basic orientation to the major groups of invertebrates that observers are likely to encounter in their samples. The illustrations of typical species provided here are intended to aid observers in general invertebrate identification. However, observers should keep in mind that the identification of fish species is a top priority, and therefore they are generally not expected to put substantial effort into invertebrate identification. Line drawings courtesy of the Florida Center for Instructional Technology (<http://etc.usf.edu/clipart/>).

Phylum Porifera: sponges (code 26)

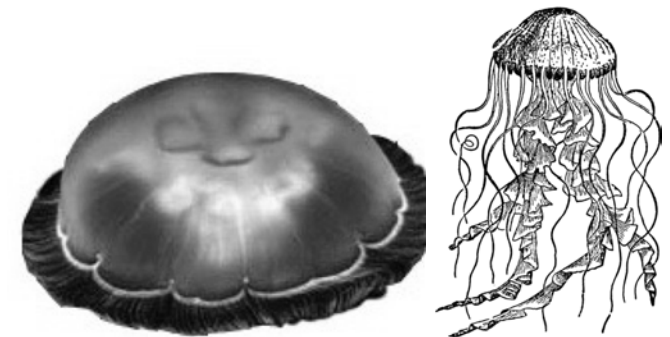
- sessile, highly variable in size, color, and shape
- includes encrusting, ball-shaped, tree-like, and various other morphologies
- exterior pores for water transfer usually visible
- texture may be soft, rubbery, hard, or crystalline



Phylum Cnidaria: jellyfish, anemones

Class Scyphozoa: jellyfish (code 35)

- consist of a bell and tentacles
- may be up to 50 cm wide
- clear, yellow, pink , or purple



Class Anthozoa: Order Actiniaria: sea anemones (code 55)

- body is a thick column with crown of tentacles
- tentacles often retract out of water
- may be brightly colored, very slimy
- typically attached to rocks or shells



Phylum Annelida: worms and leeches

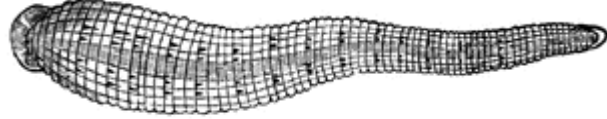
Class Polychaeta: bristleworms (**code 54**)

- body generally cylindrical and segmented
- multiple appendages with hairlike setae



Class Hirudinea: leeches (**code 52**)

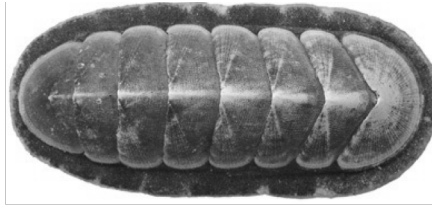
- flattened body with tapered anterior end
- suckers at both ends
- usually distinctly banded



Phylum Mollusca: snails, clams, squids, octopus

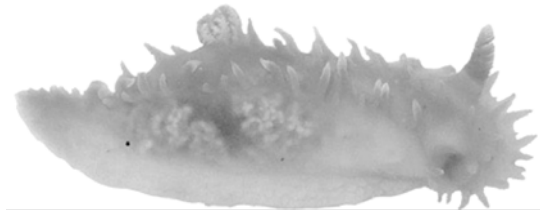
Class Polyplacophora: chitons (**code 44**)

- dorsoventrally flattened, ovoid
- 8 articulating shell plates on dorsal surface
- edges may have bristles



Class Gastropoda: snails (**code 30**) and nudibranchs (**code 25**)

- marine snails highly variable in size, color, shape
- nudibranchs lack shells, often very colorful



Class Bivalvia: clams, mussels, oysters, scallops (**code 29**)

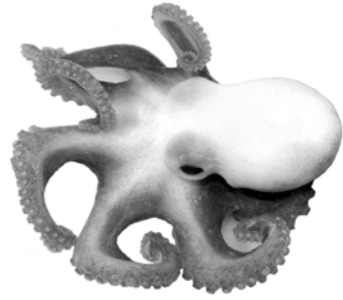
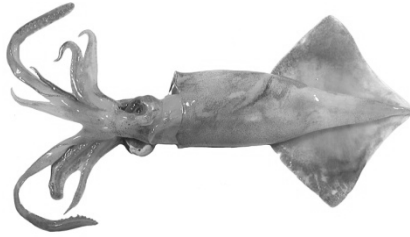
- shell consists of two hinged halves, or valves
- size, shape, sculpturing, and colors highly variable



Class Cephalopoda: squids (**code 50**) and octopus (**code 60**)

- squids are generally elongate, with fins on the mantle and 10 appendages (8 arms and 2 tentacles)

- octopuses have a robust, rounded mantle, and 8 arms



Phylum Arthropoda

Class Pycnogonida: sea spiders (**code 56**)

- very elongate, narrow body and 4-6 pairs of legs

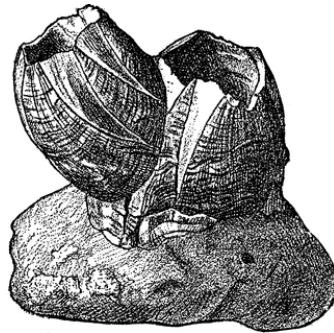
- often bright red or green



Class Cirripedia: barnacles (**code 48**)

- sessile filter-feeders usually attached to rocks

- smaller species may also attach to crabs and snails



Class Malacostraca: shrimps (**code 70**)

- various sizes and color patterns

- females carry eggs under tail segments



Class Isopoda: isopods (code 33)

- dorsoventrally flattened, segmented
- usually small (less than 5 cm long)
- often pink or red, may be parasitic



Phylum Echinodermata: crinoids, sea stars, urchins, cucumbers, etc.

Class Crinoidea: crinoids (code 53)

- commonly known as sea lilies or feather stars
- crown has pentameral symmetry, with 5 forked arms
- stalk jointed



Class Asteroidea: sea stars (code 20)

- may have 5 to over 20 arms
- size, shape, texture, and color highly variable



Class Echinoidea: sea urchins, sand dollars (code 40)

- usually less than 15 cm in diameter
- spherical shell covered with long spines
- shell (test) divided into 10 radial sections
- may be white, green, or purple



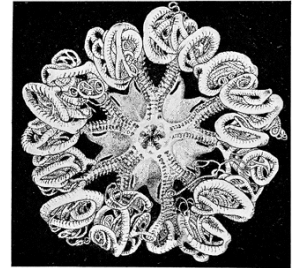
Class Holothuroidea: sea cucumbers (code 41)

- elongate tube-shaped body
- leathery or slimy texture
- may be bright yellow, orange, or purple
- appendages (tube feet) arranged in five rows on body
- when irritated, organs forcibly expelled from anus

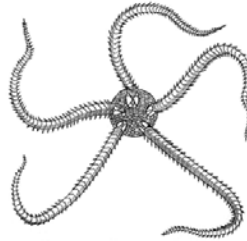


Class Ophiuroidea: basket stars (**code 21**) and brittle stars (**code 22**)

- basket stars have 5 highly branched arms, each of which ends in a coiled mass
- basket stars are generally yellow to orange, and may be relatively large (20-30 cm wide)



- brittle stars have a very small rounded disc and 5 long slender arms
- brittle stars are generally red to brown, but the color is variable



Phylum Chordata

Class Ascidiacea: tunicates and sea squirts (**code 43**)

- tunicates may be solitary or colonial
- solitary tunicates include sea squirts, and may be attached directly to the substrate or stalked
- solitary tunicates have one incurrent and one excurrent siphon
- colonial tunicates form large ball-shaped or club-shaped colonies
- colonial tunicates vary in color including gray, brown, yellow, or orange



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SEX DETERMINATION

ROUNDFISH

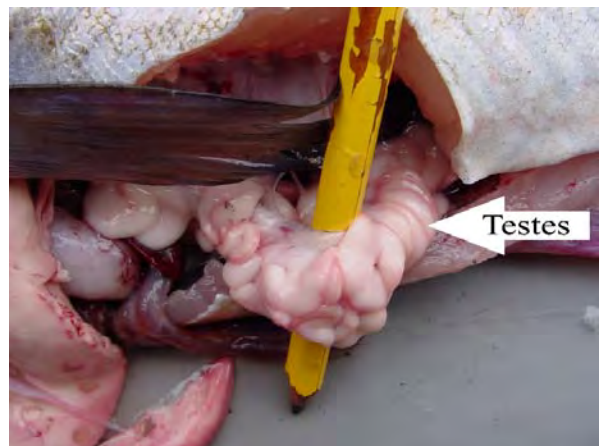
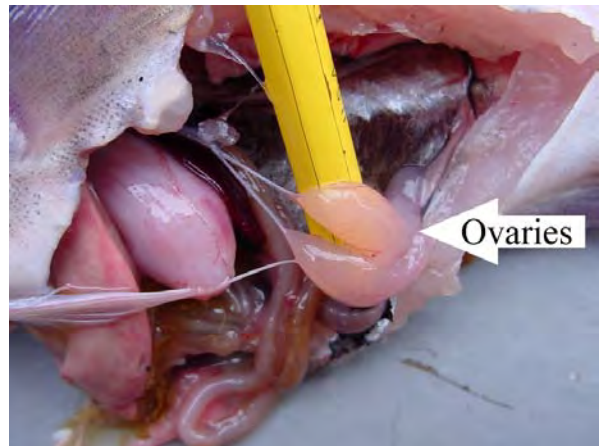
Roundfish gonads are in the visceral cavity, ahead of the vent. Insert your knife or scalpel blade in or near the anus and cut forward toward the head. There will be only two organs attached directly to the anus - the intestine and the gonads. If you carefully move the other organs aside until you get a clear view of the tubes attached to the anus, you can then pull on the tubes and discern intestine (which is coiled and attached to the stomach) from gonads (which end as paired structures near the backbone).

