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Report on Fish Collections from Rapa, French Polynesia

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ABSTRACT

Large collections of fishes were made at the South Pacific island of Rapa (27°36'S, 144°18'W), the southernmost island of French Polynesia, by the Ingersoll-Stout Expedition in 1970 for the American Museum of Natural History and from the schooner "Westward" in 1971 for the Bishop Museum. A total of 268 species of fishes was obtained; these are listed in the present report by museum number and length. Of these fishes, 72.5 percent range to tropical islands of the central and western

Pacific, and many to the Indian Ocean as well; 9.3 percent are known only from islands of the southern subtropical zone; 4.6 percent are antitropical in distribution; 5.0 percent are currently known only from Rapa (ultimately, most are expected to be found at other localities); 4.3 percent are cosmopolitan but not pelagic; 3.5 percent are pelagic, and 0.8 percent (two morays) are eastern Pacific in origin. The family with the greatest representation is the Labridae with 24 species.

INTRODUCTION

The island of Rapa, lying at 27°36'S, 144°18'W, is the most southern island of French Polynesia. It is sometimes considered as one of the Austral Islands, which lie 520 km to the northwest, but it is sufficiently isolated to be regarded as a separate geographic unit. The island has been called Rapa Iti (Lit-

tle Rapa) to distinguish it from Easter Island, the Polynesian name of which is Rapa Nui (Big Rapa). Curiously, the first European contact with Rapa was not made until 22 December 1791 when George Vancouver of the English ship "Discovery" visited the island.

Rapa is small, roughly circular, and about

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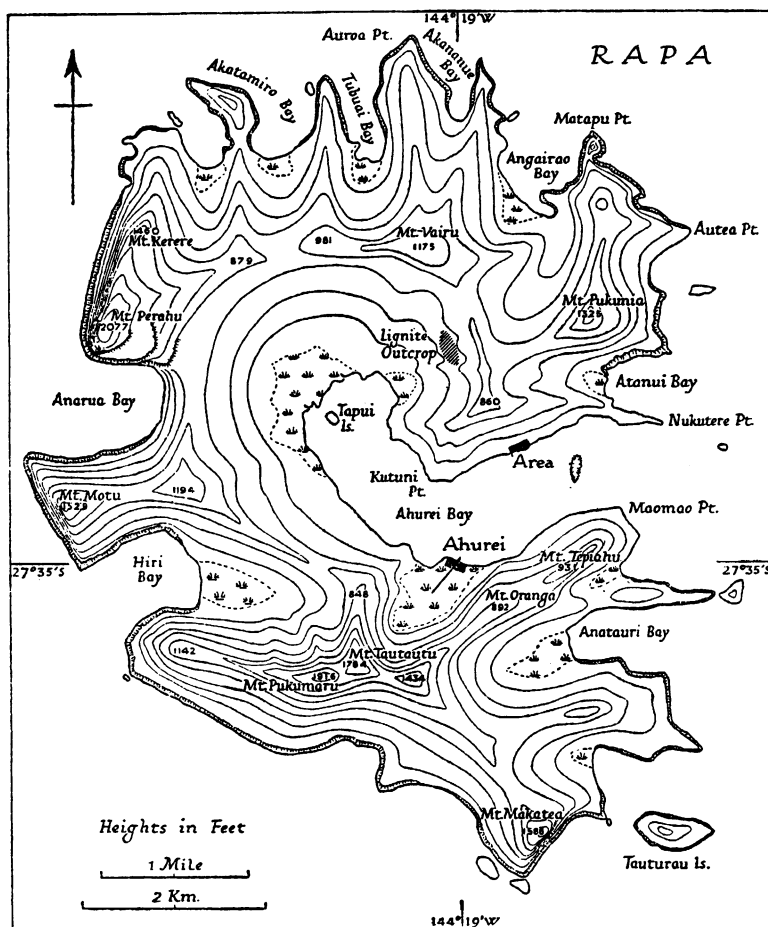


Fig. 1. The island of Rapa (after Geographical Handbook Series, B.R. 519A, Pacific Islands, volume 2).

7.2 km in diameter. It is a high island; the tallest peak is 334 m in altitude. There is no barrier reef, but there are numerous bays (fig. 1). The island gets an average of over 250 cm of rainfall per year. As a result of the runoff from the land, the sea tends to be more turbid than around most Pacific Islands. The coral growth is surprisingly rich, however, and includes species of *Acropora* (see fig. 12). The average monthly sea surface temperatures vary from about 19 to 24°C. The sea temperature in Haurei Bay (also spelled Ahurei Bay) on 27 January 1971 was 24.6°C; outside the bay it was 25.0°C.

The first author collected fishes at Easter Island in 1969 (Randall, 1970; Randall and Cea, 1984). Approximately 10 percent of the

Easter Island fish fauna consists of species that were then known only from localities in the southwest Pacific, such as Norfolk Island, Lord Howe Island, New Caledonia, and Australia, all of which lie more than 8000 km to the west of Easter Island. This is a vast distance for larvae of shore fishes (which depend on passive transport in ocean currents for their distribution) to traverse. The islands of the Pitcairn Group and Rapa, along with the small islets of Marotiri (Îlots de Bass), which lie about 100 km to the southeast of Rapa, would seem to be likely way stations for the distribution of shore fishes in this southern subtropical zone.

As noted by Randall and Sinoto (1978), only three fishes were known in the scientific



Fig. 2. The "Westward" anchored in Haurei Bay, Rapa.

literature from Rapa at that time: *Phaethonichthys tuberculatus* (= *Xiphias gladius*), *Anguilla obscura*, and *Epinephelus merra*. A few species were collected during the British "St. George" expedition of 1924–1925 and deposited in the British Museum (Natural History) [BM(NH)]. The desire to make the first extensive fish collections at Rapa and to determine if the southern fishes with disjunct distributions would be found there motivated us to organize ichthyological expeditions to the island.

The second author collected fishes at Rapa from 11 to 17 April 1971 as a participant in the Ingersoll-Stout Expedition of the American Museum of Natural History. The first author visited the island with associates on the schooner "Westward" (fig. 2) from 27 January to 25 February 1971 after collecting fishes at islands of the Pitcairn Group (Randall, 1973, 1974). A side trip of one day was made to Marotiri on 20 February 1971.

Our collections of fishes are deposited at the American Museum of Natural History,

New York (AMNH) and the Bernice Pauahi Bishop Museum (BPBM), except for paratypes of new species which have been distributed to other museums: Australian Museum, Sydney (AMS); California Academy of Sciences, San Francisco (CAS); Museum National d'Histoire Naturelle, Paris (MNHN); U.S. National Museum of Natural History, Washington, D.C. (USNM); National Science Museum, Tokyo (NSMT-P), J. L. B. Smith Institute of Ichthyology, Grahams-town (RUSI), and Western Australian Museum, Perth (WAM).

Fishes were collected mainly with the ichthyocide rotenone and by spearing. Some were taken with the anesthetic quinaldine, by hook and line, by seine, or obtained from local fishermen.

The fishes collected at Rapa and Marotiri are listed by families in conventional phylogenetic sequence (except that the Cirrhitidae and Cheilodactylidae are placed near the Serranidae) and alphabetically within families by genus and species. A museum number

is given for each lot, followed by the number of specimens (if not one) and the range in standard length (SL), precaudal length (PCL; for sharks), or total length (TL) in millimeters. Lengths of large specimens are recorded to the nearest millimeter and of small specimens to the nearest 0.5 mm. Most of the Bishop Museum specimens were measured in the field when fresh; consequently their lengths in preservative are usually somewhat shorter. Those lots taken at Marotiri are recorded as such, but no locality is given for the lots collected at Rapa.

Well-known species that are not apt to be misidentified are listed only by their scientific names, author(s), and date of publication. The dates of publication are given as an aid to the reader who needs to trace the names but the original descriptions are not necessarily included in the references. Some diagnostic data are presented for those species needing confirming information for identification, and for those whose identifications are uncertain.

Underwater photographs were taken of some fishes by the first author at Rapa. Six of these were reproduced in Randall, 1974, and three are included here. Sixty-two specimens of fishes from Rapa were photographed shortly after removal from the sea. We include 46 of these photographs. Gustav Paulay photographed fishes from the catches of fishermen during a visit to Rapa and provided us with duplicates of his color transparencies. Among them are three species that we did not collect or observe at Rapa: *Sargocentron spiniferum*, *Pristipomoides auricilla*, and *Katsuwonus pelamis*. These photographs are on file at the Bishop Museum.

The native Rapan names of fishes were recorded by Randall and Sinoto (1978). Paulay (personal commun., 1980) has provided the following corrections to this list: *Mugil cephalus* is called **kanae** not **kapae**; *Plectropomus leopardus* (= *P. laevis* in Rapa) is **atara**, not **tonu** (some Rapan fishermen use the Tahitian name **tonu** for this grouper); *Goniistius* sp. (now *Cheilodactylus plessisi*) is **pakakea**, not **pakatea**. The young of *Siganus argenteus* is **parapoatu**, not **parapuata**; *Gymnosarda unicolor* is called **va'u**, not **vao**.

From interviews with Rapan fishermen we were able to learn of some species of fishes that we did not collect or observe ourselves.

We have included those for which there is little or no doubt of identification, at least to the generic level.

SYSTEMATICS

LAMNIDAE (MACKEREL SHARKS)

Isurus oxyrinchus Rafinesque, 1809. None observed. Well known to local fishermen by the Rapan name **ma'o utuoioi**.

CARCHARHINIDAE (REQUIEM SHARKS)

Carcharhinus galapagensis (Snodgrass and Heller, 1905) (fig. 3): BPBM 12833, 975 mm PCL, 1315 mm TL, saved head and fins; BPBM 12979, 2: 410–518 mm PCL (young from a large female). Twenty-one sharks of this species to a maximum TL of 2400 mm were caught in a few hours of fishing at Marotiri, but none was preserved.

Galeocerdo cuvier (Péron and Lesueur, 1822) (fig. 4): BPBM 12926, 3100 mm TL, 160 kg; saved only the jaws. The stomach of this shark contained the digested remains of a sea bird and pieces of a tiger shark bigger than itself (probably the larger shark had been caught on another hook of the same set line).

SPHYRNIDAE (HAMMERHEAD SHARKS)

Sphyrna sp. No sharks of this family were observed, but illustrations of hammerheads were quickly identified by local fishermen who know these sharks as **ma'o hamara** (a name of recent Tahitian origin).

MOBULIDAE (MANTAS)

Manta sp. None observed by us, but known to Rapans by the local name **fafapiti** (same as Tahitian name).

ALBULIDAE (BONEFISHES)

Albula sp. A bonefish was readily identified from illustrations as occurring in Rapa, by local fishermen who call it **ioio**. Shaklee and Tamaru (1981) have shown that there are at least two species of *Albula* in the Indo-Pacific region. Because these species are difficult to distinguish externally, it is not possible to record a specific name for the Rapa fish.

ANGUILLIDAE (FRESHWATER EELS)

Anguilla obscura Günther, 1871: BM(NH) 1926.7.12.2–5, 4: 550–588 mm TL; AMNH



Fig. 3. Underwater photograph of *Carcharhinus galapagensis* at Marotiri.

51710, 2: 180–344 mm TL; AMNH 72718, 425 mm TL; AMNH 72719, 327 mm TL; BPBM 12888, 4: 375–545 mm TL. Schmidt (1925) recorded this eel from Rapa based on specimens collected during the British “St. George” expedition of 1924–1925 and deposited in the BM(NH).

