

KEY TO COMMON FISHES OF SOUTH SAN FRANCISCO BAY

1A One gill opening on each side → 10A



1B 5-7 gill openings on each side → 2A



2A Gill openings on side of body → 3A

2B Gill openings on underside of body → 7A

3A 6-7 gill openings, 1 dorsal fin → 4A

3B Five gill openings, 2 dorsal fins → 5A

4A Six gill openings ✓ **SIXGILL SHARK (Hexanchus griseus)**



4B Seven gill openings ✓ **SEVENGILL SHARK (Notorhynchus cepedianus)**



5A Spine at front of each dorsal fin, no anal fin ✓ **SPINY DOGFISH (Squalus acanthias)**

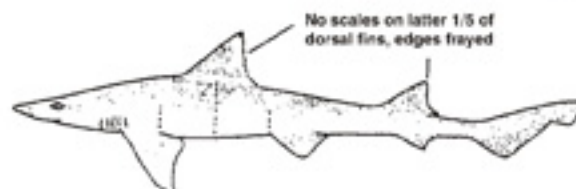


5B No spines on dorsal fins, anal fins present → 6A

6A Black bars and spots on body ✓ **LEOPARD SHARK (Triakis semifasciata)**



6B No black bars or spots ✓ **BROWN SMOOTHHOUND (Mustelus henlei)**



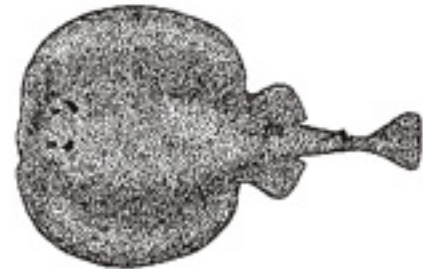
7A Body round → 8A

7B Body diamond shaped → 9A

8A Three rows of spines on back, color brown on back ✓ **THORNBACK**
(Platyrhinoidis triseriata)



8B Body smooth, color blue-black on back ✓ **PACIFIC ELECTRIC RAY**
(Torpedo californica)



9A Stinger near base of tail, 1 dorsal fin near base of tail ✓ **BAT RAY**
(Myliobatis californica)



9B No stinger present, 2 dorsal fins at end of tail ✓ **BIG SKATE**
(Raja binoculata)



10A Both eyes on same side of head → 11A

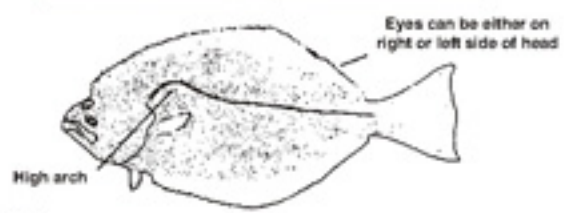
10B One eye on each side of head → 19A

11A Tail fin absent ✓ **CALIFORNIA TONGUEFISH** (Symphurus atricauda)

11B Tail fin present → 12A



12A Lateral line forms distinct arch over pectoral fin ✓ **CALIFORNIA HALIBUT**
(Paralichthys californica)



12B Lateral line without arch over pectoral fin → 13A

13A Distinct black and orange bars on dorsal and anal fins ✓ **STARRY FLOUNDER**
(Platichthys stellatus)



13B No black and orange bars on fins → 14A

14A Eyes on left side of body → 15A



14B Eyes on right side of body → 16A



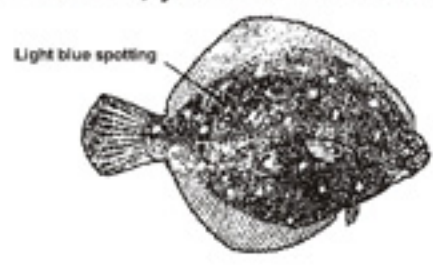
15A Pectoral fin easily reaches eye, when projected forward ✓ **PACIFIC SANDDAB**
(Citharichthys sordidus)



15B Pectoral fin does not reach eye, when projected forward ✓ **SPECKLED SANDDAB**
(Citharichthys stigmaeus)



16A Light blue spots on pigmented side, yellow coloration near mouth ✓ **DIAMOND TURBOT**
(Hypsopsetta guttulata)



16B No blue spots or yellow coloration → 17A

17A Eye visible from blind side → 18A

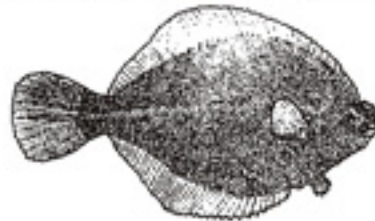


17B Eye not visible from blind side, first 4-5 dorsal rays free

✓ **SAND SOLE**
(*Psettichthys melanostictus*)



18A Rounded tail ✓ **TURBOT** of genus *Pleuronichthys*



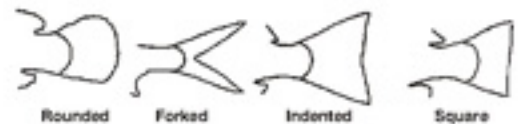
18B Tail not rounded ✓ **ENGLISH SOLE** (*Parophrys vetulus*)



19A Tail fin uneven ✓ **WHITE STURGEON** (*Acipenser transmontanus*)



19B Tail fin rounded, forked, indented, or square → 20A



20A Body very long and thin, encased in bony plates, tube shaped snout ✓ **PIPEFISH**
(*Syngnathus* sp.)