Cod, Pollock, and Giant Grenadier

The gonads are directly above the vent and are attached to the vent. Slit the skin of the belly near the vent and look behind the stomach area for the paired organs.

Ovaries are paired sacs which are typically pink or orange (or clear when immature). When ovaries are mature, you should be able to see the eggs inside. The sacs should look granular. Pacific cod ovaries often have a black covering on each sac.

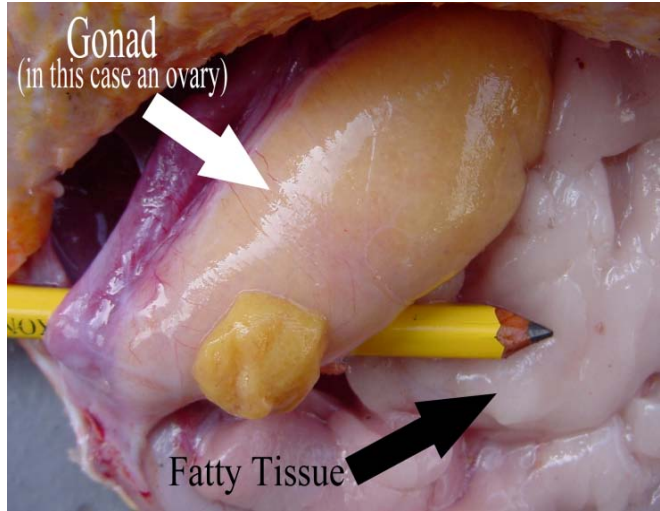
Testes look very different from ovaries. When mature, the testes are convoluted, opaque and smooth in texture. In a mature male, the testes are best described as “greasy-looking, white, twisted Ramen noodles.” Immature testes will be pink or cream colored, located near the backbone and have a ruffled look to the edges of the tubes.



Rockfish

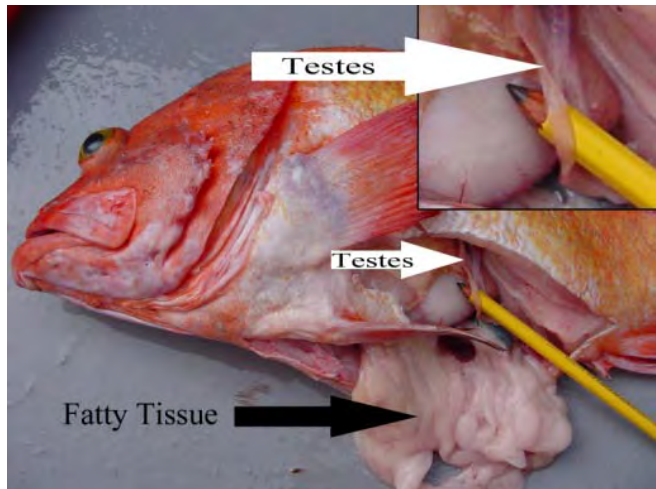
Rockfish gonads are found near the backbone in the visceral cavity. Trace the gonad strings from the vent upwards until you see the paired organs. There will always be two strings near the anus that have to be traced some ways before you can find the sacs. Sometimes there is another structure directly at the vent that appears to be a single gonad sac, but this is not the sex organ! You must follow the string-like tubes up to the **paired** gonads. Though you may notice external structures at the vent that seem sexually dimorphic, **never sex rockfish using external characteristics**. It is too easy to judge an immature male as a female or a huge female as a male when using external characteristics.

There can be a significant amount of fatty tissue in the visceral cavity of both male and female rockfish. Those observers accustomed to sexing pollock, Pacific cod and grenadier have mistaken this tissue for testes, because it is whitish and ribbon like. Rockfish gonads are smooth and discernible as paired structures: you must move any fatty tissue aside and look dorsally in the visceral cavity to see the gonads!

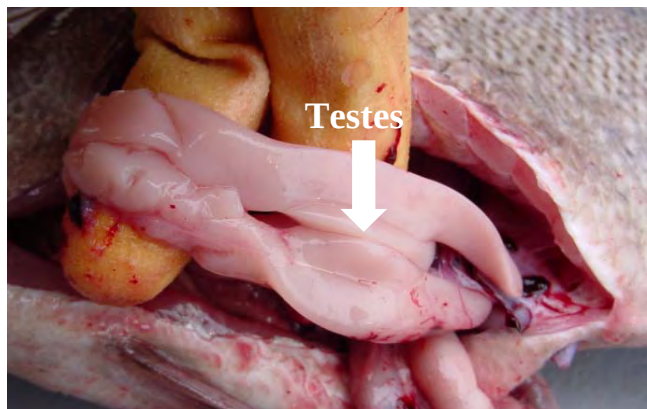


Ovaries are elongate ovals with granular insides. They will be pink, orange, yellow, or white. The two sacs will have smoothly rounded sides, as opposed to the male testes which have a three-sided, triangular shape in cross-section. If immature, look closely or cut the gonad open to see the granular insides which identify it as female. Rockfishes are live spawners, so a spawning female will have larvae in the cavity.

Testes are cream colored or pink, elongate (5 times as long as they are wide) and smooth in texture. They have three "edges" to the tubes. Instead of a rounded oval tube, testes look triangular in cross section due to the distinct edges. Testes will look like flat tubes when immature, but when examined closely you will see the defined edges and the triangular shape.



Don't mistake the fatty tissue found in the visceral cavity of some rockfish as testes! The testes of rockfish look nothing like those of pollock, Pacific cod and grenadier!

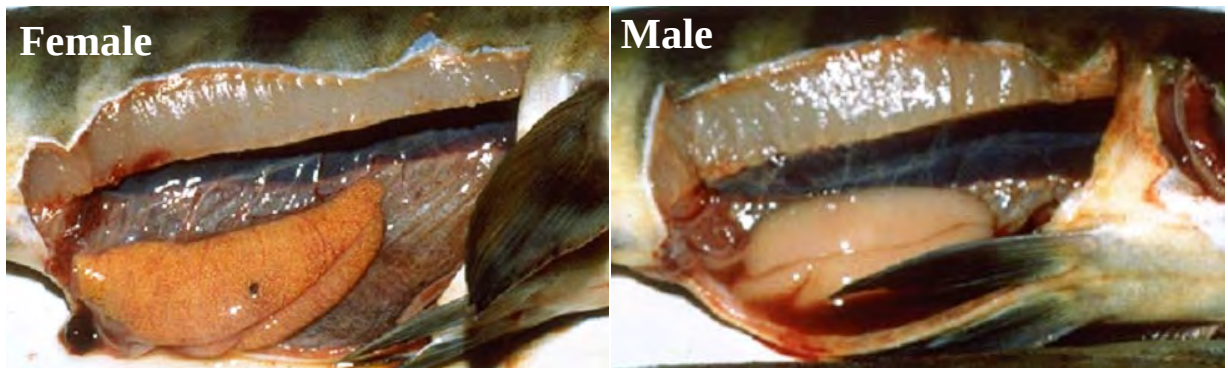


Atka Mackerel

Like rockfish, Atka mackerel gonads are at the top of the visceral cavity, close to the backbone. Externally, mature males have a yellow tinge to the white stripes but external color differences cannot be used to sex these fish. The cut and gonad location is the same as with rockfish.

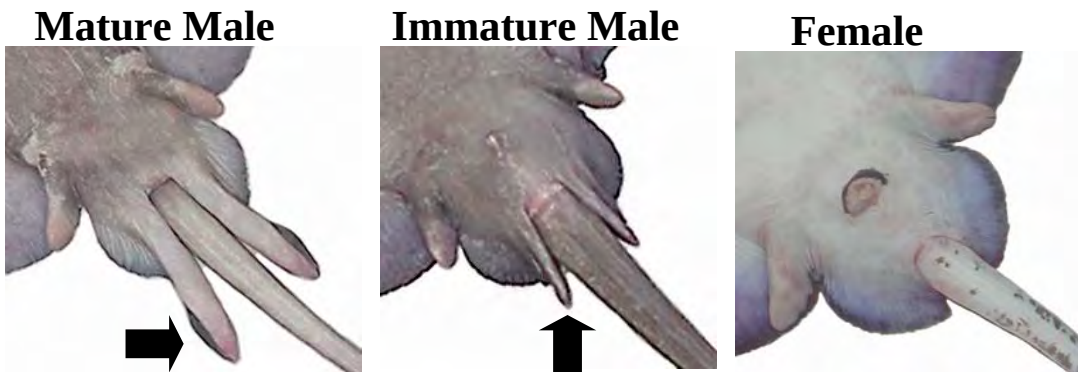
Ovaries are two clear sacs filled with small round eggs that are olive green, tan or brown. Atka mackerel spawn in spurts, so eggs in the ovaries will be a mix of different sizes and stages of development.