MORINGUIDAE (WORM EELS)

Moringua ferruginea Bliss, 1883: AMNH 72712, 69 mm TL.

MURAENIDAE (MORAY EELS)

Anarchias sp.: BPBM 13003, 244 mm TL. This undescribed species is related to *A. cantonensis* Schultz. It will be named by Erling Holm of the Royal Ontario Museum. It has 29 dorsal rays and 115 vertebrae.

Anarchias seychellensis Smith, 1962: AMNH 56161, 2: 103–123 mm TL; BPBM 12917, 103 mm TL; BPBM 17199, 124 mm TL; BPBM 17275, 8: 39–143 mm TL. These

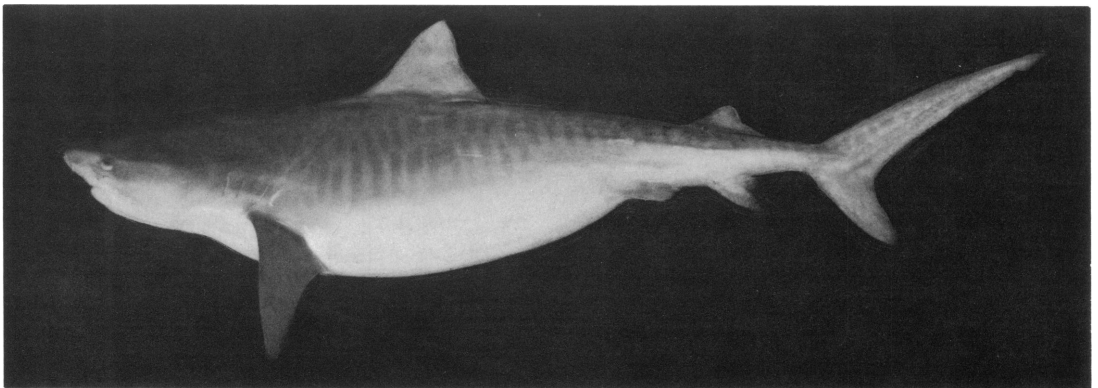


Fig. 4. *Galeocerdo cuvier* BPBM 12926, 3.1 m TL, 160 kg.



Fig. 5. *Gymnothorax chilospilus*, BPBM 12873, 404 mm TL.

specimens have 40–46 dorsal rays and 118–124 vertebrae.

Enchelycore ramosus (Griffin, 1926): AMNH 38237, 128 mm TL.

Gymnothorax sp.: AMNH 56167, 151 mm TL. We are unable to identify this juvenile moray. Depth 7 mm, head length 18 mm, snout length 3.6 mm, orbit diameter 3.05 mm, and snout-to-anus length 62 mm; jaws straight and dentition typical of the genus; 140 vertebrae; dark brown with two rows of widely spaced, pale yellowish spots the size of the pupil or smaller (one row midlateral and one above it), a dark rim on the orbit.

Gymnothorax chilospilus Bleeker, 1864 (fig. 5): AMNH 72720, 520 mm TL; AMNH 72721, 496 mm TL; BPBM 12873, 404 mm TL.

Gymnothorax eurostus (Abbott, 1860): AMNH 56168, 2: 52–83 mm TL; AMNH 56169, 2: 128–187 mm TL; BPBM 12874, 3: 130–437 mm TL; BPBM 13298, 2: 68–75 mm TL (Marotiri); BPBM 17257, 2: 89–206 mm TL.

Gymnothorax panamensis (Steindachner, 1876): AMNH 56166, 78 mm TL; AMNH 56165, 2: 73–100 mm TL; AMNH 56163, 6: 72–202 mm TL; AMNH 56164, 3: 164–250 mm TL; AMNH 56162, 2: 149–203 mm TL; BPBM 12872, 6: 117–248 mm TL; BPBM 17259, 3: 181–217 mm TL; BPBM 17304, 5: 79–179 mm TL.

Gymnothorax porphyreus (Guichenot, 1848): AMNH 56170, 203 mm TL; BPBM 12880, 4: 99–453 mm TL.

Gymnothorax undulatus (Lacepède, 1803): BPBM 13063, 1200 mm TL.

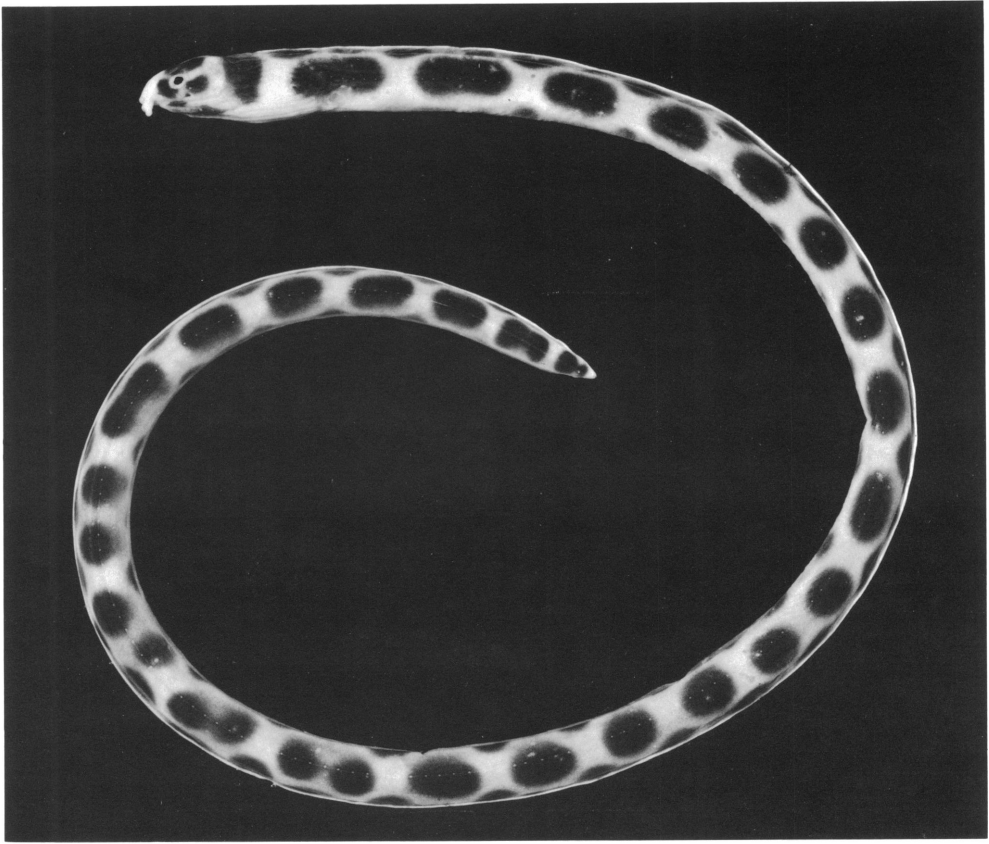


Fig. 6. *Myrichthys maculosus*, BPBM 17214, 254 mm TL.

CONGRIDAE (CONGER EELS)

Conger cinereus cinereus Rüppell, 1828: BPBM 12832, head only, from stomach of *Carcharhinus galapagensis*, 974 mm PCL; BPBM 13053, 496 mm TL (Marotiri); BPBM 17288, 164 mm TL.

OPHICHTHIDAE (SNAKE EELS)

Apterichtus flavicaudus (Snyder, 1904): BPBM 12306, 6: 290–293 mm TL.

Muraenichthys gymnotus Bleeker, 1864: BPBM 17273, 2: 126–145 mm TL.

Muraenichthys laticaudata (Ogilby, 1897): AMNH 72713, 7: 59–172 mm TL; AMNH 72714, 200 mm TL; AMNH 72715, 3: 104–156 mm TL; AMNH 72716, 135 mm TL; AMNH 72717, 145 mm TL; BPBM 17293, 2: 145–151 mm TL; BPBM 17313, 121 mm TL.

Myrichthys maculosus (Cuvier, 1817) (fig.

6): AMNH 72722, 206 mm TL (end of tail missing); BPBM 12957, 409 mm TL; BPBM 17214, 2: 156–254 mm TL.

SYNODONTIDAE (LIZARDFISHES)

Saurida flamma Waples, 1982: BPBM 31974, 63 mm SL. Waples' description of this species was based solely on Hawaiian material. In addition to the Rapa specimen, Bishop Museum now has specimens from Johnston Island, Pitcairn, and Rurutu, Austral Islands, thus suggesting an antitropical distribution.

Saurida gracilis (Quoy and Gaimard, 1824): BPBM 12887, 227 mm SL; BPBM 17314, 3: 50–58 mm SL; BPBM 17330, 62 mm SL.

Synodus sp. (fig. 7): BPBM 12960, 2: 38–70 mm SL. These specimens probably represent an undescribed species (R. S. Waples, personal commun.) presently known only from Rapa.

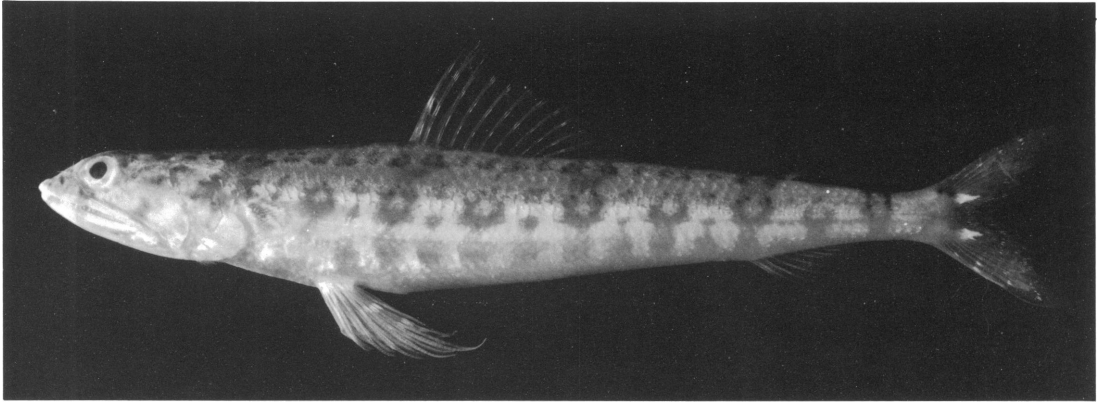


Fig. 7. *Synodus* sp., BPBM 12960, 70 mm SL.

Synodus capricornis Cressey and Randall, 1978: AMNH 72790, 44 mm SL; AMNH 72791, 2: 34.5–35.5 mm SL. Described from specimens from Easter Island; recorded from Hawaii by Waples and Randall (1988), hence apparently antitropical in distribution.

Synodus similis McCulloch, 1921 (fig. 8): BPBM 13061, 163 mm SL. Speared in 34 m. Reported from Rapa by Cressey (1981); otherwise known only from the Capricorn Group of the Great Barrier Reef, Lord Howe Island, and New Zealand.

Synodus variegatus (Lacepède, 1803): BPBM 13029, 180 mm SL; BPBM 17194, 83 mm SL; BPBM 17322, 69 mm SL. This species was reported from Rapa as *S. englemani* Schultz, 1953, by Cressey (1981); however, Waples and Randall (1988) examined

the type of *Salmo variegatus* Lacepède at the Museum National d'Histoire Naturelle and found it to be the species contemporary authors have been calling *englemani*. The next available name for the species currently known as *variegatus* is *S. dermatogenys* Fowler, 1912.

