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**ANNOTATED CHECKLISTS OF FISHES**

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**Family Hemitripteridae Gill 1872**

sea ravens or sailfin sculpins

By

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Fishes in the cottoid family Hemitripteridae are called sea ravens after an early notion that their large pectoral fins could be used for flight, or sailfin sculpins for their tall dorsal fins, particularly the exceptionally tall first dorsal fin of *Nautichthys oculofasciatus*. Head and body covered with minute “prickles” (modified, platelike scales bearing a single skin-covered spine). Frontoparietal ridge knobby. Preopercular spines 3 or 4, mostly blunt and skin-covered. Two dorsal fins, the first with 6–19 spines, the second with 11–30 soft rays. Anal fin with 11–22 soft rays. Pelvic fins with 1 spine and 3 soft rays. Lateral line canal complete, opening through numerous pores (more than 35). Vomerine and palatine teeth present. Gill membranes broadly attached to the isthmus or forming a free fold across the isthmus. Branchiostegal rays 6. Gill rakers in the form of low, spinous plates or knobs. Swim bladder absent. Vertebrae 35–41. External genital papilla present in males of some species. Bands and other pigmentation present and consistent but colors varying in some species with habitat, particularly in *Hemitripterus*. Maximum size about 8 cm (3.2 in) in *Nautichthys robustus* to about 73 cm (28.7 in) in *H. bolini*. Feed mostly on small invertebrates. As well as their overall large size, *H. americanus* and *H. bolini* have large, wide mouths and can swallow very large prey. Marine, primarily demersal; intertidal to depths of 420 m or more, most species shallower than 200 m. Distributed primarily in the North Pacific, with one species (*H. americanus*) in the western North Atlantic. Eight species in three genera.

The family-group name was first used in Gill’s (1872:6 [ref. 26254]) “arrangement” of the families of fishes. He extracted the new family from Günther’s (1860:143 [ref. 1963]) family Triglidae, group Scorpaenina. The stem of the family name Hemitripteridae readily infers its basis on the valid genus *Hemitripterus* Cuvier 1829, and Günther’s page 143 refers to *Hemitripterus* and the included species *H. americanus*. Writing clearly on this point, Gill (1885:254 [ref. 1653]) later stated that “it is to the Hemitripteridae, the sea raven of the American coast [*H. americanus*] belongs.” Gill (1888 [ref. 26431], 1889 [ref. 1729]) recounted the early history of hemitripterid classification in his two opuscula on the classification of the mailcheeked fishes.

Treated by Gill (1872 [ref. 26254]) as a separate family, hemitripterids were later, and for many years, included by authors in the Cottidae. Monophyly of the Hemitripteridae was established in the 1980s from several larval and adult characters; the evidence indicates a sister-group relationship to the Agonidae (Washington et al. 1984 [ref. 13660], Yabe 1985 [ref. 11522]). Recent classifications (e.g., Nelson 1994 [ref. 26204], Eschmeyer 1998 [ref. 23416]) include the hemitripterids as a separate family within the sub-order Cottoidei. Researchers continue to investigate the relationships of the group. The taxonomy of the hemitripterid genera and species appears to be well established and has not recently been the subject of a published review and revision.

**Genus *Blepsias* Cuvier 1829**

*Blepsias* Cuvier 1829:167 [ref. 995]. Type species *Trachinus cirrhosus* Pallas 1814. Type by monotypy.

*Peropus* Lay & Bennett 1839:59 [ref. 2730]. Type species *Blepsias bilobus* Cuvier 1829. Type by monotypy.

*Histiocottus* Gill 1889:573 [ref. 1729]. Type species *Peropus bilobus* Lay & Bennett 1839. Type by being a replacement name.

REMARKS: The name *Peropus* Lay & Bennett 1839 is preoccupied by *Peropus* Wiegmann 1835 in Reptilia.

*Histiocottus* Gill 1889 is an unneeded new name for *Peropus* Lay & Bennett 1839. Although *Histiocottus* Gill appeared in the synonymy of *Blepsias* in Jordan and Gilbert (1883:719 [ref. 2476]) it was mentioned by name only, and a description of *Histiocottus* has not been found in any earlier publication of Gill's than 1889 (some authors give 1888 for the date of this work). After further research the name could be found to date to an earlier work.