Testes are similar to those in rockfish. The two tubes will be smooth in texture, cream colored and longer than wide. Be aware that males eat the eggs from other Atka mackerel nests. Don't confuse a stomach full of eggs, or eggs loose in the cavity as a female mackerel.



Skates

Skates can easily be sexed externally by noting the presence or absence of claspers. The claspers are paired reproductive structures located between the pelvic fin and the base of the tail. In mature males the claspers are large (possibly half the length of the tail), rigid and are easily identified. In immature males the claspers are much smaller and flexible, and may be more difficult to distinguish from the pelvic fin.



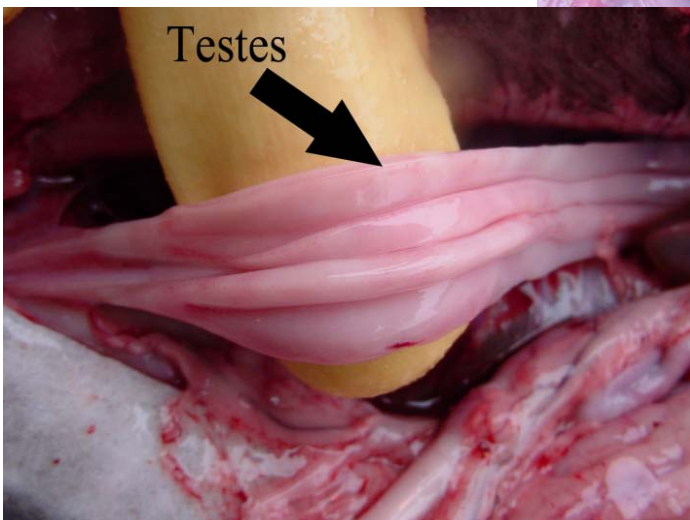
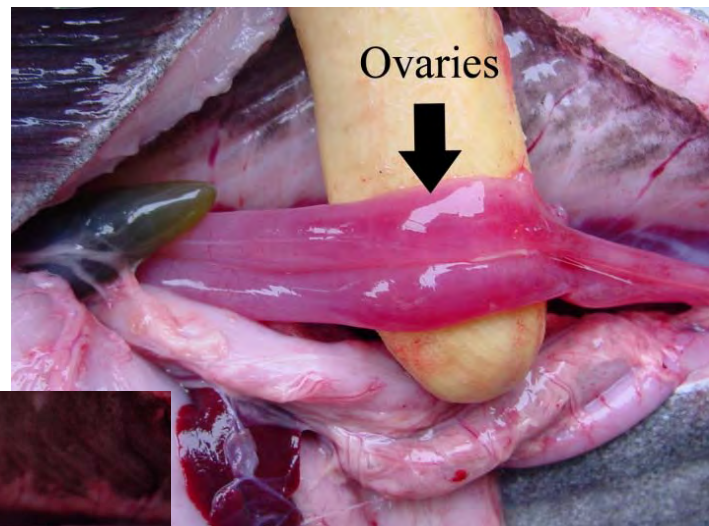
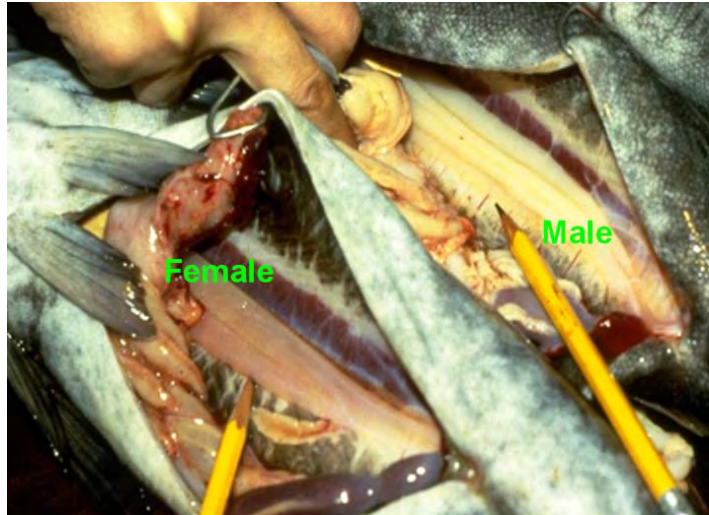
Sablefish

The gonads of sablefish are very different from all other roundfish; they lie directly on the backbone. Remove all the other organs from the visceral cavity and peer at the backbone area near the posterior of the visceral cavity for the gonad tubes. Immature fish will have nearly see-through ribbons, so you will need to probe them apart to count the correct number of lobes.

It is important to count the lobes at the posterior portion of the gonad, since the lobes will be fused anteriorly and will always look like just two lobes.

Both females and males have fleshy smooth tubes of a cream or pink color. Mature fish have liver colored gonad tubes. There are no reliable differences in color or texture between non-ripe males and females. You can reliably tell the difference between males and females based on whether the gonads have two (females) or four (males) lobes. When mature, the ovaries may have a partial fold through each of the two lobes, giving a false impression of four lobes. Cut across the gonad strands and distinguish the true number of lobes.

Male sablefish gonad lobes are fused at the anterior point, making it easy to mistake a male as female. When checking the gonad lobes, look at the posterior portion!



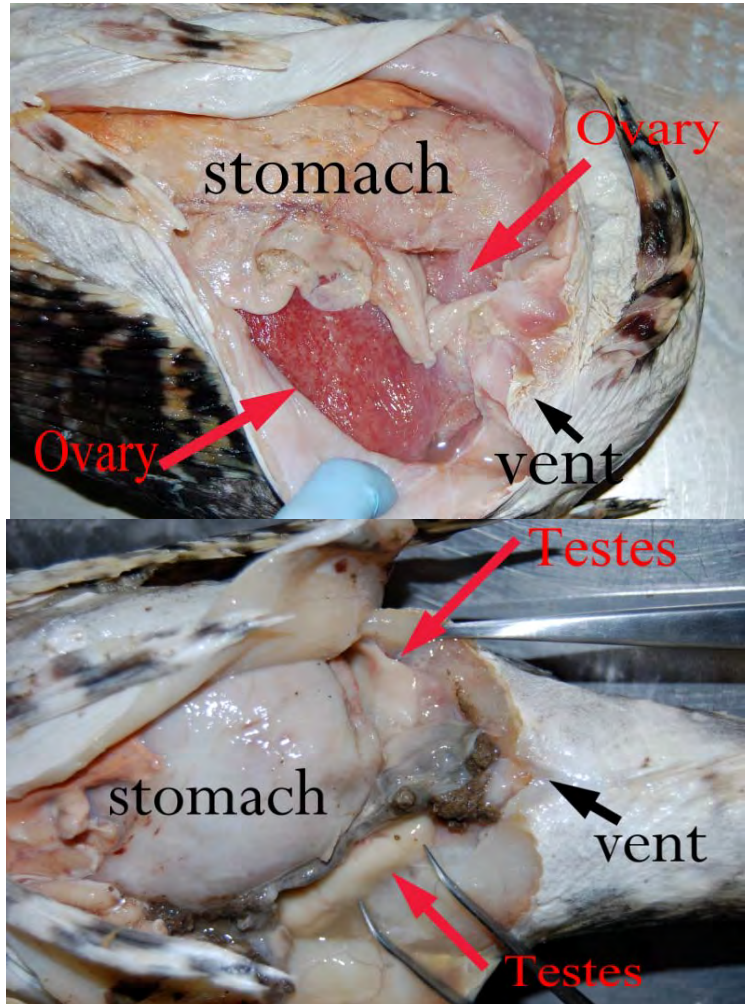
Sculpins

The gonads are directly above the vent and are attached to the vent. Slit the skin lengthwise from the vent forward (anterior/towards the head) and look behind the stomach area for the paired organs. To avoid cutting the stomach first make a gentle cut just below the skin, allowing you to move the stomach to the either side, then make a larger cut to allow for identification. Cutting the stomach may make sexing more difficult because the stomach contents may fill the visceral cavity. For Yellow Irish Lord, this step is very important, as the stomach often protrudes outward right next to the cavity wall near the gonads and the skin can be very thin in this area.

Ovaries are paired sacs which will be typically pink or orange (or clear when immature). When the ovaries are mature, you should be able to see the eggs inside. The sacs should look granular. Sculpin ovaries often have a translucent covering on each sac, but sometimes may be dark. For immature specimens, look for small paired sacs.

Ripe mature female great and plain sculpins are typically caught during the late fall and winter; their ovaries will be large (up to 20% of body weight) and eggs will be visible. Ripe mature yellow Irish Lord females are typically caught in summer and early fall. During the spawning season, some ovaries may be spent, and they are much smaller after having released the eggs.

Testes look very different from ovaries. Male gonads in all species will be flat, often with discernible edges. When mature, the testes will be opaque and smooth in texture. Immature testes will be pink or cream colored, long and thin, and located near the backbone.