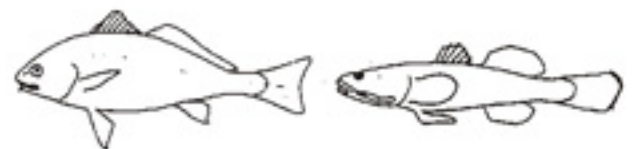
20B Body not long and thin, encased in bony plates.
No tube shaped snout. → 21A

21A Three dorsal fins ✓ **PACIFIC TOMCOD** (*Microgadus proximus*)



21B 1-2 dorsal fins → 22A

22A Dorsal fin(s) extend(s) almost to tail → 23A



22B Dorsal fin(s) short, do not extend to tail → 32A



23A Body flattened on sides (compressed) → 24A



23B Body flattened on top and bottom → 39A



24A Spines on gill cover ✓ **ROCKFISH (Sebastes sp.)**

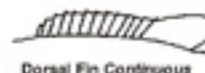


24B No spines on gill cover → 25A

25A Dorsal fin divided by a notch into spiny and soft portions → 26A



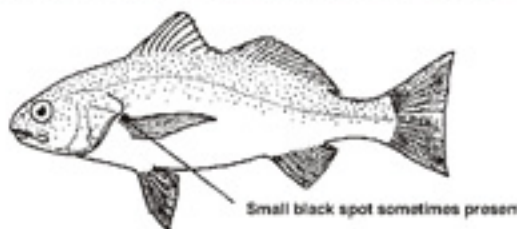
25B Dorsal fin continuous, not divided → 27A



26A Horizontal stripes on sides ✓ **STRIPED BASS (Morone saxatilis)**

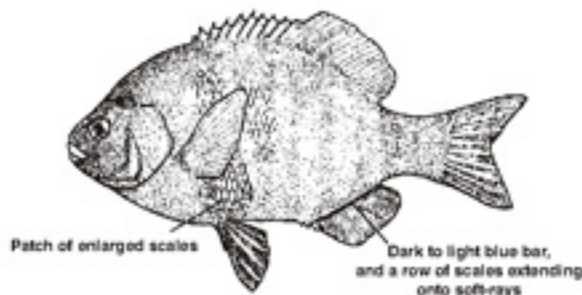


26B No stripes ✓ **WHITE CROAKER (Genyonemus lineatus)**



27A Dark body, yellow-orange lips, patch of enlarged scales near pectoral fin

✓ **BLACK SURFPERCH (Embiotoca jacksoni)**



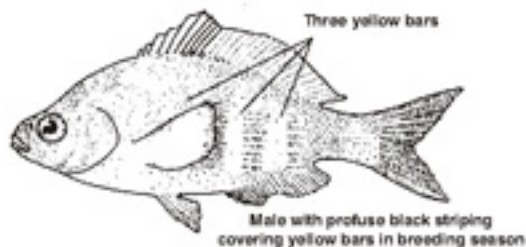
27B No enlarged scales near pectoral fin, no yellow-orange lips → 28A

28A 6-10 vertical bars on sides ✓ **BARRED SURFPERCH (*Amphistichus argenteus*)**



28B Less than 6 vertical bars on sides → 29A

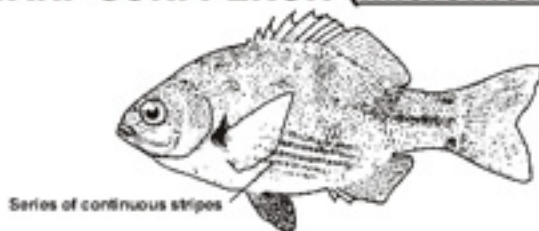
29A 2-3 yellow bars on sides ✓ **SHINER SURFPERCH (*Cymatogaster aggregata*)**



29B No yellow bars on sides → 30A

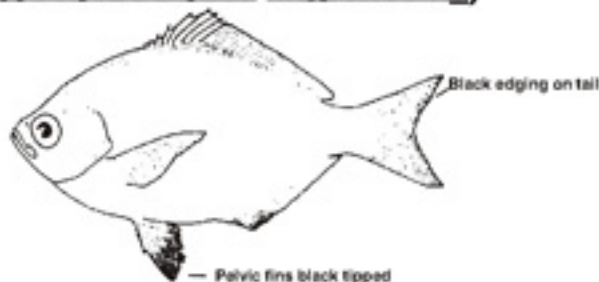
30A Black marking at base of pectoral fin, dark blotches create a series of continuous stripes

