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***Callogobius liolepis* Bleeker, a senior synonym of *Gobiopsis aporia* Lachner and McKinney (Teleostei: Gobiidae: *Gobiopsis*)**

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Abstract

Callogobius liolepis Bleeker in Koumans was briefly described from two specimens from Ambon. A later, more detailed description by Koumans was apparently based on Bleeker's unpublished description and specimens of *C. okinawae* (Snyder), considerably complicating the taxonomy of several species. Re-examination of the syntypes identifies *C. liolepis* as a species of the genus *Gobiopsis* Steindachner due to the absence of raised vertical ridges of papillae that characterise *Callogobius* and the presence of barbels in a pattern unique among gobiids to a subset of *Gobiopsis*. *Gobiopsis liolepis* (Bleeker) is determined as the senior synonym of *G. aporia* Lachner and McKinney based on the absence of head pores combined with the presence of a series of tightly spaced papillae over the eye, lateral scale counts of 36–42, pectoral-fin ray counts of 20–21, dorsal-fin ray counts VI+I, 10 and anal-fin ray counts of I, 9. The larger syntype is designated the lectotype and the smaller the paralectotype. Specimens identified as *C. liolepis* in museums or the literature are likely referable to *C. okinawae* (Snyder) or *C. bifasciatus* (Smith).

Key words: Gobiidae, *Gobiopsis*, *Callogobius liolepis*, taxonomy, Bleeker

Introduction

The taxonomy of many gobiid genera and species has been complicated by enormous numbers of synonyms generated through inadequate descriptions of small and diverse taxa. Despite many alpha taxonomic issues, *Gobiopsis* Steindachner, 1861 and *Callogobius* Bleeker, 1874 are relatively well-defined compared to most gobiid genera and are easily differentiated externally by the presence of barbels or distinctive raised ridges of papillae, respectively (e.g. Larson & Murdy 2001). In a review of gobioid genera, Koumans (1931:75) introduced *Callogobius liolepis* as an unpublished Bleeker name and provided a short description borrowed from Bleeker's notes: "*Callogobius liolepis* Blkr. (Museum name) differs from *C. hasselti* [sic] in having the base of the preoperculum and operculum naked, distance between the eyes broader, all scales being cycloid, snout longer." Although authorship of this species has generally been attributed to Koumans (e.g. Eschmeyer 2013), Koumans' (1931) unqualified attribution to Bleeker and use of his description indicates that Bleeker should retain authorship (International Commission on Zoological Nomenclature 1999: Article 50.1.1). Koumans (1932:14) later provided a more detailed description. Since that time, the species has been mentioned only infrequently in taxonomic literature and faunal lists.

McKinney and Lachner (1978) questioned the placement of this species within the genus *Callogobius*, but made no taxonomic recommendations. We examined the type materials of *C. liolepis* in 2007 to discover that, despite their poor condition, the two specimens could be determined as a species of *Gobiopsis*. In this paper we designate them as a lectotype and a paralectotype while presenting evidence to reassign the species to *Gobiopsis* and, further, to support synonymization of *G. liolepis* (Bleeker in Koumans 1931) as a senior synonym with *G. aporia* Lachner & McKinney, 1978. We also clarify misidentifications in the literature.

Material examined

Abbreviations for institutional codes follow Fricke and Eschmeyer (2013) and/or Sabaj Pérez (2013).

Callogobius liolepis Bleeker in Koumans, 1931: RMNH.PISC.4411, lectotype, 44.0 mm SL, East Indies, Ambon, P. Bleeker (prior to 1860) (EtOH and x-ray image); RMNH.PISC.36383, paralectotype, 42.0 mm SL, collected with lectotype (EtOH and x-ray image).

Gobiopsis aporia Lachner & McKinney, 1978: USNM 209731, holotype, 39.9 mm SL, Ambon Island, Moluccas, off Tandjung Suli, V.G. Springer and M.F. Gomon, 11 Jan 1973; USNM 211983, paratypes, 13: 29.5–49.3 mm SL (39.3 mm SL specimen cleared and stained), Indonesia, off the coast of Karmundjawa Is., V.G. Springer et al., 29 Mar 1974; USNM 209240, paratypes, 2: 36.3–41.5 mm SL (larger cleared and stained), Sri Lanka, Kalkudah Bay, T. Iwamoto, 9 June 1970; CAS 65720, 48.6 mm SL, Papua New Guinea, Madang Province, S.G. Poss, D. Catania et al., 12 May 1987; ROM 68690, 46.8 mm SL, Andaman Sea, Thailand, Malacca Strait, Phuket, Kata Bay, R. Winterbottom, W. Holleman, R. D. Mooi, U. Satapoomin, 14 Nov 1993; ROM 68691, 2:13.0–37.2 mm SL, Andaman Sea, Thailand, Malacca Strait, Phuket, NW tip of Ko Mai Thon, R. Winterbottom, W. Holleman, R. D. Mooi, U. Satapoomin, 23 Nov 1993; WAM 30920.015, 45 mm SL, Western Australia, Kimberley, Montgomery Reef, J.B. Hutchins, 22 Nov 1997; WAM P.31805-031, 4: 37–54 mm SL, Western Australia, Kimberley, Vansittart Bay, Long Island, J.B. Hutchins, 24 Nov 1995; WAM P.31250-042, 6: 32–51 mm SL, Western Australia, Kimberley, east side of Wildcat Reefs, S.M. Morrison, 2 Dec 1996; WAM P.31251-036, 47.0 mm SL, Western Australia, Kimberley, Montgomery Reef, S.M. Morrison, 3 Dec 1996.

