

Goatfishes of the world: An updated list of taxonomy, distribution and conservation status (Teleostei: Mullidae)

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Abstract

Members of the Mullidae family are characterized by body elongate and almost compressed, head and body completely scaled (except the periorbital region of some *Upeneus*), with 27 to 39 vertical scale rows from the upper end of gill opening to the base of caudal fin; chin with 2 long hyoid barbels; opercle usually with a small flat spine; two well-separated dorsal fin and 24 vertebrae. They inhabit brackish and marine waters above sandy to muddy bottoms as well as coral reefs. Mullids are distributed worldwide in tropical, subtropical, and temperate habitats of the Mediterranean and the Black Sea, Pacific and the Atlantic Ocean, southern and eastern Australia, and New Zealand between the upper littoral and the upper slope. This checklist aims to list all the valid Mullidae fishes of the world. It lists 101 species in 6 genera. The most diverse genus is *Upeneus* (48 species, 47%), followed by *Parupeneus* (35 species, 35%), *Mulloidichthys* (7 species, 7%); *Mullus* (6 species 6%); *Pseudupeneus* (3 species, 3%), and *Upeneichthys* (2 species, 2%). For this genus, several taxonomic species groups, including moluccensis, margarethae, stenopsis, japonicus, suahelicus, and tragula have been proposed. Some of the species are still ungrouped. The high inter- and intraspecific phenotypic diversity among the genus *Upeneus* requires a careful taxonomic approach regarding both species diagnoses and descriptions, re-descriptions, resurrections, or synonymizations. Among 101 listed species, 54 (55%) species are Least Concern (LC), 36 (36%) species are Not Evaluated (NE), 6 (6%) species are Data Deficient (DD), 1 (1%) species are Vulnerable (VU), 1 (1%) species are Near Threatened (NT) and 1 (1%) species are Endangered (EN) of the Red List of IUCN. Some of the less-known species, or species from less explored areas, merit more attention and approval of a similar fine-resolution taxonomy approach, ideally accompanied by comprehensive integrative molecular studies, to more completely understand the overall diversity, the speciation events, and the evolutionary pathways involved in mullids.

Keywords: Fish diversity, Perciformes, Systematics, Conservation.

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Introduction

Fishes are the most species-rich and diversified group of all the vertebrates (Nelson et al. 2016; Fricke et al. 2022). They include 36,105 species (Fricke et al. 2022), and dominate the world's oceans, lakes, rivers, and springs. The most species-rich and diversified group of fishes is the order Perciformes which comprises some 5,929 species (16.5% of all extant fishes) placed in 65 families and 982 genera (Fricke et al. 2022). Based on molecular evidences and some morphological characteristics, in recent years, some families of perciforms have been removed and placed elsewhere in the Percomorpha (Nelson et al. 2016). Nevertheless, Perciformes are still among the most diverse orders of fishes and are the largest order of Percomorpha in numbers of families, genera, and species, and the family Mullidae (goatfishes) is part of this order.

Mullidae family are known for their high morphological variability (Golani and Galil 1991; Stepien et al. 1994) and for inhabiting brackish and marine waters above sandy to muddy bottoms as well as of coral reefs. They are distributed worldwide in tropical, subtropical, and temperate habitats of the Mediterranean and the Black Sea, Pacific and the Atlantic Ocean, southern and eastern Australia and New Zealand (Ben-Tuvia 1986; Uiblein 2007) between the upper littoral and the upper slope (Uiblein 2007). Based on morphological characters, all extant goatfishes have been placed in a single-family, Mullidae (Kim 2002; Nelson et al. 2016; Uiblein et al. 2020; Uiblein and Motomura 2021; Fricke et al. 2022). Many species of this family are targeted by fisheries or landed as bycatch and can be found in fish markets, having moderate to high local economic value (Uiblein and

Motomura 2021).

Members of the Mullidae family are characterized by body elongate and almost compressed, head and body completely scaled (except the periorbital region of some *Upeneus*), with 27 to 39 vertical scale rows from the upper end of gill opening to the base of caudal fin; chin with 2 long hyoid barbels; opercle usually with a small flat spine; two well-separated dorsal fin and 24 vertebrae (Uiblein 2007; Nelson et al. 2016; Uiblein et al. 2018). Although mullids have developed the hyoid barbels, which is a structural and functional peculiarity unique among percoids (Perciformes) that differentiate them from other percoids (Gosline 1984), still remarkable subject in the systematics of goatfishes is the lack of well-diagnostic morphological and meristic characteristics (Uiblein and Gouws 2015), the new species are being described (Uiblein et al. 2019, 2020; Uiblein and Motomura 2021).

A wide range of articles are now being published on the biology, fisheries, hard structures of these ecologically and commercially important mullid fishes (e.g., Abu El-Regal 2018; Sabbah et al. 2020; Uiblein et al. 2020; Echreshavi et al. 2021a, b; Uiblein and Motomura 2021). Hence, providing an updated checklist and accurate use of scientific names is essential to communicate research results effectively. Here, a least of 101 species in six genera of the Mullidae family is provided.

Material and Methods

This checklist has been compiled from the works listed in the references (see selected bibliography, e.g., Miller 1943, 1948, 1956, 1968, 1976; Lachner 1954; Gill 1862; Ben-Tuvia and Golani 1989; Golani and Galil 1991; Kim 2002; Randall 2004; Uiblein and McGrouther 2012; Uiblein and Causse 2013; Uiblein and Lisher 2013; Bos 2014; Uiblein and Gouws 2014; Nelson 2016; Uiblein and Motomura 2021; Fricke et al. 2022) and material deposited in the ZM-CBSU, Zoological Museum of Shiraz University, Collection of Biology Department, Shiraz. Genera and species were arranged alphabetically; scientific names and authorities were corroborated following Fricke et al. (2022). English/common names are given. The IUCN Red List of threatened species was followed to show the conservation status of each species.

Results

The Mullidae family (Teleostei: Perciformes) of the world comprises 101 species in six genera (Figs. 1, 2). The most diverse genus is *Upeneus* (48 species, 47%), followed by *Parupeneus* (35 species, 35%), *Mulloidichthys* (7 species, 7%), *Mullus* (6 species 6%), *Pseudupeneus* (3 species, 3%), and *Upeneichthys* (2 species, 2%). Among 101 listed species, 54 (55%) species are Least Concern (LC), 36 (36%) species are Not Evaluated (NE), 6 (6%) species are Data Deficient (DD), 1 (1%) species are Vulnerable (VU), 1 (1%) species are Near Threatened (NT) and 1 (1%) species are Endangered (EN) based on the Red List of IUCN (Fig. 3).

Checklist

Mulloidichthys Whitley [G. P.] 1929:122]. Masc. *Mullus flavolineatus* Lacepède 1801. Type by being a replacement name. Replacement for *Mulloides* Bleeker 1849; see *Mulloides* Richardson.

1) *Mulloidichthys ayliffe* Uiblein, 2011

Mulloidichthys ayliffe, Uiblein [F.] 2011:56, figs. 2-3, Pls. 1-2 [Smithiana, Publications in Aquatic Biodiversity, Bulletin No. 13].

EN: Indian mimic goatfish.

Type locality: Sodwana Bay, Mellow Yellow Reef, 27°31.863'S, 32°42.48'E, KwaZulu-Natal, South Africa, southwestern Indian Ocean, depth 12-19 meters. Holotype: SAIAB 86367. Paratypes: BPBM 17620 (1), 36010

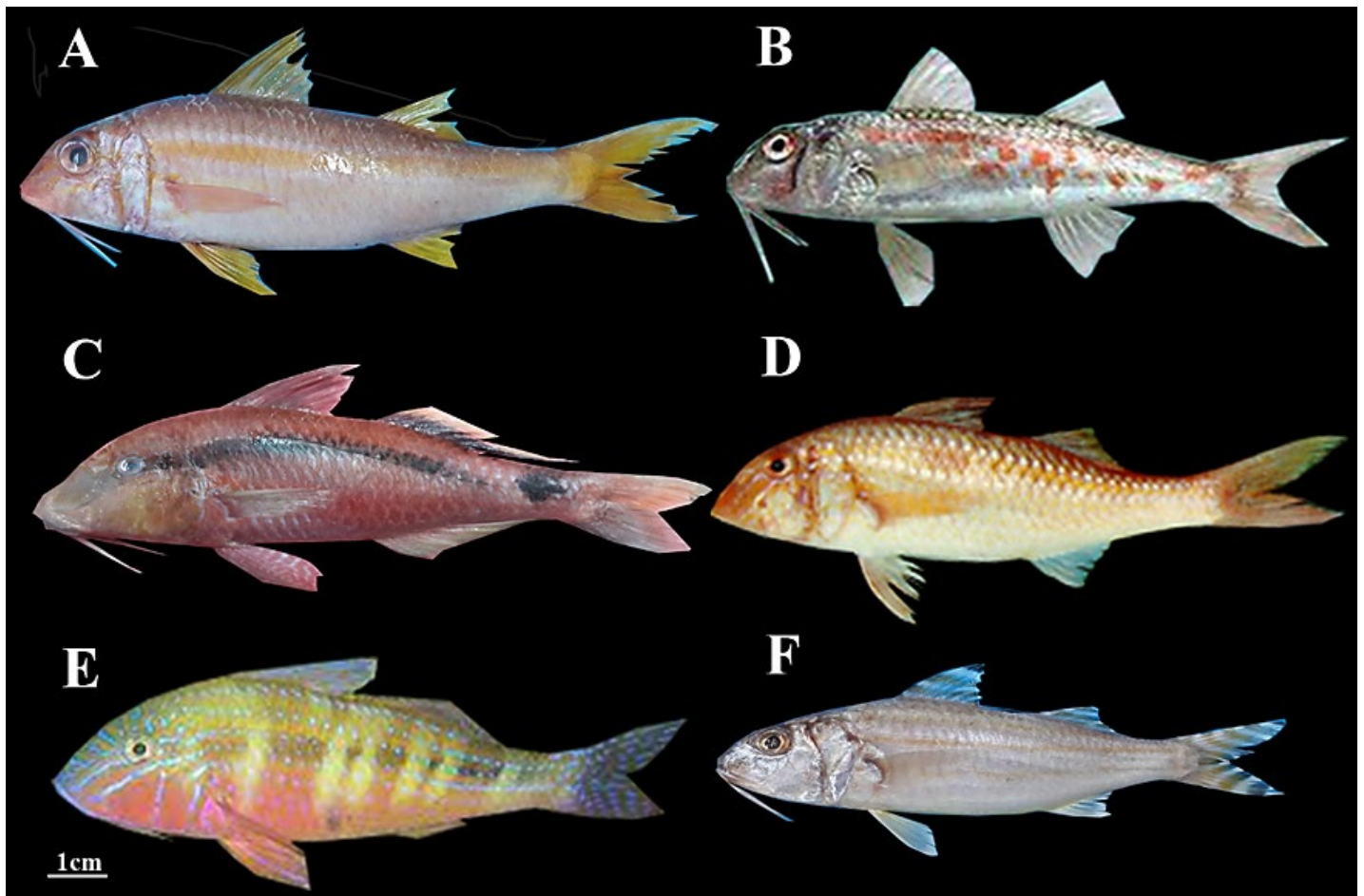


Figure 1. Representatives of six mullid genera. A: *Mulloidichthys vanicolensis* photo by Sorour Echreshavi; B: *Mullus barbatus* photo by Andrzej Martin Kasiński (Fishbase); C: *Parupeneus macronemus* photo by Sorour Echreshavi; D: *Pseudupeneus maculatus* photo by Lucas Cardoso (Fishbase); E: *Upeneichthys vlamingii* photo by Rick stuart-smith (Fishbase); F: *Upeneus vittatus* photo by Sorour Echreshavi.