✓ **DWARF SURFPERCH (*Micrometrus minimus*)**



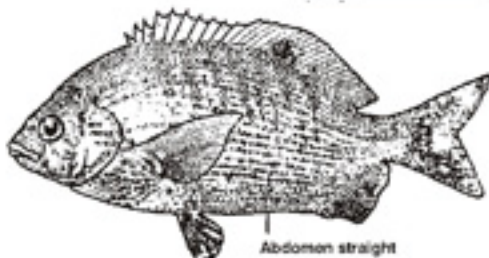
30B No black marking at base of pectoral fin → 31A

31A Pelvic fins black tipped, large eyes ✓ **WALLEYE SURFPERCH (*Hyperprosopon argenteum*)**



31B Pelvic fins not black tipped, smaller eyes, red and blue coloration on body

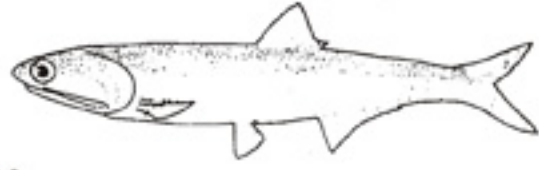
✓ **RAINBOW SURFPERCH (*Hypsurus caryi*)**



32A One dorsal fin → 33A

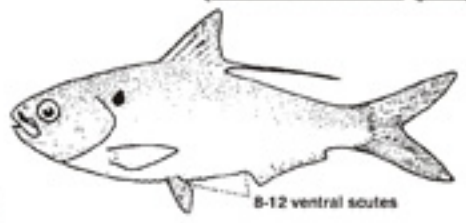
32B Two dorsal fins → 37A

33A Snout overhanging lower jaw ✓ **NORTHERN ANCHOVY (*Engraulis mordax*)**



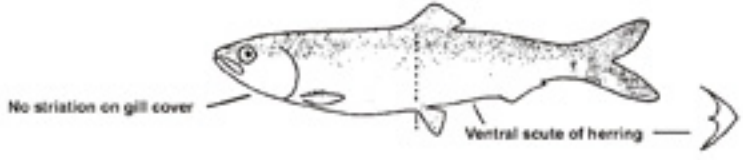
33B Snout not overhanging lower jaw → 34A

34A Last dorsal ray greatly elongated ✓ **THREADFIN SHAD (*Dorosoma petenense*)**



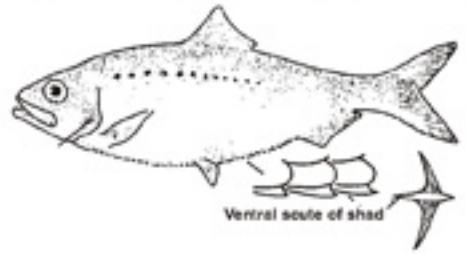
34B Last dorsal ray not greatly elongated → 35A

35A Black spots not present on sides ✓ **PACIFIC HERRING (*Clupea pallasii*)**

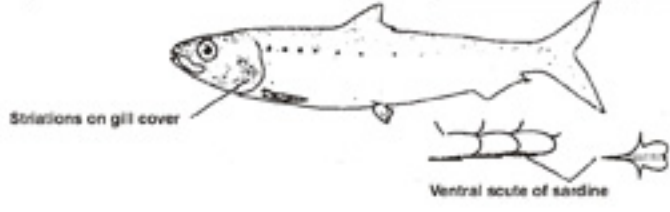


35B Black spots on sides → 36A

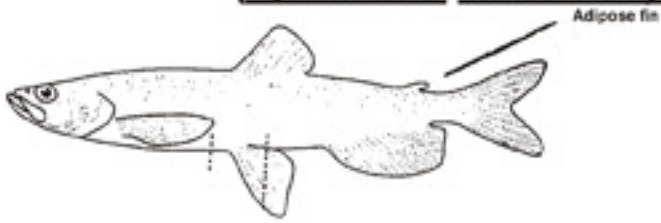
36A Scutes on belly strong and sharp ✓ **AMERICAN SHAD (*Alosa sapidissima*)**



36B Scutes on belly small ✓ **PACIFIC SARDINE (*Sardinops sagax*)**

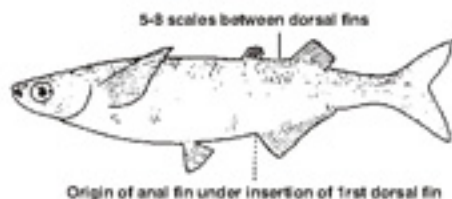


37A First dorsal fin rayed, second dorsal fin adipose (fleshy) ✓ **LONGFIN SMELT (*Spirinchus thaleichthys*)**