Callogobius okinawae (Snyder): RMNH.PISC.20176, 23.1 mm SL, Indonesia, Ambon, Snellius Expedition, 11–14 Sept 1930; RMNH.PISC.20293, 26.9 mm SL, Indonesia, Haroekoe, Snellius Expedition, 3–7 May 1930; RMNH.PISC.20597, 39.5 mm SL, Indonesia, Flores, Ende, 6–8 Nov 1930; RMNH.PISC.20607, 3: 22.6–35.8 mm SL, Indonesia, Halmahera, Ake Selaka, Kaoe Bay, Snellius Expedition, 28 May 1930.

Mucogobius bifasciatus Smith, 1958 (= *Callogobius bifasciatus*): SAIAB 235, holotype, 21.0 mm SL, Tanzania, Pemba Island, J.L.B. Smith.

Mucogobius liolepis (= *Callogobius bifasciatus*): SAIAB 3419, 63.4 mm SL, Tanzania, Pemba Island, J.L.B. Smith.

Comparisons to other described species of *Gobiopsis* are based on Lachner & McKinney (1978, 1979), Shibukawa (2010) and the holotypes of the following species: *G. angustifrons* Lachner & McKinney, USNM 213492; *G. arenaria* (Snyder), USNM 62237; *G. asanai* (Koumans) ZSI F5283/2; *G. bravoii* (Herre), SU 33120; *G. malekulae* (Herre) FMNH 17385; *G. pinto* (J.L.B. Smith), SAIAB 197; *G. quinquecincta* (H.M. Smith), USNM 90317; *G. springeri* Lachner & McKinney, USNM 210011; *G. woodsi* Lachner & McKinney, USNM 212249.

Comparisons to *Callogobius* species are based on McKinney and Lachner (1978) and data from holotypes listed in Delventhal and Mooi (2013).

Methods

Standard length was taken using dial calipers. Methods for counting fin rays, lateral scales, vertebrae, and terminology used to specify barbel groups follows Lachner and McKinney (1978). Scale counts must be considered approximate as *G. liolepis*, *C. okinawae* and *C. bifasciatus* have small, irregularly-shaped, slightly deciduous scales. Cyanine blue was used to provide temporary contrast to aid in the observation of scales, barbels and sensory papillae following the method first outlined in Akihito *et al.* (1993b:1089) and described in English by Saruwatari *et al.* (1997). Observations of osteology were made using radiographs or cleared and stained specimens. Due to the condition of the type material, detailed morphometrics and color are not re-described in detail.

Results

The types of *Callogobius liolepis*, the larger here designated as lectotype and the smaller as paralectotype, were in very poor condition (Fig. 1), as reported by Akihito and Meguro (1975), apparently having been desiccated sometime in the past. Despite this, it is evident that the specimens have no raised vertical ridges of papillae, ruling

out their membership with *Callogobius* as cladistically defined by Winterbottom (2003). The specimens do, however, exhibit several of the diagnostic features of *Gobiopsis* listed by Lachner and McKinney (1978), including short, well-developed barbels on the head in specific groupings (including the chin, anterior and posterior internasals, anterior cheek tuft, and anterior gular barbels common to all species in that paper), and a roughly horizontal fleshy fold on the midcheek. Although not as definitive, the Bleeker specimens also share the general physiognomy of *Gobiopsis*, including a depressed, broad head with a wide interorbital (about 19% of head length or 6% SL for lectotype and paralectotype, approximate due to condition of specimens), a broad snout with a protruding lower jaw, and stout body. Fin and vertebral counts (dorsal fin VI+I,10; anal fin I,9; 10+16 abdominal plus caudal vertebrae) are consistent with *Gobiopsis*, as is the first dorsal-fin pterygiophore formula of 3(221100) for both types (cf. Lachner & McKinney 1978) (Fig. 2). The specimens were very dark due to poor preservation. The few melanophores and pigmented areas that could be discerned were consistent with the general *Gobiopsis* color pattern of a series of dark saddles and mottling found in most species, with a dark spot on the upper pectoral-fin base (Fig. 1). Bleeker's original color notes (p. 258, translated from the Latin; see Appendix) state, in part: "...head and body variegated with dark in a cloud-like pattern, on the flanks the dark color forms wide irregular transverse bands [saddles]... dark spot on the upper base of the pectoral fins, caudal base with a larger dark spot, rays with small darkish spots arranged in 5 or 6 transverse stripes."