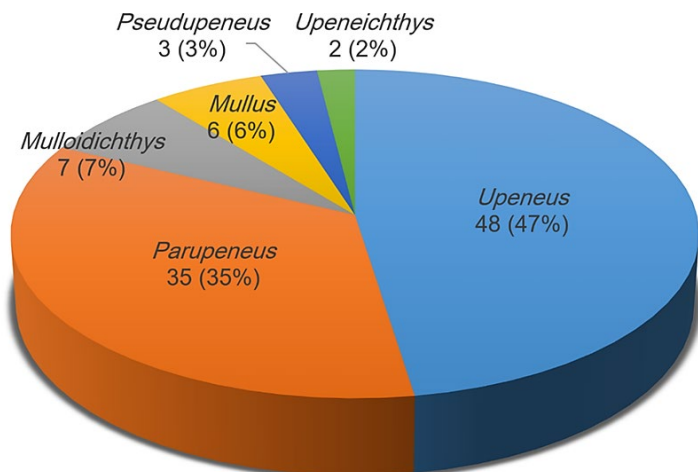


Figure 2. Number and percentage of fish species in different genera of mullids.

(2), 36024 (6), 41008 (1); SAIAB 13907 (2), 18055 (1), 18057 (2), 86368 (2). Plus, non-type specimens from Sri Lanka.

Distribution: Western Indian Ocean: South Africa, Mozambique Channel, Tanzania, Kenya, Oman, Seychelles, Sri Lanka and Andaman Islands.

IUCN: Least Concern.

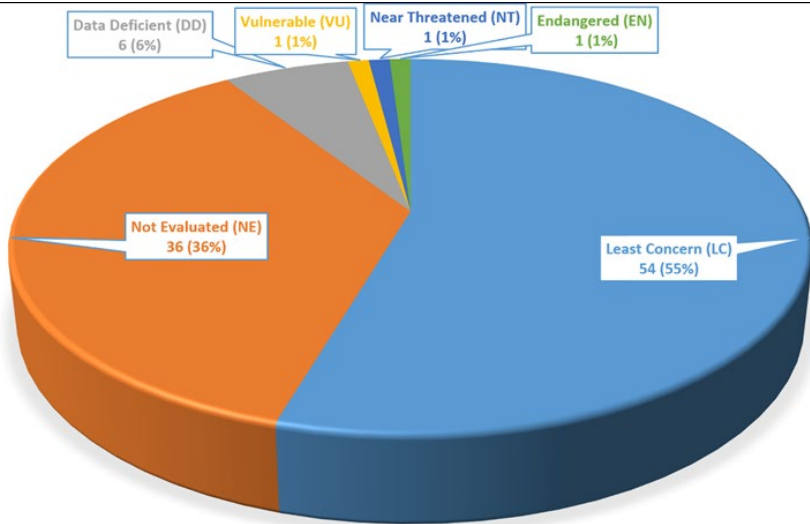


Figure 3. Number and percentage of mulloid fish species in different IUCN categories.

2) *Mulloidichthys dentatus* (Gill, 1862)

Upeneus dentatus Gill [T. N.] 1862:256 [Proceedings of the Academy of Natural Sciences of Philadelphia v. 14].

EN: Mexican goatfish.

Type locality: Baja California, Mexico. Syntypes: USNM 3699 (3).

Distribution: Eastern Pacific.

IUCN: Least Concern.

3) *Mulloidichthys flavolineatus* (Lacepède, 1801)

Mullus flavolineatus Lacepède [B. G. E.] (ex Commerson) 1801:384, 406 [Histoire naturelle des poissons (Lacepède) v. 3].

EN: Yellow-tail goatfish.

Type locality: Mauritius, East Coast, Oyster Bay, Indian Ocean, 19°43'S, 63°21'E. Neotype: BPBM 21035. Type catalog: Bauchot et al. 1985:13. Originally spelled *flavolineatus* on p. 384, but *flavo lineatus* on p. 406. Based on Commerson's manuscript.

Distribution: Indo-West Pacific: East and South Africa, Madagascar and Mascarenes east to Hawaiian Islands, Line Islands and Pitcairn Group, north to southern Japan, south to Western Australia, New South Wales (Australia) at 36°S, Lord Howe Island, New Caledonia and Rapa. Red Sea records based on *Mulloidichthys flavicaudus*.

IUCN: Least Concern.

4) *Mulloidichthys martinicus* (Cuvier, 1829)

Upeneus martinicus Cuvier [G.] in Cuvier & Valenciennes 1829:483 [Histoire naturelle des poissons v. 3].

EN: Yellow goatfish.

Type locality: Martinique Island, West Indies. Holotype (unique): MNHN A-3404. Type catalog: Bauchot et al. 1985:8.

Distribution: Western and eastern Atlantic islands.

IUCN: Least Concern.

5) *Mulloidichthys mimicus* Randall & Guézé, 1980

Mulloidichthys mimicus Randall [J. E.] & Guézé [P.] 1980:605, Pl. 1 (fig. B) [Bulletin du Museum National d'Histoire Naturelle Ser. 4: Section A: Zoologie, Biologie et Écologie Animales v. 2 (no. 2)]

EN: Mimic goatfish

Type locality: West side of Sentinelle de l'Est, Nuku Hiva, Marquesas Islands, South Pacific, depth 15 meters. Holotype: BPBM 12638. Paratypes: BPBM 4079 (1), 7738 (6), 11901 (1), 12135 (1); CAS 44204 (1); MNHN 1966-0715 (1), 1974-0078 (1); USNM 220029 (1). Type catalog: Bauchot et al. 1985:5.

Distribution: South Pacific Islands; Hawaiian Islands.

IUCN: Least Concern.

6) *Mulloides pfluegeri* Steindachner, 1900

Mulloides pfluegeri Steindachner [F.] 1900:174 [Anzeiger der Kaiserlichen Akademie der Wissenschaften, Wien, Mathematisch-Naturwissenschaftliche Classe v. 37 (no. 16) (for 21 June 1900)].

EN: Orange goatfish.

Type locality: Honolulu, Oahu Island, Hawaiian Islands. Holotype (unique): UMB 156 [RK UMB 4532]. Type catalog: Wahlert 1955:324. Species later illustrated and described in detail in Steindachner 1900:485 Pl. 3 (fig. 4); on p. 3 of separate.

Distribution: Indo-West Pacific: Mascarenes; eastern Indonesia east to the Hawaiian Islands and the Marquesas Islands, north to Ryukyu Islands (southern Japan), south to Tonga.

IUCN: Least Concern.

7) *Mulloidichthys vanicolensis* (Valenciennes, 1831)

Mulloidichthys vanicolensis Valenciennes [A.] in Cuvier & Valenciennes 1831:521 [Histoire naturelle des poissons v. 7].

EN: Yellow-fin goatfish.

Type locality: Vanikoro Island, Santa Cruz Islands, southwestern Pacific. Syntypes: MNHN A-3520 (2), A-3521 (2), B-2352 (1). Type catalog: Bauchot et al. 1985:9.

Distribution: Red Sea, Indo-West Pacific: East Africa, Comoros, Madagascar and western Mascarenes east to the Hawaiian Islands, Line Islands and Pitcairn Group, north to southern Japan, south to Western Australia, New South Wales (Australia), Lord Howe, Norfolk, Kermadec Islands, New Caledonia, Tonga and Gambier Islands.

IUCN: Least Concern.

Mullus Linnaeus [C.] 1758:299. Masc. *Mullus barbatus* Linnaeus 1758. Type by subsequent designation. Type probably designated by Bleeker 1876:334 in designating this species as type of *Mullus* Klein 1749. On Official List (Opinion 77).

8) *Mullus argentinae* Hubbs & Marini, 1933

Mullus argentinae Hubbs [C. L.] & Marini [T. L.] 1933:347 [Physis (Buenos Aires) v. 11 (no. 39)].

EN: Argentine goatfish.

Type locality: Port of Quequén, Argentina. Holotype: UMMZ 95474. Paratypes: MCZ 10999 (1), USNM 77379 (2). Based on literature and specimens.

Distribution: Southwestern Atlantic.

IUCN: Not Evaluated.

9) *Mullus auratus* Jordan & Gilbert, 1882

Mullus auratus Jordan [D. S.] & Gilbert [C. H.] 1882:280 [Proceedings of the United States National Museum v. 5 (no. 282)].

EN: Red goatfish.

Type locality: Pensacola, Florida, U.S.A. (stomach content). Holotype (unique): USNM 30828.

Distribution: Western Atlantic.

IUCN: Least Concern.

10) *Mullus barbatus* Linnaeus, 1758

Mullus barbatus Linnaeus [C.] 1758:299 [Systema Naturae, Ed. X v. 1].

EN: Red mullet.

Type locality: Mediterranean Sea; northern Ocean. Syntypes: BMNH 1853.11.12.14 [Gronovius coll.] (1, skin), LS 3 (right half-skin). Type catalog: Wheeler 1958:222, Fernholm and Wheeler 1983:248, Wheeler 1985:62.

Distribution: Mediterranean Sea, Black Sea, eastern Atlantic: Norway to Senegal including the Azores.

IUCN: Least Concern.

11) *Mullus phillipsi* Fowler, 1918

Mullus phillipsi Fowler [H. W.] 1918:5, Pl. 1 [Occasional Papers of the Museum of Zoology University of Michigan v. 56].

EN: Phillips mullet.

Type locality: Corson's Inlet, Cape May County, New Jersey, U.S.A. Corson's Inlet, Cape May County, New Jersey, U.S.A. Holotype (unique): ANSP 47448. Type catalog: Böhlke 1984:129. Synonym of *Mullus auratus* Jordan & Gilbert 1882.

Distribution: Western Atlantic.

IUCN: Not Evaluated.

12) *Mullus ponticus* Essipov, 1927

Mullus ponticus, Essipov [V. K.] 1927:137 [French p. 146] [Trudy Kerčenskoj Naučnoj Rybochozjajstvennoj Stancii v. 1 (nos 2-3)].

