

VICTOR G. SPRINGER

*Synopsis of the
Tribe Omobranchini
with Descriptions of
Three New Genera
and Two New Species
(Pisces: Blenniidae)*

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ABSTRACT

Springer, Victor G. Synopsis of the Tribe Omobranchini with Descriptions of Three New Genera and Two New Species (Pisces: Blenniidae). *Smithsonian Contributions to Zoology*, number 130, 31 pages, 16 figures, 1972.—The blenniid tribe Omobranchini is characterized and a key is given to the six genera recognized in the tribe as well as to the species of all the genera except *Omobranchus*. Three new genera and two new species are described: *Parenchelyurus* (type-species: *Enchelyurus hepburni* Snyder), *Omox biporos* (monotypic, from the Gulf of Thailand, New Guinea, and Palau Island), and *Haptogenys quadripora* (monotypic, from the Gulf of Thailand). Distribution maps and illustrations of all the species except those of *Omobranchus* are provided. A list of all the nominal species of the Omobranchini with their present status and the location of primary type material is included.

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Victor G. Springer

Synopsis of the Tribe Omobranchini with Descriptions of Three New Genera and Two New Species (Pisces: Blenniidae)

The purpose of this paper is to synopsise the genera of the blenniid tribe Omobranchini (Springer, 1968) and revise those genera comprising small numbers of species. In effect, all the genera of the Omobranchini except the genus *Omobranchus* (with about 15–20 species) are revised. A revision of *Omobranchus* is in progress and for the sake of nomenclatural stability I have indicated (in the list of all nominal species of the Omobranchini) numerous synonyms that I have determined so far for several of the *Omobranchus* species.

The Omobranchini is about comparable in numbers of genera (6) and species (25–30) to the Nephophini (Smith-Vaniz, personal communication), much larger than the monotypic Phenablenniini, about a third the size of the Blenniini, and a fifth the size of the Salariini. Aside from the Phenablenniini, the Omobranchini is geographically the most restricted blenniid tribe, occurring only in the Indo-West Pacific area (excluding the apparently adventitious occurrence of the Indo-West Pacific species, *Omobranchus punctatus*, in the Caribbean Sea).

The tribe Omobranchini comprises small species: only one or two species of *Omobranchus* attain a

standard length of 100 mm; all other Omobranchini do not exceed 75 mm. The species are all benthic, shallow-water inhabitants with few if any verified records of occurrences deeper than five meters. Some species are reported to occur in fresh water, but most come from brackish or marine habitats, and all occur around rocks, corals, and shells. In general, the Omobranchini seems to occupy the same ecological niche as the Blenniini, which is very poorly represented in the Indo-West Pacific.

Methods

Counts of fin spines and rays, vertebrae, and pleural and epipleural ribs were made as described by Smith-Vaniz and Springer (1971). Figure 1 presents the terminology used in recording sensory pore counts. Tooth counts are separated into incisors (Arabic numerals) and canines (Roman numerals) and presented as formulae—for example, I–30–I indicates that there is a canine on each side and 30 incisors in the jaw. Many of the meristic data are summarized in Tables 1–6.

Osteological terminology is that of Springer (1968). Number of circumorbital bones is a fairly constant feature for any species of blenniid; only one or two specimens of each species were examined for this character.

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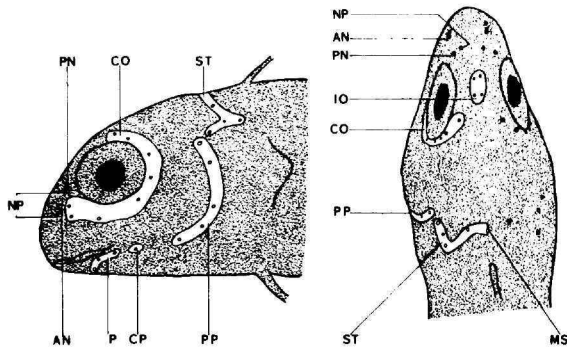


FIGURE 1.—Diagrammatic illustration of cephalic sensory pores of a hypothetical species of Omobranchini. Abbreviations: AN, anterior nostril; CO, circumorbital series; CP, common pore of mandibular and preopercular series (not included in mandibular pore counts, but included in supratemporal-preoperculo-mandibular counts); IO, interorbital series (both sides included in count; species have two to four IO pores); MP, mandibular series (species have either two or three MP pores); MS, median predorsal supratemporal pore (present or absent depending on species; MS included in supratemporal-preoperculo-mandibular pore counts); NP, nasal pores; PN, posterior nostril (absent only in some individuals of *Enchelyurus* species); PP, preopercular series; ST, supratemporal series.

Standard length (SL) was measured from the midtip of the upper lip to the midbase of the caudal fin.

Statistical data, except for covariance analysis, were computer analyzed according to formulae presented in Simpson, Roe, and Lewontin (1960) with computer programs given by J. A. Peters (1971). Covariance analysis was performed according to Snedecor (1956) from a computer program prepared by my colleague, B. B. Collette.

Synonymies include only references to original descriptions.

The following abbreviations have been used to denote the location of specimens mentioned in the study and the affiliations of persons named in the acknowledgments section: AMNH, American Museum of Natural History, New York City; AMS, Australian Museum, Sydney; ANSP, Academy of Natural Sciences, Philadelphia; BMNH, British Museum (Natural History), London; BPBM, Bernice P. Bishop Museum, Honolulu; CAS, California Academy of Sciences, San Francisco; FBQ, Fisheries Branch, Department of Primary Industries, Queensland, Brisbane; GVF denotes station or register numbers of specimens formerly with

the George Vanderbilt Foundation, Stanford University, but now with CAS; HUI, Department of Zoology, Hebrew University, Jerusalem; KUMF, Kasertart University, Museum of Fisheries, Bangkok; MCZ, Museum of Comparative Zoology, Cambridge, Massachusetts; MM denotes catalog numbers of specimens formerly with the Macleay Museum, University of Sydney, but now with AMS; MNHN, Muséum National d'Histoire Naturelle, Paris; MSNG, Museo Civico di Storia Naturale, Genova; NFIS, Natur-Museum und Forschungs-Institut Senckenberg, Frankfurt; NMV, Naturhistorisches Museum, Vienna; QMB, Queensland Museum, Brisbane; RMNH, Rijksmuseum van Natuurlijke Historie, Leiden; RU, Rhodes University, J.L.B. Smith Institute of Ichthyology, Grahamstown, South Africa; SAM, South African Museum, Capetown; SU denotes catalog numbers of specimens formerly with the Division of Systematic Biology, Stanford University, but now with CAS; USNM, United States National Museum of Natural History; UTAI, University of Tel Aviv, Israel; WAM, Western Australian Museum, Perth; ZMA Zoologisch Museum, Universiteit van Amsterdam; ZMB, Institut für Spezielle Zoologie und Zoologisches Museum, Berlin (East); ZSI, Zoological Survey of India, Calcutta; ZSZM, Zoologisches Staatsinstitut und Zoologisches Museum, Hamburg.

Tribe OMOBRANCHINI Springer, 1968

TYPE-GENUS.—*Omobranchus* Ehrenberg.

DIAGNOSIS.—Dorsal fin VI-XIV, 15–27; anal fin II, 17–27; pectoral fin 12–17; pelvic fin I, 2 (spine hidden); interopercle with posteriorly projecting spur extending posterior to joint between interopercle and epiphyal (Springer, 1968, fig. 16); dentaries united by suturing joint; premaxillaries not excavated; teeth firmly ankylosed to jaws; fewer than 50 incisor teeth in either jaw; enlarged canine tooth on each side of both upper and lower jaws (canines absent in mature females of *Omobranchus fasciolatoceps*); caudal fin rays unbranched (except abnormally); last anal fin ray bound by membrane to caudal peduncle or caudal fin; gill openings restricted ventrally, never extending ventrally much below ventral level of pectoral fin base; no cirri present on head, except present on nostrils of one species, *Laiphognathus multimaculatus*; pores in circumorbital and preoperculo-mandibular

series simple (no horizontal pairs or multiples); dorsal fin notched only slightly, if at all, between spinous and rayed portions; precaudal vertebrae 9–12 (rarely 9 or 12 in any species); caudal vertebrae 23–32; total vertebrae 33–43; basisphenoid and intercalars present; pterosphenioids reduced, excluded from external surface of cranium; swim-bladder absent.

RELATIONSHIPS.—The Omobranchini appear to be specialized offshoots of the Blenniini (Springer, 1968) and are most similar in appearance to the Phenablenniini, with which they can be easily confused. Superficially the Phenablenniini can be most easily distinguished from the Omobranchini

in having three segmented rays in each pelvic fin and only 14 segmented dorsal fin rays. The Phenablenniini lack the posteriorly projecting spur on the interopercle, which is restricted to the Omobranchini in the Blenniidae (see Springer and Smith-Vaniz, 1972, for detailed comparisons of the blennioid fish tribes). An additional character for separating the Omobranchii and Phenablenniini that was not mentioned by Springer and Smith-Vaniz is the presence of 6 circumorbital pores in the Phenablenniini and 7–12 in the Omobranchini (one species of Omobranchini, *Parenchelyurus hyena*, may have 6 circumorbital pores on one side of the head as a variation).

Key to the Genera and Species (except those of *Omobranchus*) of the Tribe Omobranchini

1. Cirri present on rims of anterior and posterior nostrils; circumorbital pores 9–12 (usually 10); one or more pores on occiput just anterior to median predorsal supratemporal pore *Laiphognathus multimaculatus*
- Cirri absent on rims of nostrils (anterior nostril may appear as slender tube); circumorbital pores 7–9; no pores on occiput anterior to median predorsal supratemporal pore, which may also be absent 2
2. Interorbital pores 4; no median predorsal supratemporal pore; gill opening extending ventrally to or below level of 7th pectoral fin ray (from dorsalmost) 3
- Interorbital pores 2–4 (4 in exceptional specimens only); median predorsal supratemporal pore present; gill opening variable, frequently restricted to area dorsal to pectoral fin base 4
3. Dorsal fin XII, 18; anal fin II, 20; length of shortest pelvic fin ray contained more than two times in length of longest; mandibular pores 2; gill opening extending ventrally to level of 13th pectoral fin ray (from dorsalmost); mouth ventral *Haptogenys quadripora*
- Dorsal fin XII, 15–17; anal fin II, 17–19, length of shortest pelvic fin ray contained less than two times in length of longest; mandibular pores 3, gill opening extending ventrally to level of 7th–11th pectoral fin ray (from dorsalmost); mouth terminal *Omox biporos*
4. Three mandibular pores; supratemporal-preoperculo-mandibular pores 13 (rarely 12 in variant specimens) *Omobranchus*
- Two mandibular pores; supratemporal-preoperculo-mandibular pores 11–12 5
5. Dorsal fin spines XI–XIII; pectoral fin rays 13 (rarely 14); gill opening restricted to area dorsal to level of 5th pectoral fin ray (from dorsalmost); teeth fewer at any given size (Figures 2 and 3); dorsal and anal fins attached on caudal fin not more than one-sixth caudal fin length; adults with frontal bones separate; ventral hypural plate autogenous; kinethmoid absent 6
- Dorsal fin spines VI–XI (XI in 1 of 110 specimens of *Enchelyurus brunneolus*); pectoral fin rays 13–17 (usually 14–16); gill opening variable, frequently extending ventrally below level of 5th pectoral fin ray (from dorsalmost); teeth more at any given size (Figures 2 and 3); dorsal and anal fins attached on caudal fin more than one-third caudal fin length (except *Enchelyurus petersi*, where they are attached at caudal fin base); adults with frontal bones fused (no joint evident); ventral hypural plate fused to urostylar centrum; kinethmoid present 7
6. Lateral line consisting of 3–8 bipored tubes anteriorly on body; head, body, and fins generally uniformly dark, occasionally with obscure dark spots (blue in life); dorsal fin spines XI (rarely XII) *Parenchelyurus hepburni*
- Lateral line absent on body; head, body, and fins pale with distinct dark spots; dorsal fin spines XII–XIII *Parenchelyurus hyena*

7. Dorsal and anal fins scarcely or not attached on caudal fin; longest pelvic fin ray 6.7–9.1 percent SL, fin length not sexually dimorphic; last dorsal fin ray 7.0–9.8 percent SL; last anal fin ray 5.4–8.7 percent SL; longest caudal fin ray 15.5–17.7 percent SL; total dorsal fin elements 33–35 (usually 34); head and body pale with black stripe extending from snout tip to well out on caudal fin *Enchelyurus petersi* (northern Red Sea)
- Dorsal and anal fins attached well out on caudal fin; longest pelvic fin ray 10.7–38.6 percent SL, males with pelvic fins relatively longer than those of females; last dorsal fin ray 10.1–18.6 percent SL; last anal fin ray 9.5–16.9 percent SL; longest caudal fin ray 16.3–23.2 percent SL, total dorsal fin elements 28–34 (usually 29–33); head and body variably marked, usually dark, never with black stripe.....8
8. Gill opening extending ventrally to or below level of ventralmost pectoral fin ray; gill opening depth 10.1–12.8 percent SL; precaudal vertebrae 11–12; total vertebrae 36–39; pectoral fin rays 15–17 (usually 16); female urogenital region conspicuously pigmented, much darker than surrounding area (Figure 8)
- Enchelyurus flavipes* (Philippines, Malaya, Indonesia)
- Gill opening extending ventrally at most to level of 11th pectoral fin ray (from dorsalmost); gill opening depth 4.2–8.2 percent SL; precaudal vertebrae 9–11 (usually 10); total vertebrae 33–37 (rarely 37); pectoral fin rays 13–16 (usually 14–15); female urogenital region not conspicuously darker than surrounding area.....9
9. Dorsal fin spines with strong mode of 10; pectoral fin rays with strong mode of 14; head of male with pattern of prominent dark markings laterally and ventrally
- Enchelyurus brunneolus* (Hawaiian Islands)
- Dorsal fin spines modally 7–9; pectoral fin rays with strong mode of 15; head of male variably pigmented: uniformly dark, with fine dark pin stripes laterally only, with reticular pattern or with scarcely noticeable, diffusely dusky broad stripes.....10
10. Dorsal fin spines 6–9 (rarely 6 or 9); head of male uniformly dark or with dark pin stripes laterally only
- Enchelyurus kraussi* (Red Sea, Indian Ocean, Western Pacific Ocean)
- Dorsal fin spines 8–10 (rarely 8 or 10); head of male variably pigmented; uniformly dark, with reticular pattern, or with scarcely noticeable diffusely dusky broad stripes, frequently over ventral surface of head..... *Enchelyurus ater* (Oceania)

Genus *Enchelyurus* Peters

Enchelyurus W. Peters, 1868, p. 268 [type-species: *E. flavipes* W. Peters, 1868, by monotypy].