MORIDAE (MORID CODS)

Lotella phycis (Temminck and Schlegel, 1846) (fig. 9): BPBM 13414, 130 mm TL (Marotiri); BPBM 29785, 163 mm TL. These specimens were identified by C. D. Paulin, National Museum of New Zealand, who plans further study because of the possibility that more than one species are being confused under this name. This subtropical species was previously known only from Japan.

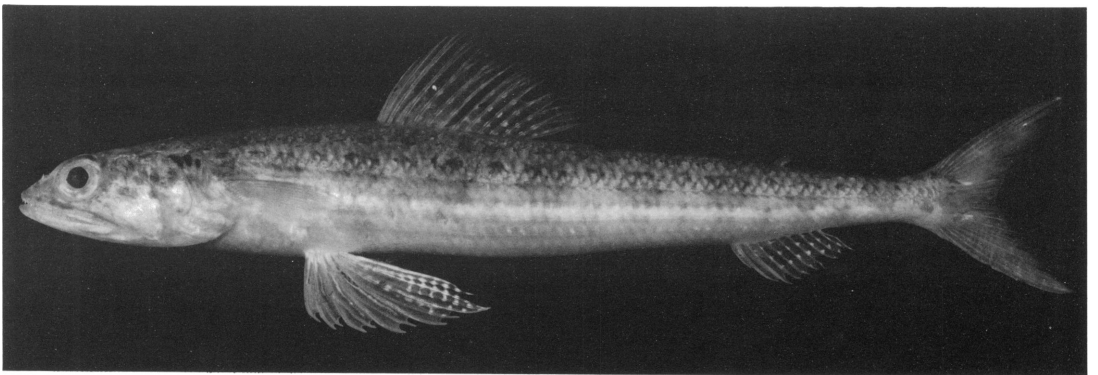


Fig. 8. *Synodus similis*, BPBM 13061, 163 mm SL.

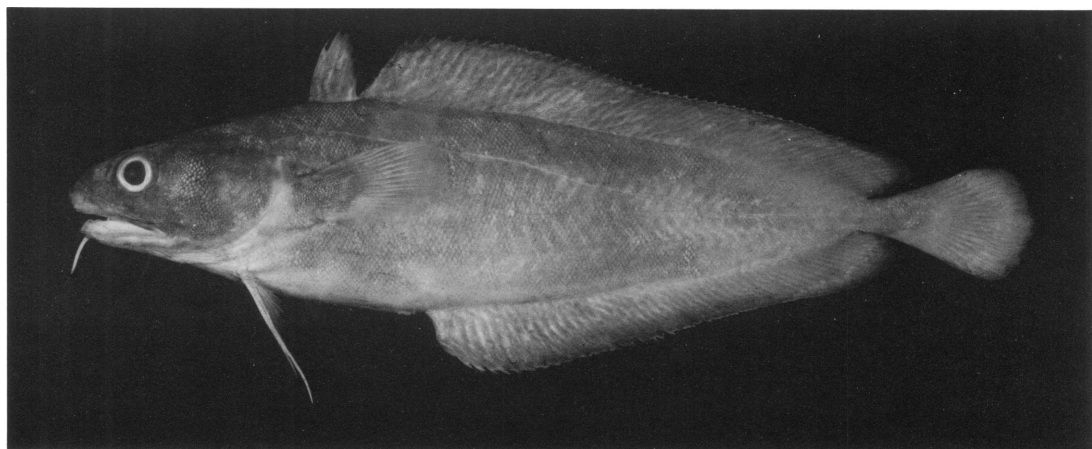


Fig. 9. *Lotella phycis*, BPBM 27985, 163 mm TL.

BYTHITIDAE (VIVIPAROUS BROTLAS)

Dinematichthys sp. (fig. 10): AMNH 72792, 47.5 mm TL; BPBM 17223, 2: 46–49 mm TL; BPBM 17291, 4: 52–105 mm TL. These specimens are on loan to Allegra N. Sedor, University of Southern California, who is revising the genus.

BELONIDAE (NEEDLEFISHES)

Ablennes hians (Valenciennes, 1846): BPBM 13291, 850 mm SL.

Platybelone argalus platyura (Bennett, 1832): BPBM 13284, 410 mm SL.

Tylosurus crocodilus crocodilus (Lesueur, 1821): BPBM 13283, large adult, head only;

sent by Rapan fisherman Alfred Make without length measurement.

EXOCOETIDAE

(HALFBEAKS AND FLYINGFISHES)

A small species of halfbeak was sighted at Rapa but not collected. It is known by the Rapan name *eihe*. Judging from the occurrence of *Hyporhamphus acutus acutus* (Günther, 1871) at Easter Island, Pitcairn, and the Austral Islands (Collette, 1974), this subspecies can be expected at Rapa.

Cheilopogon suttoni (Whitley and Colefax, 1938): BPBM 13285, 282 mm SL. Specimen sent by Alfred Make. Dorsal rays 10; anal rays 13; pectoral rays 14, the longest reaching

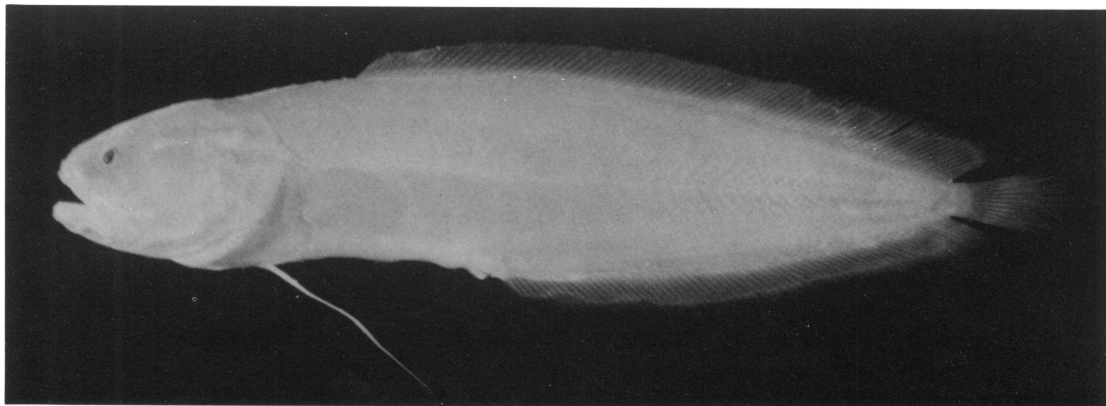


Fig. 10. *Dinematichthys* sp., BPBM 17291, 84 mm TL.

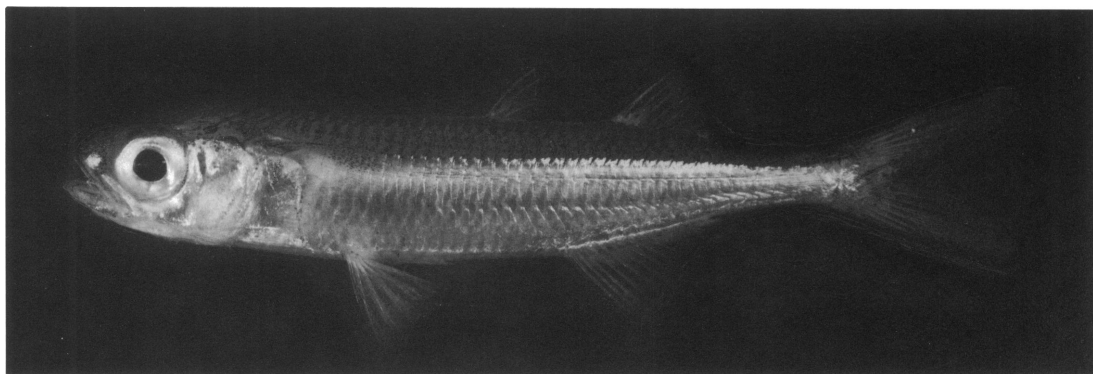


Fig. 11. *Atherinomorus lacunosus*, BPBM 17212, 51 mm SL.

beyond the rear base of the dorsal fin; origin of pelvic fins halfway between end of opercle and origin of lower caudal lobe; origin of anal fin below base of sixth dorsal ray; scattered black dots on pectoral-fin membranes and a black spot on dorsal fin between fourth and tenth rays.

Exocoetus monocirrhus Richardson, 1846: BPBM 12831, 52 mm SL. Gill rakers 24; prepelvic distance 1.7 in predorsal length; body without dark spots; pectoral fins pale; a dark spot posteriorly on dorsal fin. "Flew" on board the "Westward" at night about 50 miles north of Rapa.

Exocoetus volitans Linnaeus, 1758: BPBM 31808, 84 mm SL. Gill rakers 30; prepelvic distance 1.5 in predorsal length; pectoral fins pale except for dark brown membranes between third and tenth rays. Same collecting data as the preceding.

ATHERINIDAE (SILVERSIDES)

Atherinomorus lacunosus (Schneider, 1801) (fig. 11): AMNH 51708, 68: 27–41.5 mm SL; AMNH 72857, 9: 45.5–63 mm SL; AMNH 72858, 102: 31–43.5 mm SL; AMNH 72859, 17: 29–47 mm SL; AMNH 72860, 2: 35.5–52 mm SL; AMNH 72861, 7: 38.5–50.5 mm SL; BPBM 13059, 14: 45–96 mm SL; BPBM 13075, 103 mm SL; BPBM 17212, 4: 24–51 mm SL. This species has most often been identified as *Pranesus pinguis* (Lacepède) but Whitehead and Ivantsoff (1983) placed *Atherina pinguis* Lacepède in the synonymy of *Atherinomorus lacunosus*.

ISONIDAE (SURF FISHES)

Iso hawaiiensis Gosline, 1952: BPBM 13023, 2: 30–33 mm SL. These two specimens were identified by Walter Ivantsoff and Basim Said of Macquarie University, New South Wales, who are revising the genus.

HOLOCENTRIDAE (SQUIRRELFISHES)

Myripristis berndti Jordan and Evermann, 1903: BPBM 12866, 220 mm SL.

Myripristis tiki Greenfield, 1974: BPBM 11506, 4: 99–201 mm SL. These specimens were designated paratypes by Greenfield (1974). Illustrated in color by Randall (1974).

Neoniphon argenteus (Valenciennes, 1831): AMNH 72749, 90 mm SL.

Neoniphon sammara (Forsskål, 1775): BPBM 12850, 148 mm SL.

Plectrypops lima (Valenciennes, 1831): BPBM 17225, 48 mm SL.

Sargocentron sp.: AMNH 72751, 178 mm SL; AMNH 72752, 124 mm SL; BPBM 12861, 160 mm SL; BPBM 13009, 154 mm SL; BPBM 17250, 68 mm SL; BPBM 17287, 44 mm SL. Observed but not collected at Marotiri; also occurs at islands of the Pitcairn Group. This is an undescribed species that will be named by the first author in a revision of the genus; it is closely related to *S. wilhelmi* (De Buen), an Easter Island endemic.

Sargocentron punctatissimum (Cuvier, 1829): BPBM 13000, 2: 55–135 mm SL; BPBM 13310, 8: 54–60 mm SL (Marotiri); BPBM 13417, 4: 50–55 mm SL (Marotiri);



Fig. 12. Underwater photograph of *Fistularia commersonii* at Rapa.

BPBM 17224, 2: 55–60 mm SL. Randall and Heemstra (1985) showed that *S. punctatissimum* has priority over *S. lacteoguttatum* (Cuvier, 1829).

Sargocentron spiniferum (Forsskal, 1775). A color photograph taken by Gustav Paulay of a Rapa specimen of the largest of the squirrelfishes constitutes the record for this species.