EN: Blunt-snouted mullet.

Type locality: District of Kerch and Anapa, northeastern Black Sea, Russia. Syntypes: (many) none at ZIN.

Distribution: Black Sea and Sea of Azov.

IUCN: Not Evaluated.

13) *Mullus surmuletus* Linnaeus, 1758

Mullus surmuletus Linnaeus [C.] 1758:300 [Systema Naturae, Ed. X v. 1].

EN: Surmullet.

Type locality: Mediterranean Sea; Cornwall, England. No types known. Neotype designated by Fricke 1999:42, but withdrawn in Fricke 2000:639.

Distribution: Western Baltic Sea, North Sea, Mediterranean Sea, Black Sea, eastern Atlantic: Norway to Senegal including Azores and Madeira.

IUCN: Least Concern.

Parupeneus Bleeker [P.] 1863:34. Masc. *Mullus barberinus* Cuvier 1829 (= *Mullus barberinus* Lacepède 1801). Type by subsequent designation. On Official List (Opinion 846) but apparently with type wrongly as *bifasciatus* Lacepède in Buffon 1802 as designated by Jordan 1919:322. Type designated by Bleeker 1876:334 (ICZN did not use plenary powers to designate the type; see also Bauchot et al. 1985:4).

14) *Parupeneus angulatus* Randall & Heemstra, 2009

Parupeneus angulatus Randall [J. E.] & Heemstra [E.] 2009:41, Figs. 3C, 4 [Smithiana, Publications in Aquatic Biodiversity, Bulletin v. 10].

Type locality: Southwest of Denis Island, 3°54'S, 55°49'E, Seychelles Bank, depth 57 meters. Holotype: SAIAB 82215. Paratypes: BPBM 31309 (1). Second author is E. Heemstra.

Distribution: Western Indian Ocean: Seychelles.

IUCN: Data deficient.

15) *Parupeneus barberinoides* (Bleeker, 1852)

Upeneus barberinoides Bleeker [P.] 1852:263 [Natuurkundig Tijdschrift voor Nederlandsch Indië v. 3 (no. 2)].

EN: Bicolor goatfish.

Type locality: Waihai, northern Ceram, Indonesia. Syntypes: (8) RMNH 5740 (1), 25406 [ex 5740] (some of 8). Original as *barberinoides*.

Distribution: Western Pacific and southeastern Indian Ocean: Indonesia east to Caroline Islands and Samoa, north to Ryukyu and Ogasawara islands, south to northern Australia and New Caledonia.

IUCN: Least Concern.

16) *Parupeneus barberinus* (Lacépède, 1801)

Parupeneus barberinus Lacépède [B. G. E.] (ex Commerson) 1801:383, 406, Pl. 13 (fig. 3) [Histoire naturelle des poissons (Lacépède) v. 3].

EN: Dash-and-dot goatfish.

Type locality: Molucca Islands, Indonesia. No types known. Type catalog: Bauchot et al. 1985:12. Based on description and drawing in manuscript by Commerson (Philibert Commerson, 1727-1773, French explorer and naturalist). Neotype designation by Fricke 1999:311 is invalid; see Fricke 2000:639. *Mullus barberinus* Cuvier 1829 is apparently not an original description -- contra Hoese and Bray 2006:1267.

Distribution: Indo-West Pacific: South Africa, East Africa, Seychelles, Madagascar and Mascarenes east to Line Islands, Marquesas Islands and Gambier Islands, north to southern Japan, south to Western Australia, New South Wales (Australia), Lord Howe Island, New Caledonia and Tonga.

IUCN: Least Concern.

17) *Parupeneus biaculeatus* (Richardson, 1846)

Parupeneus biaculeatus Richardson [J.] (ex Gray) 1846:219 [Report of the British Association for the Advancement of Science 15th meeting [1845]].

EN: Pointed goatfish.

Type locality: Canton [Guangzhou], China. Holotype (unique): BMNH 1968.3.11.10 or 11 (dry half skins). Type information: Whitehead 1970:214. Apparently the smaller specimen (about 170 mm SL) is probably the holotype based on note in bottle by J. E. Randall.

Distribution: South China Sea to southern Indonesia.

IUCN: Not Evaluated.

18) *Parupeneus chrysonemus* (Jordan & Evermann, 1903)

Parupeneus chrysonemus Jordan [D. S.] & Evermann [B. W.] 1903:186 [Bulletin of the U. S. Fish Commission v. 22 (1902)].

EN: Yellow-threaded goatfish.

Type locality: Hilo, Hawaii Island, Hawaiian Islands. Holotype: USNM 50666. Paratypes: AMNH 2298 (1); ANSP 24226 (1); BPBM 1703 (1); CAS 1499 (1, missing, number wrong), 58518 [ex IU 10448] (1), 58520 (1); FMNH 3955 (1); MCZ 28906 (1); CAS-SU 6086 (4), 7476 (2); USFC 2724-25 (1, 1); USNM 50676 (1), 126548-49 (4, 1), 164656-57 (1, 1). Type catalog: Böhlke 1984:129, Ibarra and Stewart 1987:71 as 2 paratypes.

Distribution: Central Pacific: Johnston Atoll and Hawaiian Islands.

IUCN: Least Concern.

19) *Parupeneus chrysopleuron* (Temminck & Schlegel, 1843)

Parupeneus chrysopleuron Temminck [C. J.] & Schlegel [H.] 1843:29, Pl. 12 (fig. 1) [Fauna Japonica Parts 2-4].

EN: Yellow-striped goatfish.

Type locality: Japan. No types known. Type information: Boeseman 1947:43.

Distribution: Indo-West Pacific: Western Australia to Japan; Myanmar and Indonesia.

IUCN: Not Evaluated.

20) *Parupeneus ciliatus* (Lacépède, 1802)

Parupeneus ciliatus Lacépède [B. G. E.] 1802:308, 311 [Histoire naturelle des poissons (Lacépède) v. 4].

EN: Whitesaddle goatfish.

Type locality: No locality stated. Holotype (unique): MNHN A-5700 (dry). Type catalog: Bauchot et al. 1985:10, Bauchot and Desoutter 1987:32. Based on a specimen donated from RMNH to MNHN.

Distribution: Indo-West Pacific: East Africa, Seychelles, Madagascar and Mascarenes east to Marshall Islands and Pitcairn, north to southern Japan, south to western Australia, New South Wales (Australia), Lord Howe Island, New Caledonia, Tonga and Rapa.

IUCN: Least Concern.

21) *Parupeneus crassilabris* (Valenciennes, 1831)

Parupeneus crassilabris Valenciennes [A.] in Cuvier & Valenciennes 1831:523 [Histoire naturelle des poissons v. 7].

EN: Whitesaddle goatfish.

Type locality: New Guinea. Holotype (unique): MNHN A-3504. Type catalog: Bauchot et al. 1985:7.

Distribution: Western Pacific and southeastern Indian Ocean: Indonesia east to Caroline Islands and Tonga, north to Ryukyu Islands, south to northern Australia and New Caledonia.

IUCN: Least Concern.

22) *Parupeneus cyclostomus* (Lacépède, 1801)

Parupeneus cyclostomus Bleeker [P.] 1875:37 [Verhandelingen der Koninklijke Akademie van Wetenschappen (Amsterdam) v. 15 (art. 3)].

EN: Goldsaddle goatfish.

Type locality: Ambon Island, Molucca Islands, Indonesia. Holotype (unique): RMNH 5749.

Distribution: Indian and Pacific Oceans.

IUCN: Least Concern.

23) *Parupeneus diagonalis* Randall, 2004

Parupeneus diagonalis Randall [J. E.] 2004:25, Fig. 5; Pl. IVB [Indo-Pacific Fishes No. 36].

Type locality: Réunion, western Mascarenes, southwestern Indian Ocean. Holotype: MNHN 1965-0047.

Paratypes: BPBM 20218 (1), MNHN 1967-0548 (1).

Distribution: Western Indian Ocean: Réunion and Mauritius (western Mascarenes endemic).

IUCN: Least Concern.

24) *Parupeneus forsskali* (Fourmanoir & Guézé, 1976)

Parupeneus forsskali Fourmanoir [P.] & Guézé [P.] 1976:45, Fig. [Travaux et Documents de l'O.R.S.T.O.M. No. 47].

EN: Red Sea goatfish.

Type locality: Jeddah, Saudi Arabia, Red Sea. Holotype: ZMUC P49343. Type catalog: Bauchot et al. 1985:14.

Replacement name for *Mullus auriflamma* Forsskål 1775; Forsskål's *auriflamma* was placed on the Official Index in Opinion 840.

Distribution: Red Sea, northwestern Indian Ocean: Gulf of Aden to Socotra; Mediterranean Sea (Red Sea immigrant).

IUCN: Least Concern.

25) *Parupeneus fraserorum* Randall & King, 2009

Parupeneus fraserorum Randall [J. E.] & King [D. R.] 2009:32, Fig. 1, 2(A), 3-6 [Smithiana, Publications in Aquatic Biodiversity, Bulletin v. 10].

Type locality: Reef off Pumula (Near Hibberdene), 30°35.40'S, 30°38.110'E, KwaZulu-Natal, South Africa, southwestern Indian Ocean, depth 57 meters. Holotype: SAIAB 81385. Paratypes: BPBM 40931 (1), SAIAB 81386 (1). Plus non-types at SAIAB and photographed specimens.

Distribution: Southwestern Indian Ocean: KwaZulu-Natal, South Africa and southeastern Madagascar.

IUCN: Least Concern.

26) *Parupeneus heptacanthus* (Lacépède, 1802)

Parupeneus heptacanthus Lacépède [B. G. E.] 1802:308, 311 [Histoire naturelle des poissons (Lacépède) v. 4].

EN: Cinnabar goatfish.

Type locality: No locality stated [probably Indonesia]. Holotype (unique): MNHN A-5438 (dry). Type catalog: Bauchot et al. 1985:11, Bauchot and Desoutter 1987:32. Based on a specimen donated from RMNH to MNHN.

Distribution: Red Sea, Indo-West Pacific: East Africa, Madagascar and Mascarenes east to Marshall Islands, Samoa and Tonga, north to southern Japan, south to Australia, Lord Howe Island and New Caledonia.

IUCN: Least Concern.

27) *Parupeneus inayatae* Uiblein & Fahmi, 2018

Parupeneus inayatae Uiblein [F.] & Fahmi [no initials] in Uiblein, Hoang, Alama, Causse, Chacate, Fahmi & Matiku 2018:233, Figs. 1A-C [Cybium v. 42 (no. 3)]

EN: Inayat's goatfish.

Type Locality: Southeast Lombok, Tanjung Luar, Indonesia. Holotype (unique): MZB 24565.

Distribution: Lombok, Indonesia.

IUCN: Not Evaluated.