DIAGNOSIS.—No cirri on head; dorsal and anal fins attached well out on caudal fin (except *E. petersi*); frontal bones fused in adults; 3 circumorbital bones; kinethmoid present; postcleithra reduced to one or two bony fragments, neither of which articulates with cleithrum; ventral hypural plate fused to urostylelar centrum; 6–11 dorsal fin spines (11 in less than 1 percent of specimens); 13–17 (usually 14–16) pectoral fin rays; nasal bones separate; 7 sensory pores in circumorbital series; 3 sensory pores in mandibular series; 12 sensory pores in supratemporal-preoperculo-mandibular series; 3 interorbital sensory pores; posterior nostril reduced in size or absent; gill opening extending ventrally from opposite level of dorsalmost pectoral fin ray to opposite level just below ventralmost pectoral fin ray; shortest pelvic fin ray more than half length of longest.

RELATIONSHIPS.—Superficially *Enchelyurus* appears to be most similar to *Parenchelyurus*, particularly *P. hepburni*, but the osteological specializations of *Enchelyurus* are so distinctive as to obscure its relationships within the Omobranchini. These specializations include the fusion of the frontals (found elsewhere in the Blenniidae only in *Plagiotremus* of the Nemophini), reduction of the postcleithra to bony fragments (found elsewhere in the Blenniidae only in *Ecsenius* and *Praealticus* of the Salariaiini), reduction by fusion of the number of circumorbital bones, fusion of the ventral hypural plate to the urostylelar centrum and ossification of the rostral cartilage to form a kinethmoid. In addition, most species have a reduced number of dorsal fin spines but an increased number of pectoral fin rays as compared to other Omobranchini. The reduction of the size of the posterior nostril, which is sometimes absent, is unique within the Blenniidae.

In the Omobranchini, *Haptogenys* is similar to *Enchelyurus* in having a kinethmoid (see frontal

view of *Enchelyurus kraussi* skull in Springer, 1968, fig. 13) and *Laiphognathus* is similar in having the ventral hypural plate fused to the urostylar centrum. Among the Omobranchini, *Parenchelyurus* may have 3 or 4 circumorbital bones, *Enchelyurus* has 3 and all other genera have 4 or 5.

SEXUAL DIMORPHISM.—Males of *Enchelyurus* attain a larger size than conspecific females. Such sexual dimorphism is common in the Blenniidae.

Among all *Enchelyurus* species except *E. petersi*, males tend to have a proportionately longer pelvic fin. Males of *E. flavipes* tend to have a proportionately longer caudal fin than females (data on pelvic and caudal fins in personal files of VGS). Females of *E. flavipes* have a noticeable black area around the genital papilla (Figure 8) not exhibited by males or by either sex of the other species. Males of *E. kraussi*, *E. ater*, and *E. brunneolus* usually have a pattern of stripes, spots, or vermiculations on the head that is lacking in females. A few males of *E. flavipes* also show indications of such a pattern on the head. Males of *Enchelyurus* have a variable tendency to develop a striped pattern, particularly anteriorly, on the dorsal and anal fins. The anal fin rays of mature males tend to bear fleshy swellings subterminally (Figure 8). Similar structures are present in some species of *Omobranchus* and have also been reported in the Blenniini (Krejsa, 1960). They are also present in at least nuptial males of all Nemophini (Smith-Vaniz, personal communication).

DENTITION.—The species of *Enchelyurus* show significant differences in numbers of jaw teeth (Figures 2 and 3, Tables 5 and 6) both between species and between this genus and others in the Omobranchini, excluding possibly *Omobranchus*. There is no sexual dimorphism exhibited by numbers of teeth in *Enchelyurus*. As is typical of blenniids in general, numbers of teeth in *Enchelyurus* tend to increase with increase in standard length. On the basis of tooth numbers the species of *Enchelyurus* fall into three groups: (1) *E. kraussi*, *E. ater*, and *E. brunneolus*, (2) *E. flavipes*, and (3) *E. petersi*. These groups are correlated also with type of color pattern and other morphological characters. [The tables and graphs were constructed before a specimen of *E. petersi* (31.2 mm, total premaxillary teeth 23, total dentary teeth 23) was obtained. The tooth counts for this specimen would tend to lower the slope of the regression line for premaxillary

teeth and raise the slope of the regression line for dentary teeth for this species.]

Enchelyurus ater (Günther)

FIGURE 6

Petroscirtes ater Günther, 1877, p. 199 [Tahiti, BMNH 1873, 8.1.35].

Hypleurochilus vaillanti Jordan and Seale, 1906, p. 420 [Pago Pago, Samoa, USNM 51788].

In the original description *Hypleurochilus vaillanti* was not compared with any other species of blenniid. The holotype is a typical juvenile (11.0 mm SL) of *E. ater*.

Enchelyurus ater is known only from Oceania south of the equator and east of 160° west longitude (Figure 5). Its distribution does not overlap that of any other species of *Enchelyurus*.

The markings on the heads of mature males are not so noticeable as they are in *E. kraussi* and *E. brunneolus*, the other two species in the same group with *E. ater*. The markings appear to be restricted to the larger males. Of 25 males, 25 mm or larger, available, nineteen (25.0–37.0 mm, average 29.8 mm) lacked markings on the head and six (33.7–44.3 mm, average 37.8 mm) had markings. In some specimens the markings appear as a reticular pattern of dark lines (Figure 6), in others as a scarcely noticeable dusky mottling. When present, the markings occur on the ventral surface of the head as well as on the sides.

MATERIAL EXAMINED.—New Caledonia: USNM 195789 (41.0), CAS 24691 (41.2). Tonga: BMNH 1877.12.10.44 (34.4). Fiji Islands: Viti Levu, CAS 24694 (22.8). Society Islands: Moorea, USNM 204516 (30.0); Tahiti, BMNH 1873.8.1.35 (31.5, holotype of *Petroscirtes ater*), CAS SU24628 (20.9). French Oceania: Maiao, CAS GVF1354 (4: 15.7–33.0). Samoan Islands: USNM 52251 (10: 19.4–29.7), Apia, USNM 52248 (10: 12.7–29.9, including one cleared and stained), Upolu, BMNH 1926.3.6.94 (23.4), Pago Pago, CAS SU8986 (17: 12.2–37.0), USNM 51799 (11.4, holotype of *Hypleurochilus vaillanti*), USNM 195715 (3: 25.0–30.6, probably from Samoa). Tuamotu Archipelago: Tikahau Island, USNM 204515 (4: 22.3–32.4); Raroia, CAS GVF82 (13: 21.2–29.2), CAS GVF61 (2: 29.2–30.4), CAS GVF96 (4: 18.5–33.7), CAS GVF77 (2: 22–27.3). Rapa: C. L. Smith field nos. AMNH S70–23

(2: 32.2–37.2), AMNH S70–34 (35.5), AMNH S70–35 (44.3).

Enchelyurus brunneolus (Jenkins)

FIGURE 7

Aspidontus brunneolus Jenkins, 1903, p. 510 [Honolulu, Oahu, Hawaii, USNM 50718].

Enchelyurus edmonsoni Fowler, 1923, p. 389 [Honomuni, Molokai, Hawaii, BPBM 3401].

Enchelyurus edmonsoni was described from a male and compared only with *E. ater*. The holotype of *E. brunneolus* is also a male. Strasburg (1956) discussed color pattern, sexual dimorphism, and relationships of *E. brunneolus*.

This species is the smallest in the Omobranchini. The largest specimen seen was 31.2 mm SL. Strasburg (1956) mentioned that it rarely exceeded 25 mm in length. *E. brunneolus* is known only from the Hawaiian Islands (Figure 5), where it is apparently quite common.

MATERIAL EXAMINED.—Hawaiian Islands: Molokai BPBM 3401 (26.0, holotype of *Enchelyurus edmonsoni*), BPBM 4982 (21.0), BPBM 4984 (18.0), USNM 161991 (11.9), USNM 160685 (2: 22.4–23.5); Oahu, BPBM 7866 (11: 15.1–25.3), BPBM 5315 (19.0), BPBM 4983 (4: 12.0–23.0), BPBM 4988 (3: 13.0–25.0), BPBM 6985 (29.0), BPBM 4985 (23.0), CAS SU7685 (40: 11.2–31.2), USNM 78056 (4: 12.4–23.0), USNM 111975 (8: 12.0–27.0), USNM 50718 (29.0, holotype of *Aspidontus brunneolus*); Maro Reef, CAS GVF Station 33 (15: 17.8–31.1); Laysan, CAS 51GVF15 (6: 12.9–27.6), CAS 51GVF26 (3: 20.3–24.2), CAS GVF Station 12 (4: 17.7–25.8), BPBM 4986 (12.0); Lisianski, BPBM 4987 (29.0).

Enchelyurus flavipes Peters

FIGURE 8

Enchelyurus flavipes W. Peters, 1868, p. 26 [Singapore, ZMB 5193].

Enchelyurus flavipes var. *nigerrima* Weber, 1913, p. 545 [Insel Barang bei Makassar; ZMB 5193].

Weber differentiated his variety, *nigerrima*, from the typical form only on the basis of the variety's being darker. The two forms were synonymized by de Beaufort (in de Beaufort and Chapman, 1951) without comment. There is considerable variation

in color pattern among specimens within a single collection and I do not believe any subspecific categories are merited. I am unable to place Gonto Soea, the locality on the label with the holotype of *nigerrima*, or to explain the discrepancy between the published locality (Insel Barang) for the holotype and that given on the label. Both places are cited as being near Makassar (Celebes).

Philippine specimens of *E. flavipes* have generally higher numbers of total dorsal and anal fin ray elements than do specimens from Singapore (Table 1).

E. flavipes is essentially an Indo-Malayan species, overlapping in distribution little if any that of *E. kraussi*, whose distribution, in general, surrounds that of *E. flavipes* (Figure 5).

MATERIAL EXAMINED.—Singapore: ZMB 5193 (2: 48.3–51.8, syntypes of *E. flavipes*), CAS 24692 (7: 32.9–13.8). Celebes: Gonto Soea (near Makassar), RMNH 20813 (47.6, holotype of *E. flavipes* variety *nigerrima*); Great Toba Island, USNM 137864 (12: 27.1–11.6, including two cleared and stained). Sulu Islands: Tataan-Simalue Island, USNM 137862 (25.1), USNM 137863 (41.4); Sitankai, CAS SU35780 (24.8). Philippine Islands: Culion Island, CAS SU28411 (32.5).

Enchelyurus kraussi (Klunzinger)

FIGURE 9

Petrosirtes kraussi Klunzinger, 1871, p. 497 [Kosseir, Egypt, ISZZ 8029, lectotype].

Enchelyurus analis H. M. Smith, 1934, p. 318 [Koh Tao, Gulf of Siam, KUMF 0175].

The syntypes of *Petrosirtes kraussi* comprise 5 specimens (NFIS 1662, two specimens in poor condition; ZMB 8029, two male specimens, 37.4–44.6 mm SL; and ZMB 10506, one female, 35.5 mm SL). I here designate the 37.4 mm male specimen of ZMB 8029 as lectotype. It has the following characters: dorsal fin VII, 23; anal fin II, 20; pectoral fins 15–15; vertebrae 10 + 25; I–30–I teeth in each jaw.

In the original description *Enchelyurus analis* was compared only with *E. ater*. I have not seen the holotype of *E. analis* but the illustration accompanying the description depicts a male *E. kraussi*, as evidenced by the pattern of stripes on the head and anal fin.