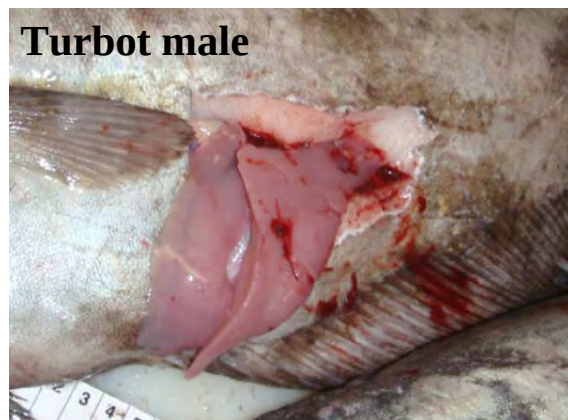
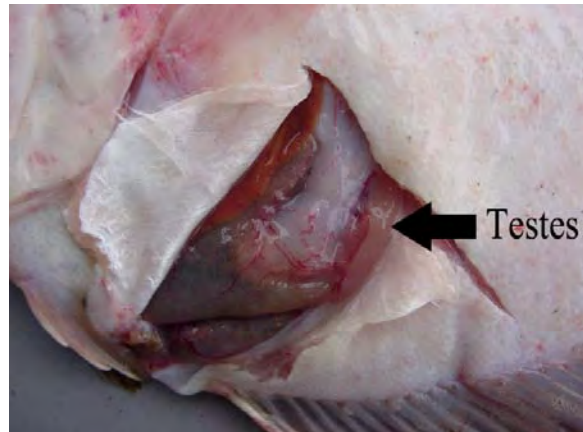
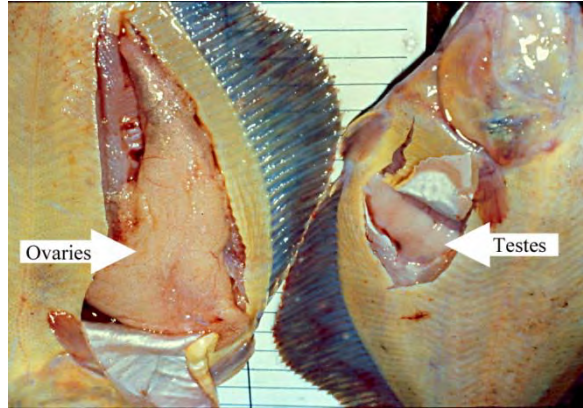
FLATFISH

Flatfish gonads are also paired, but are located behind the visceral cavity. If the flatfish has an anal spine, the gonads will begin just behind it. Cut from the anal spine location back toward the tail of the fish. When you gain experience determining sexes using a larger cut, your cut can be made smaller, faster, and in the correct spot for seeing the sex difference.

Flatfish gonads are posterior to the visceral cavity (and the anal spine if present) and extend just under the flesh on both sides of the fish, although it is easier to cut on the blind side. Cut back toward the tail from the anus as if skinning the fish. Lift the skin flap and check for a triangular shaped gonad.

Ovaries: Female flatfishes have elongate triangle ovaries that extend from behind the anal spine area almost to the tail when mature. When immature, the ovaries will be almost equilateral triangles with one angle shaped like a smoothly rounded tube extending only slightly back toward the tail (the triangle looks like a funnel in shape). The color will be pink (spent, immature) or orange (ready to spawn). Ovaries always have rounded edges.

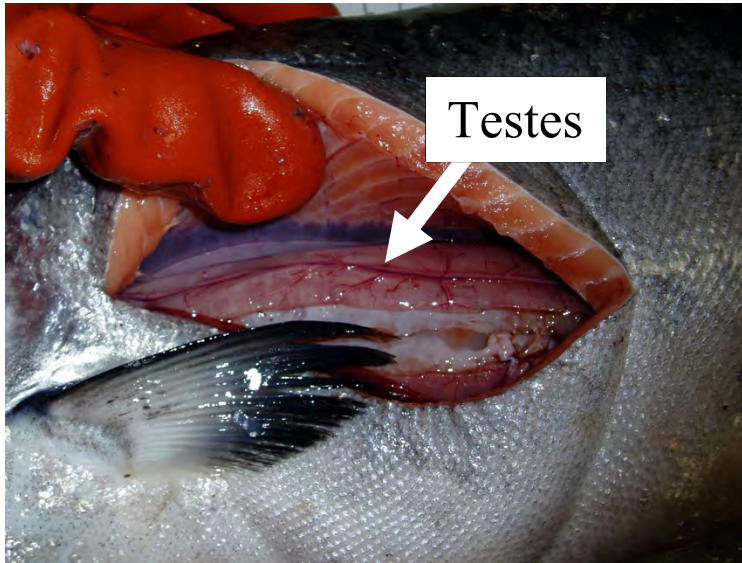
Testes: Male flatfishes have a white, equilateral triangle shaped gonad on each side. The triangle will not have a tail extending back toward the caudal fin. Immature males have a small crescent moon shaped, tan colored gonad laying right at or behind the anal spine location. All male flatfishes have “edges” to the triangle. If you lift the gonad with the knife or scalpel and examine the sides of the triangle, you can distinguish the sharp edges (male) or rounded sides (female), even on an immature flatfish.



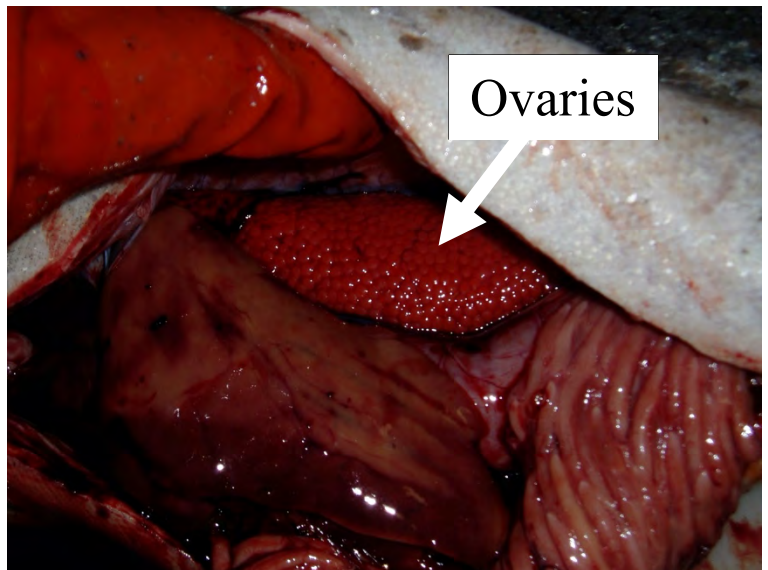
Note: Mature Greenland turbot males may have elongate testes that extend beyond the visceral cavity. However, they still have the typical edges and the same consistency as other testes.

Sex Determination of Salmon

Salmon gonads are far forward in the body and immediately under the backbone. You must cut open salmon to determine sex. Make an incision on the salmon from the pectoral fins and across about mid-way up from the belly to see into the top of the peritoneal cavity near the head. The gonads will be two long tubes laying parallel to the backbone. Females, mature and immature, will have tubes containing granular eggs in sacs that are red, pink, yellow, or orange. Mature males will have smooth textured tubes that are white or cream color. Immature males will have translucent white tubes that appear empty. Data records for salmon must be separated by species and sex.

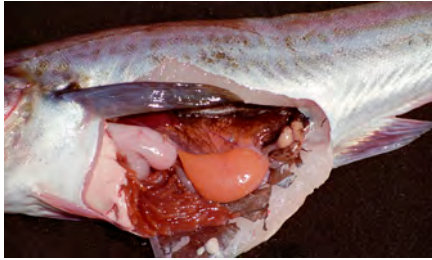
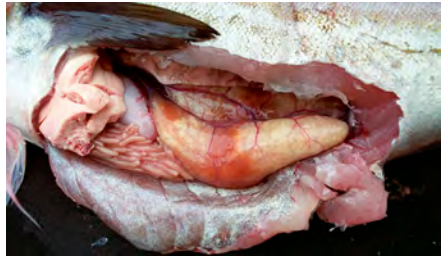
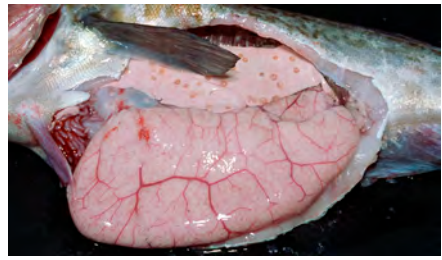
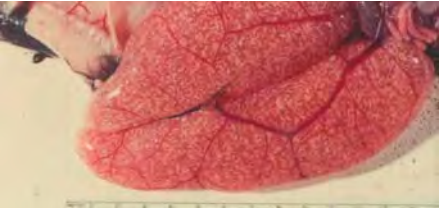
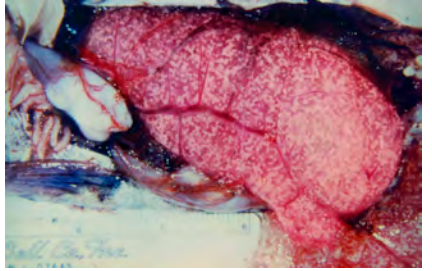
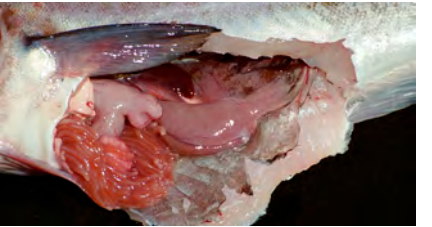


Mature Male Salmon



Mature Female Salmon

Pollock Maturity Codes (female)

Stage	Description		
1. Immature	Ovaries small, transparent to translucent, grayish-red. Eggs not visible to the eye.		
2. Developing	Ovaries occupy about half the length of the ventral cavity. Color ranges from opaque grayish-red to reddish-yellow and orange. Eggs usually are present but may not be visible to eye.		
			
