

# REVIEW OF THE GLASSFISHES (PERCIFORMES: AMBASSIDAE) OF THE WESTERN INDIAN OCEAN

by

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**ABSTRACT.** - Seven species of the glassfish genus *Ambassis* occur in brackish to marine habitats of the western Indian Ocean, mostly along sandy shores, mangrove stands and in estuaries. The earliest available name for an ambassid, *Lutjanus gymnocephalus* Lacépède, 1802, has presented nomenclatural problems and is designated a *nomen dubium*. The ambassid species in the area, from the southern tip of India to southeastern Africa, including all intervening islands, are: *A. dussumieri* (East Africa to China), *A. fontoynti* (endemic to eastern Madagascar), *A. urotaenia* (Indo-West Pacific, but not known from coastal Africa), *A. interrupta* (western India to southwestern Pacific islands), *A. nalua* (western India and throughout Australasia), and *A. ambassis* and *A. natalensis*, both East Africa, Madagascar, Mauritius and Réunion (the latter unconfirmed for *A. natalensis*).

**RÉSUMÉ.** - Révision des ambaches (Perciformes : Ambassidae) de l'océan Indien occidental.

Sept espèces d'ambaches du genre *Ambassis* sont présentes dans les eaux saumâtres et marines de l'océan Indien occidental, surtout le long des plages sableuses, dans les zones à mangroves et dans les estuaires. Le plus ancien nom valable pour un Ambassidae, *Lutjanus gymnocephalus* Lacépède, 1802, donne lieu à des problèmes nomenclaturaux et est ici désigné comme *nomen dubium*. Les espèces d'Ambassidae de la région, depuis la pointe sud de l'Inde jusqu'au sud-est de l'Afrique, y compris toutes les îles, sont : *A. dussumieri* (de l'Afrique orientale à la Chine), *A. fontoynti* (endémique de la côte orientale de Madagascar), *A. urotaenia* (Indo-Ouest Pacifique, mais inconnue des côtes africaines), *A. interrupta* (des côtes occidentales de l'Inde jusqu'au îles du Pacifique sud-ouest), *A. nalua* (des côtes occidentales de l'Inde jusqu'à l'Australasie) et enfin *A. ambassis* et *A. natalensis*, toutes deux présentes à la fois sur les côtes orientales africaines, Madagascar, Maurice et La Réunion. La présence de *A. natalensis* n'est cependant pas confirmée à La Réunion.

Key words. - Ambassidae - *Ambassis* - IWP - Indian Ocean - Taxonomy.

The fish family Ambassidae is an Indo-West Pacific group of eight genera with over 40 species (Nelson, 1994). About two-thirds of the species are confined to freshwaters ranging from India to Australasia, with the remaining third occurring mostly in coastal seas, harbours and estuaries. Many living ambassids are translucent dorsally and posteriorly, hence the vernacular glassfishes, or glassies. Little is known of the biology of most glassfishes, but a few studies have been made on species of the genus *Ambassis* in Australasia and South Africa (Martin and Blaber, 1983; Semple, 1985; Allen and Burgess, 1990; Coates, 1990). Commercial interest in glassfishes is limited; some enter the aquarium trade, others may be used as bait or dried and used as food or fertilizer, especially in India (Talwar and Jhingran, 1991).

The limits and intrarelationships of the Ambassidae have had a confused history. As basal percoids they have been considered as a subfamily of Centropomidae (e.g., Fraser-Brunner, 1955), or as a distinct family, Chandidae Fowler, 1905. In its original usage, the family-group name Ambassoidei Klunzinger, 1870 (not Bleeker, 1870 *vide* Eschmeyer, 1990: 86) predates Chandidae (contrary to Kottelat, 2001: 149). However, the oldest family-group

name, Bogodoidei Bleeker, 1859, which included *Ambassis* and *Bogoda* (= *Chanda*) was never used after Bleeker (1877), thus we conserve Ambassidae for the glassfishes in accordance with the International Code of Zoological Nomenclature, Fourth Edition, Article 23.2.

No comprehensive review of the glassfishes has been undertaken since the now dated work of Fraser-Brunner (1955). Relevant to identification of specimens from the western Indian Ocean, Maugé (1986) provided full synonymies for three species of *Ambassis* that occur in both marine and freshwaters. Martin and Heemstra (1988) presented an identification guide for three species of *Ambassis* occurring in South Africa. Allen and Burgess (1990) reviewed the species from Australia and New Guinea, three of which occur in the western Indian Ocean, and gave full synonymies and diagnoses for each genus (not repeated here for *Ambassis*).

A major departure in the present paper from all previous treatments is in the use of the name *Ambassis gymnocephalus* (Lacépède, 1802). This name, the earliest available for an ambassid, has caused considerable taxonomic confusion based on unjustifiable assumptions of authors and a misidentification of Bleeker (1874). As there are no types of Lacépède's *Lutjanus gymnocephalus* (name from

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Commerson) and the illustration and description are undiagnostic, *L. gymnocephalus* is treated here as a *nomen dubium* (see Remarks under *Ambassis ambassis* account).

We review the seven glassfishes, all species of *Ambassis*, found in brackish to marine waters ranging from southernmost India to South Africa, including all islands in the intervening area, the Red Sea and Persian Gulf.

**MATERIALS AND METHODS**

The presence, number, or absence of spines on certain head bones, as well as bone-margin serrations, have been used traditionally in *Ambassis* systematics (Fraser-Brunner, 1955; Martin and Heemstra, 1988; Allen and Burgess, 1990), and these are employed here (Fig.1). However, Allen and Burgess (1990: 140) cautioned workers that the degree of spination and serration in ambassids is positively correlated with ontogeny and early juveniles do not exhibit the adult condition. Consequently, diagnoses in each species account are of late juveniles to adults only. The first circum-orbital bone (lacrimal) has been termed “preorbital” in some works, and that name has been used consistently in ambassid systematics and is continued here. The bone bears a protruding “rostral spine” dorsally in some species as well as a spiny edge and ridge. Other bony ridges and margins of importance are shown in figure1. Descriptive sections follow the format of Allen and Burgess (1990). Institutional abbreviations follow Leviton *et al.*, 1985. Specimens examined are listed under each species account.