Aoyagi (1954) discussed *Enchelyurus kraussi* but used the name *Enchelyurus ater*. He gave an illustration of a male *E. kraussi*, but the illustration was captioned "*Lepidoblennius marmoratus ishigakiensis* n. subsp." (*Lepidoblennius* is a genus of Tripterygiidae). For a figure of a tripterygiid in the same paper he gave the caption "*Enchelyurus ater* (Günther)." Obviously the figures and captions were switched. The specimen Aoyagi reported on from Okinawa represents the northernmost record for *E. kraussi* (this record is not included on Figure 5).

E. kraussi is known from the Red Sea, Indian Ocean, and western Pacific Ocean (Figure 5). There is a tendency for the number of dorsal fin spines to increase in an east to west direction (Table 1). The increase in the number of dorsal fin spines continues eastward into the contiguous populations of *E. ater* and from *E. ater* northward into *E. brunneolus*, the other members of the *E. kraussi* species group. One might interpret these three species as representing only populations of a single species, but sharp differences in the nature of the color pattern of mature males of the three species convinces me otherwise. In addition, *E. brunneolus* has fewer pectoral fin rays than the other two forms.

Specimens of *E. kraussi* from Guam and Saipan are distinguished from specimens from other localities in that the males lack stripes on the head. The Guam and Saipan populations are well separated geographically from the other populations of *E. kraussi*. Though the color pattern difference of the Guam and Saipan populations may indicate a species difference, I defer such recognition until more specimens from throughout the range of *E. kraussi* are available.

MATERIAL EXAMINED.—Gulf of Aqaba: Sinai coast, HUI 642 (27.4), HUI 687 (33.5), HUI 686 (27.2), UTAI 5765 (13.0), UTAI 4544 (18.3), USNM 204538 (14.7), USNM 204537 (14.0). Egypt: Kosseir, ZMB 8029 (2: 37.4–44.6, smaller specimen herein designated lectotype of *Petroscirtes kraussi*), ZMB 10506 (35.5), NFIS 1662 (2, poor condition). Sudan: Port Sudan, BMNH 1968.11.27.14 (25.9). Gulf of Aden: Bay of Djibouti, MNHN 1940–318 (24.5); Berbera, BMNH 1954.4.26.219–220 (2: 29.3–33.5). Seychelles Islands: RU 2332 (3: 11.4–31.8), ZSZM 14779 (8: 22.2–31.3). Aldabra: RU 2331 (34.8). South Viet Nam: Hon Mieu Island, CAS GVF2789 (28.6); Hon Lon Island, CAS 24695 (27.8). Gulf of

Thailand: Goh Luem, CAS GVF2648 (21.0). Indonesia: Pulo Mega, Mentawai Islands, USNM 200609 (28.9); Moluccas, Tomahu Island, USNM 99367 (29.0). Taiwan: Southwest tip, USNM 204595 (6: 27.2–33.2). Philippine Islands: Canino Island, USNM 161422 (30.2). Marianas Islands: Guam, CAS GVF1874 (5: 24.5–27.1), CAS 24693 (23.2), CAS GVF1859 (20: 14.4–29.4); Saipan, CAS GVF790 (29.2), USNM 195812 (19.8). New Guinea: Kiriwina, Trobriand Islands, USNM 205708 (2: 20.0–28.5). Australia: Great Barrier Reef, One Tree Island, USNM 201831 (2: 36.0–41.0), USNM 204593 (31.3), USNM 204594 (31.6), USNM 204592 (9: 30.3–36.2, USNM 201840 (37.0), USNM 204082 (26.2), USNM 201370 (22: 23.0–36.0).

Enchelyurus petersi (Kossmann and Räuber)

FIGURE 10

Petroscirtes petersi Kossmann and Räuber, 1877, p. 21 [Red Sea; holotype lost].

The holotype of *E. petersi* is apparently lost (Klauswitz, personal communication). The illustration given with the description is readily recognizable as a relatively common species found in the shallow waters of the Gulf of Aqaba and Gulf of Suez. Kossmann and Räuber reported the type-locality as "Red Sea." All other specimens known to me are from Eilat, Gulf of Aqaba, and Tor (also known as Et Tur) and Ras Massala, Gulf of Suez. Kossmann and Räuber reported that some of their collections came from Tor and, with the exception of a few sharks and echeneids, the remainder of their collections came from Massawa and the Dahlak Islands in the southern Red Sea. It would be desirable to know if *E. petersi* occurs in the Red Sea proper.

E. petersi is not only the most distinctive species of *Enchelyurus* but it is readily recognizable from all other species in the Omobranchini by its striped color pattern.

E. petersi is found primarily around rocks, in empty worm tubes, and around sea urchins (*Diadema*) very close to shore. The pale portions of the body vary from cream colored to bright yellow or yellow-green, and the species is quite visible in its habitat. In contrast, I have never seen *E. kraussi* (which is sympatric with *E. petersi*) in nature.

MATERIAL EXAMINED.—Gulf of Aqaba: Eilat, HUI E61-9 (30.8), HUI 60/90.34 (2: 33.0-36.6), USNM 204540 (6: 38.6-53.5, including one specimen cleared and stained). Gulf of Suez: ZSZM 14776 (44.7); Tor, USNM 204539 (2: 28.4-35.7), Ras Massala, HUI SLR2908 (31.2).

Haptogenys, new genus

DIAGNOSIS.—No cirri on head; dorsal and anal fins not attached to caudal fin; frontal bones separate in adults; 4 circumorbital bones; kinethmoid present; postcleithra normal; 12 dorsal fin spines; 13 pectoral fin rays; nasal bones joined dorsomesially; 8 sensory pores in circumorbital series; 2 sensory pores in mandibular series; 13 sensory pores in supratemporal-preoperculo-mandibular series, 4 interorbital sensory pores; posterior nostril present, normal; gill opening extending ventrally to point opposite level of ventralmost pectoral fin ray; shortest pelvic fin ray less than half length of longest.

RELATIONSHIP.—*Haptogenys* is unique in the Omobranchini in having large trabeculate nasal bones that meet dorsomesially (as opposed to separate, moderate-sized, slender nasals) and a ventral mouth similar to that found in the nemophinin genus *Plagiotremus* Gill (= *Runula* Jordan and Bollman). These characters are specializations superimposed on a basically *Omobranchus*-like body. The similarity of the head shape and jaws of *Haptogenys* to those of *Plagiotremus* apparently is the result of similar feeding habits. The stomach contents of the single known specimen of *Haptogenys* contained fin rays and membrane from fishes (other Omobranchini feed on small invertebrates). *Plagiotremus* feeds on the scales and epidermis of fishes.

ETYMOLOGY.—From the Greek *hapto*, "join," and *genys*, "jaw," in reference to the suturing joint of the dentary bones of the Omobranchini; gender feminine.

TYPE-SPECIES.—*Haptogenys quadripora*, new species.

Haptogenys quadripora, new species

FIGURE 11

HOLOTYPE (only known specimen).—USNM 119658, male, 61.6 mm SL, 62.5 mm SL when

measured from midtip of snout; Koh Tao Island, Gulf of Thailand, lat. 10°03' N, 99°51' E; collected by H.M. Smith, 3 January 1927; specimen now cleared and stained.

DESCRIPTION.—Dorsal fin XII, 18; anal fin II, 20; pectoral fins 13-13; pelvic fins I,2-I,2; caudal fin (dorsal procurrent rays + segmented rays + ventral procurrent rays) 7+13+7; hypural 5 absent; two epurals; vertebrae 10+28; pleural ribs on vertebrae 3-10; epipleural ribs on vertebrae 1-12; upper jaw teeth I-22-I; lower jaw teeth I-26-I.

Proportions as percent SL: snout tip to gill opening 21.0, fleshy interorbital width 7.3, upper jaw length 6.2, gill opening depth 7.6, body depth at anal fin origin 16.6, third dorsal fin spine length (DS3) 10.2, DS5 9.9, DS12 7.0, first dorsal ray length (DR1) 10.4, DR5 11.7, DR18 7.5; longest pectoral fin ray 14.5, longest pelvic fin ray 14.8, shortest pelvic fin ray 6.3, longest caudal fin ray 23.6, last dorsal fin ray to midcaudal fin base 11.4, last anal fin ray to midcaudal fin base 9.8.

Dorsal fin origin slightly in advance of level of gill opening, notched slightly above last spine. Tips of most caudal fin rays exerted beyond margin of interradial membrane. Lateral line absent on body; no midpredorsal supratemporal sensory pore. Color pattern, if present, now almost completely faded. The only markings present are a spot on the anterior dorsal fin spines and another, larger spot on the antepenultimate dorsal fin spine.

ETYMOLOGY.—An adjective derived from the Latin *quadri*, "four," and the Greek *poros* "holes," and referring to the four interorbital sensory pores.

Genus *Laiphognathus* Smith

Laiphognathus J. L. B. Smith, 1955, p. 23 [type-species: *L. multimaculatus* J. L. B. Smith, 1955, by original designation].

DIAGNOSIS.—Cirri present on rims of anterior and posterior nostrils; dorsal and anal fins not attached to caudal fin; frontal bones separate in adults; 5 circumorbital bones; no kinethmoid; postcleithra normal; nasal bones separate; ventral hypural plate fused to urostylar centrum; 11 (rarely 10 or 12) dorsal fin spines; 13 (rarely 12 or 14) pectoral fin rays; 9-12 sensory pores in circumorbital series; 3 sensory pores in mandibular series; 14-20 sensory pores in supratemporal-preoperculo-mandibular

series; 3 interorbital sensory pores; posterior nostril present, normal; gill opening restricted to area above level of fourth from dorsalmost pectoral fin ray; shortest pelvic fin ray more than half length of longest.

RELATIONSHIPS.—The presence of cirri and the high number of pores in the circumorbital and supratemporal-preoperculo-mandibular series distinguish *Laiphognathus* from the other *Omobranchini*. These characters appear to be either specializations imposed on a basically *Ombranchus*-like form or the characters are primitive for the tribe. In the latter case, loss of cirri and decrease in the number of pores would be almost all that would be necessary to derive *Ombranchus* from *Laiphognathus*. However, the fusion of the ventral hypural plate to the urostylar centrum of *Laiphognathus* is a specialization not found in *Ombranchus*.

Laiphognathus multimaculatus Smith

FIGURE 12

Laiphognathus multimaculatus J. L. B. Smith, 1955, p. 24 [Bazaruto Island, Mozambique, RU 237].

New records of this species have not been reported in the literature since the original description, despite the fact that it is relatively common in collections and widely distributed geographically (Figure 4).

Secondary sexual dimorphism is exhibited in this species by a relative increase in the size of the nasal cirri of males. Males also have a dark spot on the venter and an elongate dark spot on the underside of the lower jaw that are not present in females, which have an immaculate venter and some small, round, dark spots anteriorly on the underside of the jaw.

The cirri on the labial flap at the corner of the mouth are poorly developed in small specimens and are readily overlooked.

Fin ray and vertebral counts of specimens from the various localities indicate a somewhat clinal shift in both an easterly and westerly direction from the Gulf of Thailand (Tables 1 and 2). Other population differences were also noted. In all but the Ceylonese specimens there are two cirri on the rims of each anterior and posterior nostril, with one and three cirri as rare variants. All seven of

the Ceylonese specimens have three cirri on each nostril. In the Ceylonese specimens the supratemporal-preoperculo-mandibular sensory pore count is 17–20, in the other specimens 14–15. The difference in pore counts occurs in the midpredorsal supratemporal canal position. At this position the canal gives rise to an anteriorly extending tube that opens by several pores in the Ceylonese specimens, but by only one or two pores in the other specimens. Cirri and pore differences are not correlated with the sizes of the specimens.

MATERIAL EXAMINED.—Tanzania: Pemba, RU uncataloged (25.8). Mozambique: Bazaruto Island, RU 237 (39.4, holotype of *Laiphognathus multimaculatus*); Inhaca Island, RU 1097 (5: 22.8–31.1), RU 1100 (24.5). Ceylon: Trincomalee, USNM 205857 (6: 14.6–23.7), USNM 205947 (24.0). Gulf of Thailand: Goh Samet Island, CAS GVF2185 (2: 21.6–21.9), CAS GVF2180 (22.9); Koh Kroi Island, CAS GVF2183 (21.1); Goh Maprao Island, CAS GVF2186 (2: 23.2–27.3); Goh Tao Island, CAS GVF1535 (20.6); Goh Raed Island, CAS GVF2651 (2: both 24.7); Goh Kram Island, CAS SU62088 (3: 13.9–25.7, including one specimen cleared and stained). Borneo: Palau Gaya, Darvel Bay, USNM 201461 (25.2). Solomon Islands: Florida Island, USNM 198962 (20.3).

Genus *Ombranchus* Ehrenberg

Ombranchus Ehrenberg, in Cuvier and Valenciennes, 1836, p. 287 [first appearance in synonymy, subsequently made available by Swainson, 1839, p. 274; type-species: *O. fasciolatus* Ehrenberg, in Cuvier and Valenciennes, 1836, by monotypy].

Graviceps Fowler, 1903, p. 170 [type-species: *Petroscirtes elegans* Steindachner, 1877, by original designation].

Cyneichthys Ogilby, 1910, p. 55 [type-species: *Blennechis anolius* Valenciennes, in Cuvier and Valenciennes, 1836, by original designation, in parentheses, and monotypy].