3. Pre-spawning	Ovaries occupy about 2/3 or more of the ventral cavity. Color becomes more opaque. As eggs begin to hydrate, some become translucent.		
4. Spawning	Roe runs with slight pressure. Most eggs hydrated (translucent) with few opaque eggs left in ovary.		
5. Spent	Ovaries almost, to completely empty. May contain a few opaque eggs or eggs in a state of reabsorption. Ovaries are flaccid, watery and bloodshot.		

Visual Maturity Scan Reminders and Suggestions: (see observer manual and visual maturity PowerPoint for complete instructions)

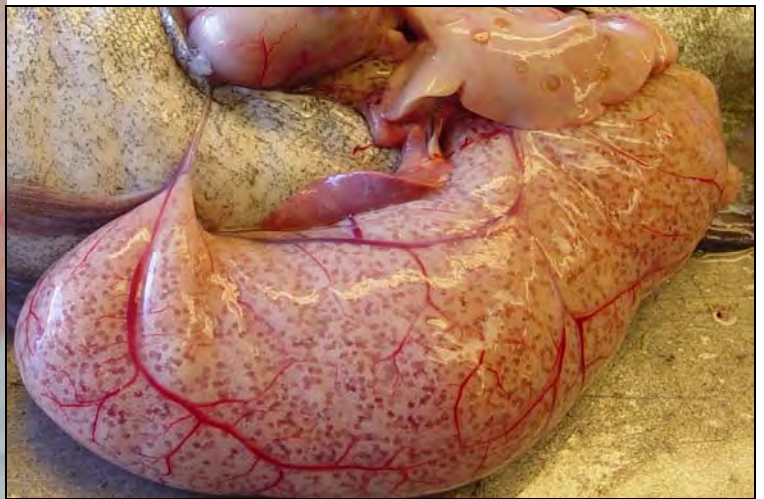
- Visual maturity is assessed on female otolith specimen fish only
- Be careful not to damage the internal structures (especially the stomach) while cutting the abdomen
- Consider all three characteristics listed below before assigning a visual maturity stage

Additional photographs:

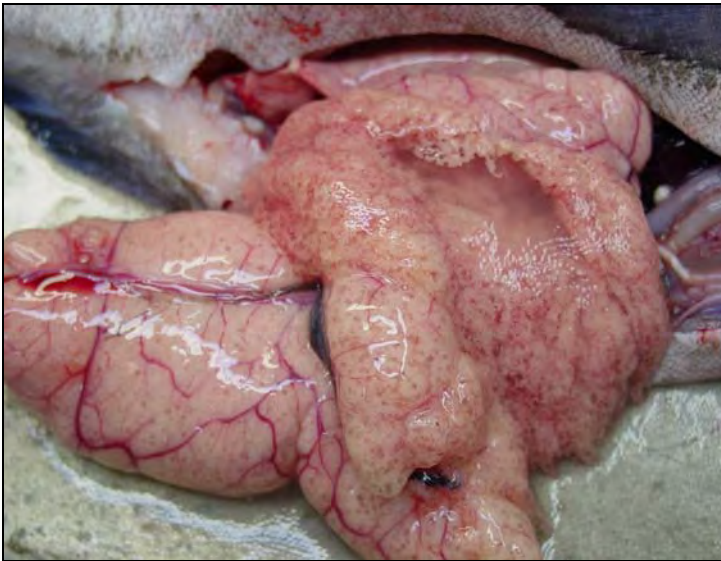
A



B



C



Photograph A: developing; yellow- orange in color, well developed blood vessels, visible eggs

Photograph B: Prespawning; occupies 2/3 or more of abdominal cavity, color becoming more opaque, and eggs begin to hydrate

Photograph C; potential spawning (if eggs emitted with slight pressure to the abdominal cavity).

Note: development is more advanced in the center of the ovary. Hydrated and free flowing eggs are surrounding less hydrated, pre-spawning stage eggs. This example confirms the need to cut open a pollock ovary to verify maturity stage evaluation. Assign most advanced stage observed to the whole ovary cavity)

For questions regarding Pacific cod key contact Sandi.Neidetcher@noaa.gov with the Fisheries Interaction Team, Alaska Fisheries Science Center

PACIFIC COD MATURITY CODES (FEMALE)

1. Immature - Ovaries appear as pink or transparent paired sacs, no oocytes (eggs at earlier stage of development) are visible to the eye. - Very small ovaries are close to vertebral column and may be difficult to sex.		* Look for transparent pinkish coloration. There may be slight silver or dark blotching on the surface, but the ovary should be small and new looking as shown.
2. Developing - Ovaries are smallish to about ½ the length of body cavity. - Ovaries form 2 tapered, distinct lobes with well-developed blood vessels. - Oocytes are distinct and visible through the ovary wall and typically appear orange to yellowish in color. - Oocytes stick together forming a solid mass.		
3. Pre-Spawn - Ovaries form 2 large distinct lobes ½ or greater the length of the abdominal cavity. - Most oocytes have matured to opaque or almost clear ova (mature eggs) - Ova are less adhesive resembling the color and consistency of Cream of Wheat- the breakfast cereal.		
4. Spawning Ova are loose in the ovary and run under slight pressure to the body. (The ovary shown was cut upon sexing; the ova fill the abdominal cavity and flow into the bin.) * To differentiate ovary stages 2 through 4 look at the adhesive quality of the eggs. Stage 2 eggs form a solid mass while stage 3 eggs are looser and stage 4 eggs flow freely.		
5. Spent - Ovaries appearing flaccid, dark, and watery or bloody. - Ovaries may contain remnants of disintegrating ova and associated structures.		* Spawning females who have released their eggs may have some loose eggs in the ovary, but the ovary will look flaccid where the ovary starts to shrink, looking wrinkled or bumpy. Disintegrating ova and structures look bloody.
6. Resting - Ovaries are small and firm, may have some black or silver color. - No oocytes are visible to the eye.		* Look for small ovaries (as shown or slightly larger) in larger fish. The surface may be dark or silver and fibrous. The shape is more triangular and thicker than an immature ovary.

Visual Maturity Scan Reminders and Suggestions: (see observer manual and visual maturity PowerPoint for complete instructions)

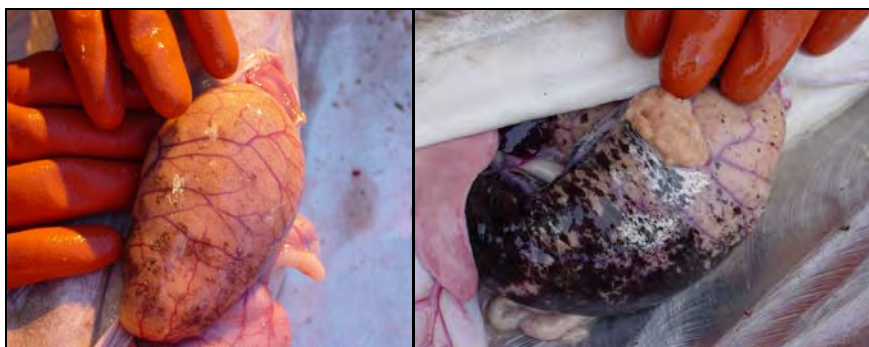
- Visual maturity is assessed on female otolith specimen fish only
- Be careful not to damage the internal structures (especially the stomach) while cutting the abdomen
- Consider all three characteristics listed below before assigning a visual maturity stage

Three main characteristics of visual maturity:

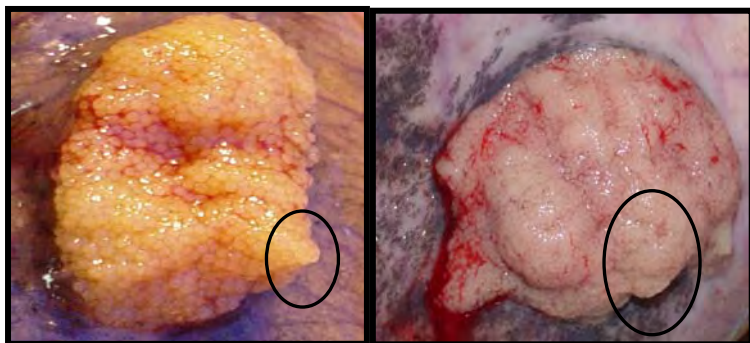
- 1) The size of the ovary in comparison to the size of the abdominal cavity.



- 2) The color of the ovary and the individual oocytes (ova)



- 3) The adhesiveness of the oocytes – do they stick tightly together or can they be separated easily; do they run freely.

