

# THE MARINE FISHES (TELEOSTEI) OF SOUTHERN CALIFORNIA†

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The data on which the following papers are based was secured chiefly during the dredging and trawling expeditions of the Marine Station launch, the Anton Dohrn. The explorations made with the launch began in 1911 and have been continued at irregular intervals to the present. A brief general account of this work was published in the Bulletin of the Academy of Sciences of Southern California, January 1917 and in six Bulletins of the Marine Biological Station of the University of Southern California.

The general plan of these studies of Southern California Fishes includes (1) A detailed study of certain groups of our fishes; (2) Studies on certain economic problems; (3) The distribution of the forms known to occur here; (4) The preparation of keys to facilitate the identification of our groups of fishes.

For our convenience the keys have been prepared first. Then the general distribution of all the forms known to occur in Southern California has been summarized. Relating to the species taken in our survey the distribution is given somewhat in detail.

The insistent request of the public for common names of our fishes makes it seem desirable to include some of the common names of species with some particular interest. As it is well known that there is no uniformity in the use of these common names. It has seemed

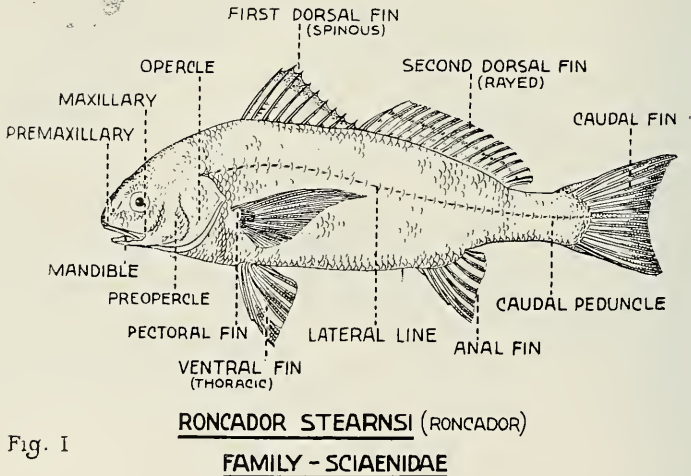


Fig. I

†Contributions from the Marine Biological Station of the University of Southern California.

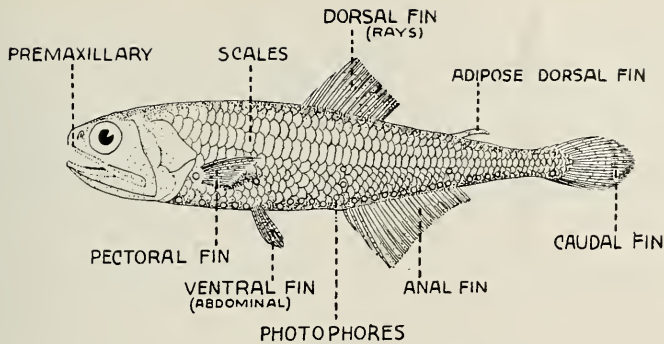


Fig. II. **TARLETONBEANIA TENUA**  
 FAMILY - MYCTOPHIDAE (LANTERN FISHES)

to us desirable to use the common names published in the standard works on the fishes of the West Coast as far as feasible, deviating from this rule only in cases in which the name is manifestly misleading. The preferred name is placed first, then parenthesis for other names and quotation marks for names used which are misleading.

The study of our collections of fishes has been made largely by graduate students and teaching fellows in the Department of Biology of the University. Mr. Frank W. Yocom formerly in charge of the Anton Dohrn has identified many of the species taken and has contributed largely to the compilation of data. The identifications of our entire collection have been verified by Henry W. Fowler of the Academy of Natural Sciences of Philadelphia.

The four large volumes by Jordan and Evermann on the "Fishes of North and Middle America" still remains the standard work for the study of the fishes occurring in Southern California waters. The key to the families of fishes described in these volumes has been adapted to the identification of the more limited groups of marine fishes off the coast of Southern California. The use of this modified key obviously reduces greatly the labor of identification. The names of families in brackets are those found in Jordan's "Classification of Fishes" 1923.

Other keys aiding in the identification of our fishes will be found in the large volume by Jordan and Everman on "American Food and Game Fishes" and in Fish Bulletin No. 5 of the California Fish and Game Commission 1921A: "A key to the Families of the Marine Fishes of the West Coast" by Edwin C. Starks.

## A KEY TO THE FAMILIES OF MARINE FISHES (TELEOSTEI) OF SOUTHERN CALIFORNIA

### 1. Ventral Fins Present, Abdominal.

- A. Back with adipose fins, dorsal fewer than 20 rays; body scaly.
- B. Photophores absent.
- C. Head naked; branchiostegals 6-20.
- D. Stomach and many pyloric cæca.....Salmonidæ.
- DD. Stomach with few pyloric cæca.....Argentinidæ.