FIGURE 1. Type specimens of *Gobiopsis liolepis* (Bleeker): A) lectotype, RMNH.PISC.4411, 44.0 mm SL; B) paralectotype, RMNH.PISC.36383, 42.0 mm SL. Photos by M. Aizawa.

As a result of their poor condition, certain barbels were visible only on one specimen or even only on one side as indicated in Fig. 3. We found two pairs of chin barbels at the symphysis of the lower jaw of each specimen. A cheek tuft with at least one or more barbels was present at the anterior edge of the mid-cheek fold on either side of each specimen. The lectotype exhibited three posterior mandibular barbels on the skin covering the posterior portion of the dentary, and the paralectotype had three anterior gular barbels and at least two inter-mandibular barbels along the hyoid region and below the lower jaw. This distinctive arrangement is unique to *Gobiopsis sensu*

stricto, a group we define (following Lachner & McKinney 1979) as including those ten species treated in Lachner and McKinney (1978): *G. angustifrons*, *G. aporia*, *G. arenaria*, *G. bravoii*, *G. canalis* Lachner & McKinney, *G. macrostoma* Steindachner, *G. malekulae*, *G. pinto*, *G. quinquecincta*, *G. woodsi*. This arrangement is not found in *Gobiopsis* species included later by Lachner and McKinney (1979: *G. atrata* (Griffin), *G. exigua* Lachner & McKinney, and *G. springeri*) or by Shibukawa (2010: *G. namnas* Shibukawa), nor in any other gobiid.

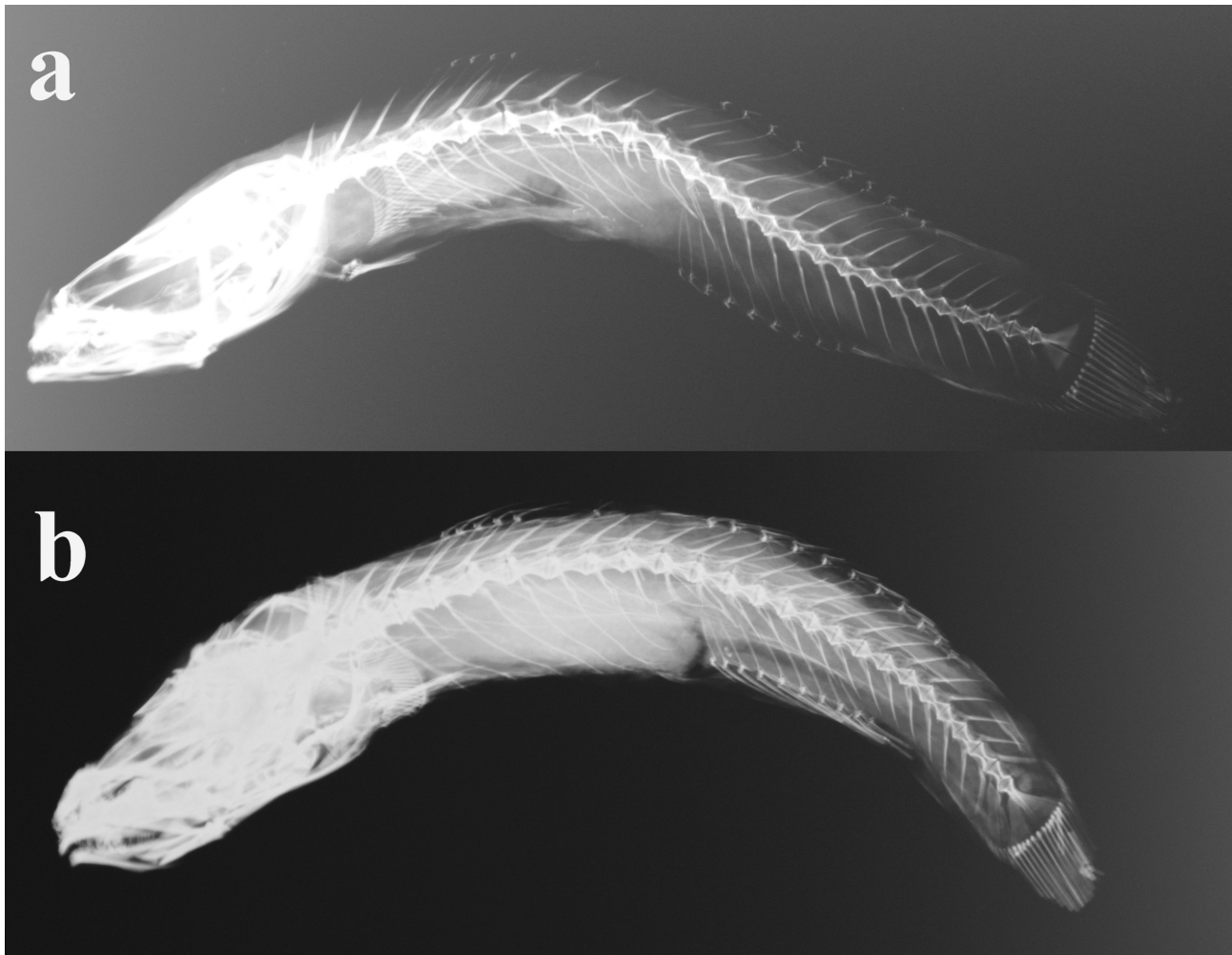


FIGURE 2. X-ray images of the type specimens of *Gobiopsis liolepis* (Bleeker): A) lectotype, RMNH.PISC.4411, 44.0 mm SL; B) paralectotype, RMNH.PISC.36383, 42.0 mm SL. Photos by M. Aizawa.