**SYSTEMATICS**

**Key to late juveniles and adults of the species of *Ambassis* of the western Indian Ocean**

- 1a.** - Cheek scales present; predorsal scales 8-16; lower gill rakers 19-27; colour grey to greenish brown dorsally, posteriorly translucent, abdomen and cheeks silvery .....2
- 1b.** - Cheek scales absent; predorsal scales 1- 4; lower gill rakers 7-9; colour uniformly brown to blackish, abdomen pale brown.....*A. fontoynti*
- 2a.** - Lateral line interrupted below soft dorsal fin by 2-6 scales lacking tubes, the posterior section continuing mid-laterally on rear part of body; preorbital (lacrimal) bone with exposed posteriorly-directed rostral spine below anterior nostril .....3
- 2b.** - Lateral line continuous; no exposed rostral spine .....4

- 3a.** - Lower corner of interopercle serrate, with 1-10 age-dependent serrae; white patch on membrane between tips of second and third anal-fin spine; body depth 2.1-2.7 in SL; lower gill rakers 24-27 .....*A. interrupta*
- 3b.** - Lower corner of interopercle smooth; no white patch at tips of anal-fin spines; body depth 2.6-2.9 in SL; lower gill rakers 22-25 ..... *A. dussumieri*
- 4a.** - Cheek with 2-3 scale rows; rear edge of preopercle serrate or smooth .....5
- 4b.** - One row of cheek scales; rear edge of preopercle smooth or with weak crenulations .....*A. urotaenia*
- 5a.** - Body depth 2.2-2.8 in SL; rear edge of preopercle serrate; pectoral-fin rays 14-15 .....6
- 5b.** - Body depth 2.0-2.2 in SL; rear edge of preopercle smooth; pectoral-fin rays 16-17, rarely 15 .....*A. nalua*
- 6a.** - Predorsal scales 9-11; preopercle ridge smooth except for 1-5 spines at rear corner; palatine teeth in 2-3 rows, at least anteriorly .....*A. natalensis*
- 6b.** - Predorsal scales 13-18; preopercle ridge serrate; palatine teeth in single row ..... *A. ambassis*

**AMBASSIS GYMNOCEPHALA (LACÉPÈDE, 1802)**

*Lutjanus gymnocephalus* Lacépède, 1802: 181, 216, (non-latinized in 1801, pl. 23) (type locality: tropical seas [“le grand Océan équinoxial”]; from MS. of Ph. Commerson; no specimens); Cuvier in Cuvier and Valenciennes, 1828: 176 (of Commerson); Bauchot and Desoutter, 1986: 99 (type catalogue); Maugé, 1986: 297 (full synonymy); Fricke, 1999: 172 (synonymy).

**Remarks**

Considerable taxonomic confusion has existed in the use of the name *A. gymnocephala*. From Commerson’s manuscripts this name and a poor drawing were first published in

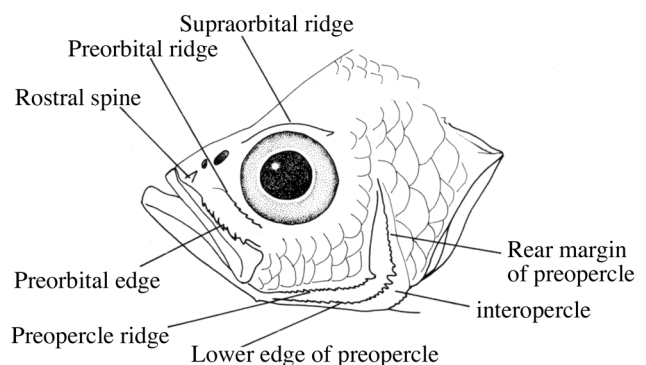


Figure 1. - Stylized head of an *Ambassis* showing key bony features and cheek scales.

the non-latinized form *Lutjan Gymnocephale* (Lacépède, 1801), with the description following (Lacépède, 1802). Neither the illustration nor the description reveal diagnostic features and there are no specimens nor specific localities mentioned. Therefore, Commerson may have observed his *Lutjanus gymnocephalus* in either the eastern Indian Ocean during the Bougainville voyage (1766-1769), or during his own collecting at Mauritius, Réunion and Madagascar (1770-1773). Lacépède worked only on Commerson's manuscripts and drawings as his specimen collection was mislaid in Paris for forty years (Bauchot *et al.*, 1997), thus it was given to Cuvier to work on the dried and mounted fishes. Cuvier (in Cuvier and Valenciennes, 1828), having Commerson's dried specimens of *Centropomus ambassis* (MNHN A.5470) made an unjustified assumption that the names *C. ambassis*, *L. gymnocephalus* and *Chanda nalua* Hamilton, 1822 all represented the same species, which he unnecessarily renamed *Ambassis commersonii* (see following account). Cuvier's assumption has been accepted by authors (above) in the use of *A. gymnocephalus* for a species with a complete lateral line, but a misidentification of Bleeker (1874), also followed by numerous authors, places the use of *A. gymnocephalus* with a species having an interrupted lateral line (Maugé, 1984). Because of this entrenched confusion and, on the basis of the lack of diagnostic features, we treat Lacépède's *Lutjanus gymnocephalus* as a *nomen dubium*. This action was also taken by Motomura *et al.* (2001) for an unidentifiable Commerson name in Lacépède (1802: 322), *Sciaena pentadactyla*, a polynemid.

### AMBASSIS AMBASSIS (LACÉPÈDE, 1802)

(Fig. 2)

*Centropomus ambassis* Lacépède, 1802: 251, 273 (type locality: pool at Réunion; 3 syntypes, MNHN A.5470).