28) *Parupeneus indicus* (Shaw, 1803)

Parupeneus indicus Type locality: Cuvier [G.] in Cuvier & Valenciennes 1829:466 [Histoire naturelle des poissons v. 3].

EN: Indian goatfish.

Type locality: Waigeo, Indonesia. Holotype (unique): MNHN 0000-9564. Type catalog: Bauchot et al. 1985:9.

Distribution: Indian Ocean and western Pacific Ocean.

IUCN: Least Concern.

29) *Parupeneus insularis* Randall & Myers, 2002

Parupeneus insularis Randall [J. E.] & Myers [R. F.] 2002:433, Figs. 5-8, 11 [Zoological Studies v. 41 (no. 4)].

EN: Twosaddle goatfish.

Type locality: Moku Manu, western side off cave, Oahu, Hawaiian Islands, depth 18.5 meters. Holotype: BPBM 6455. Paratypes: AMS I.40985-001 (2); ASIZP 60950 (1); BPBM 7089 (6), 8988 (1), 15307 (2), 17058 (2), 17148 (1), 25685 (1), 28794 (1); CAS 59044 (1), 59046 (1), 59049 (1), 59054 (3); MNHN 1975-1063 (1); NSMT-P 61976 (2); ROM 72665 (1); CAS-SU 8929 (4), 50094 (1); USNM 367312 (1). Plus non-type material.

Distribution: Western and entral Pacific: Ogasawara Islands, Mariana Islands, Minami-Tori-Shima, Marshal Islands, Samoa, Hawaiian Islands, Line Islands, Cook Islands, French Polynesia to Ducie (Pitcairn Group).

IUCN: Least Concern.

30) *Parupeneus janseni* (Bleeker, 1856)

Parupeneus janseni Bleeker [P.] 1856:44 [Acta Societatis Regiae Scientiarum Indo-Neêrlandicae v. 1 (6)].

EN: Jansen's Goatfish.

Type locality: Manado, Sulawesi, Indonesia. Syntypes: NMV 45915 (1), RMNH 5748 (2).

Distribution: Indonesia, Vietnam, Philippines, Papua New Guinea and Australia.

IUCN: Least Concern.

31) *Parupeneus louise* Randall, 2004

Parupeneus louise Randall [J. E.] 2004:36, Fig. 8; Pl. VIB [Indo-Pacific Fishes No. 36].

Type locality: Kaukura Atoll, Tuamotu Archipelago, depth 200 meters. Holotype (unique): BPBM 31692.

Distribution: Tuamotu Archipelago and Austral Islands.

IUCN: Least Concern.

32) *Parupeneus macronemus* (Lacépède, 1801)

Parupeneus macronemus Lacépède [B. G. E.] (ex Commerson) 1801:383, 404, Pl. 13 (fig. 2) [Histoire naturelle des poissons (Lacépède) v. 3].

EN: Longbarbel goatfish.

Type locality: No locality stated [Indo-West Pacific]. Holotype (unique): MNHN A-5435. Type catalog: Bauchot et al. 1985:13 with no type. Spelled *macronema* on p. 383. Based on illustration and description in manuscript by Commerson (Philibert Commerson, 1727-1773, French explorer and naturalist); underlying specimen is the type even though not seen by Lacépède.

Distribution: Red Sea, Indo-West Pacific: East and South Africa, Madagascar and Mascarenes, Cocos-Keeling Islands, Christmas Island to Indonesia and Philippines.

IUCN: Least Concern.

33) *Parupeneus margaritatus* Randall & Guézé, 1984

Parupeneus margaritatus Randall [J. E.] & Guézé [P.] 1984:12, Pl. 1 (figs. A-C) [Cybium v. 8 (no. 4)].

EN: Pearly goatfish.

Type locality: Bahrain fish market, Persian Gulf. Holotype: BPBM 29573. Paratypes: AMS 1.24445-001 (1); BMNH 1887.11.11.125-127 (3), 1889.4.15.26-27 (2), 1903.5.14.14-16 (3), 1904.5.25.45 (3), 1984.3.29.1 (1), 1984.5.16.1-2 (2), 1984.5.16.151-155 (5); BPBM 21220 (1), 29406 (2), 29410 (9), 29574 (3); CAS 54838 (1); HUI 11388 (1); MCZ 60804 (1); MNHN 1983-677 (3), 1984-457 (1), A.3517 (1); NSMT-P 23030 (1); SAIAB [formerly RUSI] 20063 (1); USNM 147994 (8), 265814 (1). Type catalog: Bauchot et al. 1985:6, Golani 2006:28.

Distribution: Northwestern Indian Ocean: Persian Gulf to Pakistan.

IUCN: Least Concern.

34) *Parupeneus minys* Randall & Heemstra, 2009

Parupeneus minys Randall [J. E.] & Heemstra [E.] 2009:45, Figs. 5-6 [Smithiana, Publications in Aquatic Biodiversity, Bulletin v. 10].

Type locality: Poivre Atoll, 5°44'S, 53°20'E, Amirantes, Seychelles. Holotype: BPBM 35553. Paratypes: BPBM 27693 (1), 40948 (1); MNHN 2008-2473 (1); SAIAB 81381 (1); USNM 395007 (1) Second author is E. Heemstra.

Distribution: Seychelles, Mozambique and India.

IUCN: Least Concern.

35) *Parupeneus moffitti* Randall & Myers, 1993

Parupeneus moffitti Randall [J. E.] & Myers [R. F.] 1993:70, Fig. 1 [Micronesica v. 26 (no. 1)].

Type locality: Off the southwestern side of Orote Peninsula, Guam, Mariana Islands, 13°26'N, 144°38'E, western Pacific, depth 120 meters. Holotype: BPBM 34930. Paratypes: BPBM 35051 (1), USNM 321084 (1).

Distribution: Western Pacific: Mariana Islands.

IUCN: Data Deficient.

36) *Parupeneus multifasciatus* (Quoy & Gaimard, 1825)

Parupeneus multifasciatus Smith [R.] & Swain [J.] 1882:130 [Proceedings of the United States National Museum v. 5 (no. 272)].

EN: Manybar goatfish.

Type locality: Johnston Island, Pacific. Holotype (unique): USNM 26822. •Synonym of *Parupeneus multifasciatus* (Quoy & Gaimard 1825) -- (Lachner 1960:12, Randall 2004:43, Mundy 2005:391).

Distribution: Pacific Ocean.

IUCN: Least Concern.

37) *Parupeneus nansen* Randall & Heemstra, 2009

Parupeneus nansen Randall [J. E.] & Heemstra [E.] 2009:47, Figs. 7-8 [Smithiana, Publications in Aquatic Biodiversity, Bulletin v. 10].

Type locality: Mozambique, 24°33.7'S, 35°15.6'E to 24°32.3'S, 35°15.6'E, depth 50-51 meters. Holotype: SAIAB 81389. Paratypes: BPBM 40949 (1), SAIAB 81683 (1), USNM 395047 (1). Non types: BPBM 31276

(7). Second author is E. Heemstra.

Distribution: Western Indian Ocean: Mozambique and Somalia.

IUCN: Least Concern.

38) *Parupeneus orientalis* (Fowler, 1933)

Parupeneus orientalis Fowler [H. W.] 1933:294, Fig. 23 [Bulletin of the United States National Museum No. 100, v. 12].

EN: Rapanui Goatfish.

Type locality: Cook Bay, Easter Island, southeastern Pacific. Holotype (unique): USNM 65639.

Distribution: Easter Island.

IUCN: Not Evaluated.

39) *Parupeneus pleurostigma* (Bennett, 1831)

Parupeneus pleurostigma Bennett [E. T.] 1831:59 [Proceedings of the Committee of Science and Correspondence of the Zoological Society of London 1830-31 (pt 1)].

EN: Sidespot goatfish.

Type locality: Mauritius, Mascarenes, southwestern Indian Ocean. Holotype: BMNH 1861.8.14.32.

Distribution: East Africa, Mozambique Channel, Seychelles, Madagascar and Mascarenes; Andaman Sea east to Hawaiian Islands, Line Islands and Pitcairn Group, north to southern Japan, south to Western Australia, New South Wales (Australia), Lord Howe Island, Raoul Island, New Caledonia, Kermadec Islands, Tonga and Rapa.

IUCN: Least Concern.

40) *Parupeneus porphyreus* (Jenkins, 1903)

Parupeneus porphyreus Jenkins [O. P.] 1903:454, Fig. 22 [Bulletin of the U. S. Fish Commission v. 22 (1902)].

Type locality: Honolulu, Oahu Island, Hawaiian Islands. Holotype: USNM 50705. Paratypes: (17).

Distribution: Hawaiian Islands.

IUCN: Near Threatened.

41) *Parupeneus posteli* Fourmanoir & Guézé, 1967

Parupeneus posteli Fourmanoir [P.] & Guézé [P.] 1967:47, Fig. I/a [Cahiers O. R. S. T. O. M. (Office de la Recherche Scientifique et Technique Outre-Mer) Série Océanographie v. 5 (no. 1)].

Type locality: Réunion, western Mascarenes, southwestern Indian Ocean, depth 150-250 meters. Holotype: MNHN 1965-0056. Paratypes: SAIAB [formerly RUSI] 615 (2). Type catalog: Bauchot et al. 1985:7.

Distribution: Southwestern Indian Ocean: Réunion (western Mascarenes endemic).

IUCN: Least Concern.

42) *Parupeneus procerigena* Kim & Amaoka, 2001

Parupeneus procerigena Kim [B.-J.] & Amaoka [K.] 2001:45, Figs. 1-2 [Ichthyological Research v. 48 (no. 1)].

Type locality: Saya de Malha Bank, western Indian Ocean, 10°22'S, 61°41'E, depth 92 meters. Holotype: HUMZ 82088. Paratypes: AMS I.40281-001 (1); HUMZ 72364 (1), 73179 (1), 73707 (1), 74033 (1, stained & dissected), 74034 (1), 74100-01 (1, 1), 81705 (1); NSMT-P 59647 (1); SAIAB [formerly RUSI] 62026 (1); USNM 361628 (1).

Distribution: Northwestern Indian Ocean: Seychelles and Saya de Malha Bank.

IUCN: Least Concern.

43) *Parupeneus rubescens* (Lacépède, 1801)

Parupeneus rubescens Lacépède [B. G. E.] (ex Commerson) 1801:384, 406 [Histoire naturelle des poissons (Lacépède) v. 3].

EN: Rosy goatfish.

Type locality: Réunion, western Mascarenes, southwestern Indian Ocean. Neotype: MNHN 1965-0058. Type catalog: Bauchot et al. 1985:6. Neotype designated by Maugé and Guézé 1984:500. Originally described from Île de France (Mauritius).

Distribution: Red Sea, East Africa and Mossel Bay (South Africa), Seychelles, Comoros, Madagascar and Mascarenes east to Philippines, north to southern Japan, south to northern Australia.