Specific characters identify the species of *Gobiopsis sensu stricto* equivalent to Bleeker's specimens (Table 1). Neither type specimen has any head pores, but each exhibits a row of numerous, tightly spaced papillae medial to each eye; *G. aporia* is the only member of *Gobiopsis sensu stricto* lacking head pores and is the only species having a continuous series of sensory papillae around the eye in the interorbital space, described as "the nasal papillae row...confluent with the suborbital row" (Lachner & McKinney, 1978:7, Pattern 1) (Fig. 3a,b). In addition, lateral scale counts of 36–42 and pectoral-fin ray counts of 20–21 in both specimens is consistent with the description and type material of *G. aporia* (Table 1). Only *G. canalis*, *G. macrostoma*, *G. pinto*, and *G. woodsi* also have pectoral-fin ray counts of 20 or higher. Among these, *G. macrostoma* is the most similar to Bleeker's specimens as it has lateral scale counts in the appropriate range, but, in addition to having cephalic sensory pores and no papillae medial to the eye, this species differs from Bleeker's specimens in having ctenoid scales and no posterior mandibular barbels (Table 1).

We conclude that *Callogobius liolepis* Bleeker in Koumans, 1931 is a species of *Gobiopsis* Steindachner, 1861 and that it is a senior synonym of *G. aporia* Lachner & McKinney, 1978.

For a complete species description and comparison, we refer to Lachner and McKinney (1978, 1979). Because Koumans (1940, 1953a,b) confounded the original *C. liolepis* with other species and altered the description to fit

those, subsequent workers have misidentified specimens using these altered descriptions. Specifics surrounding these issues are provided in the Discussion.