AULOSTOMIDAE (TRUMPETFISHES)

Aulostomus chinensis (Linnaeus, 1766): BPBM 12925, 2: 475–480 mm SL; BPBM 13019, 273 mm SL. A Rapa fish illustrated in color by Randall (1974).

FISTULARIIDAE (CORNETFISHES)

Fistularia commersonii Rüppell, 1838 (fig. 12): BPBM 12882, 823 mm SL (retained only the head).

SYNGNATHIDAE (PIPEFISHES)

Corythoichthys intestinalis (Ramsay, 1881): AMNH 72835, 6: 61–65 mm SL; AMNH 72836, 71 mm SL; AMNH 72837, 65.5 mm

SL. Widely distributed in the western Pacific, but not reported previously east of Tonga Islands and Samoa Islands (Dawson, 1977).

Doryrhamphus excisus excisus Kaup, 1865 (fig. 13): AMNH 72838, 3: 21–25 mm SL; AMNH 72839, 2: 31–51 mm SL; AMNH 72840, 3: 19–25 mm SL; BPBM 12961, 2: 50–59 mm SL; BPBM 13004, 2: 55–56 mm SL; BPBM 7265, 58 mm SL. Often identified as *D. melanopleura* (Bleeker), but Dawson (1981) placed *melanopleura* in the synonymy of *excisus*.

SCORPAENIDAE (SCORPIONFISHES)

Iracundus signifer Jordan and Evermann, 1903: BPBM 11253, 68 mm SL.

Parascorpaena mcadamsi (Fowler, 1938) (fig. 14): BPBM 11245, 2: 44–53 mm SL; BPBM 11254, 2: 32–66 mm SL. Identified by W. N. Eschmeyer.

Parascorpaena mossambica (Peters, 1855): BPBM 11248, 5: 30–55 mm SL. Identified by W. N. Eschmeyer.

Pterois antennata (Bloch, 1867): AMNH

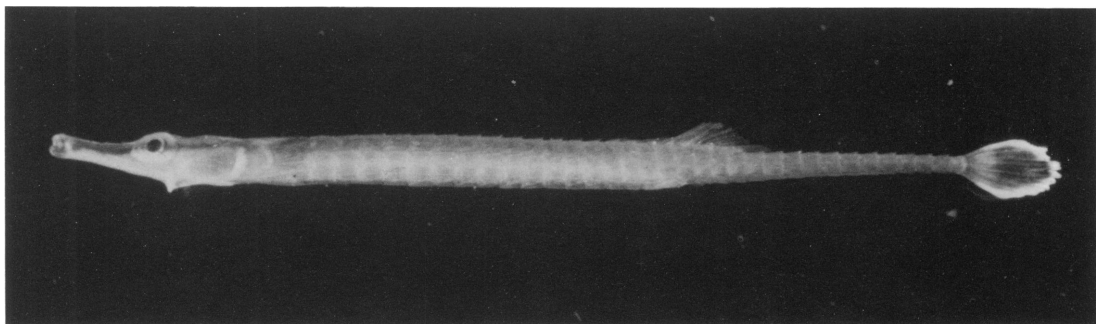


Fig. 13. *Doryrhamphus excisus excisus*, BPBM 13004, 56 mm SL.

72813, 124.5 mm SL; AMNH 72814, 4: 27–100 mm SL; BPBM 11246, 65 mm SL; BPBM 12864, 85 mm SL; BPBM 12996, 2: 75–79 mm SL; BPBM 13020, 140 mm SL.

Scorpaenodes littoralis (Tanaka, 1917): BPBM 11247, 30 mm SL; BPBM 11248, 58 mm SL; BPBM 11251, 73 mm SL.

Scorpaenodes scabra (Ramsay and Ogilby, 1885) (fig. 15): BPBM 12994, 96 mm SL. BPBM 11245, 53 mm SL. *Scorpaenopsis quiescens* Seal, 1906, from Tahiti, is a junior synonym. Randall (1985) overlooked Seale's

record in his checklist of fishes from French Polynesia.

Sebastapistes galactacma Jenkins, 1903: AMNH 72853, 19 mm SL; AMNH 72854, 49 mm SL; AMNH 72855, 3: 40–67 mm SL; AMNH 72856, 4: 36–80.5 mm SL.

CARACANTHIDAE
(ORBICULAR VELVETFISHES)

Caracanthus unipinna (Gray, 1831): BPBM 17226, 6: 15–31 mm SL. Specimens on loan

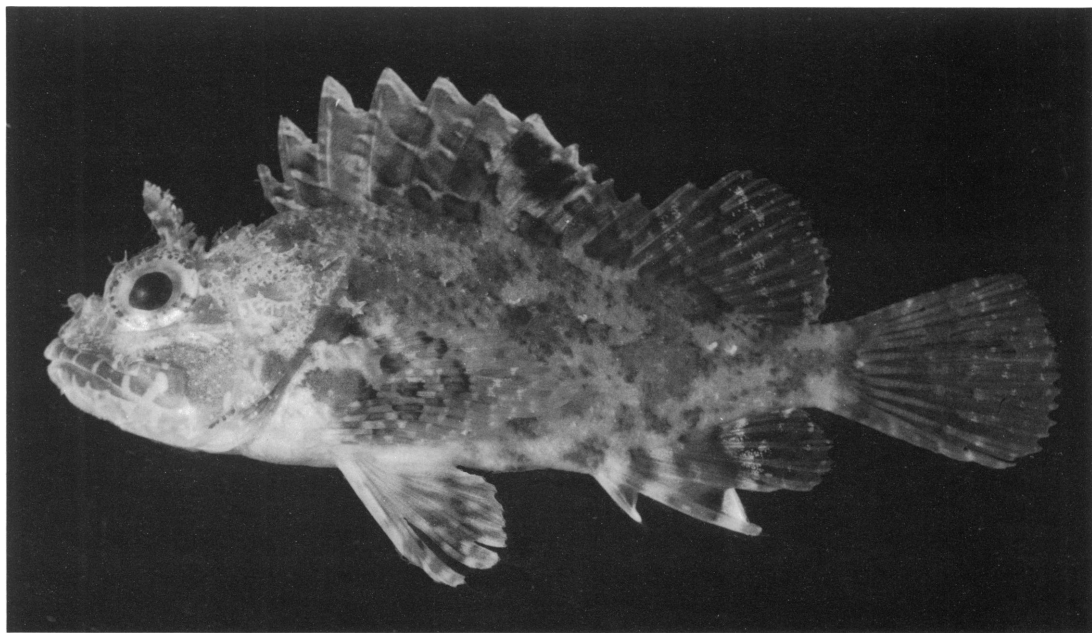


Fig. 14. *Parascorpaena mcadamsi*, BPBM 11245, 53 mm SL.

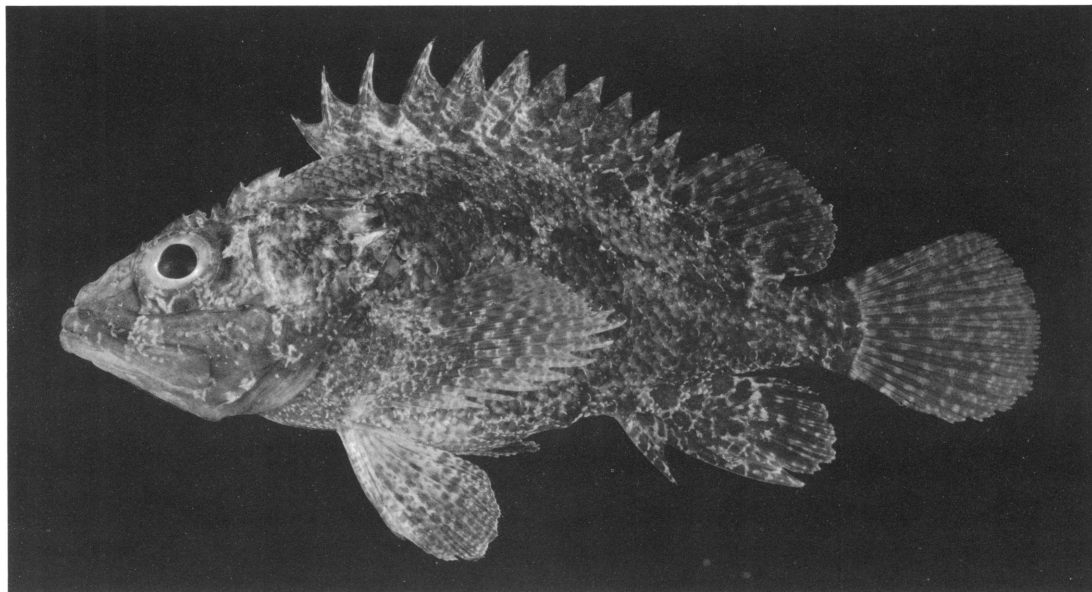


Fig. 15. *Scorpaenodes scabra*, BPBM 11245, 53 mm SL.

to W. N. Eschmeyer, CAS, who is revising the family.

DACTYLOPTERIDAE (HELMET GURNARDS)

Dactyloptena orientalis (Cuvier, 1829): BPBM 13078, 210 mm SL.

SERRANIDAE (GROUPERS AND SEABASSES)

Aulacocephalus temminckii Bleeker, 1853: BPBM 13036, 207 mm SL. Some authors (e.g., Randall et al., 1971) have classified this, and related fishes that produce the toxin grammistin in their skin, in the family Grammistidae. Johnson (1983) placed these fishes as a tribe of the subfamily Epinephelinae.

Cephalopholis argus Schneider, 1801: BPBM 12988, 153 mm SL; BPBM 13065, 325 mm SL.

Cephalopholis spiloparaea (Valenciennes, 1828): BPBM 13079, 168 mm SL. This reef species is usually not seen in less than 30 m. Diagnosed by Randall in Polovina and Ralston (1987).

Cephalopholis urodeta (Schneider, 1801): BPBM 12921, 165 mm SL. Randall in Polovina and Ralston (1987) noted that the original spelling for this species is *Percam*

urodetam, hence *C. urodeta* not *C. urodelus* as usually written.

Epinephelus fasciatus (Forsskål, 1775): BPBM 12875, 205 mm SL; BPBM 12876, 112 mm SL; BPBM 13052, 284 mm SL (Marotiri).

Epinephelus hexagonatus (Schneider, 1801): AMNH 72793, 37.5 mm SL; BPBM 13056, 156 mm SL (Marotiri); BPBM 13304, 2: 40–43 mm SL; BPBM 13415, 8: 31–46 mm SL.

Epinephelus merra Bloch, 1793: BPBM 12846, 2: 178–222 mm SL. Schultz (1945) reported this species from Rapa.

Epinephelus microdon (Bleeker, 1856): BPBM 12971, 552 mm SL. Stomach with crab remains.

Epinephelus socialis (Günther, 1873): BPBM 13299, 15: 41–44 mm SL (Marotiri); BPBM 17232, 23: 33–35 mm SL. This species is known only from the Pacific Plate (see Springer, 1982); the typical habitat is shallow exposed reefs.

Epinephelus tauvina (Forsskål, 1775): BPBM 13028, 315 mm SL.