***Blepsias bilobus* Cuvier 1829**

*Blepsias bilobus* Cuvier in Cuvier & Valenciennes 1829:379 [ref. 998] (Kamchatka, Russia). Holotype (unique): BMNH.

DISTRIBUTION: North Pacific and adjacent Arctic: Chukchi and Bering seas to British Columbia and to Okhotsk and Japan seas. *Blepsias bilobus* is often found well above the bottom.

***Blepsias cirrhosus* (Pallas 1814)**

*Trachinus cirrhosus* Pallas 1814:237 [ref. 3351] (America; port of Avacha, southeastern Kamchatka; Penzhinskaya Bay, Okhotsk Sea). Syntypes: MNHN A-5417 (1, dry) Kamchatka, ZMB 8781 (1, dry).

*Blepsias trilobus* Cuvier in Cuvier & Valenciennes 1829:375, Pl. 90 [ref. 998]. Syntypes: MNHN A-5417 (1, dry) Kamchatka, ZMB 8781 (1, dry).

*Blepsias draciscus* Jordan & Starks 1904:322, Fig. 40 [ref. 2528] (Aomori, Japan). Holotype: CAS-SU 7720.

DISTRIBUTION: North Pacific: southern Bering Sea to central California and to Okhotsk and Japan seas.

REMARKS: *Blepsias trilobus* Cuvier 1829 is an unneeded new name for *Trachinus cirrhosus* Pallas 1814.

**Genus *Hemitripterus* Cuvier 1829**

*Hemitripterus* Cuvier 1829:164 [ref. 995]. Type species *Cottus tripterygius* Bloch & Schneider 1801. Type by monotypy (with synonyms in footnote).

*Ulca* Jordan & Evermann in Jordan 1896:227 [ref. 2395]. Type species *Hemitripterus marmoratus* Bean 1890. Type by monotypy.

REMARKS: *Ulca* continues to be classified by Russian authors as a separate genus.

***Hemitripterus americanus* (Gmelin 1789)**

*Scorpaena americana* Gmelin 1789:1220 [ref. 18139] (America). No types known.

*Cottus acadian* Walbaum 1792:392 [ref. 4572] (Nova Scotia and Newfoundland, Canada). No types known.

*Scorpaena americana* Lacepède 1801:259, 284 [ref. 2710].

*Cottus hispidus* Bloch & Schneider 1801:63, Pl. 13 [ref. 471] (New York, U.S.A.). Holotype (unique): ZMB 773 (stuffed, missing).

*Cottus tripterygius* Bloch & Schneider 1801:63, Pl. 13 [ref. 471] (Nova Scotia, Canada). No types known.

*Scorpaena flava* Mitchill 1815:382, Pl. 2 (fig. 8) [ref. 13292] (New York, U.S.A.). No types known.

*Scorpaena rufa* Mitchill 1818:245 [ref. 17774] (New York, U.S.A.). Holotype (unique): whereabouts unknown.

*Scorpaena purpurea* Mitchill 1818:245 [ref. 17774] (off Block I., New York, U.S.A.). No types known.

*Hemitripterus americanus* Cuvier in Cuvier & Valenciennes 1829:268 [ref. 998] (New York). Syntypes: MNHN 6542 (1), others not found.

*Hemitripterus acadianus* Storer 1855:83, Pl. 7 (fig. 4) [ref. 18850]. No types known.

DISTRIBUTION: Western North Atlantic: Labrador to Chesapeake Bay.

REMARKS: *Scorpaena americana* Lacepède 1801 is apparently the same as, and preoccupied by, *Scorpaena americana* Gmelin 1789.

Günther (1860:143 [ref. 1963]) listed the name *Cottus acadianus* Pennant (Arctic Zoology, iii, p. 371 [dating to 1784 or 1785]) at the top of the synonymy of *Hemitripterus americanus*. Jordan and Evermann (1898: 2023 [ref. 2444]) later gave the name as *Cottus acadian* Pennant. Walbaum's *Cottus acadian* is also based on Pennant's Arctic Zoology. The name might not be available from Pennant, and Storer's name *Hemitripterus acadianus* might not be original. I have not seen the Pennant work, so have not fully investigated the matter.