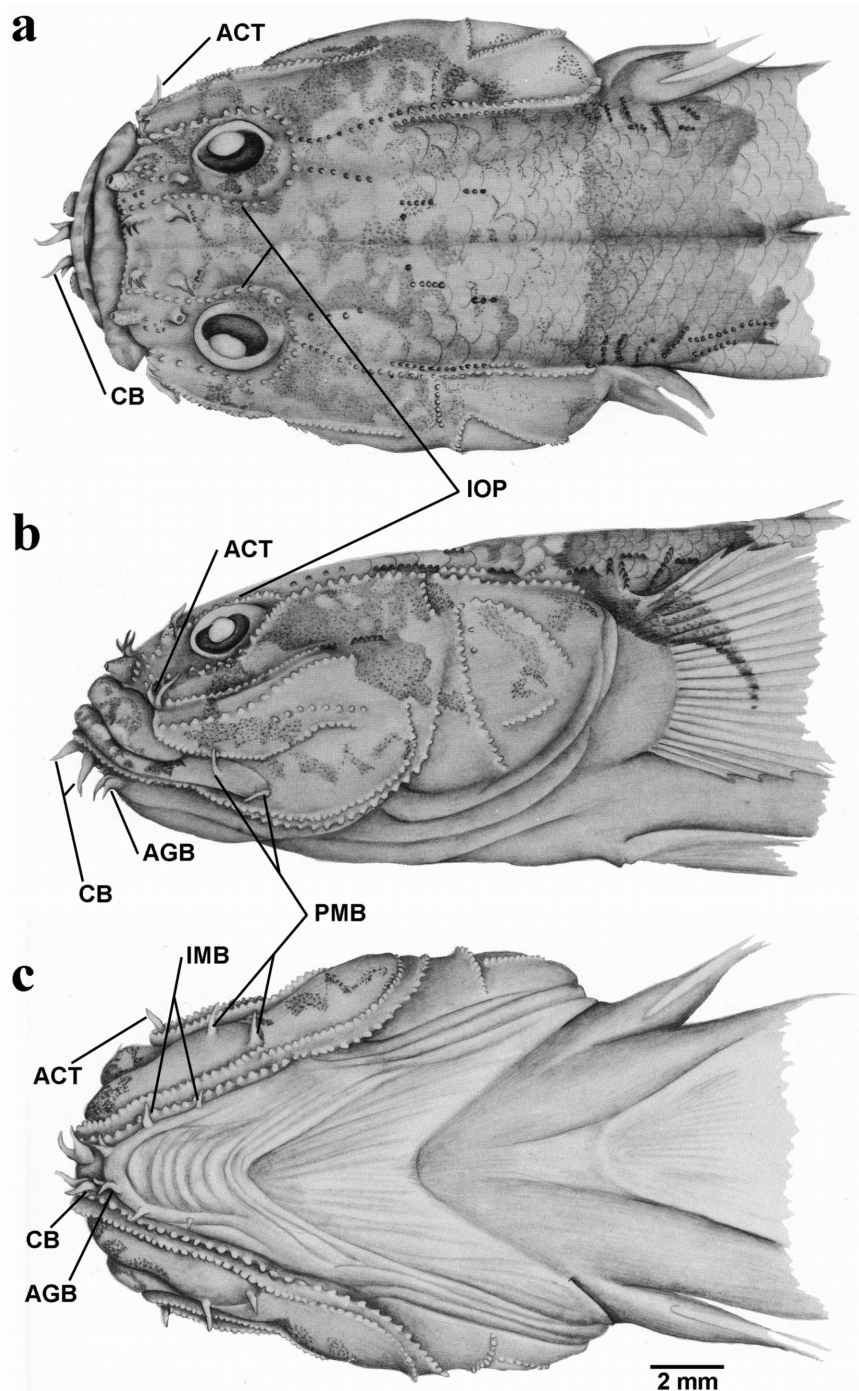


FIGURE 3. Head barbels and sensory papillae of *Gobiopsis liolepis* (Bleeker): A) dorsal view; B) lateral view; C) ventral view. Arrows and labels indicate distinctive barbels and papillae found in the lecto- and paralectotype (RMNH.PISC.4411; RMNH.PISC.36383), barbel terminology following Lachner and McKinney (1978): ACT, anterior cheek tuft; AGB, anterior gular barbels; CB, chin barbels; IMB, inter-mandibular barbels; IOP, interorbital papillae row [portion of the nasal papillae row of Lachner & McKinney (1978:7) confluent with the suborbital papillae and unique to this species]; PMB, posterior mandibular barbels. Due to condition of the specimens, not all of these features were observed in both types (see text). Base illustration modified from Lachner and McKinney (1978: plate 1a,b and plate 2a) of USNM 209247 (male paratype of *G. aporia*) from plates P09253 and P09357 by Jack R. Schroeder, Smithsonian Institution, NMNH, Division of Fishes, with permission. Scale bar is approximate.

TABLE 1. Selected distinguishing characters comparing the lecto- and paralectotype of *Gobiopsis liolepis* (Bleeker) with the most similar species of *Gobiopsis* as presented in Lachner and McKinney (1978); all other *Gobiopsis sensu stricto* have scale and pectoral-fin ray counts that are too low. Koumans (1932) reported ± 45 LL scales for Bleeker's specimens, Bleeker about 45. Modes are presented in parentheses (when available); LL scale and pectoral-fin ray counts for types are provided for left and right sides, respectively; ? = not observed in type specimens, presumably due to poor condition.

	Head pores	Inter-mandibular barbels	Posterior mandibular barbels	LL scales	Scale type	Pectoral-fin rays
<i>G. liolepis</i>						
- Lectotype	absent	?	3	37, 42	cycloid	20, 21
- Paralectotype	absent	2	?	36, 42	cycloid	21, 21
<i>G. aporia</i>	absent	1–3(2)	2–6(3)	37–45	cycloid	19–21(20)
<i>G. canalis</i>	present	absent	absent	50–55	cycloid	22–23
<i>G. macrostoma</i>	present	0–4(2)	absent	36–44	ctenoid	19–22(21)
<i>G. pinto</i>	present	0–3(1)	absent	50–60	cycloid	20–21(21)
<i>G. woodsi</i>	present	0–2(2)	2–5(3)	30–36	ctenoid	20–22(21)

Synonymy of *Gobiopsis liolepis* (Bleeker)

Callogobius liolepis Bleeker in Koumans 1931:75 [from Bleeker, unpublished, p. 258]. Koumans 1932:14 [description from Bleeker specimens, table of morphometrics and meristics]; Koumans 1940:168, 207 [comparison with *C. atratus* Griffin = *Gobiopsis atrata* (Griffin)], 168 [comparison with *Gunnamatta insolita* Whitley = *Callogobius depressus* (Ramsay & Ogilby)]; Koumans 1953a:248 [in part, list of *C. okinawae* of the Snellius Expedition]; Koumans 1953b:97 [in part, description based in part on *C. okinawae*]; Rangarajan 1968:347, 350–352, tab. II [following Koumans 1953b, comparison with *C. mannarensis*, key]; Menon & Chatterjee 1974:127–128 [comparison with *C. andamanensis*, key]; Akihito & Meguro 1975:112, table 1 [listing as syntypes, comparison with *C. hasseltii* (Bleeker) and *C. okinawae* (Snyder)]; Goren 1979a:43 [key]; Goren 1979b:216, table II [comparison with *C. clarki* (Goren), data from Koumans 1953b]; Chen & Yu 1986 [listed for Taiwan, basis unknown]; Larson & Murdy 2001:3595 [listed for western central Pacific, based on original description?].