IUCN: Least Concern.

44) *Parupeneus seychellensis* (Smith & Smith, 1963)

Parupeneus seychellensis Smith [J. L. B.] & Smith [M. M.] 1963:22, Pl. 88 (fig. B) [The fishes of Seychelles].

Type locality: Mahé, Seychelles. Holotype: SAIAB [formerly RUSI] 32. Paratypes: SAIAB [formerly RUSI] (not reserched). Described in more detail by Smith 1963:36.

Distribution: Seychelles.

IUCN: Not Evaluated.

45) *Parupeneus sinai* Uiblein, 2021

Parupeneus sinai, Uiblein [F.] 2021:74, Fig. 3F [Cybium v. 45 (no. 1)]

Type locality: Northern Red Sea, most likely Gulf of Suez. Holotype (unique): MNHN 1967-0557.

Distribution: Northern Red Sea.

IUCN: Not Evaluated.

46) *Parupeneus spilurus* (Bleeker, 1854)

Parupeneus spilurus Bleeker [P.] 1854:395 [Natuurkundig Tijdschrift voor Nederlandsch Indië v. 6 (no. 2)].

EN: Blackspot goatfish.

Type locality: Nagasaki, Japan. Holotype (unique): RMNH 5742. Also in Bleeker 1854:68, Pl. 2 (fig. 2).

Distribution: Western Pacific and the southeastern Indian Ocean: Indonesia, Philippines, Australia, New Caledonia, northern New Zealand to Japan.

IUCN: Least Concern.

47) *Parupeneus trifasciatus* (Lacépède, 1801)

Parupeneus trifasciatus Lacépède [B. G. E.] (ex Commerson) 1801:383, 404, Pl. 15 (fig. 1) [Histoire naturelle des poissons (Lacépède) v. 3].

EN: Doublebar Goatfish.

Type locality: No locality stated (is probably Mauritius, Mascarenes, southwestern Indian Ocean, or Réunion, western Mascarenes, southwestern Indian Ocean). No types known. Type catalog: Bauchot et al. 1985:14. Based on description and drawing in manuscript by Commerson (Philibert Commerson, 1727-1773, French explorer and naturalist). Neotype designation by Fricke 1999:312 is invalid; see Fricke 2000:639. Technically *trifasciatus* has priority over *bifasciatus* according to Fricke 1999:312 based on Günther 1859 as first reviser.

Distribution: South and East Africa, Seychelles, Comoros, Madagascar and Mascarenes east to western Indonesia and to southern Japan.

IUCN: Not Evaluated.

48) *Parupeneus williamsi* Shibuya & Motomura, 2020

Parupeneus williamsi, Shibuya [S.] & Motomura [H.] 2020: [2], Figs. 1-2, 6a, 6c [Ichthyological Research v. 68 (no. 1)]

EN: Williams's Goatfish.

Type locality: Middle point of west coast of Moho Tani Island, Marquesas Islands, 09°58'18"S, 138°50'31"W, depth 6 -18 meters. Holotype: USNM 412095. Paratypes: KAUM-I, USNM.

Distribution: Marquesas Islands, Central Pacific.

IUCN: Not Evaluated.

Upeneichthys Bleeker [P.] 1855:7. Masc. *Upeneus porosus* Cuvier 1829. Type by monotypy. Appeared without description but reference to Cuvier species makes available. *Hypeneichthys* Ogilby 1893:33 is an unjustified emendation.

49) *Upeneichthys lineatus* (Bloch & Schneider, 1801)

Upeneichthys lineatus var. Bloch [M. E.] & Schneider [J. G.] 1801:78, [Pl. 18] [M. E. Blochii, Systema Ichthyologiae].

EN: Blue-lined goatfish or blue-striped mullet.

Type locality: Probably Sydney, Australia. No types known. Name used on Pl. 18 is *Mullus latamii*. See Hutchins 1990:488-489 for remarks on type locality.

Distribution: Australia.

IUCN: Least Concern.

50) *Upeneichthys stotti* Hutchins, 1990

Upeneichthys stotti Hutchins [J. B.] 1990:484, Fig. 1 [Records of the Western Australian Museum v. 14 (pt 4)].

EN: Stott's goatfish.

Type locality: Rottneest Island, Western Australia, 31°58'S, 115°34'E, depth 33 meters. Holotype: WAM P.28939-003. Paratypes: AMS I.28972-001 (1); BPBM 33911 (2); WAM P.5504-001 (1), P.5594-001 (1), P.5783-001 (1), P.20883-001 (1), P.20890-001 (1), P.22067-001 (2), P.27219-026 (1), P.27960-011 (2), P.28614-001 (11, 1 c&s), P.28939-002 (5). Type catalog: Hutchins and Smith 1991:27, Moore et al. 2008:29.

Distribution: Australia: Western Australia.

IUCN: Not Evaluated.

51) *Upeneichthys vlamingii* (Cuvier, 1829)

Upeneichthys vlamingii Cuvier [G.] in Cuvier & Valenciennes 1829:452, Pl. 71 [Histoire naturelle des poissons v. 3].

EN: Southern goatfish.

Type locality: King George Sound, Western Australia. Syntypes: MNHN 0000-9566 (2). Type catalog: Bauchot et al. 1985:9. See Hutchins 1990:491 for remarks on type locality.

Distribution: Australia: New South Wales, Victoria, Tasmania, South Australia and Western Australia.

IUCN: Not Evaluated.

Upeneus Cuvier [G.] 1829:157. Masc. *Mullus vittatus* Forsskål 1775. Type by subsequent designation. Type designated by Desmarest 1856:210 -- see Whitley 1939:223 but Whitley has the wrong date for Desmarest. The type also designated by Bleeker 1876:333. Also appeared as Cuvier in Cuvier and Valenciennes 1829:448.

Hypeneus Agassiz 1846:190, 384 is an unjustified emendation.

52) *Upeneus asymmetricus* Lachner, 1954

Upeneus asymmetricus Lachner [E. A.] 1954:511, Pl. 13 (fig. B) [Proceedings of the United States National Museum v. 103 (no. 3330)].

EN: Asymmetrical goatfish.

Type locality: Pandanon Island, east of Cebu, Philippines, Albatross. Holotype: USNM 154659. Paratypes: USNM 154660-61 (2, 1).

Distribution: Western Pacific and southeastern Indian Ocean; Indonesia and Philippines.

IUCN: Not Evaluated.

53) *Upeneus australiae* Kim & Nakaya, 2002

Upeneus australiae Kim [B.-J.] & Nakaya [K.] 2002:128, Figs. 1-3 [Ichthyological Research v. 49 (no. 2)].

EN: Australian goatfish.

Type locality: 2.5 kilometers west of Island Head, Queensland, 22°19.73'-22°19.76'S, 150°38.03'E-150°38.35'E, depth 6 meters. Holotype: AMS I.34384-012. Paratypes: AMS 24350-001 (2), I.34384-004 (7), I.34396--011 (1), I.34398-062 (2); NTM S.10803-018 (1).

Distribution: Southeastern Indian Ocean and western Pacific: Australia and New Caledonia.

IUCN: Least Concern.

54) *Upeneus caudofasciatus* Uiblein & Gledhill, 2019

Upeneus caudofasciatus Uiblein [F.] & Gledhill [D. C.] in Uiblein, Gledhill, Pavlov, Hoang & Shaheen 2019:168, Figs. 7A-C [Zootaxa 4683 (no. 2)]

EN: Tailbar goatfish

Type locality: Great Barrier Reef, north of Rockingham Bay, Queensland, northeast Australia, 17°38.57'S, 146°22.79'E, depth 26 meters. Holotype: CSIRO H 6717-02. Paratypes: AMS, CSIRO, QM. Plus, additional non-type material.

Distribution: Western Pacific: Great Barrier Reef, Queensland, northeast Australia, southwest Pacific.

IUCN: Least Concern.

55) *Upeneus davidaromi* Golani, 2001

Upeneus davidaromi Golani [D.] 2001:112, Fig. 1a, 2a, 3, 4 [Israel Journal of Zoology v. 47].

EN: Darom's goatfish.

Type locality: Eilat, Israel, Gulf of Aqaba, Red Sea, depth 300 meters. Holotype: HUJ 14130. Paratypes: FMNH 108780 (1); HUJ 10520 (2), 11394 (1), 11670-71 (5, 1), 11760 (1), 12242 (1), 13253 (1), 13601-02 (1, 4), 13666 (1), 13713 (1); MNHN 2000-1157 (1); RMNH 33910 (1); USNM 361629 (1). Type catalog: Golani 2006:28.

Distribution: Northern Red Sea endemic: Gulf of Aqaba.

IUCN: Least Concern.

56) *Upeneus dimipavlov* Uiblein & Motomura, 2021

Upeneus dimipavlov Uiblein [F.] & Motomura [H.] 2021:302, Fig. 1A [Zootaxa 4938 (no. 3)].

EN: Pavlov's goatfish.

Type locality: Bai Tre Bay, north of Hon Tre Island, Nha Trang, Khanh Hoa Province, southcentral Vietnam, South China Sea, 12°13.35'N, 109°18.50'E, depth about 15 meters. Holotype: VNMN-I 2056. Paratypes: AMS,

CAS, HIFIRE, KAUM-I, MNHN, NMMBP, NHMO, VNMN.

Distribution: Western Pacific: off southcentral Vietnam, South China Sea.

IUCN: Not Evaluated.

57) *Upeneus doriae* Günther, 1869

Upeneus doriae Günther [A.] 1869:445 [Annals and Magazine of Natural History (Series 4) v. 3 (no. 18) (art. 55)].

EN: Gilded goatfish.

Type locality: Bender Abassi, Persian Gulf. Syntypes: (several) BMNH 1869.3.4.36 (1), MSNG 13056 (11), ZMB 7056 (1). Type catalog: Tortonese 1959:4, Tortonese 1963:336.

Distribution: Western Indian Ocean: Persian Gulf and Gulf of Oman.

IUCN: Data deficient.

58) *Upeneus elongatus* Uiblein & Motomura, 2021

Upeneus elongatus Uiblein [F.] & Motomura [H.] 2021:304, Figs. 1B-C [Zootaxa 4938 (no. 3)].

EN: Elongate goatfish.

Type locality: Off Kumano, Nakatane, Kumage-gun, Tanega-shima Island, Osumi Islands, Kagoshima Prefecture, south Japan, Philippine Sea, 30°28.13'N, 130°58.32'E, depth 25 meters. Holotype (unique): KAUM-I 58746.

Distribution: Western Pacific: Philippine Sea, south Japan.

IUCN: Not Evaluated.

59) *Upeneus farnis* Uiblein & Peristiwady, 2017

Upeneus farnis Uiblein [F.] & Peristiwady [T.] in Uiblein, Gledhill & Peristiwady 2017:297, Figs. 1A, 1B [Zootaxa 4318 (no. 2)].