Poroalticus Fowler, 1931, p. 403 [type-species: *P. sewalli* Fowler, 1931, by monotypy].

Pauloscirtes Whitley, 1935, p. 351 [type-species: *Petroscirtes obliquus* Garman, 1903, by original designation].

Cruantius J. L. B. Smith, 1959, p. 234 [type-species: *Ombranchus dealmeida* J. L. B. Smith, 1949, by original designation].

DIAGNOSIS.—No cirri on head; dorsal and anal fins free or attached to caudal fin; frontal bones separate in adults; 4 or 5 circumorbital bones; no kinethmoid; postcleithra normal; ventral hypural plate antegenous; 11–14 dorsal fin spines, 12–14 (usually

13) pectoral fin rays; nasal bones separate; 7-8 (9 in exceptional individuals) sensory pores in circumorbital series; 3 sensory pores in mandibular series; 13 sensory pores in supratemporal-preoperculomandibular series; 2-4 interorbital sensory pores (4 in exceptional specimens only); posterior nostril present, normal; gill opening restricted to area above level of sixth from dorsalmost pectoral fin ray; shortest pelvic fin ray more than half length of longest.

Some species of *Omobranchus* have a thin, fleshy occipital crest, which is absent in all other genera of the Omobranchini. In those species with a crest, that of males is relatively larger than that of females.

RELATIONSHIP.—See relationships under *Parenchelyurus*.

REMARKS.—In the original description, Fowler (1903) compared *Graviceps* only with *Aspidontus* Quoy and Gaimard (tribe Nemophini). The only character Fowler gave to distinguish *Graviceps* was the presence of a short blunt snout, a character found in most blenniids, including *Omobranchus*.

There is some question as to what taxonomic rank Ogilby (1910) was intending for his new name *Cyneichthys*. The type-species, *anolius*, is referred to *Petroskirtes* (sic) in the discussion of the various species. At the end of the discussion Ogilby presented a key to the subdivisions of *Petroskirtes* (sic). Two type fonts are used for the scientific names in the key: caps and small caps and italics in parentheses. The italicized names appear in key couplets under the names in caps and small caps and are obviously meant to be subdivisions within these names. "*Cyneichthys*; nom. nov." appears in italics and in parentheses in a key couplet under *Petroskirtes*, in caps and small caps. All the names listed by Ogilby must be considered as generic group names. Of these, only *Enchelyurus* and *Cyneichthys* are referable to the Omobranchini. The characters Ogilby used to distinguish *Cyneichthys* were the presence of a fleshy occipital crest and some filamentous soft dorsal fin rays. A crest is present in several species of *Omobranchus*, but filamentous soft dorsal rays appear to be restricted to *O. anolius*. Other species of *Omobranchus*, particularly males, may have the tips of the dorsal rays extending slightly beyond the margin of the interradial membrane, and males of one species have the dorsal fin spines filamentous. I do not consider

that the filamentous dorsal rays of *O. anolius* merit generic recognition.

In the original description *Poroalticus* was described by Fowler from the Caribbean and compared only with *Blennius* Linnaeus and *Hypleurochilus* Gill (both tribe Blenniini). Fowler did not recognize that his type-species, *P. sewalli*, was the same as the Indo-West Pacific species *O. punctatus* (see Springer, 1963, where the species is referred to as *O. japonicus*).

In the original description *Pauloscirtes* was compared with *Omobranchus*, *Graviceps*, and *Cyneichthys* (and some genera of the Nemophini). It was differentiated from *Omobranchus* in supposedly having larger canines, but no indication was given as to the actual size of the canines or what species of *Omobranchus* were being used for comparison. The relative size of the canines is quite variable in *Omobranchus* species and I do not consider this character alone as sufficient for generic recognition. *Graviceps* supposedly had about 30 teeth in each jaw as opposed to 18 in *Pauloscirtes*. My counts indicate that the teeth range from 17 to 28 in each jaw (depending on standard length) in the type-species of *Graviceps*, so the difference reported by Whitley probably is not valid. Although number of jaw teeth are of specific or generic importance in some genera of Omobranchini (see Figures 2 and 3), characters other than slight differences in number of teeth are distinctive of these genera. The type-species of *Pauloscirtes* shows no such important differences when compared with other *Omobranchus*. The crest and filamentous rays of *Cyneichthys* were used as the basis for distinguishing that genus from *Pauloscirtes*. The characters of *Cyneichthys* have been discussed above.

In the original description *Cruantus* was compared with *Omobranchus*, from which it presumably differed in having a sloping snout and the gill opening extending to below the upper edge of the pectoral fin base. Snout shape is variable in *Omobranchus*, as is depth of the gill opening, which may be slightly greater in the type-species of *Cruantus* than in other species of *Omobranchus*. The type-species of *Cruantus*, *C. dealmeida* (and its senior synonyms), does differ from all other species of *Omobranchus* that I have examined in having 4 circumorbital bones rather than 5. This difference and that of the gill opening depth may

merit subgeneric recognition when the genus is revised.

Omobranchus is the most speciose genus of the Omobranchini. I estimate that there are 15–20 species in the genus. The species are all Indo-West Pacific in distribution, except that one species, *O. punctatus* (Valenciennes), has a disjunct distribution that includes the Caribbean, probably as the result of man's activity. No other species of fish is known to have a similar distribution.

Omox, new genus

DIAGNOSIS.—No cirri on head; dorsal and anal fins not attached to caudal fin; frontal bones separate in adults; 4 circumorbital bones, kinethmoid present; postcleithra normal; ventral hypural plate autogenous; 12 dorsal fin spines; 13 pectoral fin rays; nasal bones separate; 8 (rarely 7 unilaterally) sensory pores in circumorbital series; 3 sensory pores in mandibular series; 13 sensory pores in supratemporal-preoperculo-mandibular series; 4 (rarely 3) interorbital sensory pores; posterior nostril present, normal; gill opening extending ventrally to opposite level of 8th to 11th from dorsalmost pectoral fin ray; shortest pelvic fin ray more than half length of longest.

RELATIONSHIPS.—*Omox* appears to be most similar to *Omobranchus* but differs from that genus primarily in the number and distribution of its sensory pores, larger gill opening, and presence of a kinethmoid. In these characters it most closely resembles *Haptogenys* but differs from that genus in having the nasal bones relatively tubelike and completely separate and in having terminal jaws.

Mature males of *Omox* have some of the caudal fin rays much elongated, a condition known only for *Omox* and some species of *Omobranchus* among the Omobranchini.

ETYMOLOGY.—The name *Omox* is an arbitrary combination of letters; gender masculine.

TYPE-SPECIES.—*Omox biporos*, new species.

Omox biporos, new species

FIGURES 13, 14

HOLOTYPE.—CAS 13520, male, 36.9 mm SL, shore of southeast bay of Goh Mak Island, southwest of Trat Bay, east coast of Gulf of Thailand, lat.

11°48'15" N, 102°29'08" E; collected by H.A. Fehlmann, et al., 30 October 1957.

PARATYPES.—CAS 13657, 2 specimens, 32.0–35.4 mm SL, and CAS 13656, 37.0 mm SL, cleared and stained, all three with same data as holotype; USNM 205698, 2 specimens, 30.6–45.8 mm SL, Madang Harbor, New Guinea, mangroves behind Nui Island; CAS 13521, 23.4 mm SL, Garayamo Island, Palau Islands.

DESCRIPTION (characters for holotype in parentheses).—Dorsal fin XII, 15–17 (16); anal fin II, 17–19 (19); pectoral fins 13; pelvic fins I, 2; caudal fin (dorsal procurrent rays-segmented rays-ventral procurrent rays) 5 to 6–13–5 to 6 (6–13–6); vertebrae 10+ 24–26 (25); pleural ribs on vertebrae 3–10; epipleural ribs on vertebrae 1–12 or 13 (13); upper jaw teeth I–20–I to I–25–I (I–22–I); lower jaw teeth I–19–I to I–26–I (I–22–I).

Dorsal fin origin slightly in advance of level of gill opening, notched slightly above last one or two spines; tips of caudal fin rays and posterior dorsal fin rays filamentous in mature males only; lateral line absent on body; midpredorsal supratemporal pore present in only one of seven available specimens. (For other characters see generic diagnosis above.)

PRESERVED COLOR PATTERN.—*Males:* Pattern variable; in specimens with most-developed pattern, 11 dark, vertical bands present on body separated by broader, paler interspaces; bands darker at mid-level; head with three or four dusky bands separated by paler interspaces; dorsal and anal fins generally dusky; dark spot or two or three dusky stripes present at anterior end of dorsal fin; tips of anal rays pale (swollen in mature males); caudal fin dusky centrally; dark mark basally on pectoral fin separated by pale area from dusky fleshy pectoral fin base; pelvic fins dusky. In males with least-developed pattern the bands of the head and body are fewer in number and appear only as dark spots midlaterally on the body. *Females:* Similar to males, but dusky bands on body as broad or broader than pale interspaces; bands more distinctly developed than in males; no distinct marks on dorsal, pectoral, and caudal fins.

ETYMOLOGY.—An adjective derived from the Latin *bi* and the Greek *poros*, meaning two-holed, in reference to the two sensory pores that appear, one on each side, just anterior to the dorsal fin origin.

***Parenchelyurus*, new genus**

DIAGNOSIS.—No cirri on head; dorsal and anal fins not attached to caudal fin; frontal bones separate in adults; 3–4 circumorbital bones; no kinethmoid; postcleithra normal; ventral hypural plate autogenous; 11–13 dorsal fin spines; 13 (rarely 14) pectoral fin rays; nasal bones separate; 6–8 (usually 7) sensory pores in circumorbital series; 3 sensory pores in mandibular series; 11–12 pores in supratemporal-preoperculomandibular series; 3 interorbital sensory pores; posterior nostril present, normal; gill opening restricted to area above level of fifth from dorsalmost pectoral fin ray; shortest pelvic fin ray more than half length of longest.

RELATIONSHIP.—*Parenchelyurus* is most similar to *Omobranchus* (and vice versa), although one of the two species, *P. hepburni*, has been repeatedly referred to *Enchelyurus*, probably because of its overall dark color and small size. The other species, *P. hyena*, was placed in *Graviceps* (= *Omobranchus*) by Whitley (1953). *Parenchelyurus* differs from *Omobranchus* primarily in having one external pore at the anterior end of the dentary as opposed to two pores in *Omobranchus*. The single-pored condition is found also in *Enchelyurus* and *Haptogenys*, but these genera exhibit many characters not found in *Parenchelyurus*. *Parenchelyurus* has three or four circumorbital bones, and thus differs from all but one species of *Omobranchus*—*O. kranjiensis* (Herre), which has four circumorbital bones.

ETYMOLOGY.—Derived from the Greek *par* meaning near to, and *Enchelyurus*, a genus of Omobranchini; gender masculine.

TYPE-SPECIES.—*Enchelyurus hepburni* Snyder, 1908.

***Parenchelyurus hepburni* (Snyder)**

FIGURE 15

Enchelyurus hepburni Snyder, 1908, p. 110 [Okinawa, USNM 62247].

?*Hypoleurochilus samoensis* Seale, 1935, p. 374 [Pago Pago, Samoa; CAS 5515].

Enchelyurus caeruleopunctatus Herre, 1939, p. 340 [Nasugbu, Batangas Province, Luzon, Philippine Islands, CAS SU 33023].

REMARKS.—In the original description, *Enchelyurus caeruleopunctatus* was compared only with

Enchelyurus flavipes, which is a true *Enchelyurus*. The holotype of *E. caeruleopunctatus* is a male *P. hepburni*. In *P. hepburni*, spotting on the body and fins is found only in males. The spots, which are blue in life, fade rapidly in preservation and frequently are completely lost.

The types of *Hypoleurochilus samoensis* are both postlarvae, as indicated by the fact that each has a spine at the lower angle of the preopercle. Based on fin formulae they could possibly be a species of *Omobranchus*. The pores, which might give a clue, are obscured, but the only Omobranchini so far known from Samoa are *Parenchelyurus hepburni* and *Enchelyurus ater*. The dorsal fin spine count of XII and pectoral fin ray count of 13 in both the holotype and paratype of *H. samoensis* exclude their identification with *Enchelyurus*, but not *Parenchelyurus*.

A specimen of *P. hepburni* as small as 11.0 mm SL did not bear the strong preopercular spines as found in the postlarval types of *H. samoensis*, 12.3–12.6 mm SL. This may indicate that there is a reduction in SL at the time of transformation. Unmetamorphosed postlarvae of the salariine genus *Ophioblennius* Gill frequently are larger than metamorphosed individuals (Springer, 1962).