Callogobius hasseltii (non Bleeker 1851).—Fowler 1949:133 [uncertainly synonymised from description in Koumans 1931; correctly assigning authorship to Bleeker].

Gobiopsis aporia Lachner & McKinney 1978:11–15, key, fig. 6, tabs. 1–6, pls. 1, 2b, 7a. Lachner & McKinney 1979:5 [comparison with *G. atrata* (Griffin)]; Akihito 1984:267, fig. 142, pl. 354D [brief description, distribution]; Böhlke 1984:104 [type list]; Ibarra & Stewart 1987:41 [type list]; Akihito *et al.* 1993a: 1042 [description, schematic drawing, key]; Akihito *et al.* 1993b: 1103, fig. 3 [schematic illustration of head barbels and papillae pattern]; Larson (in Randall & Lim) 2000:638 [listed for South China Sea]; Hutchins 2001:43 [listed for Western Australia]; Larson & Murdy 2001:3598 [listed for western central Pacific, based on original description]; Akihito *et al.* 2002:1249 [brief description, distribution, key, schematic illustration], fig. 37–6; Allen & Adrim 2003:59 [list]; Shibukawa *et al.* (in Kimura & Matsuura) 2003:185 [brief description and photo, Bitung Sulawesi]; Hoese & Larson 2006:1658 [list]; Shibukawa 2010:97 [general description of genus]; Allen & Erdmann 2012:976 [brief description and photo].

Discussion

The identity of *Callogobius liolepis* Bleeker has had a confused history. Based on two specimens 58 and 60 mm total length collected from Ambon, Bleeker (unpublished, p. 258; see Appendix) wrote a Latin description, intending this to form a part of the text of his multi-volume *Atlas Ichthyologique des Indes Orientales Néerlandaises* (1862–1877). In that manuscript, now archived at the RMNH in Leiden, Bleeker emphasized that this new species had cycloid scales, and a wide interorbital distance compared to *C. hasseltii* Bleeker, 1851, the

only species assigned to *Callogobius* at that time. More significantly, he noted that it had no head pores and much more highly developed papillae (presumably barbels), including: “the two anterior mandibular papillae [= chin barbels?] longer than the rest” (see Appendix). Upon Bleeker’s death in 1878 the publication of the *Atlas*, including the description of *C. liolepis*, was halted. The specimens intended to be the syntypes of *C. liolepis* were obtained by the RMNH. In 1983, plates for the planned volumes XI–XIV were published by the Smithsonian (Bleeker 1983). Plate 430, which should have included the illustration of *C. liolepis*, was among several that were lost (Boeseman 1983:5).

We found no mention of *C. liolepis* in published literature until 1931, when Koumans, then curator of fishes at RMNH, made a brief note referring to *C. liolepis*, which he regarded as a Bleeker museum name (Koumans 1931:75) and where he used Bleeker’s unpublished description to differentiate the species from *C. hasseltii*. This appears to satisfy the criteria to establish Bleeker as the author of *C. liolepis* (ICZN 1999: Article 50.1.1). It seems Koumans became aware that his 1931 note amounted to the original description, because he later published a more detailed description using Bleeker’s two original specimens (Koumans 1932:14).

In 1940, Koumans regarded *Callogobius atratus* Griffin, 1933 as “very close” (p. 168) or “allied” (p. 207) to *C. liolepis*. Griffin’s species was reassigned to *Gobiopsis* by Lachner and McKinney (1979). His later descriptions of the species (Koumans 1940, 1953b) seem to be based partially on a translation of Bleeker’s unpublished text and partially on specimens of *C. okinawae* (Snyder 1908). We examined six specimens of *Callogobius* collected by the Snellius Expedition (1929–1930) that had been reported as *C. liolepis* by Koumans (1953a:248), and determined that they were *C. okinawae* (RMNH.PISC.20176, 20293, 20597, 20607). Koumans (1940, 1953b) synonymised *C. santa* (Herre 1935) with *C. liolepis*; however, *C. santa* is presently considered a synonym of *C. okinawae* (Akihito & Meguro 1975). Koumans (1940, 1953b) considered *C. okinawae* a synonym of *C. hasseltii*.

The generic placement of *C. liolepis* was first questioned by McKinney and Lachner (1978) in a paper describing two new species of *Callogobius* and summarizing data on the nominal species. They stated that *C. liolepis* lacked the fleshy papillose head ridges of *Callogobius* and indicated they intended to relegate *C. liolepis* and four other nominal species to other genera in their subsequent studies. However, this planned work never materialized. McKinney and Lachner’s unpublished notes indicate that they examined the *C. liolepis* syntypes in the 1970’s. A label found in the jar containing the *C. liolepis* syntypes reads: “Not a species of *Callogobius* Bleeker; possibly related to *Pipidonia* H.M. Smith because: 1) barbels present; 2) papillae rows similar; 3) dentition like *Pipidonia*; 4) general body physiognomy similar. *C. liolepis* cannot be identified with any known species of *Pipidonia* or *Pipidonia*-like species. The presence of barbels and absence of vertical and transverse ridges on the head excludes *C. liolepis* from *Callogobius*. *C. liolepis* is therefore considered a *nomen dubium* with its exact generic affinities being unknown. J.F. McKinney 4 June 1976.” Lachner and McKinney (1978) synonymised *Pipidonia* Smith with *Gobiopsis* Steindachner but made no mention of *C. liolepis* in this or subsequent papers.