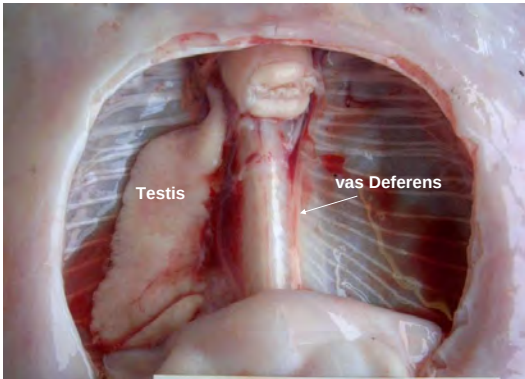


For questions regarding Pacific cod key contact Sandi.Neidetcher@noaa.gov with the Fisheries Interaction Team, Alaska Fisheries Science Center

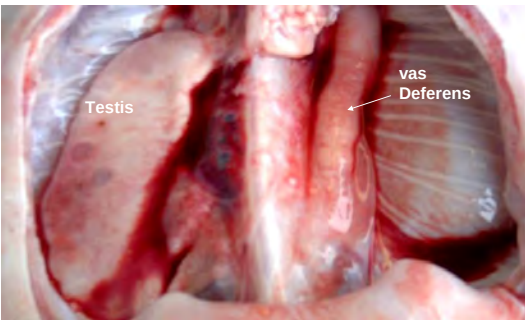
Skate Maturity Stages

MALES

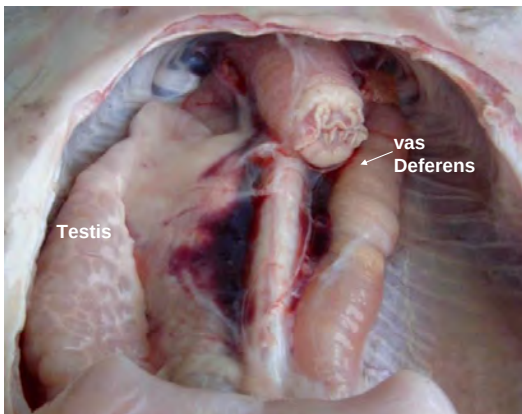
FEMALES



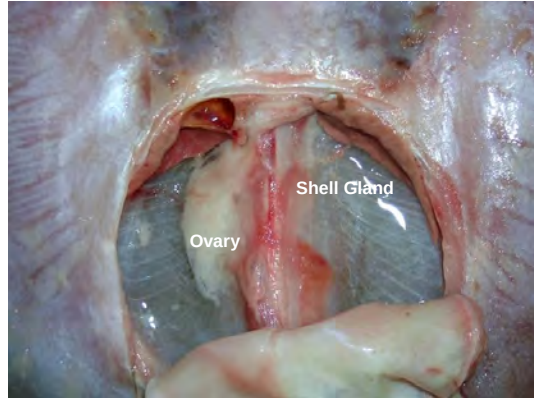
Immature (Maturity Stage 1)



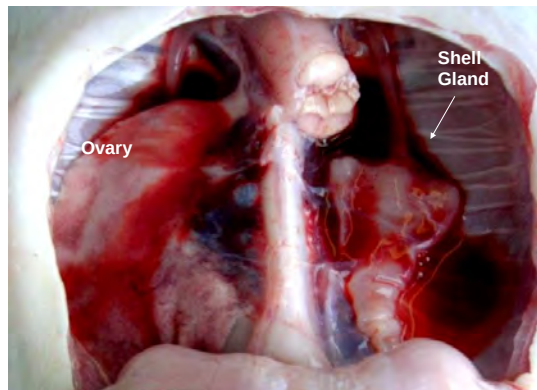
Developing (Maturity Stage 2)



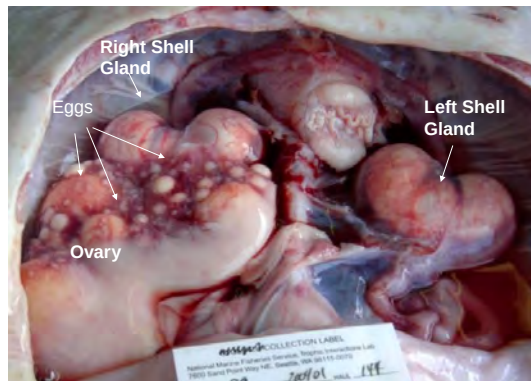
Pre-Spawn (Maturity Stage 3)



Immature (Maturity Stage 1)



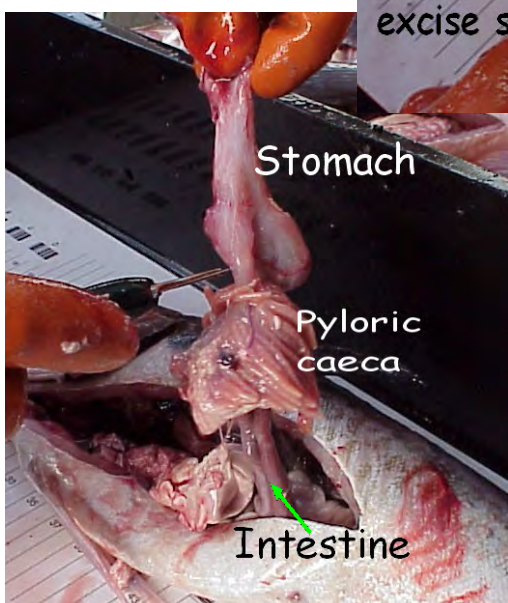
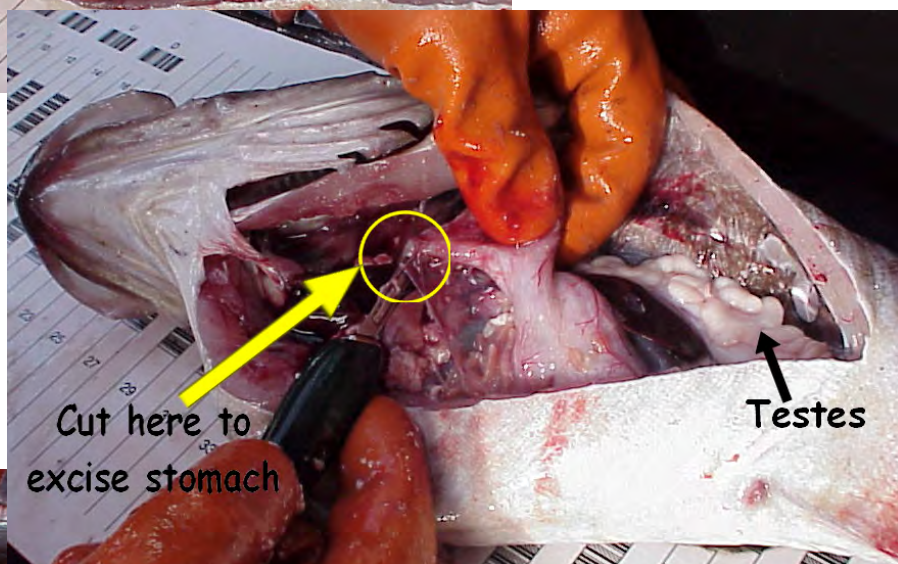
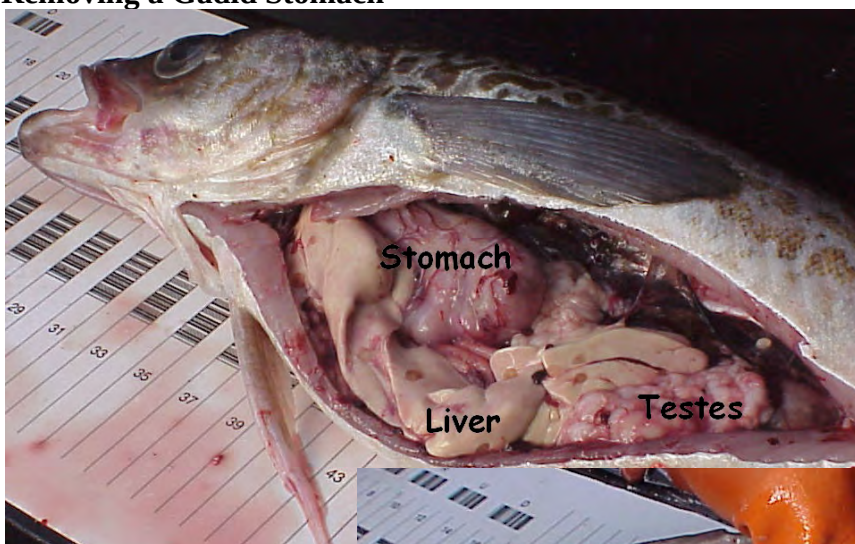
Developing (Maturity Stage 2)