Epinephelus tuamotuensis Fourmanoir, 1971: BPBM 13292, head only (sent to Bishop Museum by A. Make). Recorded from

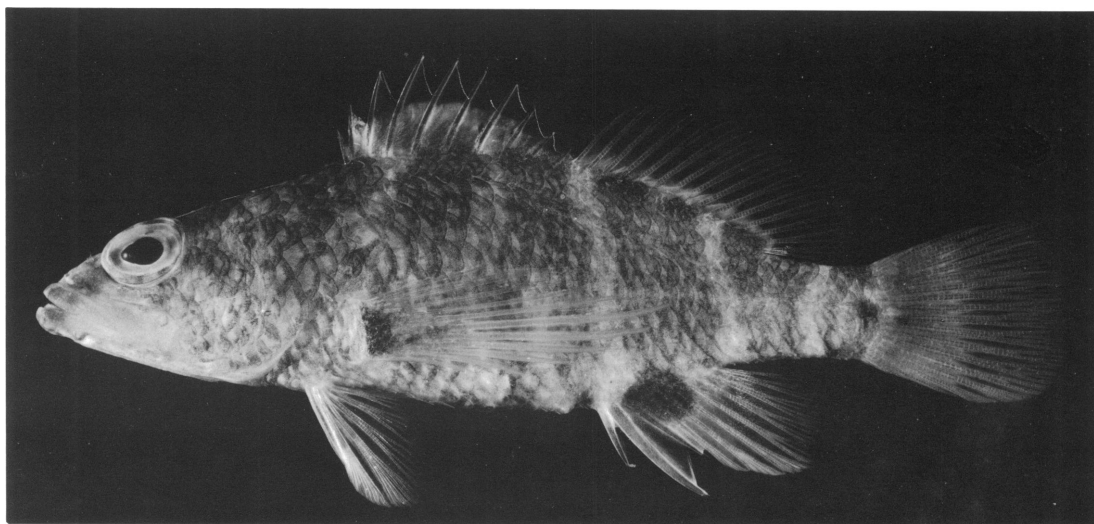


Fig. 16. *Plectranthias cirrhitoides*, holotype, BPBM 15066, 51 mm SL.

Rapa by Randall *in* Polovina and Ralston (1987); known only from the Tuamotu Archipelago, Pitcairn Group, and Rapa. It has been taken in the depth range 122–240 m.

Plectranthias cirrhitoides Randall, 1980 (fig. 16): BPBM 15066, 51 mm SL (holotype); BPBM 15067, 56.5 mm SL (paratype); USNM 212177, 57 mm SL (paratype). Known only from Rapa.

Plectropomus laevis (Lacepède, 1801). A very large adult in the dark color phase with numerous blue dots was observed underwater by the first author at Rapa (reported by Randall and Hoese, 1986). This phase has usually been misidentified as *P. maculatus* or *P. leopardus*, and the dark-barred, yellow-finned phase with few blue spots as *P. melanoleucus*.

Variola louti (Forsskål, 1775): BPBM 12973, 502 mm SL.

CIRRHITIDAE (HAWKFISHES)

Amblycirrhitus wilhelmi (Lavenberg and Yáñez, 1972): AMNH 72761, 32 mm SL; BPBM 13418, 103 mm SL (Marotiri). This species is otherwise known only from Easter Island and the Pitcairn Group. Its classification in the genus *Amblycirrhitus* is provisional.

Cirrhitus pinnulatus (Schneider, 1801): BPBM 17326, 29 mm SL.

Paracirrhitus arcatus (Cuvier, 1829): BPBM 12956, 55 mm SL.

CHEILODACTYLIDAE (MORWONGS)

Cheilodactylus plessisi Randall, 1983 (fig. 17): BPBM 12834, 2: 170–225 mm SL; BPBM 12842, 220.5 mm SL; BPBM 12948, 222 mm SL; BPBM 13050, 249 mm SL (Marotiri); CAS 47908, 222 mm SL (all paratypes). This species is known only from Easter Island and Rapa.

KUHLIIDAE (FLAGTAILS)

Kuhlia marginata (Cuvier, 1829): AMNH 72750, 11: 24.5–41.5 mm SL; AMNH 73120, 17: 30–132 mm SL; BPBM 12881, 23: 42–102 mm SL; BPBM 13054, 3: 102–118 mm SL (Marotiri).

Kuhlia mugil (Schneider, 1801): BPBM 17234, 3: 22–59 mm SL.

PRIACANTHIDAE (BIGEYES)

Cookeolus japonicus (Cuvier, 1829): BPBM 13037, 236 mm SL. Starnes (1988) has shown that this name replaces *C. boops* (Schneider) of most recent authors.

Heteropriacanthus cruentatus (Lacepède, 1801): BPBM 12940, 2: 198–224 mm SL; BPBM 17312, 74 mm SL. Fitch and Crooke (1984) established the monotypic genus *Heteropriacanthus* for this species.

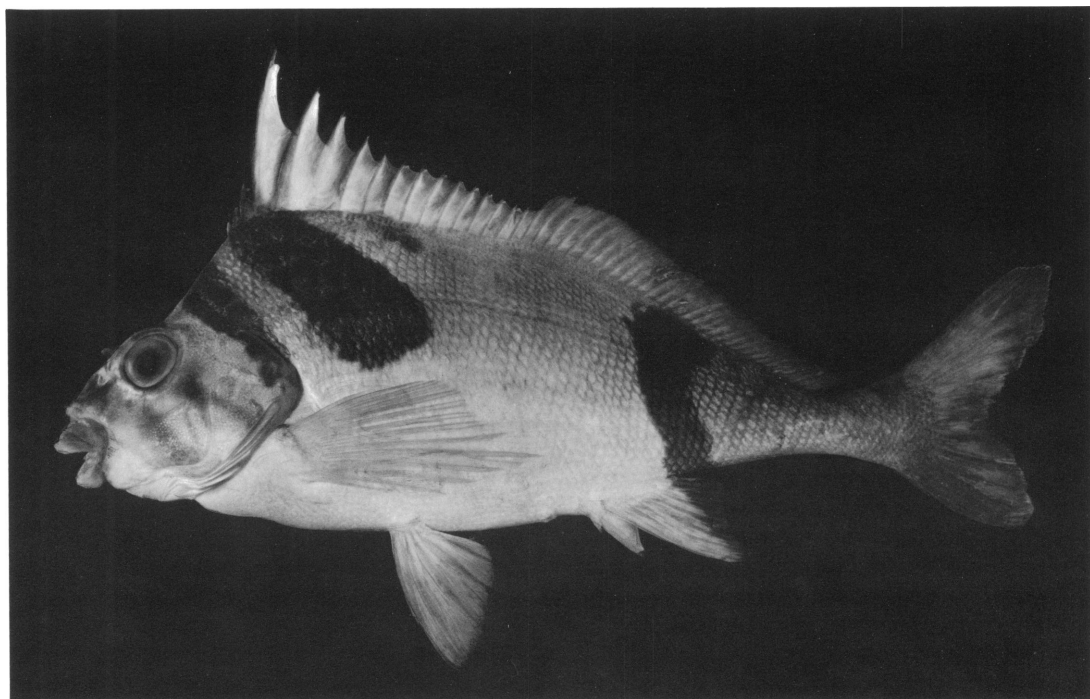


Fig. 17. *Cheilodactylus plessisi*, paratype, BPBM 12842, 220.5 mm SL.

APOGONIDAE (CARDINALFISHES)

Apogon caudicinctus Randall and Smith, 1988 (fig. 18): AMNH 72756, 30 mm SL (paratype); AMNH 72759, 5: 15–30 mm SL (paratypes); AMNH 72760, 3: 25–27 mm SL (paratypes); BPBM 13002, 52.5 mm SL (holotype); CAS 60678, 49 mm SL (paratype); RUSI 27055, 56.5 mm SL (Marotiri, paratype); WAM P.29385-001, 53 mm SL (Marotiri, paratype). This species, also reported from Réunion, Ryukyu Islands, Fiji, and the Pitcairn Group, is similar to *Apogon doryssa* (Jordan and Seale); it differs from *doryssa* in having a shorter second dorsal spine and a broad blackish bar on the caudal peduncle.

Apogon crassiceps Garman, 1903: AMNH 72767, 6: 13–35 mm SL; AMNH 72768, 3: 17.5–36 mm SL; AMNH 72769, 36 mm SL. AMNH 72770, 5: 10.5–15.5 mm SL; BPBM 17229, 10: 26.5–40.5 mm SL; pectoral rays 13, 14 (2 of 10 with 13); predorsal scales 5, 6 (2 of 10 with 6); gill rakers 3, 4+12, 13 (1 of 10 with 4 on upper limb); body depth 2.7–3.1 in SL; caudal peduncle length 3.5–3.8 in SL. Confusion over the correct names for

transparent red cardinalfishes of the Indo-Pacific region led the first author to request the loan of the holotype of *Apogon crassiceps* Garman, described from one specimen from Fiji. The specimen, MCZ 28214, 27 mm SL, proved to be a species that most recent authors have identified either as *A. erythrinus* Snyder or *A. coccineus* Rüppell. Smith (1961) placed *A. erythrinus* in the synonymy of *A. coccineus*, and he has been followed by many authors. Hayashi and Kishimoto (1983), however, have shown that *erythrinus* is distinct from *coccineus* on the basis of gill-raker counts, body depth, and caudal peduncle length. Our Rapa specimens are clearly not *coccineus*, which has 5+14–16 gill rakers; thus, we identify them as *crassiceps*, a senior synonym of *erythrinus*.

Apogon doryssa (Jordan and Seale, 1906) (fig. 19): BPBM 13017, 39 mm SL.

Apogon fuscus Quoy and Gaimard, 1825: AMNH 72774, 2: 57.5–72.5 mm SL; BPBM 12844, 78 mm SL; BPBM 17318, 2: 22–55 mm SL. Thomas H. Fraser and the first author have determined that *A. fuscus* is a valid earlier name of *A. savayensis* Günther, 1871.

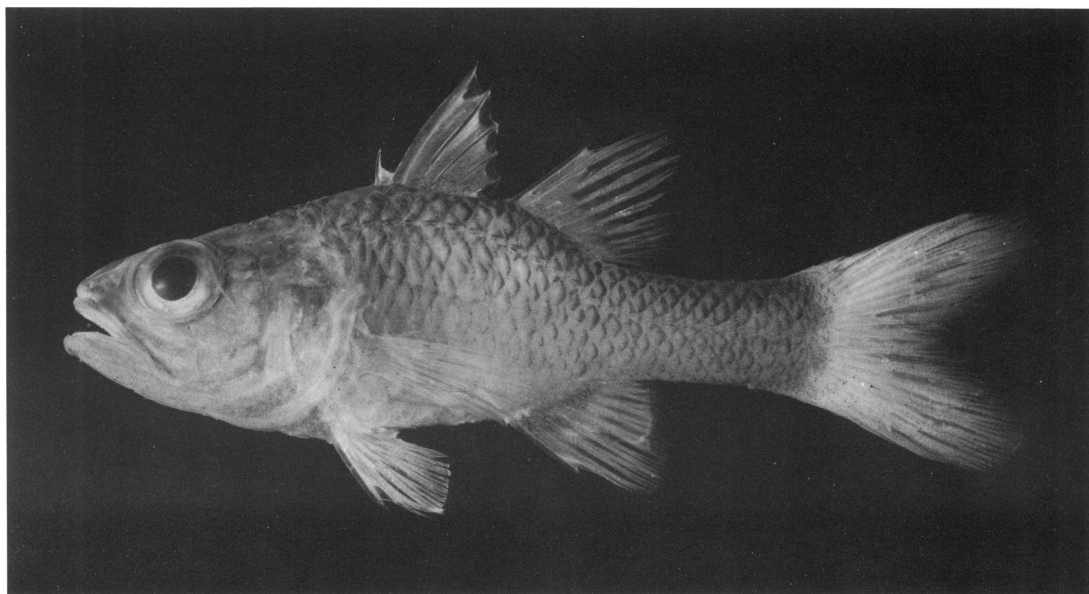


Fig. 18. *Apogon caudicinctus*, holotype, BPBM 13002, 52.5 mm SL.