EN: Farnis' goatfish.

Type locality: Indonesia, northeastern Sulawesi, Bitung fish market. Holotype: LBRC-F 001450. Paratypes: LBRC-F.

Distribution: Western Pacific: Sulawesi, Indonesia.

IUCN: Not Evaluated.

60) *Upeneus filifer* Ogilby, 1910

Upeneus filifer Ogilby [J. D.] 1910:95 [On some new fishes from the Queensland coast].

EN: Pennant goatfish.

Type locality: Off Cape Gloucester, southern Queensland, Australia. Syntypes: AMS I.12541 (1), QM I.1560 (1).

Distribution: Australia, Coral Sea and New Caledonia.

IUCN: Not Evaluated.

61) *Upeneus floros* Uiblein & Gouws, 2020

Upeneus floros Uiblein [F.] & Gouws [G.] in Uiblein, Gouws, Lisher & Malauene 2020:526, Figs. 1A-C, 2 [Zootaxa 4834 (no. 4)].

EN: Floros goatfish.

Type locality: Two-Mile Reef, Sodwana Bay, KwaZulu-Natal, South Africa, southwestern Indian Ocean, 27°30.735'S, 32°41.224'E, depth 19 meters. Holotype: SAIAB 204583. Paratypes: SAIAB. Plus, additional non-

type material.

Distribution: Southwestern Indian Ocean: Park Rynie (south of Durban), South Africa to Angoche, north Mozambique.

IUCN: Not Evaluated.

62) *Upeneus francisi* Randall & Guézé, 1992

Upeneus francisi Randall [J. E.] & Guézé [P.] 1992:23, Figs. 1-3 [Cybium v. 16 (no. 1)].

EN: Francis' goatfish.

Type locality: Duncombe Bay, Norfolk Island, 29°05'S, 167°59'E, depth 18 meters. Holotype: BPBM 34256. Paratypes: AMS IB.5364 (1); BPBM 34254 (4), 34592 (5); CAS 76110 (1); MNHN 1990-0133 (1); NMNZ P.6142 (1), P.27184 (1); NSMT-P 34740 (1); USNM 317286 (1).

Distribution: Southwestern Pacific: Norfolk Island, Kermadec Islands and New Zealand.

IUCN: Least Concern.

63) *Upeneus gubal* Uiblein, 2019

Upeneus gubal Uiblein [F.] in Uiblein, Gledhill, Pavlov, Hoang & Shaheen 2019:172, Fig. 7D [Zootaxa 4683 (no. 2)].

EN: Gubal goatfish.

Type locality: North of Gubal Island, Strait of Gubal, Gulf of Suez, Red Sea, western Indian Ocean, 27°49'59"N, 33°43'1"E, depth 70 meters. Holotype (unique): MNHN 2011-1515.

Distribution: Western Indian Ocean: Red Sea, Gulf of Suez.

IUCN: Data deficient.

64) *Upeneus guttatus* Day, 1868

Upeneus guttatus Day [F.] 1868:938 [Proceedings of the Zoological Society of London 1867 (pt 3) (art. 7)].

EN: Two-tone goatfish.

Type locality: Madras, India. Syntypes and/or Day specimens: AMS I.25 (1, syntype) Madras; BMNH 1868.5.14.11 (1), 1975.9.30.19 (1) Madras; ZSI 2912 (1, lost). Type catalog: Whitehead and Talwar 1976:160, Ferraris et al. 2000:297.

Distribution: Red Sea, East Africa and Madagascar east to Philippines, north to southern Japan.

IUCN: Least Concern.

65) *Upeneus heemstra* Uiblein & Gouws, 2014

Upeneus heemstra Uiblein [F.] & Gouws [G.] 2014:667, Figs. 4-8 [Marine Biology Research v. 10 (no. 7)].

EN: Heemstra goatfish.

Type locality: Kipini, 2°38'S, 40°28"E, Kenya, depth 12 meters. Holotype: SAIAB 119042. Paratypes: SAIAB (19). Plus non-types.

Distribution: Red Sea, East Africa, Seychelles and Madagascar to India and Sri Lanka.

IUCN: Least Concern.

66) *Upeneus heterospinus* Uiblein & Pavlov, 2019

Upeneus heterospinus Uiblein [F.] & Pavlov [D. A.] in Uiblein, Gledhill, Pavlov, Hoang & Shaheen 2019:180, Figs. 9-10 [Zootaxa 4683 (no. 2)].

EN: Varied-spine goatfish.

Type locality: North of Hon Tre Island, Nha Trang, Khanh Hoa province, south-central Vietnam, South China Sea, western Pacific, 12°13'21"N, 109°18'30"E. Holotype: VNMN-I 2015. Paratypes: CSIRO, HIFIRE, MNHN, VNMN, ZMUC, ZMUO. Plus, additional non-type material.

Distribution: Western Pacific: S Indonesia to Singapore and Central Philippines; to the Gulf of Thailand, Vietnam, South China, Taiwan, and S Japan.

IUCN: Least Concern.

67) *Upeneus indicus* Uiblein & Heemstra, 2010

Upeneus indicus Uiblein [F.] & Heemstra [P. C.] 2010:43, Pls. 1, 3 [Smithiana, Publications in Aquatic Biodiversity, Bulletin No. 11].

EN: Tall-fin goatfish.

Type locality: Cochin, western India [from local fishermen]. Holotype: BPBM 27524. Paratypes: BPBM 40987 (1).

Distribution: Western India.

IUCN: Least Concern.

68) *Upeneus itoui* Yamashita, Golani & Motomura, 2011

Upeneus itoui Yamashita [M.], Golani [D.] & Motomura [H.] 2011:48, Figs. 1-3 [Zootaxa No. 3107].

EN: Oriental goatfish.

Type locality: East of Sakinoyama, Kataura, Kasasa, Minamisatsuma, Kagoshima, Japan, 31°25'44"N, 130°11'49"E, depth 27 meters. Holotype: NSMT 102554 [ex KAUM 21091]. Paratypes: many at AMS, CSIRO, KAUM, MNHN, MUFS, URM and USNM. Plus non-type specimens.

Distribution: Western Indian Ocean: Japan.

IUCN: Not Evaluated.

69) *Upeneus japonicus* Houttuyn, 1782

Upeneus japonicus Houttuyn [M.] 1782:334 [Verhandelingen der Hollandsche Maatschappij der Wetenschappen, Haarlem v. 20 (pt 2)].

EN: Japanese goatfish.

Type locality: Off Futo Harbor, East coast of Izu Peninsula, Honshu, Japan, depth 15 meters. Neotype: NSMT-P 45177. Neotype designated by Randall et al. 1993:304; original type locality off Nagasaki, Japan. See Boeseman 1995:3 for additional comments.

Distribution: Western Pacific: Western Malaysia and Philippines to South Korea and Peter the Great Bay, Russia.

IUCN: Not Evaluated.

70) *Upeneus lombok* Uiblein & White, 2015

Upeneus lombok Uiblein [F.] & White [W. T.] 2015:53, Fig. 1a [Zootaxa 3980 (no. 1)].

EN: Lombok goatfish.

Type locality: Lombok, Indonesia, 8°48'S, 116°33'E, depth 54-60 meters. Holotype: NTM S.11341-002. Paratypes: NTM.

Distribution: Indonesia.

IUCN: Not Evaluated.

71) *Upeneus luzonius* Jordan & Seale, 1907

Upeneus luzonius Jordan [D. S.] & Seale [A.] 1907:25, Fig. 9 [Bulletin of the Bureau of Fisheries v. 26 (Doc. 606) (for 1906)].

EN: Dark-barred goatfish.

Type locality: Cavite, Luzon Island, Philippines. Holotype: CAS-SU 9244 (not USNM 53067). Paratypes: CAS-SU 20101 (2), USNM 53067 (2). Type catalog: Böhlke 1953:80. Holotype was not deposited at USNM as indicated in Jordan and Seale 1885 but was retained at SU. Seven specimens were mentioned in the original description.

Distribution: Western Pacific and southeastern Indian Ocean.

IUCN: Not Evaluated.

72) *Upeneus margarethae* Uiblein & Heemstra, 2010

Upeneus margarethae Uiblein [F.] & Heemstra [P. C.] 2010:44, Pls. 1, 3 [Smithiana, Publications in Aquatic Biodiversity, Bulletin No. 11].

EN: Margaretha's goatfish.

Type locality: Mozambique, 35°78.60'S, 19°93.61'E, depth 47 meters. Holotype: SAIAB 82217. Paratypes: SAIAB 82209 (1), 82814 (2), 82817 (5); USNM 396092 (1). Plus non-type specimens.

Distribution: Red Sea, Somalia and Madagascar east to northern Australia.

IUCN: Least Concern.

73) *Upeneus mascarensis* Fourmanoir & Guézé, 1967

Upeneus mascarensis Fourmanoir [P.] & Guézé [P.] 1967:50, Fig. I/b [Cahiers O. R. S. T. O. M. (Office de la Recherche Scientifique et Technique Outre-Mer) Série Océanographie v. 5 (no. 1)].

EN: Mascarene goatfish.

Type locality: Réunion, western Mascarenes, southwestern Indian Ocean. Holotype: MNHN 1965-0072. Paratypes: whereabouts unknown. Type catalog: Bauchot et al. 1985:8.

Distribution: East Africa, Madagascar and Réunion (Mascarenes); western Indonesia.

IUCN: Least Concern.

74) *Upeneus moluccensis* Bleeker, 1855

Upeneus moluccensis Bleeker [P.] 1855:409 [Natuurkundig Tijdschrift voor Nederlandsch Indië v. 8 (no. 3)].

EN: Goldband goatfish.

Type locality: Ambon Island, Molucca Islands, Indonesia. Holotype (unique): RMNH 5722 (poor condition).

Distribution: Red Sea, East Africa, Madagascar and Réunion east to Caroline Islands and New Guinea, north to southern Japan, south to Western Australia and Queensland (Australia); Mediterranean Sea (Red Sea immigrant).

IUCN: Least Concern.

75) *Upeneus mouthami* Randall & Kulbicki, 2006

Upeneus mouthami Randall [J. E.] & Kulbicki [M.] 2006:302, Fig. 6 [Zoological Studies v. 45 (no. 3)].

EN: Moutham's goatfish.

Type locality: Chesterfield Bank, 20°59'48"S, 158°47'18"E, Coral Sea. Holotype: BPBM 33858. Paratypes: AMS I.43340-001 (1); BPBM 33855 (1), 39467 (1); MNHN 2004-1571 (1); NSMT P 68933 (1); USNM 378143 (1).

Distribution: West-central Pacific: Chesterfield Bank, Coral Sea.

IUCN: Data Deficient.

76) *Upeneus niebuhri* Guézé, 1967

Upeneus niebuhri Guézé [P.] 1976:596 [Revue des Travaux de l'Institut des Pêches Maritimes v. 40 (no. 3-4)].