Callogobius liolepis has been included sporadically in faunal lists in literature since its description. Our studies indicate that most of these identifications are based on Koumans (1953b), and are likely referable to *C. okinawae*. Another possible source of confusion is *C. bifasciatus*. J.L.B. Smith (1958) described and illustrated an 80 mm TL specimen as *Mucogobius liolepis* (Koumans) in the same paper in which he described *M. bifasciatus* Smith 1958 [= *Callogobius bifasciatus* (Smith); Randall *et al.* 1994; Delventhal & Mooi 2013]. Both specimens were collected from Pemba Island; the type of *C. bifasciatus* (SAIAB 235) is a 21 mm SL juvenile. Smith distinguished *C. bifasciatus* from *C. liolepis* by scale counts and coloration (noting that they shared the presence of cycloid scales). However, the scale-count difference falls within intraspecific variation (40 vs 45; *C. bifasciatus* scales are unevenly sized and spaced) and the coloration difference is consistent with ontogenetic change in *C. bifasciatus* (juveniles are distinctly bi-colored, becoming more mottled with age). Smith must have realized his error, as *C. liolepis* is not mentioned in later publications. A specimen of *C. bifasciatus* from Pemba Island (SAIAB 3419, 63.4 mm SL) is consistent with Smith’s description and illustration of his *Mucogobius liolepis* (Smith 1958:147, pl. IIIK). Jones and Kumaran (1970:329) followed Smith (1958) and identified specimens from Minicoy (Laccadive Archipelago, India) as *Mucogobius liolepis* (Koumans), providing a figure and description. As would be expected, their specimens appear to be a *Callogobius* and not *Gobiopsis liolepis* (Koumans), but we cannot determine the species. Some aspects of the description do match *Callogobius bifasciatus* (Smith), but others do not and this species has not been recorded from this part of the Indian Ocean.

Takagi (1963) collected specimens from Japan that he identified as *Callogobius liolepis*. Akihito and Meguro

(1975) examined type specimens of *C. okinawae*, *C. hasseltii* and *C. liolepis* and determined that Takagi's specimens were *C. okinawae*. Goren (1979a,b) included *C. liolepis* in a key to *Callogobius* species and in a table of species and diagnostic characters for Red Sea and Indian Ocean *Callogobius*. Data were from Kouman's (1953b), but the species was likely included among Indian Ocean taxa through reference to Smith's (1958) identification of adult *C. bifasciatus* as Kouman's *liolepis* (as noted above).

Gobiopsis liolepis (Bleeker) is a relatively common species of the genus known from the Andaman Sea eastward to southern Japan and south through Indonesia, New Guinea and northern Australia (Lachner & McKinney 1978; museum collections).

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APPENDIX. Bleeker's unpublished description of *Callogobius liolepis* with translation following (translations edited by Ineke Loots and Martien van Oijen). Comments additional to translation appear in square brackets.
Tome XI p. 258

Callogobius liolepis Blkr. Atl. Tab. 430, Gob. Tab. 5 fig. 9.

Callog. corpore elongate antice cylindraceo postice compresso, altitudine 5 circ. in ejus longitudine absque, 6 ad $6\frac{1}{2}$ in ejus longitudine cum pinna caudali; capite acutiusculo $3\frac{1}{2}$ circ. in longitudine corporis absque, $4\frac{1}{3}$ circ. in longitudine corporis cum pinna caudali; altitudine capitis 2 circ., latitudine capitis $1\frac{1}{2}$ circ. in ejus longitudine; linea rostro-frontali declivi rostro tantum convexa; oculis magis sursum quam lateraliter spectantibus, diametro 5 circ. in longitudine capitis, diametro 1 circ. distantibus; regione interoculari poro conspicuo nullo; plicis et papillis capite superne lateribus et inferne pluribus, papillis mandibularibus 2 anterioribus ceteris longioribus; rostro convexo multo latiore quam longo, oculo non brevior, apice ante oculum sito; tubule narium anteriore posterior longiore; maxilla superiore maxilla inferiore paulo brevior sub oculi parte posteriore desinente; rictu valde oblique; dentibus maxillis acutis serie externa ceteris longioribus et paucioribus; lingua obtuse rotundata; apertura branchiali paulo infra basin pinnae pectoralis desinente; capite vertice tantum squamato, rostro genisque rugoso; sulco oculo-suprascapulari poro conspicuo nullo; squamis toto corpore cycloideis, serie longitudinali 20 circ. frontem et dorsalem anteriorem, 45 circ. angulum aperturæ branchialis superiorem inter et basin pinnae caudalis, serie transversa 15 circ. initium pinnae analis inter et dorsalem radiosam; squamis trunco postrorsum magnitudine parum accrescentibus; appendice anali oblonga obtuse; pinnis dorsalibus distantibus, magnitudine parum accrescentibus; appendice anali oblonga obtuse; pinnis dorsalibus distantibus, spinosa obtusiuscula corpore humiliore spinis mediis ceteris longioribus; dorsali radiosa dorsali spinosa vix altiore postice quam antice altiore acute vel acutiuscula; pectoralibus non filosis subaequali sed ea brevior; caudali lanceolata acutiuscula capite non longiore; colore corpore superne viridi-roseo inferne dilutior; iride viridi margine pupillari aurea; capite corporeque fusco nebulato-variegatis, fusco lateribus fascias latas transversas efficiente; pinnis roseis vel aurantiacis dorsalibus vittis vel fasciis 2 vel 3 longitudinale [?] transversis; pectoralibus basi superne macula fusca; caudali basi macula fusca majore, radiis maculis parvis fuscentibus in vittulas 5 vel 6 transversas dispositis.