#### ***Hemitripterus bolini* (Myers 1934)**

*Ulca bolini* Myers 1934:44 [ref. 21791] (off Sitkalidak I., Alaska, U.S.A., 57°N, 153°18'W, Albatross sta. 2855, 69 fm). Syntypes: USNM 45371 (2).

*Hemitripterus marmoratus* Bean 1890:43 [ref. 229] (off Sitkalidak I., Alaska, U.S.A., 57°N, 153°18'W, Albatross sta. 2855, 69 fm). Syntypes: USNM 45371 (2).

DISTRIBUTION: North Pacific: Bering Sea to northern California and to northern Kuril Islands.

REMARKS: *Ulca bolini* Myers 1934 replaced the name *Hemitripterus marmoratus* Bean 1890, a homonym of *H. marmoratus* Ayres 1854 (= *Scorpaenichthys marmoratus* Girard 1854) in Cottidae.

#### ***Hemitripterus villosus* (Pallas 1814)**

*Cottus villosus* Pallas 1814:129 [ref. 3351] (Cape Kronotskiy, southeastern Kamchatka, and mouth of Itscha [Icha] R., western Kamchatka, Russia). No types known.

*Hemitripterus sinensis* Sauvage 1873:53 [ref. 18661] (China seas). Holotype (unique): MNHN 6924.

*Hemitripterus cavifrons* Lockington 1880:233 [ref. 17552] (St. Paul [now city of Kodiak], Kodiak I., Alaska, U.S.A.). Holotype (unique): CAS (not found, probably destroyed in 1906 fire).

DISTRIBUTION: Western North Pacific: Karaginskiy and Commander islands, Bering Sea, to Okhotsk and Japan seas; one record from western Gulf of Alaska.

REMARKS: The description of *Cottus villosus* Pallas is based on the notes of Steller.

The type locality for *Hemitripterus sinensis* is not known with certainty; given as “*Mers de Chine*” by Sauvage (1873:54), possibly Yellow Sea but could be Japan Sea or East China Sea. Lockington's (1880) description of *H. cavifrons* identifies his specimen as an example of *H. villosus*; this is the only record of *H. villosus* for Alaska and the type locality could be erroneous, although it is not necessarily so (Mecklenburg et al. 2002:505, 508 [ref. 25968]).

#### **Genus *Nautichthys* Girard 1858**

*Nautichthys* Girard 1858:74 [ref. 4911]. Type species *Blepsias oculoasciatus* Girard 1858. Type by monotypy.

*Nautiscus* Jordan & Evermann 1898:1883, 2019 [ref. 2444]. Type species *Nautiscus pribilovius* Jordan & Gilbert 1898. Type by original designation (also monotypic).

***Nautichthys oculofasciatus* (Girard 1858)**

*Blepsias oculofasciatus* Girard 1858:202 [ref. 1811] (Fort Steilacoom, Puget Sound, Washington, U.S.A.). Holotype: USNM 512.

DISTRIBUTION: Eastern North Pacific: Gulf of Alaska to southern California.

***Nautichthys pribilovius* (Jordan & Gilbert 1898)**

*Nautiscus pribilovius* Jordan & Gilbert in Jordan & Evermann 1898:2019 [ref. 2444] (off St. George I., Pribilof Is., Bering Sea, *Albatross* sta. 3635, 23 fm). Holotype: USNM 48237.

DISTRIBUTION: North Pacific and adjacent Arctic: Chukchi and Bering seas to eastern Gulf of Alaska and to Okhotsk and Japan seas.

***Nautichthys robustus* Peden 1970**

*Nautichthys robustus* Peden 1970:2, Figs. 1–2 [ref. 22188] (Attu I., Aleutian Is., Alaska, U.S.A.). Holotype: USNM 204495 [ex UBC 63-1004].

DISTRIBUTION: Eastern North Pacific: southern Bering Sea to Washington.