EN: Niebuhr's goatfish.

Type locality: Gulf of Suez, 28°54'29"N, 32°29' to 32°45'E, Red Sea, depth 62 meters. Holotype (unique): MNHN 1977-0174. Type catalog: Bauchot et al. 1985:8.

Distribution: Red Sea.

IUCN: Not Evaluated.

77) *Upeneus nigromarginatus* Bos, 2014

Upeneus nigromarginatus Bos [A. R.] 2014:753, Figs. 3-5 [Raffles Bulletin of Zoology 62].

EN: Black-margined goatfish.

Type locality: Panabo City, fish market, 7°18'23"N, 125°41'01"E, Philippines. Holotype: RMNH.PISC.37991. Paratypes: RMNH.PISC 36422 (1), 36423 (1), 32464 (1), 37992 (1).

Distribution: Philippines.

IUCN: Not Evaluated.

78) *Upeneus oligospilus* Lachner, 1954

Upeneus oligospilus Lachner [E. A.] 1954:525, Pl. 14 (fig. D) [Proceedings of the United States National Museum v. 103 (no. 3330)].

EN: Short-fin goatfish.

Type locality: Tarut Bay, Persian Gulf. Holotype: USNM 153988. Paratypes: USNM 147995 (11).

Distribution: Western Indian Ocean: Persian Gulf.

IUCN: Least Concern.

79) *Upeneus parvus* Poey, 1852

Upeneus parvus Poey [F.] 1852: [226, 227], Pl. 17 [as Pl. 20] (fig. 3) [Memorias sobre la historia natural de la Isla de Cuba v. 1].

EN: Dwarf goatfish.

Type locality: Cuba. No types known. Name dates from plate on Oct. 1852; text published May 1853.

Distribution: Western Atlantic.

IUCN: Least Concern.

80) *Upeneus pori* Ben-Tuvia & Golani, 1989

Upeneus pori Ben-Tuvia [A.] & Golani [D.] 1989:105, Figs. 1-2 [Israel Journal of Zoology v. 36 (no. 2)].

EN: Por's goatfish.

Type locality: Eilat, Israel, Gulf of Aqaba, Red Sea. Holotype: HUI 13622 [not 13627]. Paratypes: AMS I.28042-001 (1); BMNH 1977.12.20.19-21 (3); BPBM 33505 (1); CAS 66225 (1); FMNH 98293 (1); HUI 6614 (3), 8540 (2), 12358 (1), 13517 (2), 13623 (2), 13639 (2); MNHN 1989-0537 (1); SAIAB [formerly RUSI] 28958 (1); USNM 303539 (1). Type catalog: Golani 2006:28 with holotype as 13627.

Distribution: Red Sea to Oman; Madagascar, Lessepsian migrant into eastern Mediterranean through Suez Canal.

IUCN: Not Evaluated.

81) *Upeneus quadrilineatus* Cheng & Wang, 1963

Upeneus quadrilineatus Cheng [C.-T.] & Wang [C.-X.] in Chu, Chan & Chen 1963:344, Fig. 260 [Ichthyofauna of the East China Sea].

EN: Four-stripe goatfish.

Type locality: Ta Chen Island, Zhejiang Province, China. Holotype: ASIO 60-3617. Paratypes: ASIO 60-3614 (1), 3615 (1), 3616 (1), 3618 (1).

Distribution: Indo-West Pacific.

IUCN: Not Evaluated.

82) *Upeneus randalli* Uiblein & Heemstra, 2011

Upeneus randalli Uiblein [F.] & Heemstra [P. C.] 2011:589, Figs. 1-2 [Scientia Marina v. 75 (no. 3)].

Type locality: Off southern Kuwait, 29°00'N, 48°25'E, Kuwait, Persian Gulf, depth 15-20 meters. Holotype: BPBM 33180. Paratypes: BPBM 21201 (6), ZMUC P49161 (1).

Distribution: The Persian Gulf, northwestern Indian Ocean: Kuwait and Bahrain.

IUCN: Least Concern.

83) *Upeneus saiab* Uiblein & Lisher, 2013

Upeneus saiab Uiblein [F.] & Lisher [M.] 2013:86, Figs. 1-2 [Zootaxa 3717 (no. 1)].

EN: Saiab goatfish.

Type locality: Angoche, Nampula province, 16°2.75'S, 40°20.26'E, Mozambique, depth 29-40 meters. Holotype: SAIAB 188298. Paratypes: SAIAB 188299 (5).

Distribution: Mozambique.

IUCN: Endangered.

84) *Upeneus seychellensis* Uiblein & Heemstra, 2011

Upeneus seychellensis Uiblein [F.] & Heemstra [P. C.] 2011:641, Fig. 1 [Marine Biology Research v. 7 (no. 7)].

EN: Tailstripe goatfish.

Type locality: Seychelles Bank, 5°24'25.2"S, 56°25'43.8"E, Seychelles, depth 60 meters. Holotype: SAIAB 96980. Paratypes: SAIAB 84280 (15).

Distribution: Western Indian Ocean: Seychelles Bank.

IUCN: Not Evaluated.

85) *Upeneus spottocaudalis* Uiblein & Gledhill, 2017

Upeneus spottocaudalis Uiblein [F.] & Gledhill [D. C.] in Uiblein, Gledhill & Peristiwady 2017:298, Figs. 1E, 1F, 1G [Zootaxa 4318 (no. 2)].

EN: Tail spot goatfish.

Type Locality: Australia, Queensland, Torres Strait, east of Cape York Peninsula, Blackwood Channel, 11°43.8'S, 143°43.8'E, depth 24 meters. Holotype: CSIRO H 3436-05. Paratypes: AMS, CSIRO, QM. Plus additional non-type material.

Distribution: Eastern Indian Ocean to Western Pacific: Indonesia (Sulawesi and Bali) to Australia (Queensland).

IUCN: Not Evaluated.

86) *Upeneus stenopsis* Uiblein & McGrouther, 2012

Upeneus stenopsis Uiblein [F.] & McGrouther [M.] 2012:63, Fig. 1-2 [Zootaxa No. 3550].

EN: Narrowtail goatfish.

Type locality: Coral Sea, off Raine Island, 11° 35'S, 144° 02'E, Queensland, Australia, depth 270-275 meters.

Holotype: AMS I.20918-017. **Paratypes:** AMS I.21628-001 (1); MNHN 1984-0802 (1), 2012-0212 (1). Plus one non-type specimen.

Distribution: Australia and Philippines.

IUCN: Not Evaluated.

87) *Upeneus suahelicus* Uiblein & Heemstra, 2010

Upeneus suahelicus Uiblein [F.] & Heemstra [P. C.] 2010:50, Pls. 2, 3 [Smithiana, Publications in Aquatic Biodiversity, Bulletin No. 11].

EN: Swahili goatfish.

Type locality: Off Malindi, Kenya, 3°07'S, 40°11'W. **Holotype:** SAIAB 13948. **Paratypes:** SAIAB 11478 (1), 55589 (1), 74521 (3), 76122 (2), 81957 (1), 82805 (1), 82816 (1), 82820 (1); USNM 396113 (1). Plus non-type specimens.

Distribution: South and East Africa to Madagascar and Mauritius (Mascarenes).

IUCN: Least Concern.

88) *Upeneus subvittatus* Temminck & Schlegel, 1843

Upeneus subvittatus Temminck [C. J.] & Schlegel [H.] 1843:30 [Fauna Japonica Parts 2] Japan [Nagasaki]. **Lectotype:** RMNH 4700b (135-mm TL specimen). **Paralectotypes (?)**: RMNH 4700a (1, 113-mm TL). **Lectotype selected by Boeseman 1947:44.**

EN: Deep-water goatfish.

Type locality: but regarded as an invalid lectotype designation by Golani 2001:118.

Distribution: Eastern Indian Ocean, western Pacific: Indonesia east to Philippines, north to southern Japan. [Red Sea records based on *U. davidaromi*.]

IUCN: Not Evaluated.

89) *Upeneus sulphureus* Cuvier, 1829

Upeneus sulphureus Cuvier [G.] in Cuvier & Valenciennes 1829:450 [Histoire naturelle des poissons v. 3].

EN: Sulphur goatfish.

Type locality: Java, Indonesia. **Syntypes:** MNHN A-3458 (3). **Type catalog:** Bauchot et al. 1985:9. Spelled *sulfureus* by Kner 1865:67.

Distribution: Red Sea, East and South Africa, Seychelles, Madagascar and Mascarenes east to Philippines and Fiji, north to southern Japan, south to Western Australia and New Caledonia.

IUCN: Least Concern.

90) *Upeneus sundaicus* Bleeker, 1855

Upeneus sundaicus Bleeker [P.] 1855:411 [Natuurkundig Tijdschrift voor Nederlandsch Indië v. 8 (no. 3)].

EN: Ochre-banded goatfish.

Type locality: Ambon Island, Molucca Islands, Indonesia. **Syntypes:** RMNH 5735 (some of 6). **Bleeker specimens:** BMNH 1880.4.21.98 (1), NMV A908 (2). Based on *Upeneoides vittatus* of Bleeker (not of Cuvier). **Doubtful status --** (Lachner 1954:507).

Distribution: Indo-West Pacific: Mauritius, Persian Gulf to Thailand, Indonesia, Australia, Papua New Guinea, Philippines and Vietnam.

IUCN: Least Concern.

91) *Upeneus supravittatus* Uiblein & Heemstra, 2010

Upeneus supravittatus Uiblein [F.] & Heemstra [P. C.] 2010:53, Pls. 2, 3 [Smithiana, Publications in Aquatic Biodiversity, Bulletin No. 11].

EN: Long-fin goatfish.

Type locality: Colombo, Slave Island Market, Kelani River drainage, 6°55'55"N, 79°50'52"E, Sri Lanka. Holotype: NRM 51635. Paratypes: BPBM 200504 (3); NRM 18877 (1), 24606 (6); USNM 267679 (5), 396114 (6).

Distribution: Indian Ocean: Gulf of Oman to Sri Lanka.

IUCN: Least Concern.

92) *Upeneus taeniopterus* Cuvier, 1829

Upeneus taeniopterus Cuvier [G.] in Cuvier & Valenciennes 1829:451 [Histoire naturelle des poissons v. 3].

EN: Finstripe goatfish.

Type locality: Trincomalee, Sri Lanka. Surviving syntype: MNHN 0000-9568 (1). Type catalog: Bauchot et al. 1985:9 with MNHN 0000-9568 as holotype. Based on (at least) two syntype specimens. Status uncertain -- (Lachner 1954:507).

Distribution: East Africa, Aldabra and Madagascar east to Solomon and Hawaiian Islands, north to southern Japan.

IUCN: Least Concern.

93) *Upeneus torres* Uiblein & Gledhill, 2015

Upeneus torres Uiblein [F.] & Gledhill [D. C.] 2014:3, Figs. 1A & B [Marine Biology Research v. 11 (no. 5)].