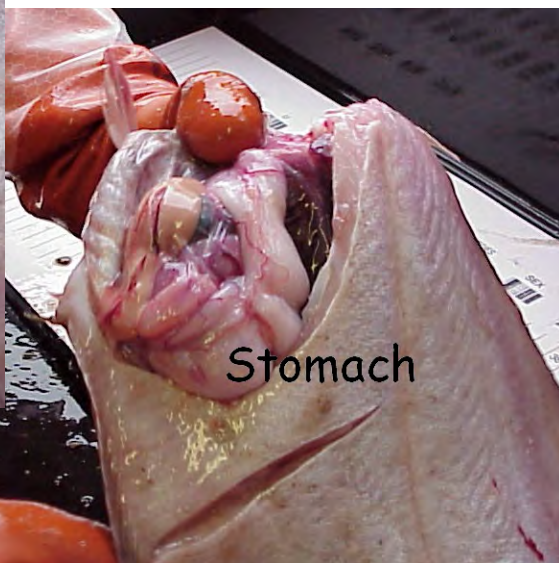
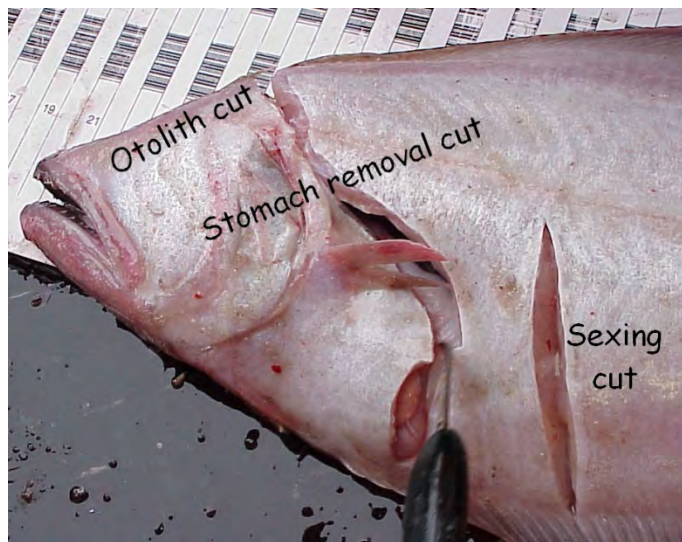
Pre-Spawn (Maturity Stage 3)

STOMACH SAMPLING

Removing a Gadid Stomach



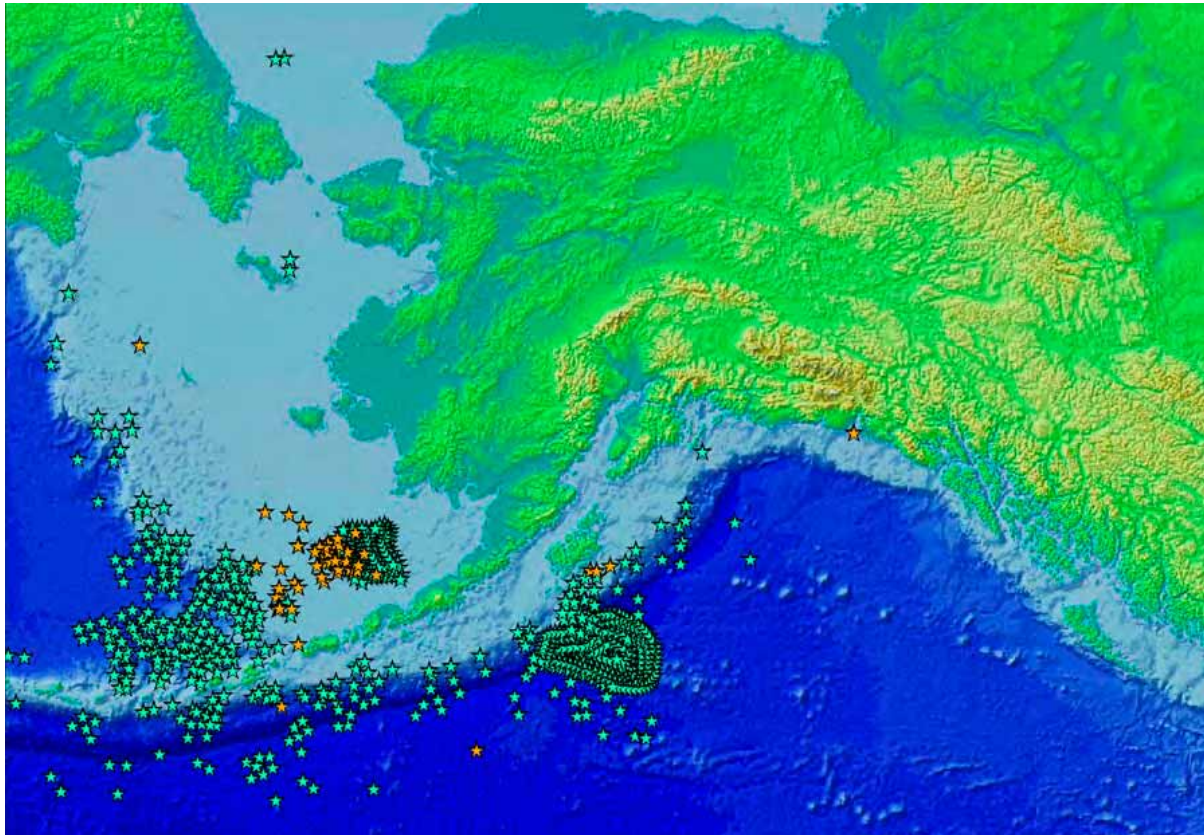
Removing a Flatfish Stomach



North Pacific Right Whales

MARINER ADVISORY

The right whale population in the eastern North Pacific is the most endangered stock of whales in the world, with fewer than 100 individuals remaining. Right whales are slow swimmers that sometimes feed at or near the surface. They show little or no instinct to avoid vessels and are vulnerable to ship strikes. They also tend to roll when they meet an obstacle, which may result in gear entanglement. North Pacific right whales have been observed over the central Bering Sea shelf and off Kodiak Island in recent years.



★ sightings from 1979 – 2004

★ sightings from 1941 – 1967

DO

1. Look out for whales.
2. Log the time and location of right whale sightings.
3. Immediately notify federal fisheries observer of right whale sightings.
4. If no federal fisheries observer, photograph whale for sighting confirmation and send sighting report to address on reverse side.
5. Notify nearby vessels and ask them to stay away.
6. Remain at least 100 yards from whales.
7. If a whale approaches your vessel, take the vessel out of gear (neutral) and allow the whale to pass.
8. Leave the area at a slow, safe speed, ASAP.



DON'T

1. Set or haul gear of any type close to whales.
2. Approach within 100 yards of any whale.
3. Place your vessel in the path of oncoming whales, forcing them to surface.
4. Remain near a right whale.
5. Operate your vessel at anything greater than a slow, safe speed near whales.

RIGHT WHALE



V-shaped, bushy blow



Callosities on head



No dorsal fin, smooth back



Triangular, all-black tail

HUMPBACK WHALE



Tall, slender and/or low, bushy



Grooves and knobs on head



Dorsal fin, hump sometimes with knuckles



Scalloped edge on tail

GRAY WHALE



Bushy, heart shaped



Barnacles all over



No dorsal fin, prominent knuckles



Broad and rounded tail

Right whales may be confused with humpback and gray whales. Look for these important differences.

Right whales are baleen (filter-feeding) whales. They have bowed lower lips that enfold a narrow arching rostrum, the narrow upper jaw. North Pacific right whales grow to about 60 feet (18.3 meters) in length, and adults average 50 tons. They have robust bodies with large heads that are one fourth of the body length. There are a series of callosities – areas of raised, roughened, white-colored skin – on the chin, above the eyes, on the lower lip, behind the blowholes and on the rostrum. The skin is usually black, with white patches on the belly. Right whales have no dorsal (back) fin, and no throat grooves. They have large paddle-like flippers and very broad triangular tails with straight edges. Their blow is V-shaped and up to 16 feet (5 meters) high. Note: never use blow shape alone to identify whales because this characteristic will change depending on weather conditions and whale behavior.

Take photos if possible! Right whales can be individually identified by the pattern of callosities on their head and by other features, so photographs - especially of the head and any scars - are of great value to researchers. At a minimum: report date, number of animals, location (lat/long).