*Ambassis commersonii* Cuvier in Cuvier & Valenciennes,

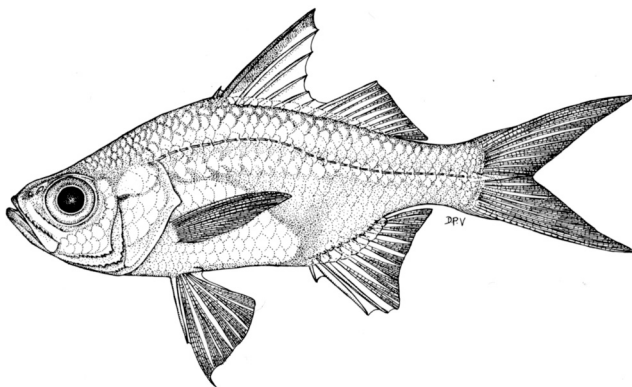


Figure 2. - *Ambassis ambassis*, 66 mm SL, RUSI 37648, off Natal, South Africa.

1828: 176, pl. 25 (unnecessary replacement name; type localities: Réunion [MNHN A. 5470], India, Java); Playfair in Playfair and Günther, 1866: 18; Klunzinger, 1870: 719; Bleeker, 1875-77: 133, 136, pl. 352; Day, 1875: 52, pl. 15; Boulenger, 1915: 112, fig. 85 (from Cuvier and Valenciennes); Barnard, 1927: 643; Pellegrin, 1933: 86, fig. 52; Smith, 1949: 245, fig. 635; Fraser-Brunner, 1955: 192, 195 (part); Maugé, 1984: 211-218 (in synonymy with *A. gymnocephalus*); Hill, 1966: 22; Day, 1974: 95; Blaber, 1978: 32, 34; Masuda *et al.*, 1984: 123, pl. 108F; Pethiyagoda, 1991: 210, fig.; Terashima *et al.*, 2001: 30, fig.

*Ambassis productus* Guichenot, 1866: 130 (type locality: Madagascar); Fraser-Brunner, 1955: 194, 198; Heemstra and Martin, 1986: 508, fig.; Martin and Heemstra, 1988: 8, fig. 4; van der Elst, 1988: 119, fig.; Whitfield, 1998: 116, fig.

*Ambassis klunzingeri* Steindachner, 1881: 238 (type locality: Madagascar).

*Ambassis ambassis* Fowler, 1925: 220; Fricke, 1999: 172.

*Chanda commersonii* Dor, 1984: 94.

*Ambassis urotaenia* (non Bleeker, 1852): ?Eccles, 1992: 87; Reinthal and Stiassny, 1997: 354 (list; in part).

### Material examined

79 specimens. South Africa. - RUSI 44191 (9; 61-120 mm SL). Mozambique. - RUSI 58714 (4; 20-29 mm SL). Kenya. - NMK FW 1352 (9; 52-82 mm SL). Mauritius. - RUSI 1308 (4; 53-82 mm SL); MNHN 2956 (2; 69-84 mm SL). Réunion. - MNHN 1998-0497 (1; 116 mm SL); MNHN A. 5470 (3 skins, 95-107 mm TL; syntypes of *Centropomus ambassis* Lacépède and of *Ambassis commersonii* Cuvier). Madagascar. - RUSI 32152 (1; 61 mm SL); RUSI 45356 (3; 97-127 mm SL); MNHN 1960-0230 (3; 85-105 mm SL); MNHN 1963-0172 (5; 33-41 mm SL); MNHN 1987-0560 (5; 80-97 mm SL); MNHN 1998-1501 (1; 87 mm SL); MNHN 1998-1502 (1; 120 mm SL); MNHN 1998-1513 (2; 111-121 mm SL); AMNH 88042 (10; 53-68 mm SL); AMNH 88145 (12; 15-52 mm SL). India. - MNHN 9164 (4; 51-94 mm SL; syntypes of *Ambassis commersonii* Cuvier).

### Diagnosis

A species of *Ambassis* with the following combination of characters: single supraorbital spine; rostral spine absent; preopercle ridge and rear margin serrate; interopercle edge smooth except for few small serrae at angle; 2-3 rows of cheek scales; predorsal scales 13-18; lateral line continuous (normally); lower gill rakers 19-23; pectoral-fin rays 14-15.

### Description

Dorsal-fin rays VII/I, 9-10; anal-fin rays III, 9-11; pectoral-fin rays 14-15; lateral line usually continuous, with

27-31 scales when so, very infrequently 1-2 scales without tubes interrupt lateral line below juncture of dorsal fins; vertical scale rows 29-32; horizontal scale rows 9-10; cheek scale rows 2-3; predorsal scales 13-18 (usually 14-16); gill rakers 7-10+19-23.

Single supraorbital spine. Preorbital ridge smooth in early juveniles, becoming serrate by about 35-40 mm SL; preorbital edge with 5-12 serrae; retrorse rostral spine absent. Preopercle ridge with 7-22 serrae; lower edge of preopercle with 12-26 serrae, these extending dorsally along rear margin of preopercle its entire height in specimens greater than 30 mm SL. Interopercle smooth except for 3-10 minute serrae at angle. Teeth in single row on palatines; in three patches on vomer in large specimens.

Measurements in percent SL: body depth 34.6-44.1; head length 37.9-40.1; snout length 7.1-7.4; eye diameter 11.3-13.6; upper jaw (maxilla) length 14.3-16.0; caudal peduncle depth 13.0-13.7; caudal peduncle length 21.2-23.0; first dorsal-fin height 30.6-33.3; third anal-fin spine length 19.5-21.8.

Live colouration translucent greenish-brown dorsally, head and abdomen silvery; scales with minute melanophores; membrane between second and third dorsal and anal spines dusky, black at tip; black lineations along bases of unpaired fins; lobes of caudal fin dusky toward upper and lower margins.