Apogon kallopterus Bleeker, 1856: BPBM 12838, 108 mm SL; BPBM 12843, 98 mm SL.

Apogon nigrofasciatus Lachner, 1953: AMNH 72775, 18: 19–70.5 mm SL; AMNH

72776, 5: 20–89 mm SL; AMNH 72777, 7: 22–28 mm SL; AMNH 72778, 57 mm SL; BPBM 17268, 2: 55.5–69.5 mm SL. The last-mentioned lot was recorded from Rapa by Randall and Lachner (1986).

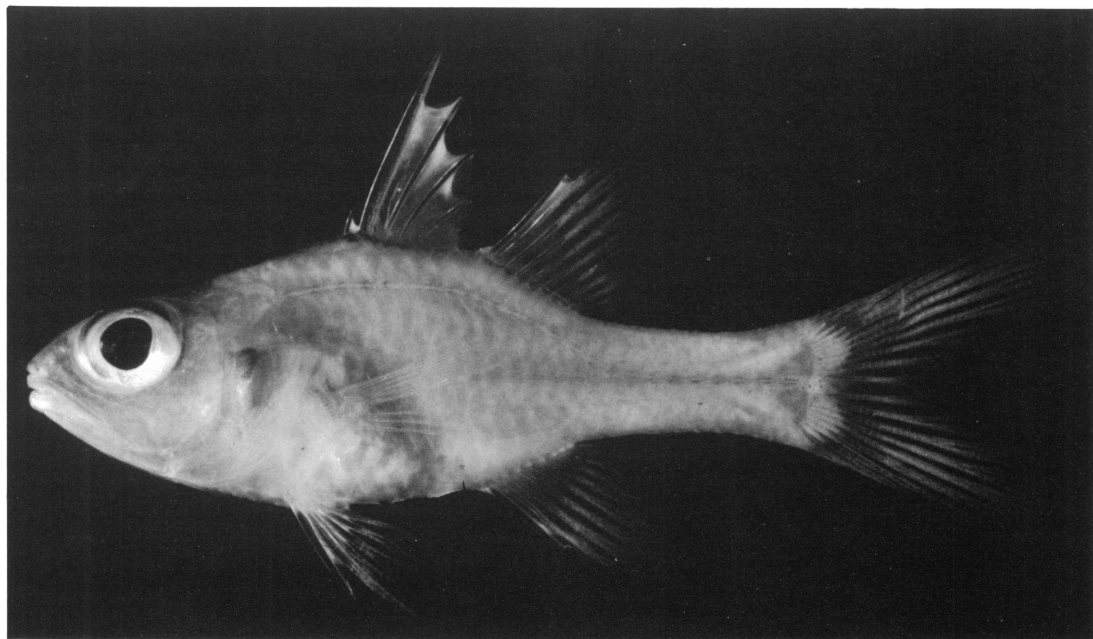


Fig. 19. *Apogon doryssa*, BPBM 13017, 39 mm SL.

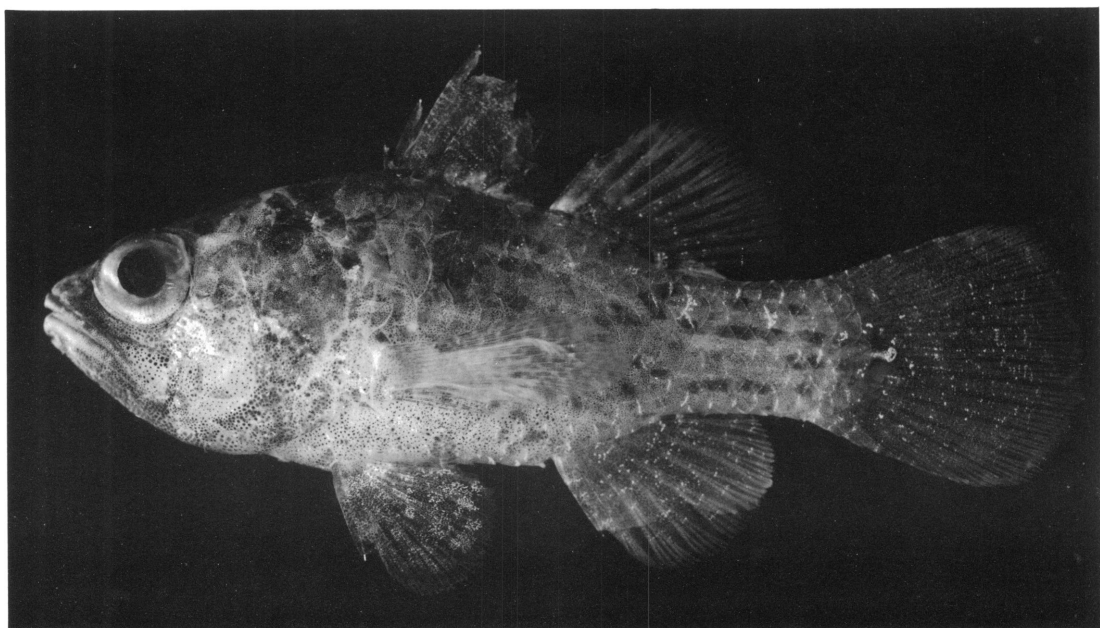


Fig. 20. *Apogonichthys perdix*, BPBM 17269, 38 mm SL.

Apogon taeniophorus Regan, 1908: BPBM 17206, 3: 19–88 mm SL; BPBM 30347, 81 mm SL. Reported from Rapa by Randall and Lachner (1986).

Apogonichthys ocellatus (Weber, 1913): AMNH 51712, 2: 12.5–14 mm SL; AMNH 72815, 37 mm SL; AMNH 72816, 3: 17–22.5 mm SL; AMNH 72817, 16.5 mm SL; AMNH

72818, 19.5 mm SL; AMNH 72819, 3: 17–20.5 mm SL.

Apogonichthys perdix Bleeker, 1854 (fig. 20): AMNH 72773, 5: 27–41.5 mm SL; BPBM 17269, 2: 38–40 mm SL; BPBM 17315, 38 mm SL. Randall et al. (1985) placed *A. waikiki* Jordan and Evermann in the synonymy of *A. perdix*.

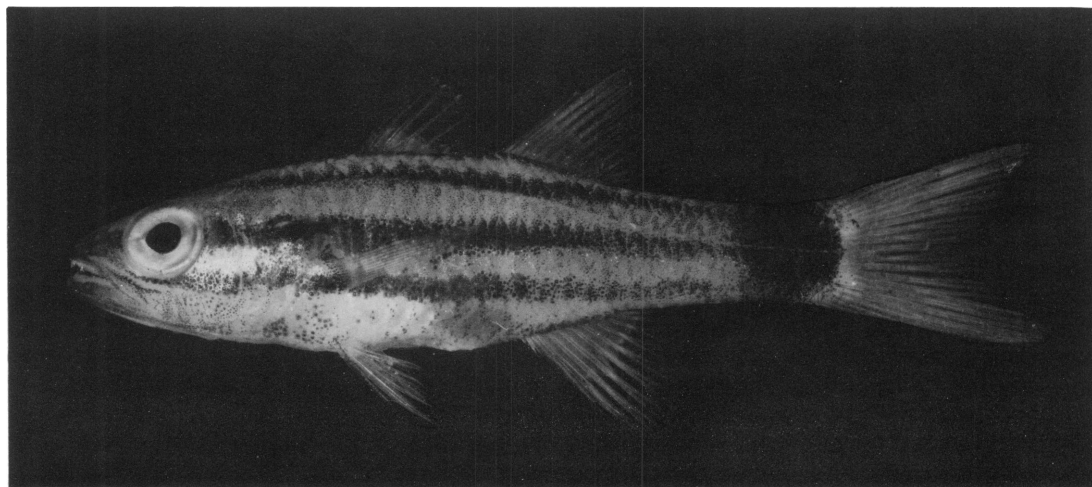


Fig. 21. *Cheilodipterus lineatus*, BPBM 17292, 40 mm SL.



Fig. 22. *Foa fo*, BPBM 17296, 42 mm SL.

Cheilodipterus lineatus (Linnaeus, 1758) (fig. 21): BPBM 13014, 133 mm SL; BPBM 17292, 2: 35–40 mm SL. Ofer Gon (personal commun.) has determined that this name replaces *C. macrodon* Lacepède of most authors.

Cheilodipterus quinquelineatus Cuvier, 1828: AMNH 72786, 71 mm SL; AMNH 72787, 102.5 mm SL; AMNH 72788, 26 mm SL; AMNH 72789, 3: 83.5–88 mm SL; BPBM 12857, 2: 58–85 mm SL; BPBM 17186, 3: 48–94 mm SL; BPBM 17297, 2: 25–72 mm SL.

Foa fo Jordan and Seale, 1906 (fig. 22): AMNH 51711, 3: 17–22 mm SL; AMNH 72820, 10: 12–38 mm SL; AMNH 72821, 12: 14–23 mm SL; AMNH 72822, 11: 15–23.5 mm SL; AMNH 72824, 7: 14–42 mm SL; AMNH 72825, 2: 17–18 mm SL; BPBM 17296, 42 mm SL.

Fowleria isostigma Jordan and Seale, 1906: AMNH 72771, 2: 48–53 mm SL; AMNH 72772, 4: 45–51.5 mm SL; BPBM 12998, 3: 44–74 mm SL; BPBM 17193, 2: 45–66 mm SL.

Pseudamia gelatinosa Smith, 1954 (fig. 23): AMNH 72823, 41.5 mm SL; AMNH 72826,

13 mm SL; AMNH 72827, 2: 18–43 mm SL; BPBM 17284, 51 mm SL. The above specimens, except for the 13 mm one, were reported from Rapa by Randall et al. (1985).

Pseudamiops gracilicauda (Lachner, 1953) (fig. 24): BPBM 17271, 2: 48–50 mm SL; BPBM 17305, 2: 39–41 mm SL; BPBM 17311, 35 mm SL. Dorsal rays VI–I, 8; anal rays II, 8–9 (usually 8); pectoral rays 16; scales cycloid and deciduous; no lateral line; gill rakers 3–4+11–13; a ventral, bony projection on lower posterior corner of maxilla; two short, stout spines at corner of preopercle; caudal fin rhomboid, body elongate; transparent with faint red edging on scales and a large diffuse dusky spot on preopercle behind eye. In his description of *Gymnapogon gracilicauda*, Lachner gave the gill-raker count, including rudiments, as 3+8. Jeffrey T. Williams kindly checked this count on the USNM holotype for us and found 4+11 (3 as rudiments on the upper limb and 4 as rudiments on the lower).