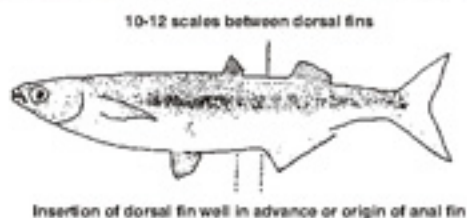


37B Both dorsal fins rayed → 38A

- 38A Anal fin begins directly beneath trailing end of first dorsal fin ✓ **TOPSMELT**
(*Atherinops affinis*)



- 38B Anal fin begins behind first dorsal fin ✓ **JACKSMELT** (*Atherinopsis californiensis*)



- 39A Continuous dorsal fin, photophores (rows of pearly buttons) on belly
✓ **PLAINFIN MIDSHIPMAN** (*Porichthys notatus*)



- 39B Dorsal fin not continuous, no photophores → 40A

- 40A Antler-like spine on gill cover → 41A

- 40B No spines on gill cover, pelvic fins form cuplike disc → 42A

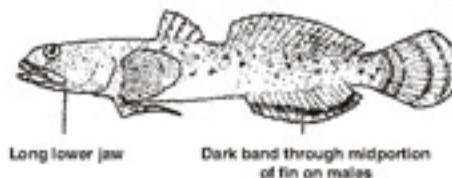
- 41A Body smooth (scaleless) ✓ **STAGHORN SCULPIN** (*Leptocottus armatus*)



- 41B Rows of scales beneath dorsal fin ✓ **BONYHEAD SCULPIN** (*Artedius notospilotus*)



- 42A Mouth extends well past eye ✓ **ARROW GOBY (Clevelandia ios)**



- 42B Mouth does not extend past eye → 43A

- 43A Body dark with stripes, black spot at base of tail fin

- ✓ **CHAMELEON GOBY (Tridentiger trionocephalus)**



- 43B Body light, no stripes → 44A

- 44A First dorsal fin black tipped, dorsal fins widely spaced

- ✓ **BAY GOBY (Lepidogobius lepidus)**

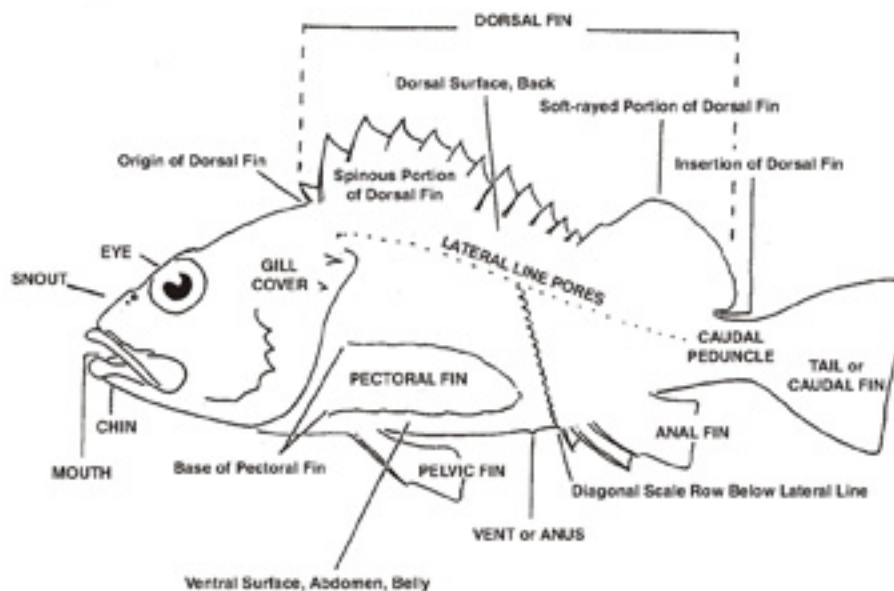


- 44B Speckled dorsal fin, zigzag markings on tail fin

- ✓ **YELLOWFIN GOBY (Acanthogobius flavimanus)**



EXTERNAL FISH ANATOMY



GLOSSARY

ADIPOSE FIN	fatty second dorsal fin found in smelt (family Osmeridae) and trout and salmon (family Salmonidae)
BAR	vertical band
BLIND SIDE	bottom side of flatfish, which is white and has no eyes
PHOTOPHORE	light producing organ
PIGMENTED SIDE	top side of a flatfish, which is colored and has eyes
RAY	soft or flexible structures found in fins
SCUTE	thickened, hardened scale on midline of body
SPINE	sharp projection sometimes found on fins, head, and gill cover
STINGER	long barbed spine found on the tail of some rays
STRIPE	lengthwise or horizontal line