B. 5. D. $6-1\frac{1}{8}$ vel $6-1\frac{1}{9}$. P. 21. V. $1\frac{1}{5}-5\frac{1}{1}$. A. $1\frac{1}{8}$ vel $1\frac{1}{9}$. C. $5\frac{1}{14}\frac{1}{5}$ circ.

Hab. Amboina, in mari.

Longitudo 2 speciminum $58''$ et $60''$.

Elongate body, cylindrical anteriorly, compressed posteriorly, depth about 5 times in length without, 6 to $6\frac{1}{2}$ in length with caudal fin; head somewhat acute, about $3\frac{1}{2}$ in body length without, about $4\frac{1}{3}$ with caudal fin; head depth about 2, head width about $1\frac{1}{2}$ in its length, rostrum-frontal profile sloping, only on the snout convex, eyes looking upwards more than laterally, diameter about 5 in head length, about 1 diameter apart; no visible pores in interocular region, many folds and papillae on the lateral and lower sides of the head, the two anterior mandibular papillae longer than the rest [presumably what are now termed chin barbels]; snout convex, much wider than long, not shorter than eye, tip located in front of the eye; anterior nasal tube longer than posterior one; upper jaw a little shorter than lower jaw, ending under the posterior part of the eye; gape very oblique; jaws with sharp teeth, teeth in outer series longer and fewer than the others; tongue bluntly rounded; branchial opening ends a little below the base of the pectoral fin; only top of head scaled, snout and cheeks wrinkled; no pores visible in oculo-suprascapular groove; all body scales cycloid, about 20 scales in longitudinal series between the forehead and anterior dorsal fin, about 45 scales between the superior angle of the branchial opening and the base of the caudal fin, about 15 scales in transverse series from anal fin origin to rayed dorsal fin; trunk scales slightly increasing in size towards the posterior part, anal appendage [urogenital papilla] oblong, blunt; dorsal fins separate [literally: dorsal fins apart], spiny fin somewhat blunt, lower than the body, middle spines longer than the others, rayed dorsal fin hardly higher than spiny dorsal fin, posterior part higher than anterior part, acute or somewhat acute, ventral fin a little shorter than pectoral fins, in the middle united for almost the whole length; anal fin nearly equal in shape and height to second dorsal fin [litt. rayed dorsal fin], but shorter; caudal fin lanceolate, somewhat acute, no longer than the head; body color green-pink dorsally, of a fainter color ventrally; iris green, margin of the pupil golden, head and body variegated with dark in a cloud-like pattern, on the flanks the dark color forms wide irregular transverse bands, fins pink or orange, dorsal fins with 2 or 3 longitudinal transverse dark stripes or bands; dark spot on the upper base of the pectoral fins, caudal base with a larger dark spot, rays with small darkish spots arranged in 5 or 6 transverse stripes.

B. 5, D. $6-1\frac{1}{8}$ or $1\frac{1}{9}$, P. 21, V. $1\frac{1}{5}.5\frac{1}{1}$, A. $1\frac{1}{8}$ or $1\frac{1}{9}$, C. $5\frac{1}{14}\frac{1}{5}$ approximately.

Hab. Amboina, in sea.

Length of 2 specimens 58 and 60 mm. [TL]

Rem. Cette espèce est fort distincte de l'*Hasseltii* par la nature cycloïdes de toutes les écailles, par l'absence d'écailles sur les joues et les opercules, par la caudale pas plus longue que la tête, par la tête plus grande et plus large et à sillons et papilles beaucoup plus développés, etc.

Les deux espèces ne sont connues jusqu'ici que de l'Insulinde.

Remarks. This species is very distinct from *Hasseltii* by having all scales cycloid, by the absence of scales on the cheeks and opercles, by the caudal being not as long as the head, by having the head much larger and wider, and by much more developed grooves and papillae etc.

The two species till now are only known from the East Indies.