Cercamia cladara Randall and Smith, 1988: AMNH 75135, 3: 23–34.5 mm SL (paratypes); BPBM 17202, 44 mm SL (holotype); BPBM 17279, 5: 21–40 mm SL

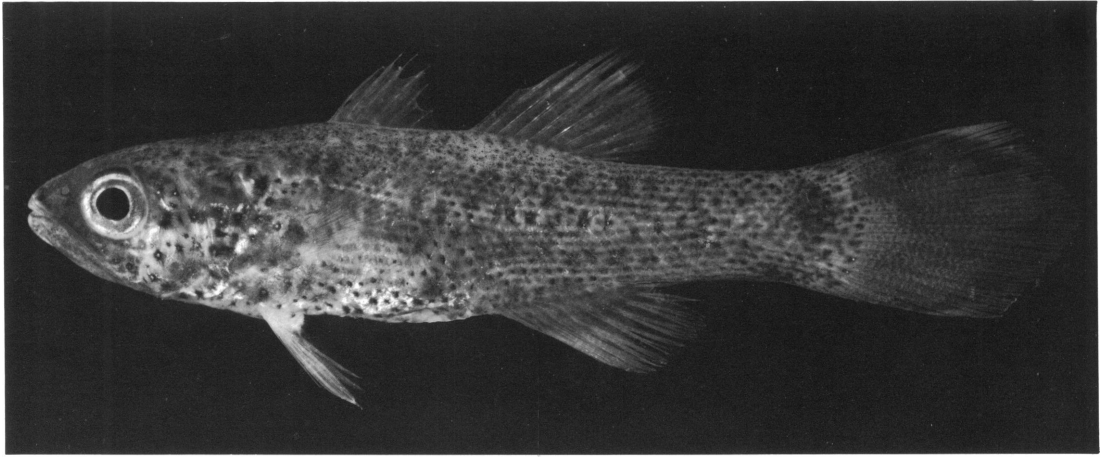


Fig. 23. *Pseudamia gelatinosa*, BPBM 17284, 51 mm SL.

(paratypes); CAS 61348, 28.5 mm SL (paratype); MNHN 1987-2035, 23.5 mm SL (paratype); NSMT-P 44801, 30.5 mm SL (paratype); RUSI 29535, 30.5 mm SL (paratype); WAM P.29655-001, 26.5 mm SL (paratype); USNM 290959, 32.6 mm SL (paratype). Anal rays II, 11-12 (usually 12); pectoral rays 10; gill rakers 3-4+15-16; vertebrae 9+15; two small spines at corner of second preopercular margin and a shorter one

at corner of first margin; uniformly pale in preservative.

LABRACOGLOSSIDAE (KNIFEFISHES)

Bathystethus orientale Regan, 1913 (fig. 25): BPBM 13024, 76 mm SL. Known only from Easter Island and Rapa. A related species, *B. cultratus* (Schneider), occurs at Norfolk Island, Lord Howe Island, northern New Zealand, and New South Wales. The current

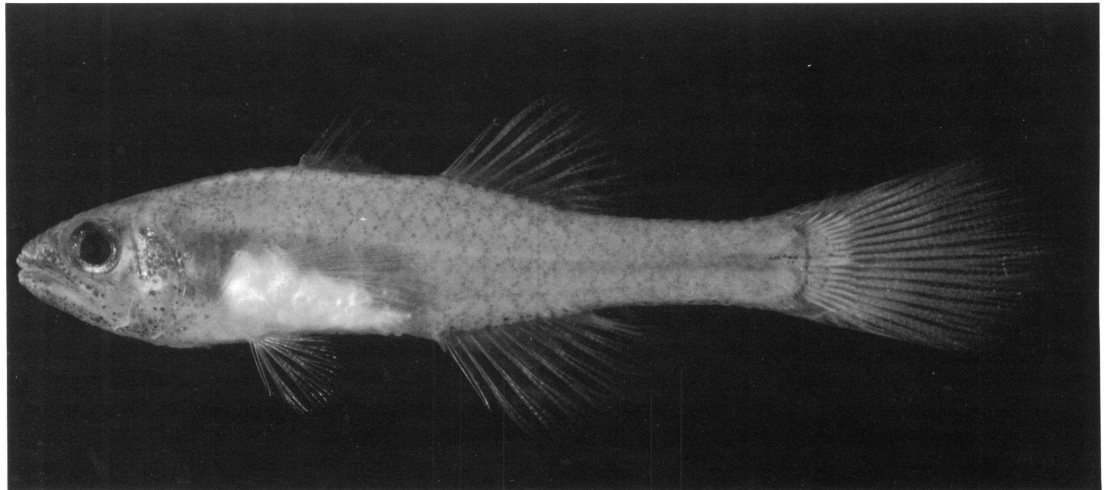


Fig. 24. *Pseudamiops gracilicauda*, BPBM 17271, 50 mm SL.

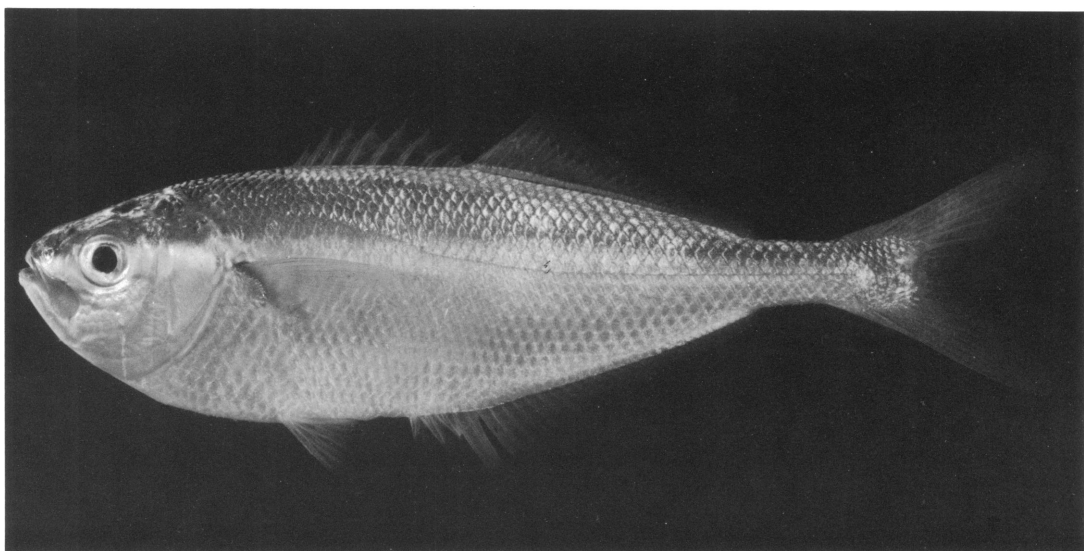


Fig. 25. *Bathystethus orientale*, BPBM 13024, 76 mm SL.

placement of *Bathystethus* in the family Labracoglossidae is questionable.

Labracoglossa nitida McCulloch and Waite, 1916: BPBM 13039, 3: 180–194 mm SL. Dorsal rays X, 26–28; anal rays III, 23–24; yellow on back above a demarcation from nape to lower caudal-fin base, abruptly blue below, shading to white ventrally; a black spot at upper pectoral base, larger in axil. Previously known from Lord Howe Island, Norfolk Island, New South Wales, and northern New Zealand. Closely related to *L. argentiventris* Peters from southern Japan.

CARANGIDAE (JACKS)

Carangoides ferdau (Forsskål, 1775). One individual observed underwater at Rapa. Native name, **omuri**.

Carangoides orthogrammus (Jordan and Gilbert, 1881). No specimens obtained. This dark-barred species is known by the Rapan name **aruru**.

Caranx ascensionis Cuvier, 1833: BPBM 13049, 614 mm FL (Marotiri). Wheeler (1981) has shown that *C. ascensionis* is an earlier name than *C. lugubris* Poey for this species, commonly known as the black jack.

Caranx ignobilis (Forsskål, 1775): BPBM 13069, 476 mm FL.

Caranx melampygus Cuvier, 1833: BPBM 13288, 184 mm FL.

Decapterus muroadsi (Temminck and Schlegel, 1844): BPBM 13076, 179 mm FL. Randall and Cea-Egana (1984) recorded this species as *D. scombrinus* (Valenciennes) from Easter Island. William F. Smith-Vaniz (personal commun.) has since determined that the latter, named from the eastern Pacific, is a junior synonym of *D. muroadsi*.

Pseudocaranx dentex (Schneider, 1801): AMNH 72799, 2: 195–201 mm FL; BPBM 11841, 492 mm FL; BPBM 12918, 2: 253–280 mm FL; BPBM 12936, 152 mm FL; BPBM 12974, 377 mm FL. The most common jack at Rapa.

Scombroides lysan (Forsskål, 1775). Observed underwater at Rapa, but no specimens were obtained. Known by the Rapan name **rai**.

Selar crumenophthalmus (Bloch, 1793): BPBM 13077, 184 mm FL.

Seriola lalandi Valenciennes, 1833: BPBM 12915, 460 mm FL; BPBM 13047, 550 mm FL (Marotiri).

Trachinotus bailloni (Lacepède, 1801): BPBM 13066, 302 mm SL.

Uraspis sp. Rapan fishermen recognized illustrations of fishes of this genus and gave

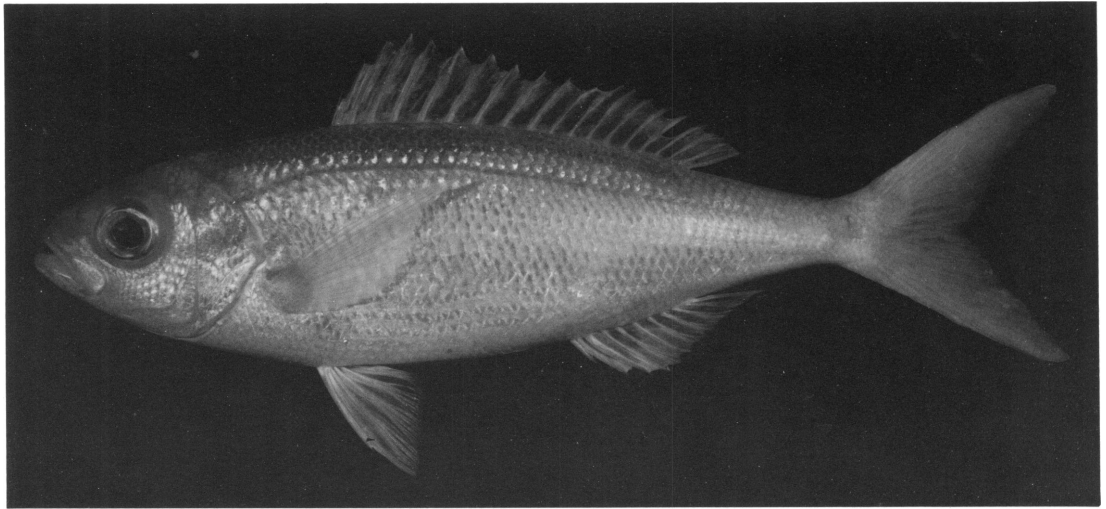


Fig. 26. *Parapristipomoides squamimaxillaris*, paratype, BPBM 12569, 342 mm SL.

the name **aruru** (same as that for *Carangoides orthogrammus*).

LUTJANIDAE (SNAPPERS)

Lutjanus fulvus (Schneider, 1801): BPBM 13080, 196 mm SL.

Lutjanus kasmira (Forsskål, 1775). Several individuals of this species were sighted underwater at Rapa but none was collected. Photographed by G. Paulay.

Lutjanus monostigma (Cuvier, 1826): BPBM 13006, 255 mm SL.

Parapristipomoides squamimaxillaris (Kami, 1973) (fig. 26): BPBM 12569, 2: 342–350 mm SL (paratypes). Caught with hand-line in 130 m. Known to date only from Easter Island, Rapa, and Tonga.

Pristipomoides auricilla (Jordan et al., 1927): A color photograph by G. Paulay of a specimen of this deep-water snapper is the basis for the Rapa record.