### Distribution

Subtropical eastern South Africa to Kenya, Madagascar, Réunion and Mauritius. *Ambassis ambassis* prefers mostly estuarine environments, either open or seasonally closed when large amounts of freshwater may enter the system. Bruton (1993) reported the occurrence of a single specimen of *A. ambassis* (as *A. productus*) from Lake Sibaya, South Africa, and attributed its occurrence in this freshwater system to flooding events. However, the species is known from volcanic crater lakes in Madagascar (e.g., AMNH 230694, Lake Andjavibe, Nosy-Bé) and this occurrence is attributed to natural events rather than artificial stocking (P. Loiselle, pers. comm.).

### Remarks

Three syntypes (MNHN A. 5470) of *A. ambassis* from Commerson's material collected at Réunion are also types of Cuvier's unnecessary substitute name *Ambassis commersonii*, which includes six other syntypes from India and Java (Bauchot and Desoutter, 1986). Thus *A. commersonii* is a junior objective synonym of *A. ambassis* and *Centropomus ambassis* Lacépède is the type species of *Ambassis* Cuvier by absolute tautonymy. The specimens in MNHN A.5470, three half-skins mounted on blue glass, are in a poor state today but one has a complete lateral line, two rows of cheek

scales and apparently a high predorsal scale count. This corresponds to Plate 25 in Cuvier and Valenciennes (1828) which also shows a completely serrate preopercle ridge. However, the specimen on plate 25 shows some errors such as five rows of cheek scales, 12 pectoral-fin rays and about 19 predorsal scales. Nevertheless, even with those errors we are confident in applying the name *Ambassis ambassis* to a fish with the above modified diagnosis.

Fricke (1999) inexplicably gave co-authorship to Commerson and Lacépède for both *Ambassis ambassis* and the doubtful *A. gymnocephalus*, an act which no other author has done for the Commerson manuscript fishes.

Martin and Blaber (1983) reported on the feeding ecology of *A. ambassis* (as *A. productus*).

### *AMBASSIS DUSSUMIERI* CUVIER, 1828

(Fig. 3)

*Ambassis dussumieri* Cuvier, in Cuvier & Valenciennes, 1828: 181 (type locality: SW India).

*Ambassis dussumieri* Playfair in Playfair & Günther, 1866: 19 (part); Fraser-Brunner, 1955: 201; Maugé, 1986: 297; Kottelat *et al.*, 1993: 104, pl. 50.

*Ambassis denticulata* Klunzinger, 1870: 719 (type locality: Red Sea).

*Ambassis gymnocephalus* (non Lacépède, 1802): Bleeker, 1874: 99; Bleeker, 1875-77: 133, 138, pl. 352, fig. 2; Day, 1875: 54, pl. 15, fig. 6; Nicols and Pope, 1927: 381; Weber and de Beaufort, 1929: 412; Smith, 1949: 246; Fraser-Brunner, 1955: 200; Munro, 1955: 107, pl. 17; Jayaram, 1981: 317; Heemstra and Martin, 1986: 507, fig.; Martin and Heemstra, 1988: 9, fig. 2; Allen and Burgess, 1990: 163, figs. 5E, 12; Talwar and Jhingran, 1991: 793, 796; Randall, 1995: 121, fig. 269; Whitfield, 1998: 115, fig.

*Ambassis urotaenia* (non Bleeker, 1852): Pellegrin, 1933: 88.

*Chanda gymnocephalus* Dor, 1984: 94.

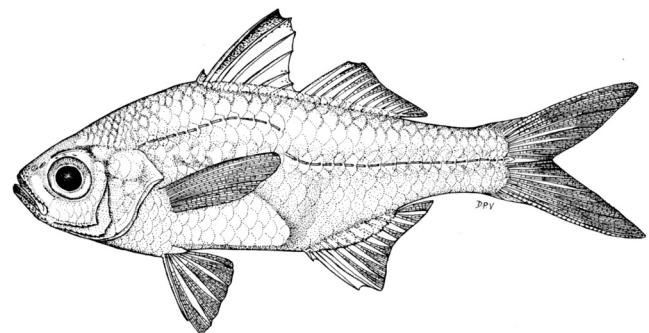


Figure 3. - *Ambassis dussumieri*, 46 mm SL, RUSI 36016, Durban, South Africa.

### Material examined

31 specimens. South Africa. - RUSI 19234 (3; 52-57 mm SL); RUSI 30213 (9; 22-48 mm SL); RUSI 32364 (15; 42-56 mm SL). Seychelles (Aldabra Isl.): RUSI 19230 (2; 32 mm SL); MNHN 9353 (1; 58 mm SL). Kenya. - NMK FW 1352 (1; 41 mm SL).

### Diagnosis

A species of *Ambassis* with the following combination of characters: supraorbital spines 1-5, usually 3-4; rostral spine present; rear margin of preopercle smooth (at least dorsally); interopercle edge smooth; two rows of cheek scales; predorsal scales 13-16; lateral line discontinuous; lower gill rakers 22-25; pectoral-fin rays 14-16.

### Description

Dorsal-fin rays VI-VIII/I, 8-10; anal-fin rays III, 8-11; pectoral-fin rays 14-16; lateral line with 12-14+10-16 scales, interrupted below base of soft dorsal rays by 1-3 (usually two) tubeless scales; vertical scale rows 27-28; horizontal scale rows 9-10; cheek scale rows 2; predorsal scales 13-16 (11 or 12 in some early juveniles); gill rakers 8-10+22-25 (7+17 in a 17 mm SL early juvenile).

Supraorbital spines 1-4, more numerous and more pronounced in larger specimens. Preorbital ridge smooth or with 2-3 small serrae; preorbital edge with 4-6 serrae (two in 17 mm juvenile); retrorse rostral spine present at all sizes. Preopercle ridge with 3-13 serrae; lower edge of preopercle with 6-31 serrae, these extending dorsally along rear margin of preopercle to about one-third its height in larger specimens. Interopercle smooth except for 1-2 tiny spines near posterior angle.