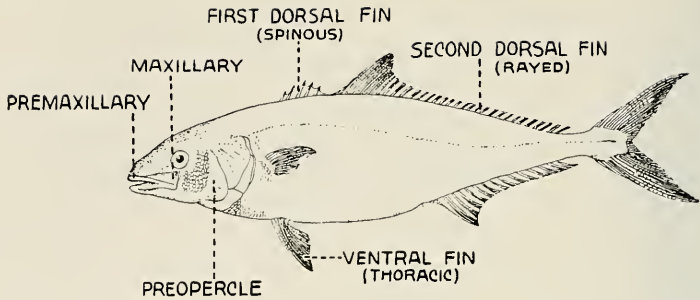


Fig. III. **SERIOLA DORSALIS** (YELLOW-TAIL)  
FAMILY - CARANGIDAE

- CC. Head scaly on sides; maxillary very narrow, rudimentary or obsolete.....**Synodontidæ.**
- BB. Photophores developed; no barbels at throat; vertebral spines not exerted in front of dorsal.
  - E. Pseudobranchiæ present.
    - a. Form elongate, snout pointed, photophores small.....**Paralepididæ.**
    - aa. Form oblong, snout not much produced, photophores conspicuous.....**Myctophidæ.**
  - EE. Pseudobranchiæ absent; mouth large, with canine teeth; scales deciduous or wanting.....**Chauliodontidæ.**
- AA. Back without adipose fin.
  - B. Back with a single dorsal fin made up of rays and not preceded by a series of free spines or followed by finlets.
    - C. Body naked; throat without barbel; pectorals wanting; body snake-like; dorsal long and low.....**Idiacanthidæ.**
- CC. Body scaly.
  - D. Anal fin without distinct spines.
  - E. Pectoral fins inserted high, near axis of body.
  - F. Jaws each with long, sharp teeth mixed with smaller ones.....**Escocidæ [Belonidæ].**
  - FF. Jaws with small equal teeth, conic or tricuspid.
    - G. Lower jaw more or less produced.....**Hemiramphidæ.**
    - GG. Lower jaw a little produced; teeth conic; pectorals elongate, forming an organ of flight.....**Exocoetidæ.**
  - EE. Pectoral fins inserted below axis of body.
    - H. Throat with long barbels. Sides with phosphorescent spots.....**Stomiatidæ.**
- HH. Throat without barbels.
  - b. Phosphorescent spots present; teeth unequal.....**Chauliodontidæ.**
  - bb. Phosphorescent spots none.
    - I. Head scaly, more or less.

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- c. Maxillaries connate with premaxillaries; jaws long. . . . . **Synodontidæ.**
- cc. Maxillaries distinct; upper jaw protractile, its margin formed by premaxillaries alone; no lateral line. . . . . **Poecilidæ.**
- II. Head naked.
- J. Dorsal fin inserted more or less before anal (rarely slightly behind it); shore fishes or river fishes, usually silvery in coloration with skeleton firm.
- K. Gular plate none; lateral line well developed; mouth small, horizontal; teeth present; posterior part of tongue and roof of mouth covered with coarse-paved teeth. **Albulidæ.**
- KK. Lateral line wanting; no gular plate.
- L. Mouth moderate, terminal, maxillary about three pieces. . . . . **Clupeidæ.**
- LL. Mouth subinferior, below a tapering, pig-like snout, maxillary very long. . . . . **Engraulidæ.**
- JJ. Dorsal fin posterior; opposite anal; deep-sea fishes; mostly blackish, mouth small, with small pointed teeth. . . . . **Alepocephalidæ.**
- BB. Dorsal fin single, preceded by free spines.
- M. Body scaleless, naked or with bony plates.
- N. Ventral fins I, 1. The spine strong; snout moderate. . . . . **Gasterosteidæ.**
- NN. Ventral fins I, 5, the spine slender; snout prolonged. . . . . **Aulorhynchidæ.**
- BBB. Dorsal fins 2, the anterior of spines only, the posterior chiefly of soft rays.
- O. Pectoral fin with 5 to 8 lower-most rays detached and filamentous. . . . . **Polynemidæ.**
- OO. Pectoral fin entire; snout not tubular.
- P. Teeth strong, unequal, lateral line present. **Sphyrænidæ.**
- PP. Teeth small or wanting, lateral line obsolete.
- Q. Dorsal spines 4, stout; anal spines 3. . . . . **Mugilidæ.**
- QQ. Dorsal spines 4 to 8, slender; anal spine single. . . . . **Atherinidæ.**
- BBBB. Dorsal fin soft-rayed, followed by a series of detached finlets . . . . . **Scombrocidæ** [**Scomberesocidæ**].
2. Ventral Fins Present, Thoracic or Subjugular, the Number of Rays Definitely 1, 5.
- A. Gill openings in front of the pectoral fins.
- B. Body more or less scaly or armed with bony plates. (BB near end.)
- C. Ventral fins completely united; gill membranes joined to the isthmus; no lateral line. . . . . **Gobiidæ.**
- CC. Ventral fins separate.
- D. Suborbital with a bony stay, which extends across the cheek to or toward the preopercle, cheeks sometimes entirely mailed.
- E. Pectoral fin with 3 lower rays detached and free; head bony . . . . . **Triglidæ.**
- (To be continued in the May-June Number of the Bulletin