### Summary Lists

#### Genus-Group Names of Family Hemitripteridae

*Blepsias* Cuvier 1829 = *Blepsias* Cuvier 1829

*Hemitripterus* Cuvier 1829 = *Hemitripterus* Cuvier 1829

*Histiocottus* Gill 1889 = *Blepsias* Cuvier 1829

*Nautichthys* Girard 1858 = *Nautichthys* Girard 1858

*Nautiscus* Jordan & Evermann 1898 = *Nautichthys* Girard 1858

*Peropus* Lay & Bennett 1839 = *Blepsias* Cuvier 1829

*Ulca* Jordan & Evermann 1896 = *Hemitripterus* Cuvier 1829

#### Incertae Sedis Genus-Group Names

None

#### Unavailable Genus-Group Names

None

#### Species-Group Names of Family Hemitripteridae

*acadian*, *Cottus* Walbaum 1792 = *Hemitripterus americanus* (Gmelin 1789)

*acadianus*, *Hemitripterus* Storer 1855 = *Hemitripterus americanus* (Gmelin 1789)

*americana*, *Scorpaena* Gmelin 1789 = *Hemitripterus americanus* (Gmelin 1789)

*americana*, *Scorpaena* Lacepède 1801 = *Hemitripterus americanus* (Gmelin 1789)

*americanus*, *Hemitripterus* Cuvier 1829 = *Hemitripterus americanus* (Gmelin 1789)

*bilobus*, *Blepsias* Cuvier 1829 = *Blepsias bilobus* Cuvier 1829

*bolini*, *Ulca* Myers 1934 = *Hemitripterus bolini* (Myers 1934)

*cavifrons*, *Hemitripterus* Lockington 1880 = *Hemitripterus villosus* (Pallas 1814)

*cirrhosus*, *Trachinus* Pallas 1814 = *Blepsias cirrhosus* (Pallas 1814)

*draciscus*, *Blepsias* Jordan & Starks 1904 = *Blepsias cirrhosus* (Pallas 1814)

*flava*, *Scorpaena* Mitchill 1815 = *Hemitripterus americanus* (Gmelin 1789)

*hispidus*, *Cottus* Bloch & Schneider 1801 = *Hemitripterus americanus* (Gmelin 1789)

*marmoratus*, *Hemitripterus* Bean 1890 = *Hemitripterus bolini* (Myers 1934)

*oculofasciatus*, *Blepsias* Girard 1858 = *Nautichthys oculofasciatus* (Girard 1858)

*pribilovius*, *Nautiscus* Jordan & Gilbert 1898 = *Nautichthys pribilovius* (Jordan & Gilbert 1898)

*purpurea*, *Scorpaena* Mitchill 1818 = *Hemitripterus americanus* (Gmelin 1789)  
*robustus*, *Nautichthys* Peden 1970 = *Nautichthys robustus* Peden 1970  
*rufa*, *Scorpaena* Mitchill 1818 = *Hemitripterus americanus* (Gmelin 1789)  
*sinensis*, *Hemitripterus* Sauvage 1873 = *Hemitripterus villosus* (Pallas 1814)  
*trilobus*, *Blepsias* Cuvier 1829 = *Blepsias cirrhosus* (Pallas 1814)  
*tripterygius*, *Cottus* Bloch & Schneider 1801 = *Hemitripterus americanus* (Gmelin 1789)  
*villosus*, *Cottus* Pallas 1814 = *Hemitripterus villosus* (Pallas 1814)

#### **Incertae Sedis Species-Group Names**

None

#### **Unavailable Species-Group Names**

*coccineus*, *Cottus* De la Pylaie in Cuvier & Valenciennes 1829:272 [ref. 998]. Nomen nudum. Mentioned in the account of *Hemitripterus americanus*.