Measurements in percent SL: body depth 33.3-39.2; head length 31.2-37.1; snout length 5.5-8.5; eye diameter 10.3-15.0; upper jaw (maxilla) length 10.4-14.1; caudal peduncle depth 12.6-14.8; caudal peduncle length 19.7-22.4; first dorsal-fin height 24.5-32.3; third anal-fin spine length 18.3-22.2.

Live colouration dusky grey and translucent dorsally and posteriorly, especially in young, silvery ventrally; membrane around second and between second and third dorsal-fin spines black; scales on dorsum edged in black; black lineations along base of dorsal and anal fins and posterior lateral line in larger fish.

### Distribution

Indo-West Pacific from Algoa Bay, South Africa, north to the Red Sea, the Seychelles and eastward around India and Australasia to the Philippines and China in estuarine and coastal waters.

### Remarks

Maugé (1984) showed that Bleeker's (1874, 1875-77) use of Lacépède's (1802) name, *Lutjanus gymnocephalus*, for an *Ambassis* species with an interrupted lateral line was based on a misidentification subsequently used uncritically by authors. A new name for this widespread species was thus needed, but Maugé (1984) unnecessarily erected *A. bleekeri* for it. Maugé also stated that the types of *A. dussumieri* Cuvier, possessed a continuous lateral line. However, and without explanation, Maugé (1986) reversed himself in his observation of the state of *A. dussumieri*'s lateral line by placing his *A. bleekeri* in synonymy with *dussumieri* (= *A. gymnocephalus* of most authors).

Lectotype (herein designated): MNHN A-9335, 43.4 mm SL, Malabar coast (Kerala State), India, from J.J. Dussumier. Paralectotypes: MNHN 2002-1291, 42.1, 42.4 mm SL, same data as lectotype.

### *AMBASSIS FONTOYNOTI* PELLEGRIN, 1932

(Fig. 4)

*Ambassis fontoynoti* Pellegrin, 1932: 425 (type locality: Faraony River, Madagascar).

*Ambassis fontoynoti* Pellegrin, 1933: 89, fig. 54; Pellegrin, 1935: 70; Arnoult, 1959: 55, pl. 9; Kiener, 1961: 49, fig. 59; Kiener, 1966: 1129; Maugé, 1986: 298.

### Material examined

26 specimens. Madagascar. - Lectotype (herein designated): MNHN 1932-175 (53 mm SL), small stream tributary to the Faraony River; MNHN 60-231 (6; 23-39 mm SL); MNHN 1963-168 (9; 12-51 mm SL); MNHN 1966-892 (4; 58-64 mm SL); MNHN 1966-893 (5; 33-38 mm SL); AMNH 229516 (1; 27 mm SL).

### Diagnosis

A species of *Ambassis* with the following combination of characters: rostral spine absent; rear margins of interopercle

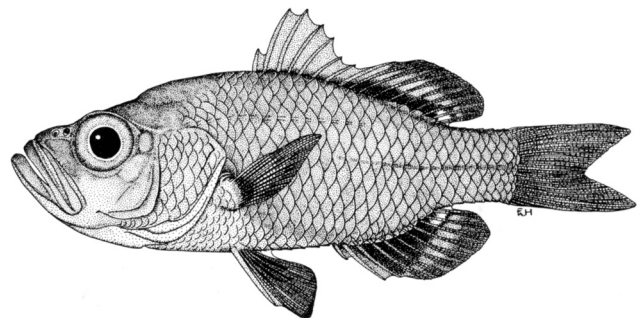


Figure 4. - *Ambassis fontoynoti*, lectotype, 53 mm SL, MNHN 1932-175, Faraony River, Madagascar.

and preopercle smooth; preopercle ridge smooth; cheek scales absent; predorsal scales 1-4 in specimens over about 28 mm SL; lateral line interrupted; lower gill rakers 7-9; pectoral-fin rays 11-13; colour uniformly brown to blackish.

### Description

Dorsal-fin rays VII/I, 7-9; anal-fin rays III, 7-9; pectoral-fin rays 11-13; lateral line discontinuous, with 13-16+11-13 scales, interrupted below first through third soft dorsal rays by 3-4 scales; lateral line tubes very weakly developed in adults, amounting to little more than a low boss, undeveloped in juveniles less than 20 mm SL; vertical scale rows 25-28; horizontal scale rows 10-12; no scales on cheek; predorsal scales 1-4 in fish over about 28 mm SL; nape naked except in largest fish which have a single row of 5-7 scales laterally along nape before dorsal-fin origin (these not counted as predorsal scales); gill rakers 2-3+7-9, elongate.

Supraorbital spines undeveloped in fish less than about 55 mm SL, weak in largest specimens. Preorbital, preopercle ridge and rear margin of preopercle smooth; lower edge of preopercle serrate. Few small serrae on posteroventral corner of preopercle in adults.

Measurements in percent SL: body depth 35.7-43.3; head length 35.8-43.0; snout length 6.4-10.4; eye diameter 9.8-14.4; upper jaw (maxilla) length 15.0-19.8; caudal peduncle depth 12.8-15.9; caudal peduncle length 17.6-20.7; first dorsal-fin height 13.8-21.2; third anal-fin spine length 10.8-15.4.

Live colouration: head and body brownish, with blackish areas on dorsum and head; black bands at base and margin of unpaired fins, with dusky areas between bands; black stripe along posterior part of lateral line; pelvic fins black; abdomen pale.

### Distribution

Endemic to eastern Madagascar in coastal rivers and streams to brackish lagoons, mangrove stands and estuaries.

### *AMBASSIS INTERRUPTA* BLEEKER, 1852

(Fig. 5)

*Ambassis interruptus* Bleeker, 1852: 696 (type locality: Celebes, Indonesia).