MATERIAL EXAMINED.—Okinawa: CAS SU21112 (2: 21.9–30.7); Naha, USNM 74554 (3: 21.0–32.1), USNM 62247 (34.9, holotype of *Enchelyurus hepburni*). Philippine Islands: Oriental Negros, Nagbak, CAS GVF1618 (28.2); Oriental Negros, Duamaguete, CAS SU38220 (35.8); Batangas, Nasugbu, CAS SU33023 (30.5, holotype of *Enchelyurus caeruleopunctatus*), CAS SU33024 (27.5); Oriental Negros, Siaton, CAS GVF2671 (3: 11.0–24.8). Gulf of Thailand: Hinson Chalam, CAS GVF1466 (2: 29.5–30.8), CAS SU6295 (32.5); Goh Samet Island, CAS GVF1572 (23.6), lat. 08°26'06" N, 100°45'06" E, CAS GVF2037 (7: 23.4–32.0). Marshall Islands: Eniwetok, USNM 204931 (24.2). Caroline Islands: Ponape, USNM 65883 (28.3). New Hebrides: AMS I.14320 (2: 29.6–32.0); Wala Island, CAS SU24068 (27.7). Australia: Great Barrier Reef, One Tree Island, USNM 204083 (31.0), USNM 204081 (5: 0–33.5, including one specimen cleared and stained). Solomon Islands: Guadalcanal, BPBM 8143 (16.3), BPBM 8144 (3: 24.7–28.8). Fiji Islands: Makalawa, BPBM 8145 (7: 21.6–32.7). Samoa: Apia, USNM 164989 (23.6), USNM 164990 (25.7); Pago Pago, CAS 5515 and

CAS 5516 (2: 12.3–12.6, includes holotype of *Hypleurochilus samoensis*; holotype and paratype in same bottle, not separated).¹

***Parenchelyurus hyena* (Whitley)**

FIGURE 16

Graviceps punctatus hyena Whitley, 1953, p. 137 [Palm Islands, Queensland: FBQ 1957].

¹ While this paper was in press I received one specimen of *P. hepburni* (USNM 207864) collected at the island of Mauritius by Dr. T. H. Fraser. This specimen represents the first record of the species from the Indian Ocean.

I have not seen the holotype of *G. p. hyena*, but the illustration and description given by Whitley are sufficient for recognition of the species. The species is apparently rare in museum collections but of widespread distribution (Figure 3). The series of dark blotches on the head behind the eye, continuing on the body, is diagnostic of the species.

MATERIAL EXAMINED.—Philippine Islands: Canino Island (near Daet), USNM 99373 (30;0). New Guinea: Port Moresby, USNM 205700 (31.5). Australia: Great Barrier Reef, Little Hope Island, ANSP 109702 (3: 24.3–32.4), including one specimen cleared and stained).

List of Nominal Species, Tribe Omobranchini

Listed below are the nominal species, and subspecies, of the tribe Omobranchini. Included are the identification that I currently recognize for each species, the basis for the identification (A=holotype, lectotype, or syntypes seen; B=literature or other information), and the depository of the primary types (holotype, lectotype, or syntypes). Where "cotypes" are listed no other type material is known to me, and it is not known whether the cotypes represent syntypes or paratypes. The notation "cotypes" is usually found only in the bottle containing the specimens and is not found in the original description where the number of specimens is not indicated. The catalog numbers for the primary type material are given if known. *Omobranchus* is treated here on the basis of work in progress. Some species are listed merely as nominal species, others are placed in synonymy based on unpublished data.

<i>Species, author, and reference</i>	<i>Current identification</i>	<i>Basis</i>	<i>Depositories and catalog numbers of primary types</i>
<i>Graviceps alexanderi</i> Whitley, 1945, p. 33	<i>Omobranchus alexanderi</i>	B	WAM P.671
<i>Petroscirtes altivelis</i> Steindachner, 1863, p. 1191	<i>Omobranchus anolius</i>	A	NMV 71774 (3 syntypes)
<i>Enchelyurus analis</i> H. M. Smith, 1934, p. 318	<i>Enchelyurus kraussi</i>	B	KUMF 0175
<i>Graviceps angelus</i> Whitley, 1959, p. 320	<i>Omobranchus angelus</i>	A	AMS IB3995
<i>Petroscirtes anolis</i> Günther, 1861, p. 238 [misspelling of <i>anolius</i>]	<i>Omobranchus anolius</i>	A	MNH A-1832
<i>Blennechis anolius</i> Valenciennes, in Cuvier and Valenciennes, 1836, p. 288	<i>Enchelyurus ater</i>	A	BMNH 1873.8.1.35
<i>Petroscirtes ater</i> Günther, 1877, p. 199	<i>Omobranchus aurosplendidus</i>	B	Type lost
<i>Blennius auro-splendidus</i> Richardson, 1846, p. 265	<i>Omobranchus banditus</i>	B	RU 232
<i>Omobranchus banditus</i> J. L. B. Smith, 1959, p. 232	<i>Omobranchus bhattacharyae</i>	B	ZSI F8764/1
<i>Petroscirtes bhattacharyae</i> Chaudhuri, 1916, p. 107	<i>Omox biporos</i>	A	CAS 13520
<i>Omox biporos</i> Springer	<i>Omobranchus bipunctatus</i>	B	Type lost
<i>Petroscirtes bipunctatus</i> Day, 1878, p. 327	<i>Enchelyurus brunneolus</i>	A	USNM 50718
<i>Aspidontus brunneolus</i> Jenkins, 1903, p. 510	<i>Parenchelyurus hepburni</i>	A	CAS SU33023
<i>Enchelyurus caeruleo-punctatus</i> Herre, 1939, p. 340	<i>Omobranchus cristatus</i>	A	BMNH 1954.4.26.68
<i>Omobranchus cristatus</i> Fraser-Brunner, 1951, p. 214	<i>Omobranchus anolius</i>	A	AMS MM1037 (4 "cotypes")
<i>Petroscirtes cristiceps</i> Macleay, 1881, p. 9	<i>Omobranchus darwini</i>	A	AMS IA4298
<i>Graviceps darwini</i> Whitley, 1958, p. 47	<i>Omobranchus punctatus</i>	A	CAS SU7070 (2 syntypes)
<i>Aspidontus dason</i> Jordan and Snyder, 1902, p. 456	<i>Omobranchus kranjiensis</i>	A	RU 233
<i>Omobranchus dealmeida</i> J. L. B. Smith, 1949, p. 104	<i>Omobranchus decipiens</i>	A	QMB I1352
<i>Salarias decipiens</i> DeVis, 1884b, p. 694	<i>Omobranchus punctatus</i>	A	BMNH 1860.7.20.99–100 (2 syntypes representing 2 species, for both of which there are older names)
<i>Petroscirtes dispar</i> Günther, 1861, p. 232	<i>Omobranchus fasciolatoceps</i>		

Species, author, and reference	Current identification	Basis	Depositories and catalog numbers of primary types
<i>Petroscirtes dispar</i> Fowler, 1937, p. 258 [junior primary homonym of <i>Petroscirtes dispar</i> Gunther]	<i>Omobranchus</i> sp.	A	ANSP 68255
<i>Enchelyurus edmonsoni</i> Fowler, 1923, p. 389	<i>Enchelyurus brunneolus</i>	A	BPBM 3401
<i>Petroscirtes elegans</i> Steindachner, 1876, p. 217	<i>Omobranchus elegans</i>	B	Type lost
<i>Petroscirtes elongatus</i> W. Peters, 1855a, p. 249; 1855b, p. 440	<i>Omobranchus elongatus</i>	A	ZMB 1940 (2 syntypes)
<i>Blennius fasciolatoceps</i> Richardson, 1846, p. 265	<i>Omobranchus fasciolatoceps</i>	B	Type lost
<i>Blennechis fasciolatus</i> Valenciennes, in Cuvier and Valenciennes, 1836, p. 287	<i>Omobranchus fasciolatus</i>	B	Type lost
<i>Petroscirtes fasciolatus</i> Macleay, 1881, p. 8 [secondary junior homonym of <i>O. fasciolatus</i> (Valenciennes)]	<i>Omobranchus macleayi</i>	A	AMS MM1038 (10 "cotypes")
<i>Petroscirtes felicianae</i> Herre, 1942, p. 112	<i>Omobranchus kranjiensis</i>	A	CAS SU36671
<i>Petroscirtes ferox</i> Herre, 1927, p. 277	<i>Omobranchus ferox</i>	B	Type lost
<i>Enchelyurus flavipes</i> W. Peters, 1868, p. 268	<i>Enchelyurus flavipes</i>	A	ZMB 5193 (2 syntypes)
<i>Enchelyurus flavipes</i> var. <i>nigerrima</i> Weber, 1913, p. 545	<i>Enchelyurus flavipes</i>	A	RMNH 20813
<i>Salarias furcatus</i> DeVis, 1884b, p. 696	<i>Omobranchus furcatus</i>	A	QMB 1114
<i>Salarias furtivus</i> DeVis, 1886, p. 60	<i>Omobranchus</i> spp.	A	AMS 1383-384 (5 "cotypes" representing two species)
<i>Salarias galeatus</i> DeVis, 1884a, p. 147	<i>Omobranchus anolius</i>	A	AMS 1470 ("cotype")
<i>Petroscirtes germaini</i> Sauvage, 1883, p. 158	<i>Omobranchus germaini</i>	A	MNH A4891
<i>Petroscirtes guttatus</i> Macleay, 1881, p. 9	<i>Omobranchus anolius</i>	A	AMS MM1037 (2 syntypes)
<i>Salarias helenae</i> DeVis, 1884b, p. 697	<i>Omobranchus punctatus</i>	A	AMS 112694 and MM11361 (2 "cotypes")
<i>Enchelyurus hepburni</i> Snyder, 1908, p. 110	<i>Parenchelyurus hepburni</i>	A	USNM 62247
<i>Chasmodes herklotsi</i> Herre, 1935, p. 228	<i>Omobranchus fasciolatoceps</i>	A	CAS SU30970
<i>Petroscirtes japonicus</i> Bleeker, 1869, p. 246	<i>Omobranchus punctatus?</i>	B	Type lost
<i>Omobranchus japonicus scalatus</i> J. L. B. Smith, 1959, p. 232	<i>Omobranchus punctatus</i>	B	RU 239
<i>Petroscirtes kallosoma</i> Bleeker, 1858, p. 227	<i>Omobranchus kallosoma</i>	A	RMNH 4452
<i>Petroscirtes kochi</i> Weber, 1908, p. 263	<i>Omobranchus punctatus</i>	A	ZMA 109.102 (2 syntypes)
<i>Petroscirtes kranjiensis</i> Herre, 1940, p. 25	<i>Omobranchus kranjiensis</i>	A	CAS SU 33007
<i>Petroscirtes kraussi</i> Klunzinger, 1871, p. 497	<i>Enchelyurus kraussi</i>	A	ZMB 8029 (lectotype)
<i>Petroscirtes lineolatus</i> Kner, 1868a, p. 29; 1868b, p. 331	<i>Omobranchus lineolatus</i>	B	Type lost
<i>Petroscirtes lineo-punctatus</i> Sauvage, 1880, p. 216	<i>Omobranchus elegans</i>	A	MNH 5120
<i>Petroscirtes lini</i> Herre, 1934, p. 292	<i>Omobranchus aurosplendidus</i>	A	CAS SU29088
<i>Hyleurochilus loxias</i> Jordan and Seale, 1905, p. 802	<i>Omobranchus loxias</i>	A	USNM 51952
<i>Petroscirtes loxozonus</i> Jordan and Starks, 1906, p. 705	<i>Omobranchus loxozonus</i>	A	USNM 53275
<i>Petroscirtes macleayi</i> Ogilby, 1887, p. 38 [replacement name for <i>Petroscirtes fasciolatus</i> Macleay]	<i>Omobranchus macleayi</i>		
<i>Petroscirtes masyae</i> H. M. Smith, 1934, p. 316	<i>Omobranchus punctatus</i>	B	KUMF 0176
<i>Petroscirtes mekranensis</i> Regan, 1905, p. 328	<i>Omobranchus mekranensis</i>	A	BMNH 1904.5.25.94
<i>Laiphognathus multimaaculatus</i> , J. L. B. Smith, 1955, p. 24	<i>Laiphognathus multimaaculatus</i>	A	RU 237
<i>Petroscirtes obliquus</i> Garman, 1903, p. 237	<i>Omobranchus obliquus</i>	B	MCZ 28297
<i>Blennius pardalis</i> Castelnau, 1875, p. 26 [possibly belongs in the Blenniini]	? <i>Omobranchus</i>	B	Type lost
<i>Petroscirtes petersi</i> Kossmann and Räuber, 1877, p. 21	<i>Enchelyurus petersi</i>	B	Type lost
<i>Blennechis punctatus</i> Valenciennes, in Cuvier and Valenciennes, 1836, p. 286	<i>Omobranchus punctatus</i>	A	MNH 716
<i>Graviceps punctatus hyena</i> Whitley, 1953, p. 137	<i>Parenchelyurus hyena</i>	B	FBQ 1957
<i>Haptogenys quadripora</i> Springer	<i>Haptogenys quadripora</i>	A	USNM 119658

<i>Species, author, and reference</i>	<i>Current identification</i>	<i>Basis</i>	<i>Depositories and catalog numbers of primary types</i>
<i>Petrosirtes rotundiceps</i> Macleay, 1881, p. 9	<i>Omobranchus rotundiceps</i>	A	AMS MM1041
<i>Hypleurochilus samoensis</i> Seale, 1935, p. 374	? <i>Pavenchelyurus hepburni</i>	A	CAS 5515
<i>Petrosirtes semilineatus</i> Kner, 1868b, p. 333	<i>Omobranchus punctatus</i>	A	NMV 12561
<i>Poroaliticus sewalli</i> Fowler, 1931, p. 403	<i>Omobranchus punctatus</i>	A	ANSP 53318
<i>Salarias sindensis</i> Day, 1888, p. 263	<i>Omobranchus punctatus</i>	A	BMNH 1889.2.1.3616-18 (3 syntypes)
<i>Petrosirtes striatus</i> Jatzow and Lenz, 1898, p. 512 [junior primary homonym of <i>Petrosirtes striatus</i> Day (Nemophini)]	<i>Omobranchus</i>	B	Type lost
<i>Petrosirtes uekii</i> Katayama, 1941, p. 591	<i>Omobranchus fasciolatoceps</i>	B	Unable to locate
<i>Blennius unicornis</i> Castelnau, 1879, p. 384	<i>Omobranchus anolius</i>	B	Type lost
<i>Hypleurochilus vaillanti</i> Jordan and Seale, 1906, p. 420	<i>Enchelyurus ater</i>	A	USNM 51788
<i>Petrosirtes vinciguerrae</i> Borsieri, 1904, p. 211	<i>Omobranchus vinciguerrae</i>	B	MSNG 32051
<i>Petrosirtes waterousi</i> Herre, 1942, p. 112	<i>Omobranchus kranjiensis</i>	A	CAS SU36673
<i>Petrosirtes wilsoni</i> Macleay, 1885, p. 171	<i>Omobranchus anolius</i>	A	AMS MM1037A
<i>Aspidontus woodi</i> Gilchrist and Thompson, 1908, p. 105	<i>Omobranchus woodi</i>	A	SAM 9898
<i>Petrosirtes zebra</i> Bleeker, 1868, p. 279	<i>Omobranchus zebra</i>	A	RMNH 4454

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TABLE 1.—Frequency distributions for dorsal and anal fin-ray elements in the tribe Omobranchini (except Omobranchus).