REPORT SIGHTINGS AND SEND PHOTOGRAPHS TO:

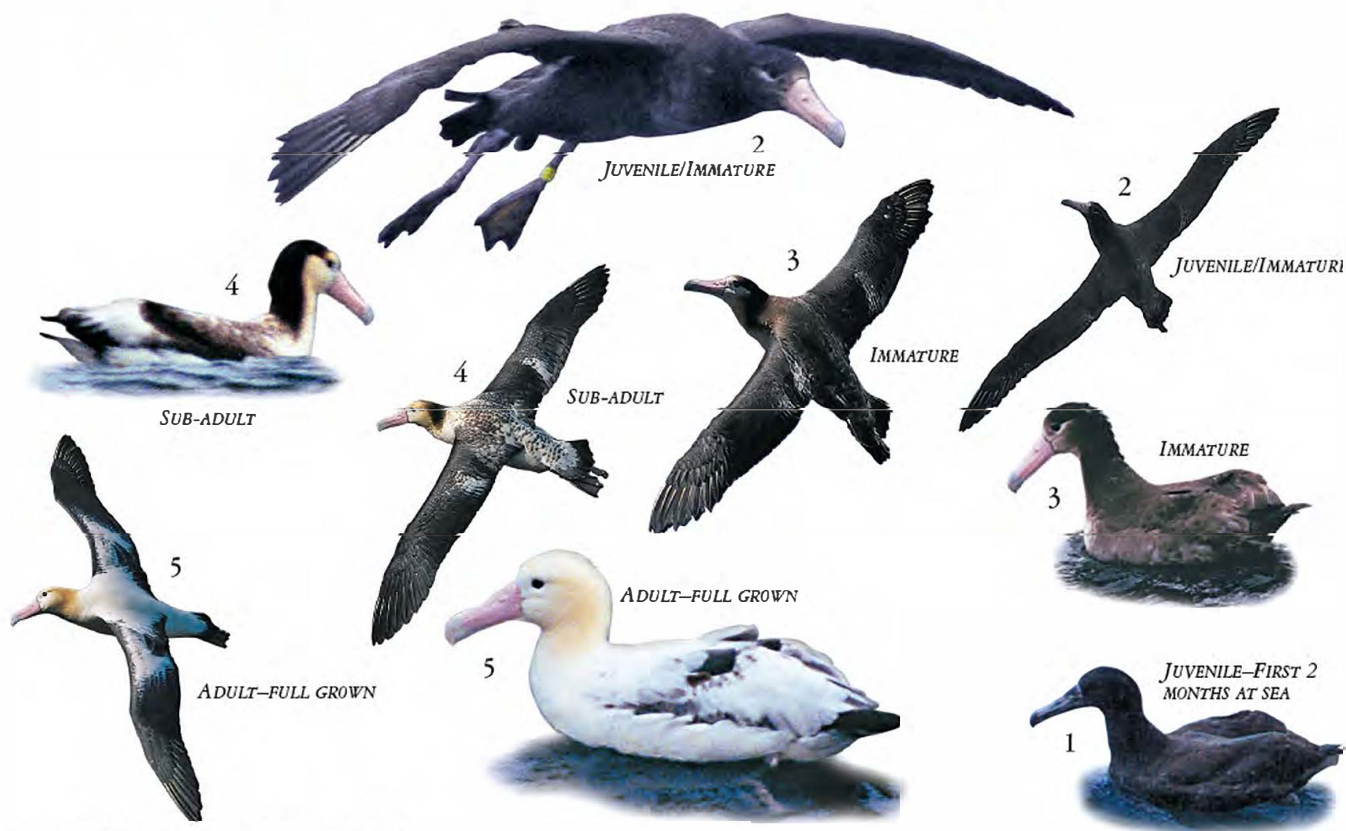
Director
National Marine Mammal Lab
Alaska Fisheries Science Center
NMFS, NOAA
7600 Sand Point Way N.E.
Seattle, WA 98115-6349

(206) 526-4045 voice
(206) 526-6615 fax

<http://nmml.afsc.noaa.gov/>



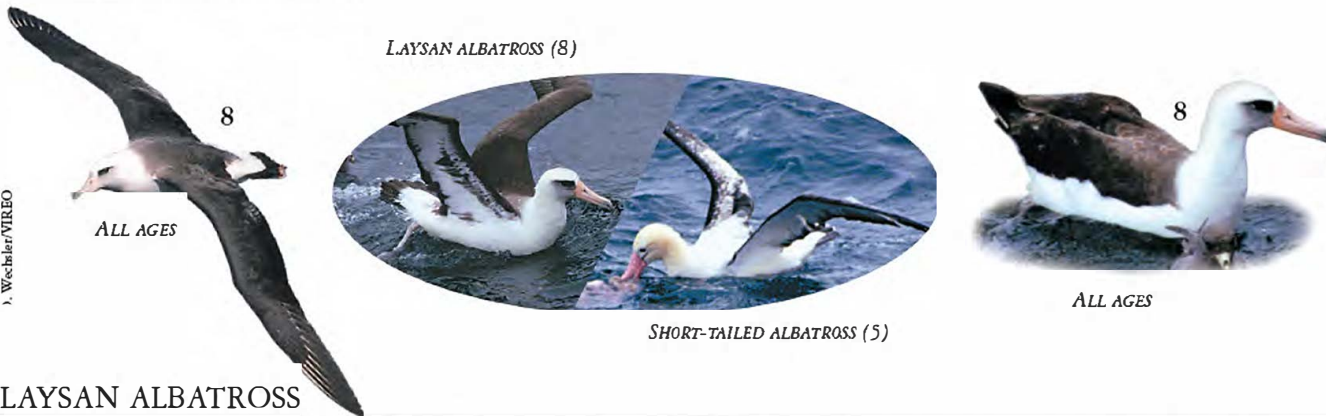
North Pacific Albatrosses



SHORT-TAILED ALBATROSS



BLACK-FOOTED ALBATROSS



LAYSAN ALBATROSS

Identification of Live Birds:

Please match numbers with photos on front.
Bill outlines are life-size for positive identification.

SHORT-TAILED ALBATROSS

(1) SHORT-TAILED, Juvenile

First two months at sea

Similarities

- Difficult to distinguish; completely brown body and wings, dark bill and legs

Differences

- Large, light gray bill with traces of pink

Note: Bill of young short-tailed albatross changes to pink probably within its first two months at sea. It departs from nest mid-May to early June.

(2) SHORT-TAILED, Juvenile/Immature

- Confusion with other species unlikely at this stage
- Completely brown body and wings
- Large pink bill
- Pale legs (sometimes dark)

(3) SHORT-TAILED, Immature

Similarities

- Brown body, some white on chest and face

Differences

- Large pink bill
- Pale legs
- Brown rump and undertail
- Brown wings with white patches on upperwings

(4) SHORT-TAILED, Sub-adult

Similarities

- Pink bill (Laysan bill varies yellowish to pinkish-beige)
- White body with brown back
- Pale legs

Differences

- Dark cap on back of head/neck
- Brown and white upperwings
- Lacks eye patch
- Back more mottled brown

Note: Can breed at this stage.

(5) SHORT-TAILED, Adult-full grown

Similarities

- Pink bill (Laysan bill varies yellowish to pinkish beige)
- White body
- Pale legs

Differences

- White head/neck with yellow tinge
- White back
- Brown and white upperwings
- Lacks eye patch

BLACK-FOOTED AND LAYSAN ALBATROSS

(6) BLACK-FOOTED, Juvenile

- Smaller dark gray bill
- White on face at base of bill

(7) BLACK-FOOTED, Old adult

- Smaller dark bill
- Dark legs
- White rump and undertail
- Wings all brown

(8) LAYSAN ALBATROSS, All ages

- White head/neck
- Brown back and upperwings
- Dark gray eye patch

(8) LAYSAN ALBATROSS, All ages

- White head/neck without yellow tinge
- Brown back and upperwings
- Dark gray eye patch

GENERAL DESCRIPTIONS

Short-tailed Albatross

Phoebastria albatrus

Can occur anywhere in the North Pacific Ocean during ALL months. Currently less than 200 breeding pairs. Multiple threats throughout its range require international cooperation to prevent its extinction. During various stages, can be confused with black-footed and Laysan albatrosses. Full grown chicks completely brown; dark legs; large bill grayish with pink traces (1). Not known exactly when bill develops distinctive pink color (2) but thought to occur during first two months at sea. As they mature, legs become pale; white patches replace brown plumage (3 and 4). Eventually exhibits nearly all-white body; white head and neck with yellow tinge; **white and dark brown wings; white back** (5).

Breeds: Japan

Estimated breeding pairs: 180

Black-footed Albatross

Phoebastria nigripes

Mostly brown throughout its life and **always has white at base of dark bill** (6 and 7). Dark legs. Develops a **white rump** and more white on the face and chest as it matures (7).

Breeds: Hawaiian Islands, Japan

Estimated breeding pairs: 71,000

Laysan Albatross

Phoebastria immutabilis

A white-bodied albatross, like the adult short-tailed albatross, but **solid dark brown from wing tip to wing tip on upper side; dark back** (8). Pink bill but can vary. Legs pale. Plumage colors do not change.

Breeds: Hawaiian Islands, Japan, Mexico

Estimated breeding pairs: 630,000

OTHER FACTS

Albatrosses are adult-size when they leave the nest and spend their first several years at sea. They mate for life. Both sexes of these three species raise a single chick annually, which takes 5 to 6 months. If one parent is killed, the chick also dies and the mate is not replaced for up to three years. These three species have an approximate 7-foot wingspan and range across the entire North Pacific Ocean. They can live 40 years or more.

Please report sightings of short-tailed albatrosses to the U.S. Fish & Wildlife Service: 1-800-272-4174. The only way of knowing the short-tailed albatross' age is from leg bands placed on them as chicks. By reporting the following information, you are contributing to the knowledge of this endangered seabird's pelagic range: 1) Date and time 2) Vessel's position 3) Plumage characteristics 4) The leg-band color combinations (both right and left leg)

Photographs:

Hiroshi Hasegawa, Elizabeth Mitchell, VIREO

Text/Design/Art/Graphics:

Elizabeth Mitchell, Greta Tristram

Support: U.S. Fish & Wildlife Service
National Marine Fisheries Service
International Pacific Halibut Commission
A & A Printing, Seattle



North
Pacific
Longline
Association



SHORT-TAILED ALBATROSS

Female

BLACK-FOOTED ALBATROSS

Male

Female

LAYSAN ALBATROSS

Male