*Ambassis interruptus* Masuda *et al.*, 1984: 123, pl. 108G; Allen and Burgess, 1990: 165, fig. 13; Talwar and Jhingran, 1991: 796; Allen, 1999: 2435.

*Ambassis interrupta* Day, 1875: 53, pl. 15, fig. 5; Bleeker, 1875-77: 133, 137, pl. 348, fig. 5; Weber and de Beaufort, 1929: 415; Coates, 1990: 267-274 (biology);

Kottelat *et al.*, 1993: 105, pl. 50.

*Ambassis elevatus* Macleay, 1881: 338 (type locality: Queensland, Australia).

*Ambassis dalyensis* Rendahl, 1922: 187 (type locality: Northern Territory, Australia).

### Material examined

95 specimens. Papua New Guinea. - RUSI 54971 (1; 89 mm SL); RUSI 54977 (3; 47-63 mm SL). Indonesia (Irian Jaya). - TMNH 171006 (35; 32-48 mm SL); TMNH 173113 (56; 34-53 mm SL).

### Diagnosis

A species of *Ambassis* with the following combination of characters: single supraorbital spine; rostral spine present; rear margin of preopercle smooth; interopercle edge serrate; two rows of cheek scales; predorsal scales 13-16; lateral line discontinuous; lower gill rakers 24-27; pectoral-fin rays 14-16; bright white patch distally on anterior portion of anal fin.

### Description

Dorsal-fin rays VIII/I, 9-10; anal-fin rays III, 9-10; pectoral-fin rays 14-16; lateral line discontinuous, with 7-13+9-14 scales, interrupted below anterior base of soft dorsal rays by 3-6 tubeless scales; vertical scale rows 27-28; horizontal scale rows 10; cheek scale rows 2; predorsal scales 13-16; gill rakers 8-10+24-27.

One to three supraorbital spines at posterodorsal margin of eye. Preorbital ridge with 3-6 small serrae; preorbital edge with 5-8 serrae; retrorse rostral spine well developed. Preopercle ridge with 7-20 serrae; lower edge of preopercle with 10-25 serrae, rear margin smooth except for 1-3 serrae extending onto rear margin at corner rarely. Interopercle with 1-10 serrae at angle; juveniles less than about 55 mm SL with interopercle angle smooth or with one tiny spinule.

Measurements in percent SL: body depth 37.2-47.8;

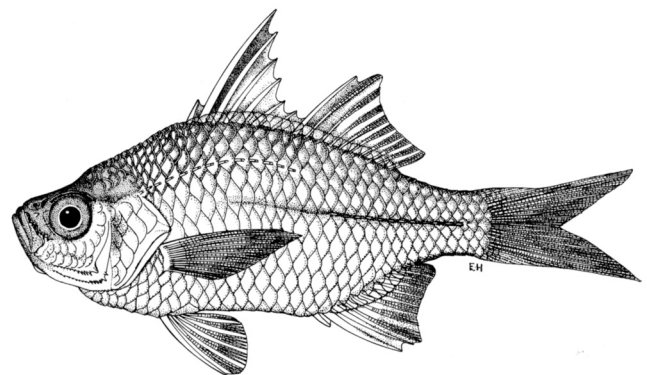


Figure 5. - *Ambassis interrupta*, 89 mm SL, RUSI 54971, Papua New Guinea.

head length 34.7-42.3; snout length 6.7-8.7; eye diameter 11.3-15.7; upper jaw (maxilla) length 12.5-14.5; caudal peduncle depth 11.4-16.1; caudal peduncle length 15.2-22.7; first dorsal-fin height 26.0-40.5 (usually 34-38). Third anal-fin spine height 19.4-24.3.

Live colouration dusky grey, with silvery abdomen and cheeks; membrane between second and third dorsal-fin spines black; membrane distally between second and third anal-fin spines bright white; scales on dorsum, along bases of unpaired fins and proximal caudal-fin rays dusky; a thickened black stripe along midbody with silvery cover when fresh.

### Distribution

Indo-West Pacific from lower freshwaters of large rivers to mangrove stands; west coast of India (Goa) to Andaman Islands, Indonesia, Philippines, Australia, New Guinea, New Caledonia and Vanuatu.

### Remarks

Coates (1990) reported on aspects of the biology (habitat, reproduction and feeding) of *A. interrupta* in northern Papua New Guinea.

### **AMBASSIS NALUA (HAMILTON, 1822)**

(Fig. 6)

*Chanda nalua* Hamilton, 1822: 107 (type locality: Ganges River, India).

*Ambassis nalua* Day, 1875: 53, pl. 15, fig. 4; Bleeker, 1875-77: 133, 135, pl. 354, fig. 6; Weber and de Beaufort, 1929: 409; Allen and Burgess, 1990: 179, fig.20; Talwar and Jhingran, 1991: 798; Kottelat *et al.*, 1993: 105, pl. 50; Allen, 1999: 2434.

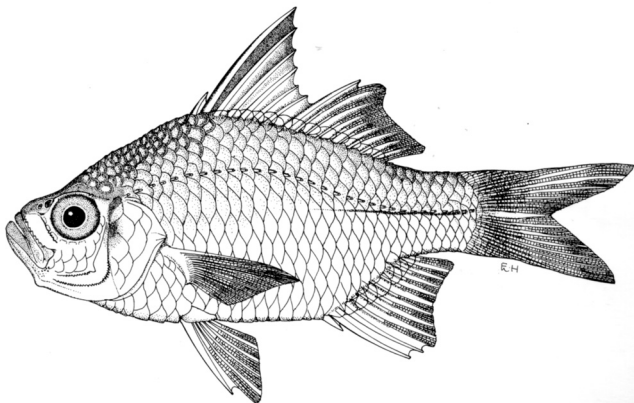


Figure 6. - *Ambassis nalua*, 70 mm SL, RUSI 54976, Papua New Guinea.