Genus and Species	Dorsal Fin Spines						Dorsal Fin Rays										Total Dorsal Fin Elements						Total Anal Fin Elements																		
	6	7	8	9	10	11	12	13	15	16	17	18	19	20	21	22	23	24	25	26	27	27	28	29	30	31	32	33	34	35	19	20	21	22	23	24	25	26			
<u>Enchelyurus</u>																																									
<u>kraussi</u>																																									
Gulf of Aqaba	1	5	1												1	5	1								1	5	1											1	6		
Egypt	1	1	1												1	1	1								1	3												1	1	1	
Sudan	1	1													1	1									1	1												1	1		
Gulf of Aden	1	1	1												2	1								2	1												3	3			
Seychelles	2	7	1												3	4	3							2	7	1										4	6				
Aldabra	1														1	1								1	1													1	1		
Mentawai Islands	1	1													1	1								1	1													1	1		
Taiwan	2	4												1	4	1							2	4												3	3				
S. China Sea	3	3												2	1								2	1													3	3			
Philippines	1	2													2	1								2	1													1	1		
Seipan	3	2													2	2								2	2													2	2		
Guam	3	19	4											8	17	1							6	20												5	21				
Tomahu Island	1	2												1	2								1	2													1	1			
New Guinea	8	27	2											2	14	18	3						1	2												2	2				
E. Australia														2	14	18	3						1	19	17											2	27	8			
<u>ster</u>																																									
New Caledonia		1	1													2								1	1													1	1		
Fiji		1	1											1									1	1													1	1			
Tonga		1	1											1									1	1													1	1			
Samoa		1	35	3										14	25								11	19	9											17	21				
Maiao			4											1	4								1	4												1	3				
Tahiti			7											1	6								1	6												4	3				
Raroua			20	1										2	12	6	1						2	12	6	1									5	10	6				
Rapa		2	2											1	1	1	2						1	3												2	2				
<u>brunneolus</u>																																									
Hawaiian Islands	1	9	95	1									1	31	64	7							39	64	3										1	46	55	2			
<u>petersi</u>																																									
N. Red Sea				13												2	8	3																				3	8	2	
<u>flavipes</u>																																									
Singapore	25																						1	17	7											2	19	4			
Philippines	14	2																					3	12	1											4	9	3			
Makassar	1																						1													1	1				
<u>Haptogenys</u>																																									
<u>quadripora</u>																																									
						1						1												1														1			
<u>Laiphognathus</u>																																									
<u>multimaculatus</u>																																									
Tanzania							1								1											1													1		
Mozambique				6	1									4	3									3	4												1	5	1		
Ceylon				7									4	3									3	4												2	5				
Thailand				3	35	1						16	22										16	23											9	29					
Borneo																																							1		
Solomon Islands																1																							1		
<u>Omx</u>																																									
<u>biporos</u>																																									
Thailand						4																		3	1												1	3			
New Guinea						2					3	1												2													1	1			
Palau						1					1													1															1		
<u>Parenchelyurus</u>																																									
<u>hyena</u>																																									
						4	1						3	2											2	3											4	1			
<u>hepburni</u>																																									
					46	3							1	24	22	2																					3	17	27	2	

TABLE 5.—Relationship of number of upper and lower jaw teeth to standard length in certain species of Omobranchini. See also Figures 3 and 4.

Genus and Species	Regression equation Upper teeth vs SL	N	Correlation coefficient	Regression equation Lower teeth vs SL	N	Correlation coefficient
<u>Enchelyurus kraussi</u>	$Y = .3488 X + 17.1307$	98	.75	$Y = .3674 X + 17.7009$	95	.78
<u>Enchelyurus ater</u>	$Y = .3411 X + 18.1132$	49	.80	$Y = .3400 X + 19.0225$	48	.77
<u>Enchelyurus brunneolus</u>	$Y = .3773 X + 17.7815$	32	.82	$Y = .4748 X + 16.2715$	31	.87
<u>Enchelyurus petersi</u>	$Y = .3047 X + 17.0499$	12	.95	$Y = .2233 X + 19.4008$	11	.84
<u>Enchelyurus flavipes</u>	$Y = .2286 X + 19.2892$	37	.76	$Y = .2413 X + 19.5453$	36	.82
<u>Laiphognathus multimaculatus</u>	$Y = .2210 X + 12.6195$	53	.70	$Y = .3545 X + 11.3049$	51	.77
<u>Oxox biporos</u>	$Y = .1898 X + 15.3212$	7	.78	$Y = .2771 X + 12.1739$	7	.86
<u>Paranchelyurus hyena</u>	$Y = .2890 X + 11.4006$	5	.88	$Y = .4082 X + 9.9390$	5	.92
<u>Paranchelyurus hepburni</u>	$Y = .4125 X + 8.5054$	35	.83	$Y = .4869 X + 8.4646$	36	.82

TABLE 6.—F values for covariance comparisons of regression equations of upper and lower jaw teeth in certain species of Omobranchini (*, significant at 95 percent level; NS, not significant). See Table 5.

Compared Species	F values slopes	Degrees of freedom	F values heights	Degrees of freedom
<u>E. kraussi</u> X <u>E. ater</u>				
upper teeth	.02 NS	1/143	7.33*	1/144
lower teeth	.26 NS	1/139	4.21*	1/140
<u>E. kraussi</u> X <u>E. brunneolus</u>				
upper teeth	.13 NS	1/126	17.17*	1/127
lower teeth	1.96 NS	1/122	15.82*	1/123
<u>E. ater</u> X <u>E. brunneolus</u>				
upper teeth	.29 NS	1/77	4.22*	1/78
lower teeth	3.40 NS	1/75	4.18*	1/76
<u>E. petersi</u> X <u>E. flavipes</u>				
upper teeth	1.76 NS	1/45	3.69 NS	1/46
lower teeth	.11 NS	1/43	4.33*	1/44
<u>P. hepburni</u> X <u>P. hyena</u>				
upper teeth	.53 NS	1/36	1.68 NS	1/37
lower teeth	.15 NS	1/37	1.68 NS	1/38

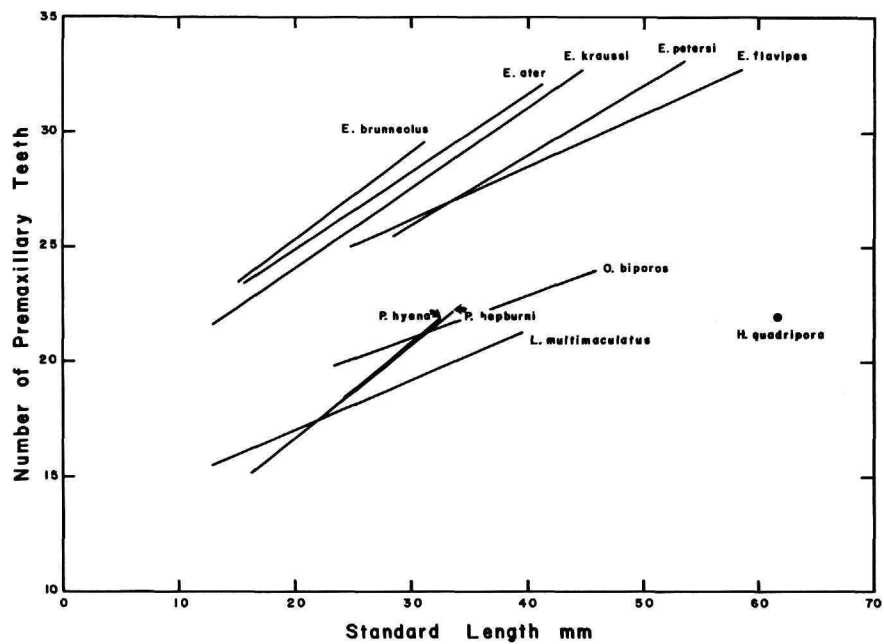


FIGURE 2.—Regression lines for number of upper jaw incisor teeth versus standard length for species of *Enchelyurus* (E.), *Haptogenys* (H.), *Laiphognathus* (L.), *Omx* (O.), and *Parenchelyurus* (P.). See also Tables 5 and 6.

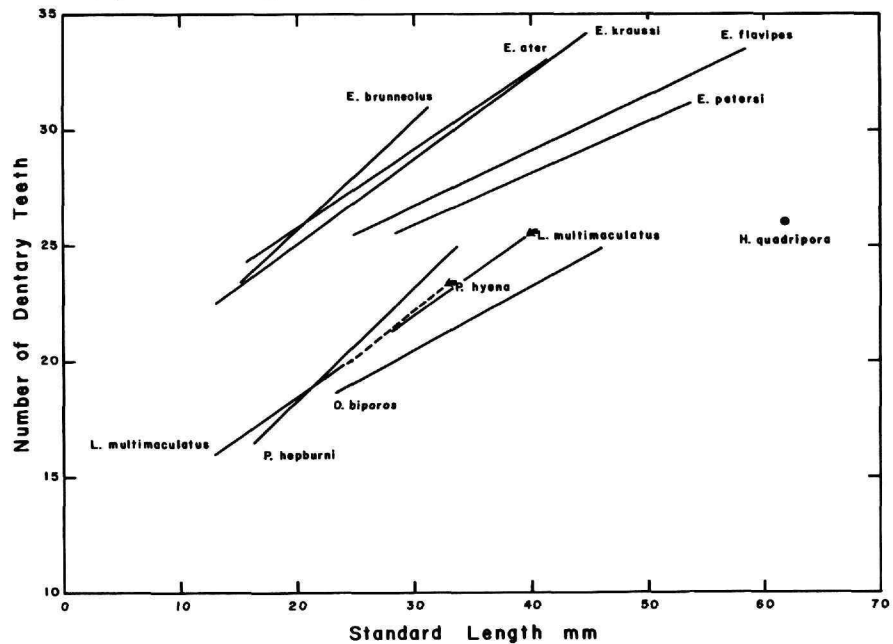


FIGURE 3.—Regression lines for number of lower jaw incisor teeth versus standard length for species of *Enchelyurus* (E.), *Haptogenys* (H.), *Laiphognathus* (L.), *Omx* (O.), and *Parenchelyurus* (P.). See also Tables 5 and 6.