EN: Torres goatfish.

Type locality: Queensland, Torres Strait, north of Dalrymple Island, 9°19.70'S, 143°15.09'E, Australia. Holotype: CSIRO H 7202-02. Paratypes: AMS, CSIRO, NMV. Plus non-type specimens.

Distribution: Australia and Vanuatu.

IUCN: Not Evaluated.

94) *Upeneus tragula* Richardson, 1846

Upeneus tragula Richardson [J.] 1846:220 [Report of the British Association for the Advancement of Science 15th meeting [1845]].

EN: Freckled goatfish.

Type locality: Canton [Guangzhou], China. Syntypes: (3) BMNH 1968.3.11.12 (1, left half skin). Type information: Whitehead 1970:214. The latin word *tragula* (= spear, javelin) is a noun and does not decline; the spelling is correct as *tragula*, regardless of generic assignment.

Distribution: Red Sea, Indo-West Pacific: East Africa east to Andaman Islands, China, Philippines and Solomon Islands, north to southern Japan, south to Western and eastern Australia and New Caledonia.

IUCN: Least Concern.

95) *Upeneus vanuatu* Uiblein & Causse, 2013

Upeneus vanuatu Uiblein [F.] & Causse [R.] 2013:337, Fig. 1 [Zootaxa 3666 (no. 3)].

EN: Vanuatu goatfish.

Type locality: Vanuatu, South Pacific. Espiritu Santo Island, 11°07'01"S, 166°52'50"E, depth 282-321 meters.

Holotype: MNHN 0001-3361. Paratype: MNHN 2002-0028 (1), 2002-0103 (2), 2008-1331 (1).

Distribution: Vanuatu, South Pacific.

IUCN: Data Deficient.

96) *Upeneus vittatus* Forsskål, 1775

Upeneus vittatus Forsskål [P. S.] 1775:31, x [Descriptiones animalium (Forsskål)].

EN: Yellowstriped goatfish.

Type locality: Red Sea, probably off Eritrea [original locality Jeddah, Saudi Arabia, Red Sea]. Neotype: SMF 1185. Type catalog: Nielsen 1974:66. Holotype figured in Klausewitz & Nielsen 1965:Pl. 4 as ZMUC P49344 (dry skin). The true holotype is lost according to Randall 1974, and P49344 is not this species. Neotype selected by Uiblein and Heemstra 2010:56-57.

Distribution: Red Sea, East and South Africa, Seychelles, Madagascar and Mascarenes east to Hawaiian Islands, Line Islands and Marquesas Islands, north to southern Japan, south to Western Australia, New Caledonia and Tonga.

IUCN: Least Concern.

97) *Upeneus willwhite* Uiblein & Motomura, 2021

Upeneus willwhite Uiblein [F.] & Motomura [H.] 2021:313, Fig. 1F [Zootaxa 4938 (no. 3)].

EN: White's goatfish.

Type Locality: Tanjung Luar, fish market, Lombok, Indonesia. Holotype: CSIRO 7217-07. Paratype: MZB 23014 (1).

Distribution: Eastern Indian Ocean: Lombok (Indonesia).

IUCN: Not Evaluated.

98) *Upeneus xanthogrammus* Gilbert, 1892

Upeneus xanthogrammus Gilbert [C. H.] 1892:553 [Proceedings of the United States National Museum v. 14 (no. 880)].

Type locality: Harbor of La Paz, Baja California, Mexico, Gulf of California. Syntypes: CAS-SU 330 (3). Type catalog: Böhlke 1953:80.

Distribution: Eastern Pacific (if valid).

IUCN: Not Evaluated.

Pseudupeneus Bleeker [P.] 1862:134. Masc. *Upeneus prayensis* Cuvier 1829. Type by monotypy. Also appeared in Bleeker 1863 (possibly 1862):56.

99) *Pseudupeneus grandisquamis* (Gill, 1863)

Pseudupeneus grandisquamis Günther [A.] 1864:148 [Proceedings of the Zoological Society of London 1864 (pt 1) (art. 3) (for 22 Mar. 1864)].

EN: Bigscale goatfish.

Type locality: Pacific coast of Panama. Syntypes: BMNH 1864.1.26.340-341 (2).

Distribution: Eastern Pacific: Baja California, Mexico to Chile.

IUCN: Least Concern.

100) *Pseudupeneus maculatus* (Bloch, 1793)

Pseudupeneus maculatus Bloch [M. E.] 1793:95, Pl. 348 (fig. 1) [Naturgeschichte der ausländischen Fische v. 7].

EN: Spotted goatfish.

Type locality: Brazil. No types known. On p. 79 of Bloch's Ichthyologie, v. 10.

Distribution: Western Atlantic.

IUCN: Least Concern.

101) *Pseudupeneus prayensis* (Cuvier in Cuvier and Valenciennes, 1829)

Pseudupeneus prayensis Cuvier [G.] in Cuvier & Valenciennes 1829:485 [Histoire naturelle des poissons v. 3].

EN: West African goatfish.

Type locality: Port Praya, Cape Verde Islands, eastern Atlantic. Holotype (unique): MNHN A-1925. Type catalog: Bauchot et al. 1985:9.

Distribution: Western Mediterranean Sea, eastern Atlantic: Morocco to Angola, including offshore islands.

IUCN: Vulnerable.

Discussion

The known world of mullids comprises more than 101 valid species, which are placed into six genera (Frick et al. 2022). The goatfish genus *Upeneus* Cuvier, 1829 is highly diverse, with 48 species (47% of known mullids). The genus *Upeneus* is characterized by having the following morphological characteristics based on Uiblein and Motomura (2021): Body oblong, slightly compressed or nearly rounded. Snout length 9.1–14% standard length (SL), subequal to or slightly shorter than postorbital length (9.7–15% SL). Small teeth on vomer and palatines; teeth on jaws multiserial and villiform. Barbels 15–27% SL. Dorsal fins VII or VIII + 9; pectoral fins 12–17 and principal caudal-fin rays 7 + 8 (median 13 branched). Gill rakers 4–9 + 13–24 = 18–33. Lateral line complete, lateral-line scales 28–39; small scales present basally on second dorsal, anal and/or caudal fins. The body frequently with one to several longitudinal stripes, varying from yellow to red, brown or black in life. Oblique bars are often present on caudal-fin lobes, usually retained in preservative when darkly pigmented, and their number, colour and form of diagnostic importance (Uiblein and Motomura 2021). For this genus several taxonomic species group (Table 1) has been proposed. The high inter- and intraspecific phenotypic diversity among the genus *Upeneus* requires a careful taxonomic approach regarding both species diagnoses and descriptions, redescrptions, resurrections, or synonymizations.

While several comprehensive alpha-taxonomic investigations of the mullids have combined molecular data with advantage (e.g., Uiblein and Gouws 2014, 2015; Uiblein et al. 2016; Uiblein and Motomura 2021), no genetic information currently exists for many species.

Some of the less-known species, or species from less explored areas, merit more attention and approval of a similar fine-resolution taxonomy approach, ideally accompanied by comprehensive integrative molecular studies, to more completely understand the overall diversity, the speciation events and the evolutionary pathways involved in mullids.

Acknowledgments

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Table 1. Overview of all valid *Upeneus* species and species groups.

Species	Species group	Species	Species group
<i>U. caudofasciatus</i> Uiblein, & Gledhill 2019	margarethae	<i>U. moluccensis</i> (Bleeker, 1855)	moluccensis
<i>U. gubal</i> Uiblein, 2019	margarethae	<i>U. quadrilineatus</i> Cheng & Wang, 1963	moluccensis
<i>U. heterospinus</i> Uiblein & Pavlov, 2019	margarethae	<i>U. sulphureus</i> Cuvier, 1829	moluccensis
<i>U. margarethae</i> Uiblein & Heemstra, 2010	margarethae	<i>U. davidaromi</i> Golani, 2001	stenopsis
<i>U. mouthami</i> Randall & Kulbicki, 2006	margarethae	<i>U. mascareinsis</i> Fourmanoir & Guézé, 1967	stenopsis
<i>U. randalli</i> Uiblein & Heemstra, 2011	margarethae	<i>U. stenopsis</i> Uiblein & McGrouther, 2012	stenopsis
<i>U. asymmetricus</i> Lachner, 1954	japonicus	<i>U. subvittatus</i> (Temminck & Schlegel, 1843)	stenopsis
<i>U. australiae</i> Kim & Nakaya, 2002	japonicus	<i>U. vanuatu</i> Uiblein & Causse, 2013	stenopsis
<i>U. farnis</i> Uiblein & Peristiwady, 2017	japonicus	<i>U. indicus</i> Uiblein & Heemstra, 2010	suahelicus
<i>U. francisi</i> Randall & Guézé, 1992	japonicus	<i>U. suahelicus</i> Uiblein & Heemstra, 2010	suahelicus
<i>U. guttatus</i> (Day, 1868)	japonicus	<i>U. supravittatus</i> Uiblein & Heemstra, 2010	suahelicus
<i>U. itoui</i> Yamashita, Golani & Motomura, 2011	japonicus	<i>U. heemstra</i> Uiblein & Gouws, 2014	tragula
<i>U. japonicus</i> (Houttuyn, 1782)	japonicus	<i>U. luzonius</i> Jordan & Seale, 1907	tragula
<i>U. lombok</i> Uiblein & White, 2015	japonicus	<i>U. niebuhri</i> Gueze, 1976	tragula
<i>U. pori</i> Ben-Tuvia & Golani, 1989	japonicus	<i>U. oligospilus</i> Lachner, 1954	tragula
<i>U. saiab</i> Uiblein & Lisher, 2013	japonicus	<i>U. sundaicus</i> (Bleeker, 1855)	tragula
<i>U. seychellensis</i> Uiblein & Heemstra, 2011	japonicus	<i>U. tragula</i> Richardson, 1846	tragula
<i>U. spottocaudalis</i> Uiblein & Gledhill, 2017	japonicus	<i>U. filifer</i> (Ogilby, 1910)	ungrouped
<i>U. torres</i> Uiblein & Gledhill, 2015	japonicus	<i>U. nigromarginatus</i> Bos, 2012	ungrouped
<i>U. dimipavlov</i> Uiblein & Motomura, 2021	japonicus	<i>U. parvus</i> Poey, 1852	ungrouped
<i>U. elongatusn</i> Uiblein, 2021	japonicus	<i>U. taeniopterus</i> Cuvier, 1829	ungrouped
<i>U. willwhiten</i> Uiblein, 2021	japonicus	<i>U. vittatus</i> (Forsskål, 1775)	ungrouped
<i>U. floros</i> Uiblein & Gouws, 2020	japonicus	<i>U. xanthogrammus</i> Gilbert, 1892	ungrouped
<i>U. doriae</i> (Günther, 1869)	moluccensis		

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