### Material examined

5 specimens. Papua New Guinea. - RUSI 54976 (4; 60-68 mm SL). Indonesia (Irian Jaya). - ex TMNH 173113 (1; 61 mm SL).

### Diagnosis

A species of *Ambassis* with the following combination of characters: supraorbital spines 1-2, usually 1; rostral spine absent; rear margin of preopercle smooth; interopercle edge smooth; two rows of cheek scales; predorsal scales 11-13; lateral line continuous, with 27-29 scales; lower gill rakers 18-22; pectoral-fin rays 15-17; body depth 45.3-50.6% SL.

### Description

Dorsal-fin rays VII/ I, 9-11; anal-fin rays III, 8-10; pectoral-fin rays 15-17 (usually 16-17); lateral line continuous, with 27-29 scales; vertical scale rows 27-30; horizontal scale rows 11-12; cheek scale rows 2; predorsal scales 11-13; gill rakers 8-9+18-22.

Supraorbital spines 1-2, rarely 2. Preorbital ridge smooth or with a few weak crenulations in larger fish; preorbital edge with 7-10 serrae; rostral spine absent. Preopercle ridge with 9-17 serrae; lower edge of preopercle with 21-32 serrae, rear margin smooth dorsally. Interopercle smooth or with 1-2 small serrae at angle in larger fish.

Measurements in percent SL: body depth 45.3-50.6; head length 34.2-40.7; snout length 7.8-10.0; eye diameter 11.3-13.9; upper jaw (maxilla) length 15.4-18.0; caudal peduncle depth 16.6-18.4; caudal peduncle length 17.7-21.1; first dorsal-fin height 27.4-32.2; third anal-fin spine length 21.9-22.0.

Live colouration translucent greenish brown dorsally to dusky grey, with silvery abdomen and cheeks; membrane between second and third dorsal-fin spine black; scales on dorsum and along bases of unpaired fins dusky; a black stripe along midbody.

### Distribution

Indo-West Pacific in bays, estuaries and tidal creeks from the west coast of India (Kerala State) to Andaman Islands, Indonesia, Philippines, Australia and New Guinea.

### **AMBASSIS NATALENSIS GILCHRIST & THOMPSON, 1908 (Fig. 7)**

*Ambassis natalensis* Gilchrist & Thompson, 1908: 148 (type locality: Durban harbour, South Africa).

*Ambassis kopsi* (non Bleeker, 1858): Pellegrin, 1932: 226; Pellegrin, 1933: 88, fig. 53.

*Ambassis safgha* Forsskål, 1775: Smith, 1949: 245; Hill, 1966: 23; Day, 1974: 95.

*Ambassis natalensis* Fraser-Brunner, 1955: 194, 198; Wallace, 1975: 15; Blaber, 1978: 34, 40; Heemstra and Martin, 1986: 507, pl. 44 (colour); Martin and Heemstra, 1988: 8, fig. 3; van der Elst, 1988: 118, fig.; Whitfield, 1998: 116, fig.; Terashima *et al.*, 2001: 31, fig.

*Ambassis urotaenia* (non Bleeker, 1852): Reinthal & Stiassny, 1997: 354 (list; in part).

#### Material examined

58 specimens. South Africa. - RUSI 17061 (15; 39-49 mm SL). Mauritius. - RUSI 58610 (15 of 174; 30-75 mm SL). Madagascar. - MNHN 1931-0205 (4; 24-27 mm SL); MNHN 1965-0357 (7; 28-71 mm SL); MNHN 1966-0895 (3; 49-54 mm SL); MNHN 1987-560 (6 of 11; 37-42 mm SL); MNHN 1998-1505 (1; 55 mm SL); AMNH 97369 (1; 41 mm SL); AMNH 215526 (2; 31-32 mm SL); AMNH 228057 (1; 52 mm SL); AMNH 228090 (2; 51-61 mm SL); AMNH 228098 (1; 25 mm SL).

#### Diagnosis

A species of *Ambassis* with the following combination of characters: supraorbital spines 1-4; rostral spine absent; rear margin of preopercle entirely serrate; preopercle ridge smooth except for 1-5 tiny spines at rear corner; interopercle smooth or with 1-4 tiny serrae at angle; two rows of cheek scales; predorsal scales 9-11; lateral line continuous; lower gill rakers 19-22; pectoral-fin rays 14-15; teeth on vomer and palatines in 2-3 rows.

#### Description

Dorsal-fin rays VIII/I, 9-10; anal-fin rays III, 9-11; pectoral-fin rays 14-15; lateral line usually continuous, with 27-29 scales (several specimens in RUSI 58610 from Mauritius with lateral line interrupted by 2-3 scales on one or both sides); vertical scale rows 28-30; horizontal scale rows 9-10; cheek scale rows 2; predorsal scales 9-11; gill rakers 8-10+19-22 (6+7 in 26 mm early juvenile).

Supraorbital spines 1-4, more numerous in largest speci-

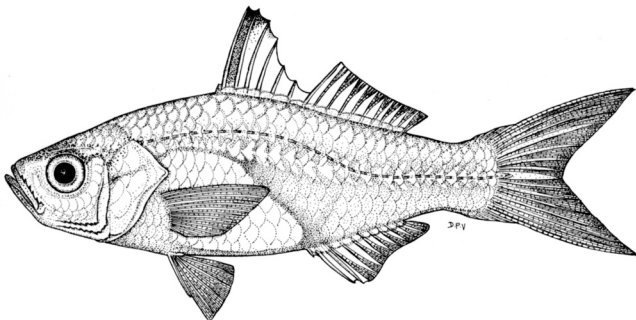


Figure 7. - *Ambassis natalensis*, 95 mm SL, off Natal, South Africa.

mens. Preorbital ridge smooth in smallest specimens, becoming serrate at about 35 mm SL; preorbital edge with 5-11 serrae; retrorse rostral spine absent. Preopercle ridge smooth except for 1-5 small spines at lower rear corner; lower edge of preopercle with 9-18 serrae, rear margin entirely serrate. Interopercle with 1-4 minute spines at angle. Teeth in villiform bands on vomer, palatines, tongue and jaws; palatine teeth in 2-3 rows in fish over about 20 mm SL.

