



ORDER GASTEROSTEIFORMES

Gasterosteiforms

The order Gasterosteiformes contains nearshore marine, brackish, and freshwater fishes in two suborders with 11 families and nearly 260 species. Seahorses (which do not occur in Alaska) are probably the most familiar members of the group to nonscientists. Many gasterosteiform species have dermal plates, small mouths, and long snouts, and most have elongate bodies. Diagnostic features also include: supramaxilla, orbitosphenoid, and basisphenoid absent; pelvic girdle never attached directly to the cleithra; postcleithrum a single bone or absent; and branchiostegal rays 1–5. Gasterosteiforms typically are small fishes, with few species reaching lengths of more than 18 cm (7 inches). The tropical trumpetfishes and cornetfishes reach lengths of 80–180 cm (31–71 inches).

Males of the suborder Gasteroidei construct nests of plant material using glue produced by their kidneys. Species in this suborder occur only in the Northern Hemisphere. The group is represented in Alaska by the

families Aulorhynchidae and Gasterosteidae. Shared features include: protractile upper jaws, lack of a postcleithrum, circumorbital bones present in addition to the lachrymal, pelvic fins placed below the pectoral fins, and presence of isolated dorsal spines followed by a soft-rayed dorsal fin. Species in the suborder Syngnathoidei have nonprotractile upper jaws, no circumorbital bones other than the lachrymal, pelvic fins located on the abdomen or absent, and no ribs. The Syngnathoidei are represented in Alaska by the family Syngnathidae. The gasterosteiform suborders are classified by some taxonomists in separate orders.

Like the relationships of so many other fish groups, those of the gasterosteiforms, both within the order and between it and other taxa, are subject to different interpretations. Johnson and Patterson (1993) examined possible gasterosteiform relationships. Nelson (1994) summarized recent views and provided references to pertinent literature.

FAMILY AULORHYNCHIDAE

Tubesnouts

Species of the tubesnout family occur only in salt water along coasts of the North Pacific Ocean. There are two species: *Aulorhynchus flavidus* from the Gulf of Alaska south to Baja California, and *Aulichthys japonicus* from northern Japan to Korea. Tubesnouts are schooling fishes of inshore areas, with schools sometimes numbering millions of fish. *Aulorhynchus flavidus* males guard egg clumps spawned on stems of seaweed, and dispersal of eggs may occur when clumps rip off during storms (Marliave 1976). *Aulichthys japonicus* spawns in the peribranchial cavity of the tunicate *Halocynthia* (Ida in Masuda et al. 1984). Tubesnouts are also commonly called needlefishes.

Diagnostic tubesnout features include: elongate, cylindrical body; bony scutes on sides; 23–27 small,

free dorsal spines followed by a dorsal fin with 9–11 rays; anal fin opposite rayed dorsal fin and with about the same number of rays; 13 caudal fin rays; pelvic fins with 1 spine and 4 rays; 4 branchiostegal rays; circumorbital ring complete posteriorly; and 52–56 vertebrae.

Some classifications, including that followed by the American Fisheries Society (Robins et al. 1991a), combine the Aulorhynchidae and Gasterosteidae in one family. Nelson (1994) chose to retain them as separate families until relationships within the suborder Gasteroidei are better understood. The Aulorhynchidae could be paraphyletic, as molecular data suggest that the western Pacific tubesnout is more closely related to sticklebacks (Gasterosteidae) than to the eastern Pacific tubesnout (Nelson 1994).