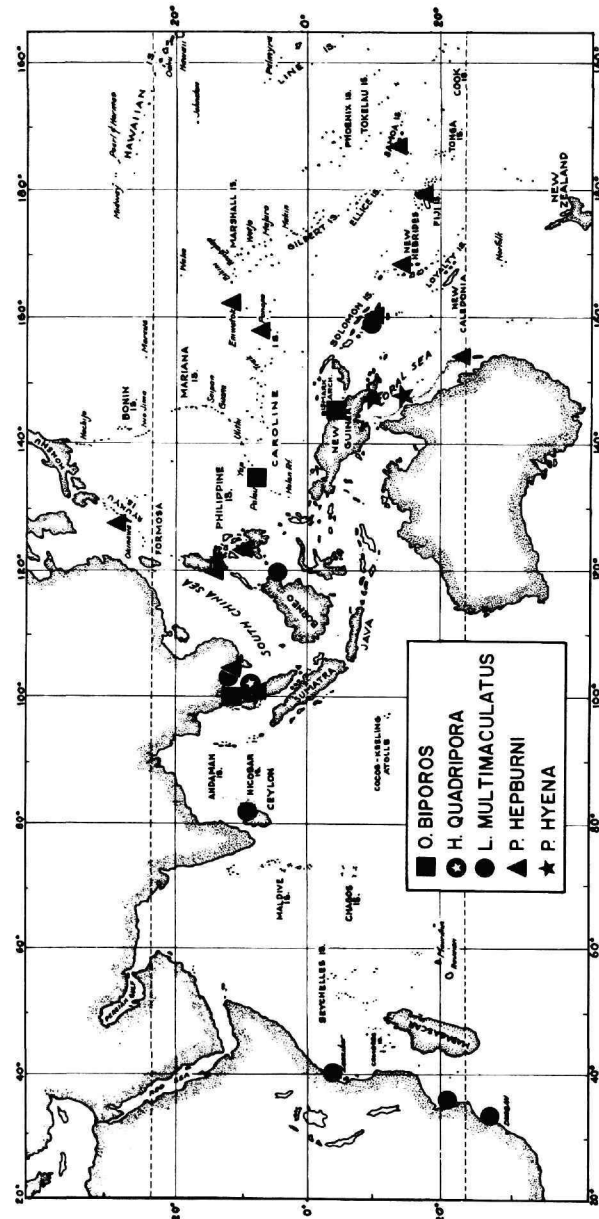


FIGURE 4.—Distribution of the species of *Haptogenys* (H.), *Lalphognathus* (L.), *Omxo* (O.), and *Paranchelyurus* (P.). For additional record of *Paranchelyurus hepburni* from Mauritius, Indian Ocean, see note, page 13.

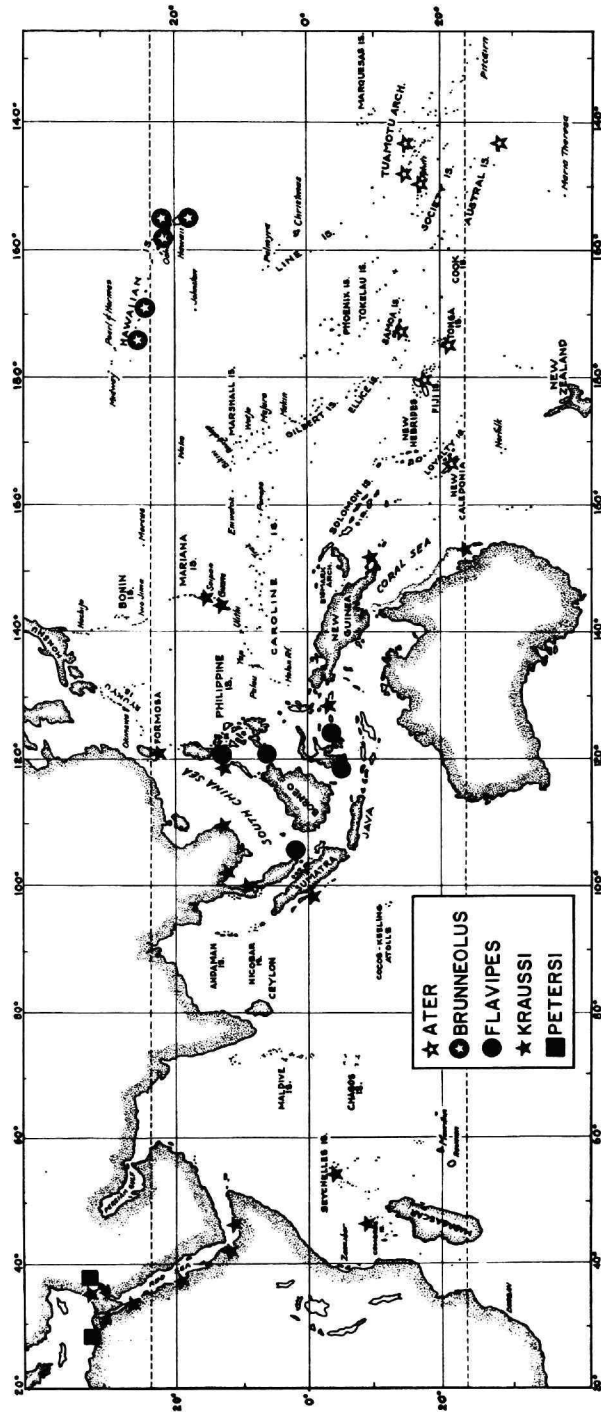
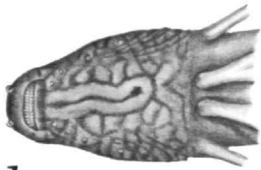
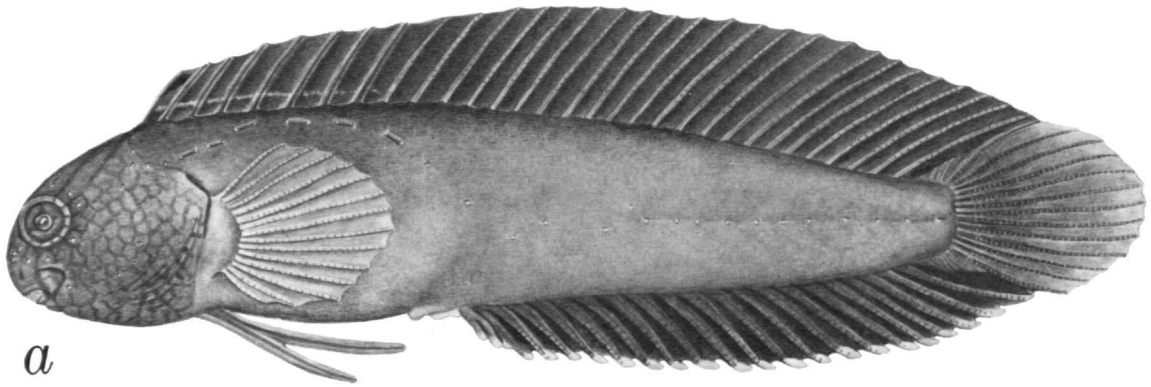


FIGURE 5.—Distribution of the species of *Enchelyurus*.

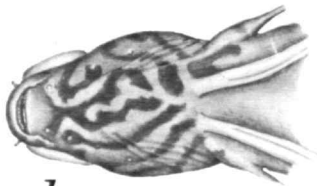


b

FIGURE 6.—*Enchelyurus ater*, CAS 24691, male, 41.2 mm SL, New Caledonia. *a*, Lateral view; *b*, underside of head. (Drawn by J. R. Schroeder.)

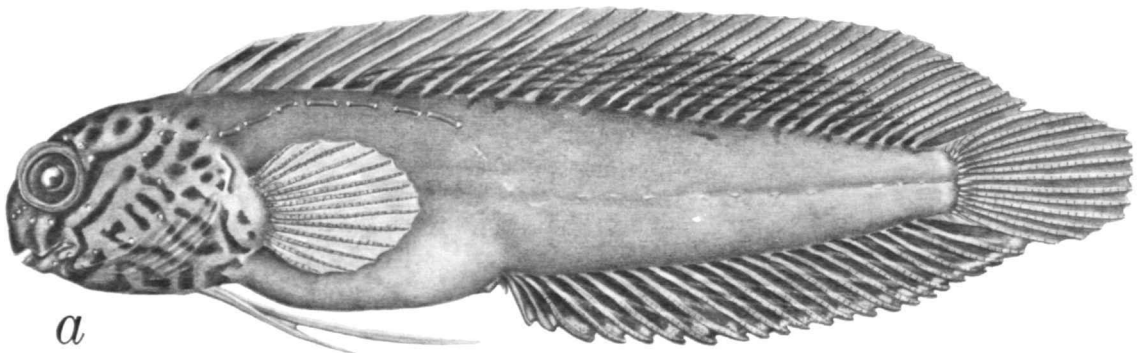


a



b

FIGURE 7.—*Enchelyurus brunneolus*, CAS GVF station 33, male, 30.2 mm SL, Hawaiian Islands. *a*, Lateral view; *b*, underside of head. (Drawn by J. R. Schroeder.)



a

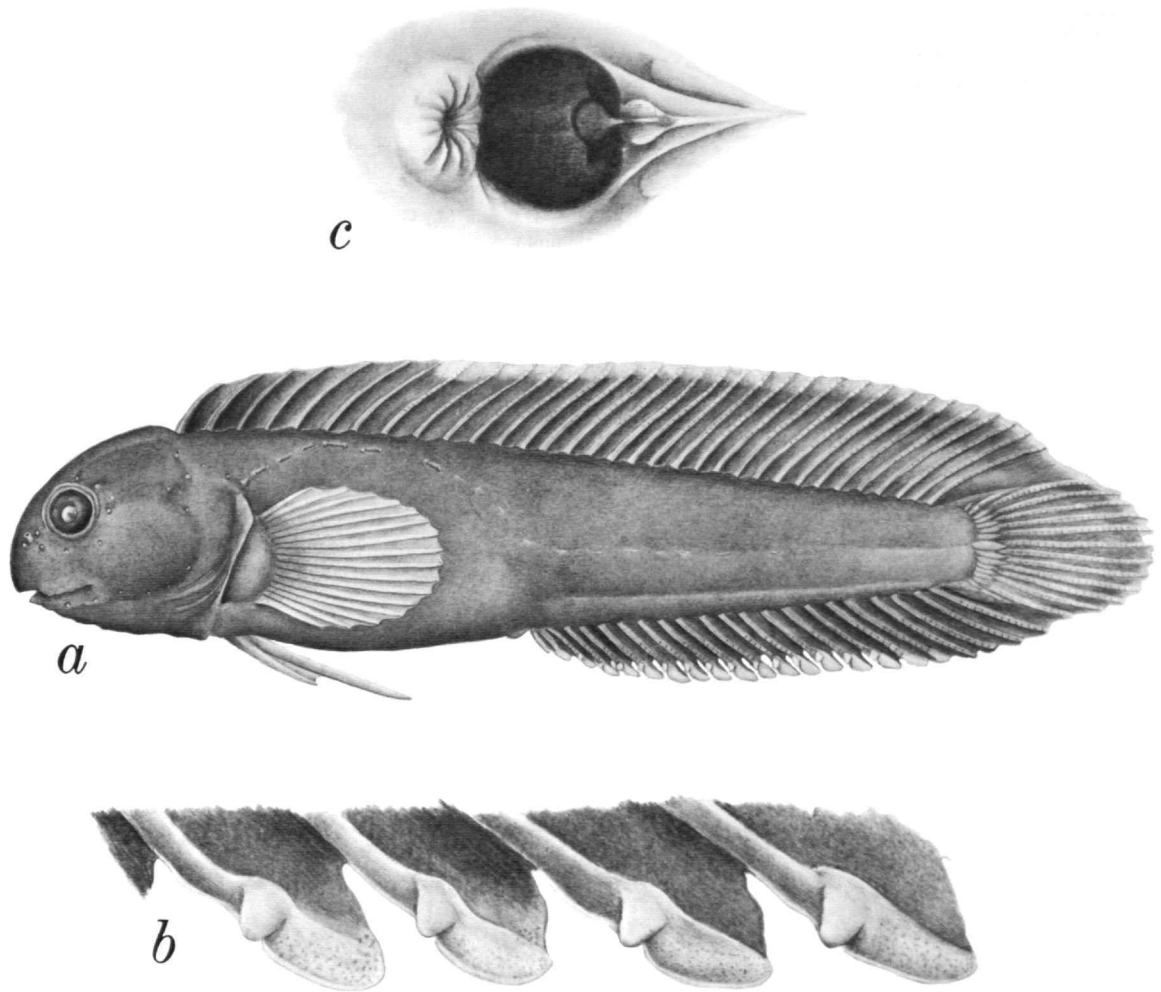


FIGURE 8.—*Enchelyurus flavipes*, CAS SU30660, Singapore. *a*, *b*, Male, 50.6 mm SL: *a*, lateral view; *b*, enlarged view of tips of anal fin rays. *c*, Female, enlarged ventral view of anus and genital papilla. (Drawn by J. R. Schroeder.)

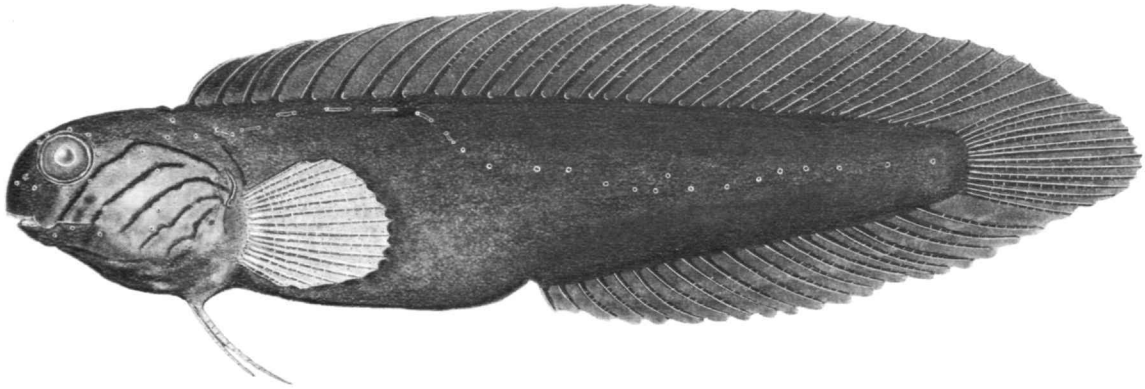


FIGURE 9.—*Enchelyurus kraussi*, USNM 201891, male, 41.0 mm SL, Great Barrier Reef. (Drawn by S. L. Collum.)