Measurements in percent SL: body depth 28.7-39.1; head length 30.7-36.2; snout length 7.9-10.1; eye diameter 9.0-11.7; upper jaw (maxilla) length 12.3-13.4; caudal peduncle depth 10.7-13.6; caudal peduncle length 18.6-20.8; first dorsal-fin height 18.4-23.5; third anal-fin spine length 11.3-14.9.

Live colouration translucent greenish-brown dorsally, head and abdomen silvery; scales with minute melanophores; membrane between second and fourth dorsal-fin spine dusky, black at tip; black lineations along bases of unpaired fins.

#### Distribution

Chalumna River estuary, South Africa, to central Mozambique, Madagascar and Mauritius usually along sandy beaches and in estuaries, lagoons and harbours. One record (AMNH 97369) from a large lake, Lac Kinkony, Mahajanga Prov., Madagascar, which is about 40 km from the sea.

#### Remarks

Martin and Blaber (1983) reported some aspects of the feeding ecology of this and the following species in South Africa. Several authors have identified *A. natalensis* with *Sciaena safgha* Forsskål, 1775 from the Red Sea. As *A. natalensis* does not occur in the Red Sea as far as we know, and, as the description is undiagnostic and there are no types (Nielsen, 1974; Maugé, 1984), we consider *S. safgha* a *nomen dubium*.

#### **AMBASSIS UROTAENIA BLEEKER, 1852**

(Fig. 8)

*Ambassis urotaenia* Bleeker, 1852: 257 (type locality: Indonesia).

*Ambassis urotaenia* Playfair in Playfair & Günther, 1866: 18 (list); Bleeker, 1875-77: 135, pls. 344, 351; Fowler, 1925: 220; Barnard, 1927: 642 (part); Pellegrin, 1933: 88; Smith, 1949: 246 (part); Masuda *et al.*, 1984: 123, pl. 108D; Maugé, 1986: 298 (synonymy); Allen and Burgess, 1990: 180, fig. 21; Kottelat *et al.*, 1993: 105, pl. 50.

*Ambassis papuensis* Alleyne & Macleay, 1877: 266 (type locality: Papua New Guinea).

?*Ambassis commersonii* (non Cuvier): Weber & de Beaufort, 1929: 406.

### Material examined

17 specimens. Seychelles. - RUSI 19232 (2; 39 mm SL); RUSI 19237 (12; 40-63 mm SL); MNHN 9333 (3; 48-62 mm SL).

### Diagnosis

A species of *Ambassis* with the following combination of characters: supraorbital spines 1-2; rostral spine absent; rear margin of preopercle serrate only in largest specimens, otherwise smooth or with weak crenulations; interopercle with serrae in fish over about 60 mm SL; one row of cheek scales; predorsal scales 8-11; lateral line continuous; lower gill rakers 19-24; pectoral-fin rays 13-16.

### Description

Dorsal-fin rays VII/I, 9-10; anal-fin rays III, 9-10; pectoral-fin rays 13-16; lateral line usually continuous, arching to mid-body under soft-dorsal fin, with 26-27 scales; vertical scale rows 26-29; horizontal scale rows 8-10; one cheek scale row; predorsal scales 8-11; gill rakers 8-10+19-24. Supraorbital spines 1-2, usually one small spine posteriorly. Serrae on head bones fewer in smallest fish than in larger specimens. Rostral spine absent, inadvertently said to be present in description of Allen and Burgess (1990), but correctly stated as absent in their diagnosis. Preorbital ridge smooth; preorbital edge with 5-10 serrae. Preopercle ridge with 5-16 serrae; lower edge of preopercle with 10-23 serrae, these absent on rear margin of preopercle in small specimens, or extending its entire length in largest fish. Interopercle smooth on fish less than about 60 mm SL; larger fish with 2-7 tiny spines.

Measurements in percent SL: body depth 35.1-39.0; head length 34.1-38.8; snout length 5.6-8.1; eye diameter 13.2-15.9; upper jaw (maxilla) length 11.8-13.6; caudal peduncle depth 10.2-15.5; caudal peduncle length 19.4-23.0;

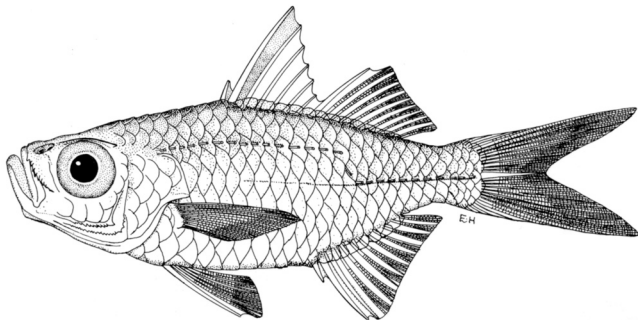


Figure 8. - *Ambassis urotaenia*, 59 mm SL, RUSI 19237, Mahé, Seychelles.

first dorsal-fin height 23.4-30.2; third anal-fin spine length 19.5-22.0.

Live colouration dusky grey and translucent dorsally, silvery along lateral line, lower part of head and abdomen; membrane between second and third dorsal-fin spines black, dusky in young; scales on dorsum edged in black; black lineations along bases of dorsal and anal fins; both lobes of caudal fin with wide yellow stripes and diffuse, dusky membranes at edges not forming a distinct stripe.

### Distribution

Widespread in the Indo-West Pacific, mostly in tropical estuaries and lagoons; reported in the western Indian Ocean from the Seychelles, Réunion, Madagascar, India and the Red Sea; not yet known from coastal Africa.

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