*Aulorhynchus flavidus* Gill, 1861

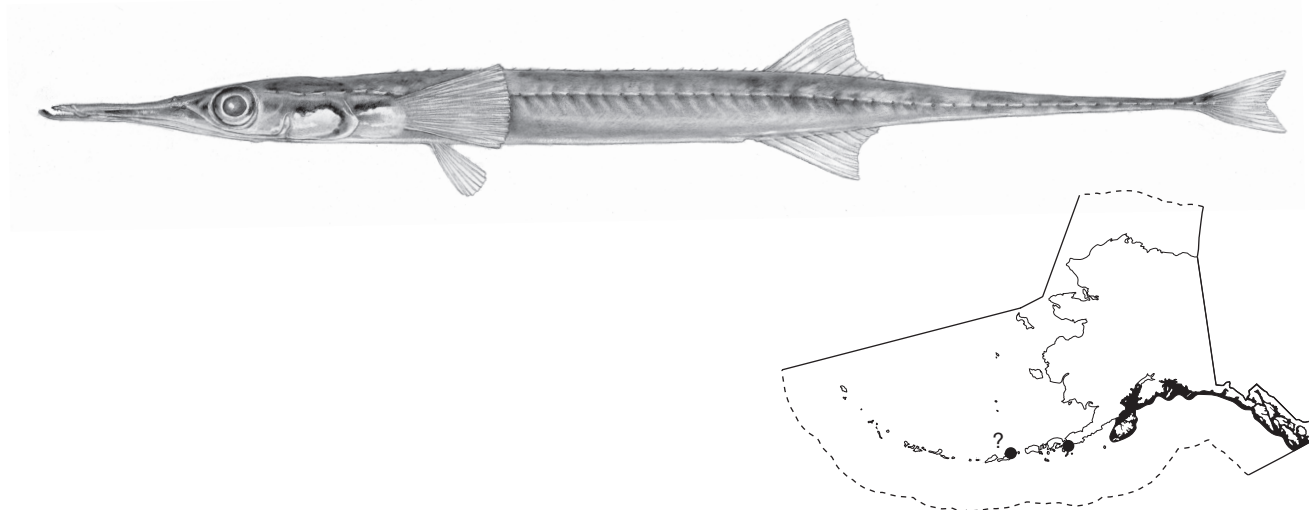
tubesnout

Captains Bay, Unalaska Island, record uncertain; southwest Alaska Peninsula at Pavlof Bay; Kodiak Island to central Baja California at Punta Roca.

Near surface to depth of 30 m, usually in schools; eelgrass beds, kelp forests, rocky areas, and over sand, often near pilings and under docks; sometimes well offshore; nests built of kelp stems above bottom, usually deeper than 10 m.

D XXIII–XXVII + 9–11; A I,9–10; Pec I,9–10; Pel I,4; Br 4; LLp 52; GR 25–31; Vert 52–56.

- Silvery brown to olive green with darker bars; dark stripe on head, often extending onto body; silvery patch between operculum and pectoral fin; pelvic fin bright red and snout phosphorescent in breeding males.
- Body spindle-shaped and rigid; snout long and tubular, with small mouth at tip; eye large; caudal peduncle strongly keeled, making it broader than deep.
- Numerous short, isolated spines preceding triangular, soft-rayed dorsal fin; anal fin opposite and about same size as dorsal fin; caudal fin small and forked; pectoral fin broad; pelvic fin below pectoral fin.
- Thin, embedded bony plates along side.
- Length to 188 mm TL.

**Notes & Sources** — *Aulorhynchus flavidus* Gill, 1861

Description: Miller and Lea 1972:88; Hart 1973:273–275; Eschmeyer and Herald 1983:128; Coad 1995:816–817.

Figures: University of British Columbia, artist P. Drukker-Brammall; UBC 63-235, 121 mm SL, Silver Bay, Alaska.

Range: Range given as extending north to Sitka or southeastern Alaska by Wilimovsky (1954, 1958), Miller and Lea (1972), Quast and Hall (1972), Hart (1973), Eschmeyer and Herald (1983), and Lamb and Edgell (1986). Examples from southeastern Alaska in ABL collection are from Samsing Cove near Sitka, Traitors Cove near Ketchikan, Paul Bight in Skowl Arm, Steamer Bay, and Clarence Strait. Sometimes found in abundance in eastern Gulf of Alaska localities; NMC 61-163 includes 56 specimens from San Juan Batista Island, taken in beach seine in 0–1 m of water. We usually notice tubesnouts in the summer at Tee Harbor, north of Juneau, and B. L. Wing (pers. comm., 9 Mar. 2000) reports there is usually a school under the ABL float in the summer. Records exist that document extension of the known range farther north and west. Found in OCSEAP studies west to Kodiak Island (Blackburn and Jackson 1982) and north to Danger Island, Zaikof Bay, and Schooner Rock, Prince William Sound (Rosenthal 1980), and Kachemak Bay, Cook Inlet (Dames and Moore 1979). Indication of occurrence at Kodiak, Cook Inlet, and

Prince William Sound in table by Rogers et al. (1986) is based on those reports. Previously unreported examples from northern Gulf of Alaska, all collected by the International Fisheries Commission in 1928–1932, are: UW 155, Yakutat Bay; UW 3825, Hanning Bay, Prince William Sound; and UW 4268, Zaikof Bay, Prince William Sound. Collection UBC 62-489 includes a specimen from Pavlof Bay, on the southwest end of the Alaska Peninsula at 55°36'N, 161°28'W. A specimen (UW 3090) collected by beach seine in 1932 by L. Townsend of the IFC at Captains Bay, Unalaska Island, 53°52'N, 166°34'W, may be the westernmost record, but the UW database indicates the exact locality could be incorrect. Reported to be very uncommon to rare around Kodiak Island by J. E. Blackburn (pers. comm., 9 Mar. 2000). Southernmost record may be SIO 52-164, from 28°45'N, 114°24'W, at Punta Roca, Baja California. Previously reported south to northern Baja California at Punta Rompiente by Miller and Lea (1972).

Size: Coad 1995. Length of 7 inches was given by previous authors, variously converted to 17.7, 17.9, or 18 cm. R. Baxter (unpubl. data) found a specimen measuring 180.2 mm TL among OSUO uncataloged material, providing further confirmation (in addition to Coad 1995) of sizes 18 cm and over.