#### **Literature Cited**

- Bean, T. H. 1890 (1 July) [ref. 229]. New fishes collected off the coast of Alaska and the adjacent region southward. In: Scientific results of explorations by the U. S. Fish Commission steamer *Albatross*. Proc. U. S. Natl. Mus. v. 13 (no. 795): 37–45.
- Bloch, M. E. and J. G. Schneider. 1801 [ref. 471]. M. E. Blochii Systema Ichthyologiae iconibus cx illustratum. Post obitum auctoris opus inchoatum absolvit, correxit, interpolavit Jo. Gottlob Schneider, Saxo. Berolini. Sumtibus Auctoris Impressum et Bibliopolio Sanderiano Commisum. i–lx + 1–584, 110 pls.
- Cuvier, G. 1829 (Mar.) [ref. 995]. Le Règne Animal, distribué d’après son organisation, pour servir de base à l’histoire naturelle des animaux et d’introduction à l’anatomie comparée. Edition 2. v. 2: i–xv + 1–406.
- Cuvier, G. and A. Valenciennes. 1829 (Nov.) [ref. 998]. Histoire naturelle des poissons. Tome quatrième. Livre quatrième. Des acanthoptérygiens à joue cuirassée. i–xxvi + 2 + 1–518, Pls. 72–99, 97 bis.
- Eschmeyer, W. N., editor. 1998 (May) [ref. 23416]. Catalog of fishes. Center for Biodiversity Research and Information, Spec. Publ. 1. California Academy of Sciences, San Francisco. 3 vols. 1–2905.
- Gill, T. N. 1872 [ref. 26254]. Arrangement of the families of fishes, or classes Pisces, Marsipobranchii, and Leptocardii. Smithson. Misc. Collect. No. 247: i–xlvi + 1–49.
- Gill, T. N. 1885 [ref. 1653]. Sub-class II. Teleostei. In: J. S. Kingsley, ed. The standard natural history. Vol. III. Lower vertebrates. S. E. Cassino and Company, Boston: 98–298.
- Gill, T. N. 1888 [ref. 26431]. The primary groups of mail-cheeked fishes. Am. Nat. 22: 356–358.
- Gill, T. N. 1889 (25 Sept.) [ref. 1729]. On the classification of the mail-cheeked fishes. Proc. U. S. Natl. Mus. v. 11 (no. 756): 567–592.
- Girard, C. F. 1858 [ref. 4911]. Fishes. In: General report upon the zoology of the several Pacific railroad routes, 1857. In: Reports of explorations and surveys, to ascertain the most practicable and economical route for a railroad from the Mississippi River to the Pacific Ocean, v. 10: i–xiv + 1–400, 21 pls. [Includes plates 7–8, 13–14, 17–18, 22c, 26, 29–30, 34, 37, 40–41, 48, 53, 59, 61, 64–65, 71.] [Volume dated 1859, Girard’s work originally was published as a separate in 1858.]
- Girard, C. F. 1858 (about 1 May) [ref. 1811]. Notice upon new genera and new species of marine and fresh-water fishes from western North America. Proc. Acad. Nat. Sci. Phila. v. 9 (no. 15): 200–202.
- Gmelin, J. F. 1789 [ref. 18139]. Caroli a Linné, Systema Naturae per regna tria naturae, secundum classes, ordines, genera, species; cum characteribus, differentiis, synonymis, locis. Editio decimo tertia, aucta, reformata. 3 vols. in 9 parts. Lipsiae [Leipzig], 1788–93. v. 1 (pt. 3): 1033–1516 [fishes on pp. 1126–1516].
- Günther, A. 1860 (13 Oct.) [ref. 1963]. Catalogue of the acanthopterygian fishes in the collection of the British Museum. 2. Squamipinnes, Cirrhitidae, Triglidae, Trachinidae, Sciaenidae, Polynemidae, Sphyrænidae, Trichiuridae, Scombridae, Carangidae, Xiphiidae. London. i–xxi + 1–548.
- Jordan, D. S. 1896 (19 June) [ref. 2395]. Notes on fishes little known or new to science. Proc. Calif. Acad. Sci. (Ser. 2) v. 6: 201–244, Pls. 20–43.
- Jordan, D. S. and B. W. Evermann. 1898 (3 Oct.) [ref. 2444]. The fishes of North and Middle America: a descriptive catalogue of the species of fish-like vertebrates found in the waters of North America, north of the Isthmus of Panama. Part II. Bull. U. S. Natl. Mus. No. 47: i–xxx + 1241–2183.