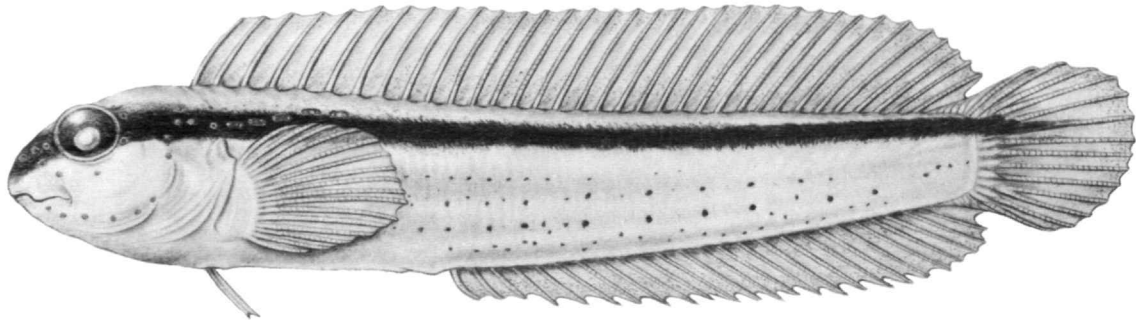
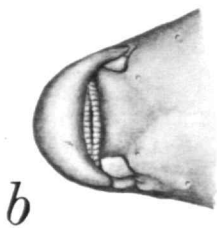
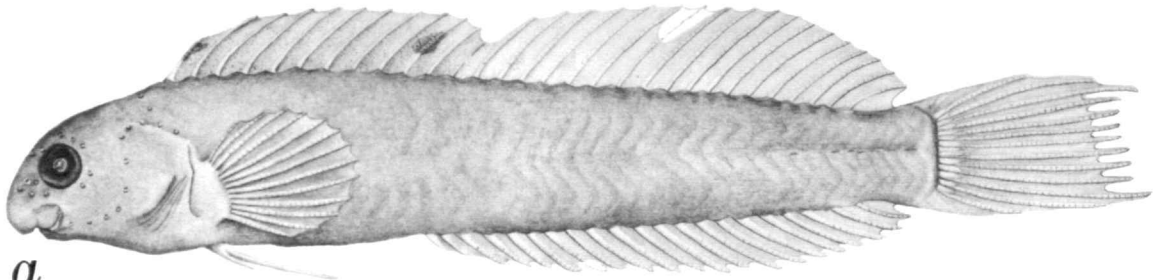


FIGURE 10.—*Enchelyurus petersi*, USNM 204540, male, 48.0 mm SL, Gulf of Aqaba. (Drawn by K. H. Moore.)



b

FIGURE 11.—*Haptogenys quadripora*, USNM 119658, holotype, male, 61.6 mm SL, Gulf of Thailand. *a*, Lateral view; *b*, enlarged view of underside of head. (Drawn by J. R. Schroeder.)



a

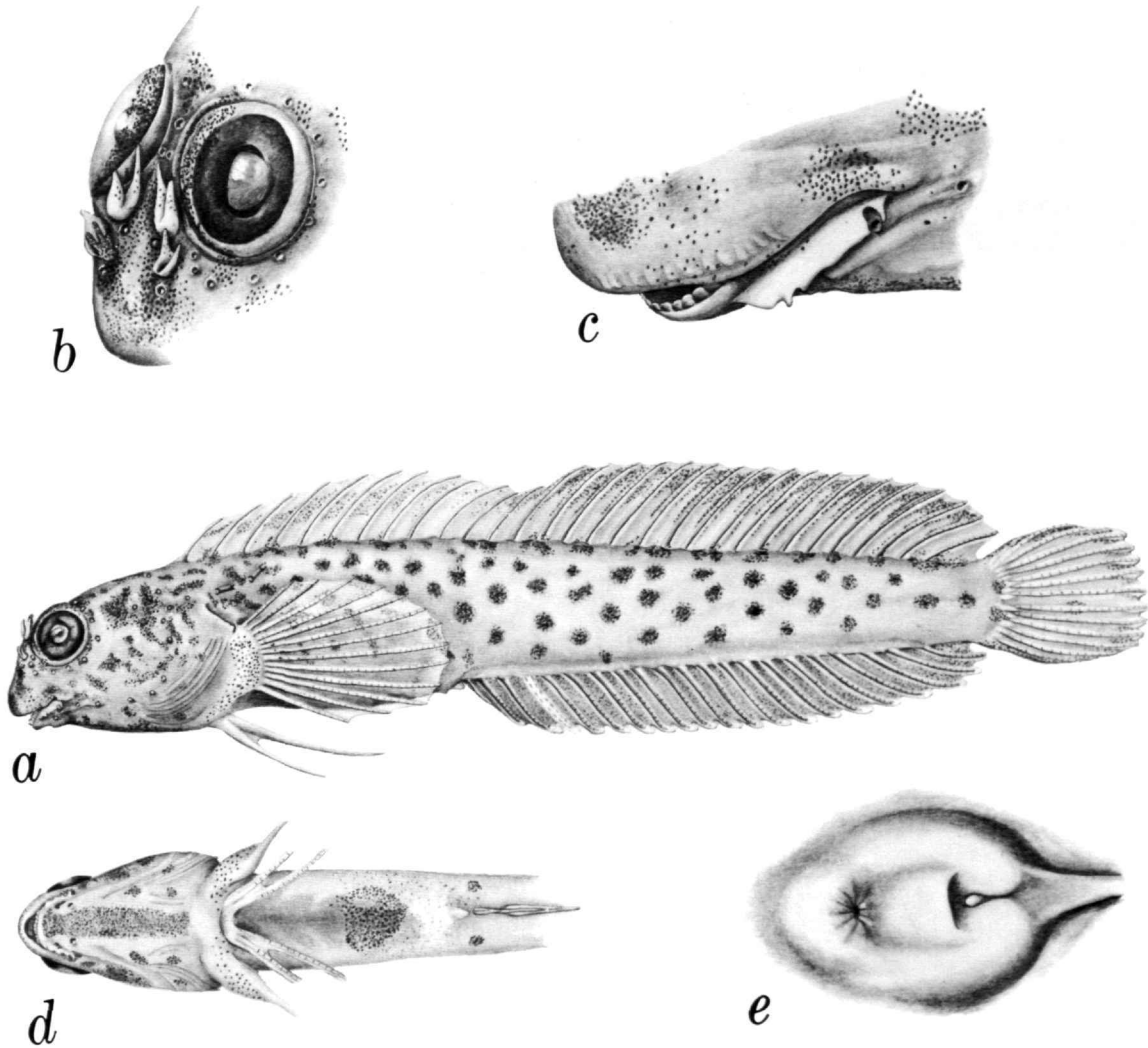


FIGURE 12.—*Laiphognathus multimaculatus*, CAS GVF2186, Gulf of Thailand. *a-d*, Male, 27.3 mm SL; *a*, lateral view; *b*, enlarged view of nasal cirri; *c*, enlarged view of labial flap; *d*, ventral view of head and venter. *e*, Female, view of anus and genital region. (Drawn by J. R. Schroeder.)

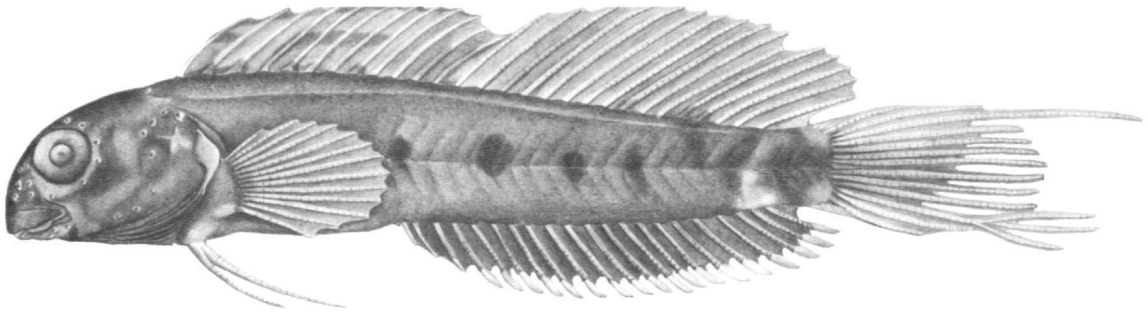


FIGURE 13.—*Omox biporos*, CAS 13520, holotype, male, 36.9 mm SL, Gulf of Thailand. Trifurcate caudal ray is aberrant. (Drawn by J. R. Schroeder.)

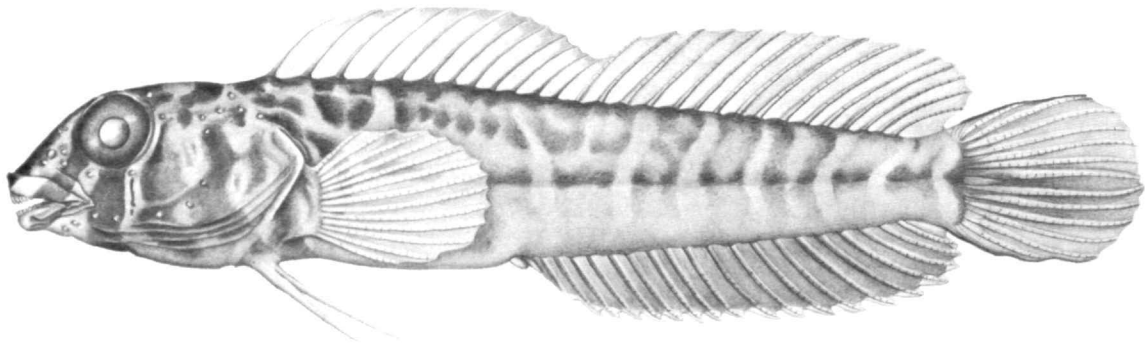


FIGURE 14.—*Omox biporos*, USNM 205698, female, 30.6 mm SL, New Guinea. (Drawn by J. R. Schroeder.)

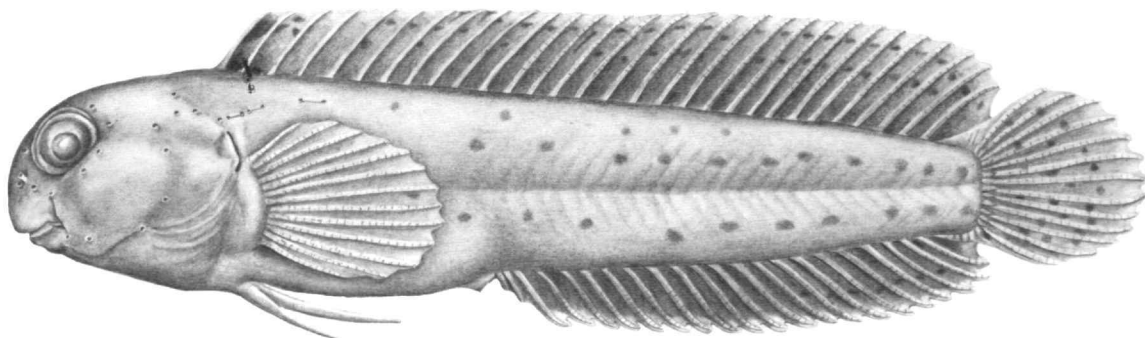


FIGURE 15.—*Parenchelyurus hepburni*, AMS I.14320, male, 29.6 mm SL, New Hebrides. (Drawn by J. R. Schroeder.)

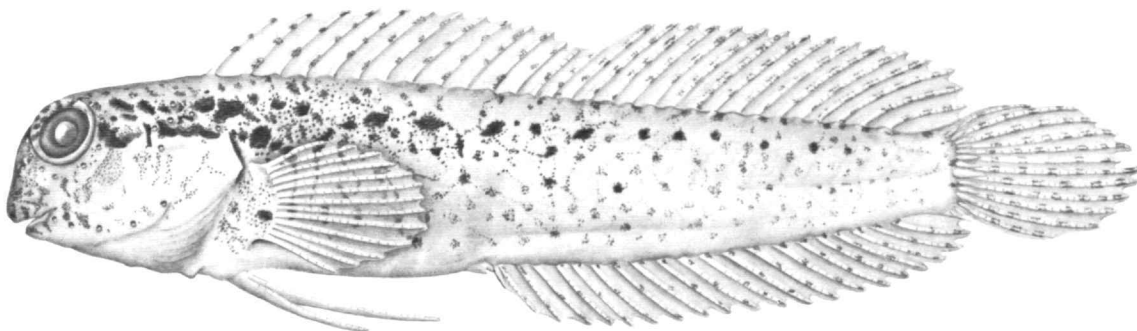


FIGURE 16.—*Parenchelyurus hyena*, ANSP 109702, female, 32.4 mm SL, Great Barrier Reef. Right pelvic fin is illustrated instead of damaged left pelvic fin. (Drawn by J. R. Schroeder.)

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