- Jordan, D. S. and C. H. Gilbert. 1883 (early Apr.) [ref. 2476]. Synopsis of the fishes of North America. Bull. U. S. Natl. Mus. 16: i–liv + 1–1018.
- Jordan, D. S. and E. C. Starks. 1904 (28 Jan.) [ref. 2528]. A review of the Cottidae or sculpins found in the waters of Japan. Proc. U. S. Natl. Mus. v. 27 (no. 1358): 231–335.
- Lacepède, B. G. E. 1801 (18 Oct.) [ref. 2710]. Histoire naturelle des poissons. v. 3. i–lxvi + 1–558, 34 pls.
- Lay, G. T. and E. T. Bennett. 1839 [ref. 2730]. Fishes. In: The zoology of Captain Beechey's voyage; compiled from the collections and notes made by Captain Beechey, the officers and naturalists of the expedition, during a voyage to the Pacific and Behring's Straits performed in His Majesty's ship *Blossom*, under the command of Captain F. W. Beechey in the years 1825, 26, 27 and 28. H. G. Bohn, London: 41–75, Pls. 15–23.
- Lockington, W. N. 1880 (7 Sept.) [ref. 17552]. Description of a new species of *Hemitripterus* from Alaska. Proc. Acad. Nat. Sci. Phila. v. 32: 233–236.
- Mecklenburg, C. W., T. A. Mecklenburg and L. K. Thorsteinson. 2002 (Mar.) [ref. 25968]. Fishes of Alaska. American Fisheries Society, Bethesda, Maryland. i–xxxvii + 1–1037, 40 pls.
- Mitchill, S. L. 1815 [ref. 13292]. The fishes of New York described and arranged. Trans. Lit. Phil. Soc. N. Y. v. 1: 355–492, Pls. 1–6.
- Mitchill, S. L. 1818 [ref. 17774]. Memoir on ichthyology. The fishes of New York .... In a supplement to the Memoir .... Am. Monthly Mag. Crit. Rev. v. 2: 241–248, 321–328.
- Myers, G. S. 1934 [ref. 21791]. A new name for the Alaskan cottoid fish *Ulca marmorata* (Bean). Copeia 1934 (no. 1): 44.
- Nelson, J. S. 1994 [ref. 26204]. Fishes of the world. 3rd edition. John Wiley & Sons, New York. i–xvii + 1–600.
- Pallas, P. S. 1814 [ref. 3351]. Zoographia Rosso-Asiatica, sistens omnium animalium in extenso Imperio Rossico et adjacentibus maribus observatorum recensionem, domicilia, mores et descriptiones anatomem atque icones plurimorum. Petropoli [St. Petersburg]. v. 3: i–vii + 1–428 + index (i–cxxxv), Pls. 1, 13, 14, 15, 20, and 21.
- Peden, A. E. 1970 [ref. 22188]. A new cottid fish, *Nautichthys robustus*, from Alaska and British Columbia. Publ. Biol. Oceanogr. Natl. Mus. Nat. Sci. Can. No. 2: i–vi + 1–10.
- Sauvage, H. E. 1873 [ref. 18661]. Notice sur quelques poissons d'espèces nouvelles ou peu connues provenant des mers de l'Inde et de la Chine. Nouv. Arch. Mus. Hist. Nat. Paris v. 8 (Bull.): 49–62, 2 pls.
- Storer, D. H. 1855 [ref. 18850]. A history of the fishes of Massachusetts. Mem. Am. Acad. Arts Sci. (N. S.) v. 5: 49–92, Pls. 1–8.
- Walbaum, J. J. 1792 [ref. 4572]. Petri Arledi sueci genera piscium in quibus systema totum ichthyologiae proponitur cum classibus, ordinibus, generum characteribus, specierum differentiis, observationibus plurimis. Redactis speciebus 242 ad genera 52. Ichthyologiae, pars iii. 1–723, Pls. 1–3.
- Washington, B. B., W. N. Eschmeyer and K. M. Howe. 1984 [ref. 13660]. Scorpaeniformes: relationships. In: H. G. Moser et al., eds. Ontogeny and systematics of fishes. Am. Soc. Ichthyol. Herpetol. Spec. Publ. 1: 438–447.
- Yabe, M. 1985 [ref. 11522]. Comparative osteology and myology of the superfamily Cottoidea and its phylogenetic classification. Mem. Fac. Fish. Hokkaido Univ. v. 32 (no. 1): 1–130.

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