CAESIONIDAE (FUSILIERS)

Pterocaesio tile (Cuvier, 1830): BPBM 11238, 87 mm SL (Marotiri); BPBM 13022, 2: 179–181 mm SL.

EMMELICHTHYIDAE (ROVERS)

Emmelichthys karnellai Heemstra and Randall, 1977: BPBM 17211, 213 mm SL (paratype). Also reported from Hawaii and Easter Island.

HAEMULIDAE (GRUNTS)

Plectorhinchus picus (Cuvier, 1830) (fig. 27): BPBM 12945, 410 mm SL; BPBM 12950, 265 mm SL; BPBM 12989, 287 mm SL; BPBM 13007, 192 mm SL. This appears to be the only species of the genus that ranges as far east as French Polynesia.

LETHRINIDAE (EMPERORS)

Gnathodentex aureolineatus (Lacepède, 1802): BPBM 12942, 202 mm SL.

MULLIDAE (GOATFISHES)

Mulloides flavolineatus (Lacepède, 1801): BPBM 12937, 166 mm SL; BPBM 12980, 106 mm SL.

Parupeneus ciliatus (Lacepède, 1802): AMNH 72764, 49 mm SL; AMNH 72765, 50 mm SL; AMNH 72766, 3: 42–51 mm SL; BPBM 12943, 234 mm SL; BPBM 13015, 130 mm SL. *P. fraterculus* (Valenciennes) and *P. pleurotaenia* (Playfair and Günther) are junior synonyms.

Parupeneus cyclostomus (Lacepède, 1801): BPBM 13026, 320 mm SL; BPBM 13067, 352 mm SL.

Parupeneus multifasciatus (Quoy and Gaimard, 1825): BPBM 12841, 109 mm SL; BPBM 12894, 116 mm SL.

Parupeneus pleurostigma (Bennett, 1831):

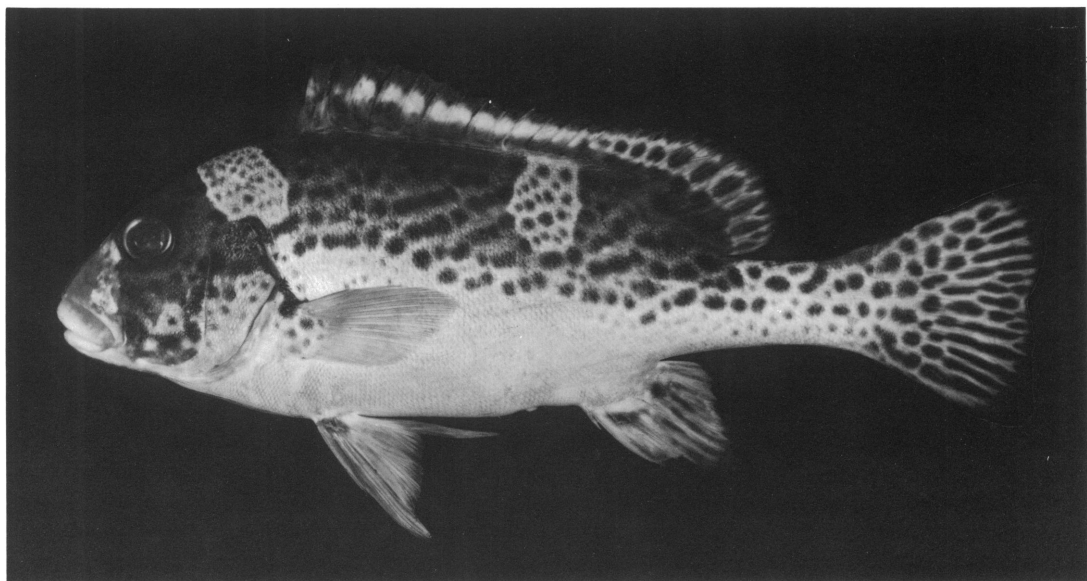


Fig. 27. *Plectorhinchus picus*, BPBM 12950, 265 mm SL.

BPBM 12929, 68 mm SL; BPBM 12963, 162 mm SL.

PEMPHERIDIDAE (SWEEPERS)

Pempheris sp.: BPBM 12889, 10: 126–143 mm SL; BPBM 12967, 21: 16–27 mm SL; BPBM 17289, 10: 15.5–126 mm SL. Dorsal rays VI, 10–11 (usually 11); anal rays III, 33–36; pectoral rays 16–17 (usually 17; short bony splint fused to first principal ray not counted); lateral-line scales 75–82; gill rakers 11–12+26–28 (counts of 11 adult specimens); tips of elevated part of dorsal and anal fins blackish; large, vertically elongate, oval dark spot on opercle at level of eye; lateral line edged in dark brown. This species is closely related to *P. adspersus* Griffin, described from New Zealand, but it differs in higher counts of anal rays, lateral-line scales, and gill rakers. The 21 juveniles listed above have the same fin-ray counts as adults, and the same range in number of lateral-line scales, although these are not fully formed posteriorly on the caudal peduncle. The gill-raker counts, however, are 10–11+23–25. Fortunately, the 10 specimens of BPBM 17289 include individuals that demonstrate that the gill rakers of the 16–27 mm specimens are not fully developed.

KYPHOSIDAE (RUDDERFISHES)

Kyphosus bigibbus Lacepède, 1801: BPBM 12868, 159 mm SL; BPBM 13074, 160 mm SL. Also observed at Marotiri where the yellow phase is common (Randall, 1974: fig., p. 31). Some Rapan fishermen claim that there is a second species of *Kyphosus* at their island with the local name of *karamami ume*; if true, this species is most likely *K. vaigiensis* (Quoy and Gaimard).

CHAETODONTIDAE (BUTTERFLYFISHES)

Chaetodon auriga Forsskål, 1775: BPBM 12920, 153 mm SL.

Chaetodon bennetti Cuvier, 1831: AMNH 72802, 38.5 mm SL; BPBM 12862, 103 mm SL.

Chaetodon ephippium Cuvier, 1831: BPBM 12991, 2: 158–172 mm SL.

Chaetodon flavirostris Günther, 1874: AMNH 72796, 3: 65–86 mm SL; AMNH 72797, 3: 29–91 mm SL; AMNH 72798, 81 mm SL; AMNH 72800, 2: 38–43 mm SL; BPBM 12851, 101 mm SL; BPBM 12885, 114 mm SL; BPBM 12999, 113 mm SL; BPBM 13051, 161 mm SL (Marotiri). Rapa fish illustrated in color by Randall (1974).

Chaetodon lunula (Lacepède, 1802): BPBM

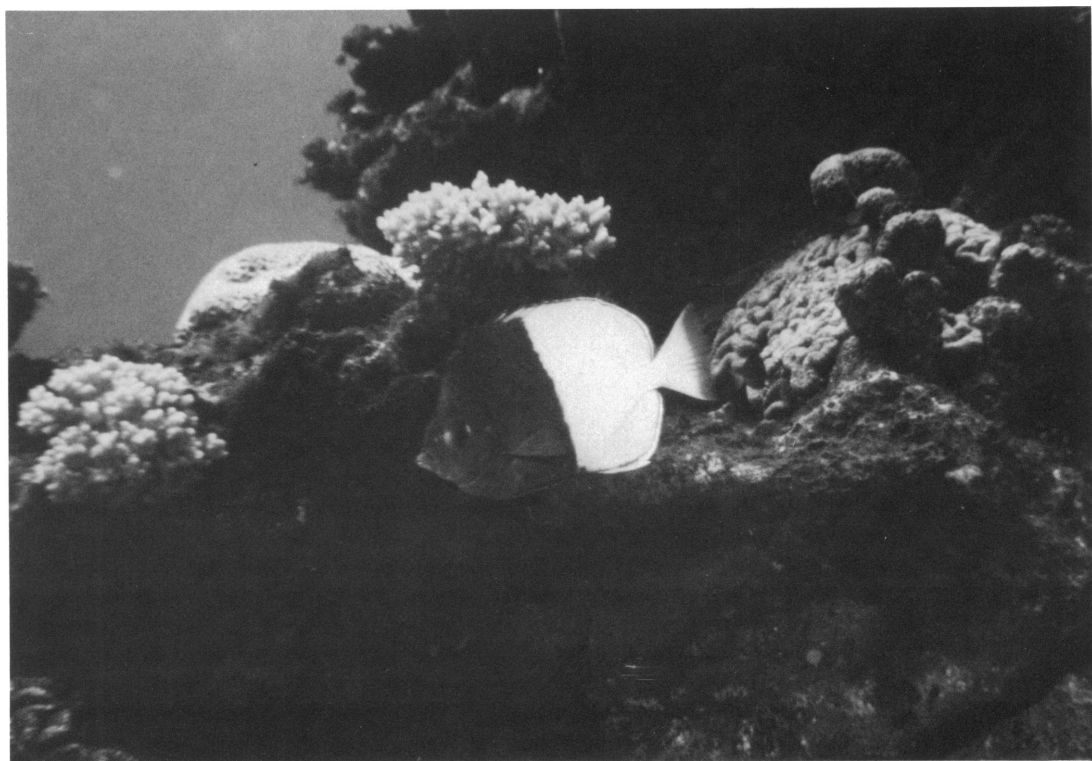


Fig. 28. Underwater photograph of *Chaetodon smithi*, at Rapa.

13300, 32 mm SL (Marotiri); BPBM 17218, 35 mm SL; BPBM 17239, 22 mm SL.

Chaetodon mertensi Cuvier, 1831: AMNH 72801, 51 mm SL; BPBM 17320, 60 mm SL.

Chaetodon ornatissimus Cuvier, 1831: BPBM 13042, 157 mm SL.

Chaetodon pelewensis Kner, 1868: BPBM 17264, 30 mm SL.

Chaetodon smithi Randall, 1975 (fig. 28): AMNH 32455, 4: 34–86 mm SL; AMNH 32456, 4: 32–86; BPBM 12870, 3: 83.5–112 mm SL; BPBM 13058, 2: 98–102.5 mm SL (Marotiri); AMS I.17916-001, 92 mm SL; CAS 33466, 112 mm SL; MNHN 1975-696, 83.5 mm SL (all paratypes). Illustrated in color by Randall (1974). One specimen collected at Easter Island in 1986; no others recorded. Also known from the Pitcairn Group, and aquarium fish collector Steven Leong obtained individuals from Tubuai.

Chaetodon trifascialis Quoy and Gaimard, 1825; BPBM 12856, 92 mm SL. Sometimes classified in *Megaprotodon*.

Chaetodon trifasciatus Mungo Park, 1787: BPBM 12938, 107 mm SL.

Chaetodon unimaculatus Bloch, 1787: BPBM 13048, 165 mm SL (Marotiri).

Forcipiger flavissimus Jordan and McGregor, 1898: BPBM 12946, 155 mm SL. Also observed at Marotiri.

POMACANTHIDAE (ANGELFISHES)

Centropyge flavissimus (Cuvier, 1831): BPBM 12982, 88 mm SL. Observed but not collected at Marotiri.

Centropyge hotumatua Randall and Caldwell, 1973: BPBM 13012, 60.5 mm SL (paratype). Known only from Easter Island, Pitcairn Group, Rapa, and the Austral Islands.

Centropyge loriculus (Günther, 1874): No specimens obtained, but one sight record was made of this unmistakable small angelfish.

POMACENTRIDAE (DAMSELFISHES)

Abudefduf sexfasciatus (Lacepède, 1801) (fig. 29): AMNH 72779, 4: 12–20 mm SL;

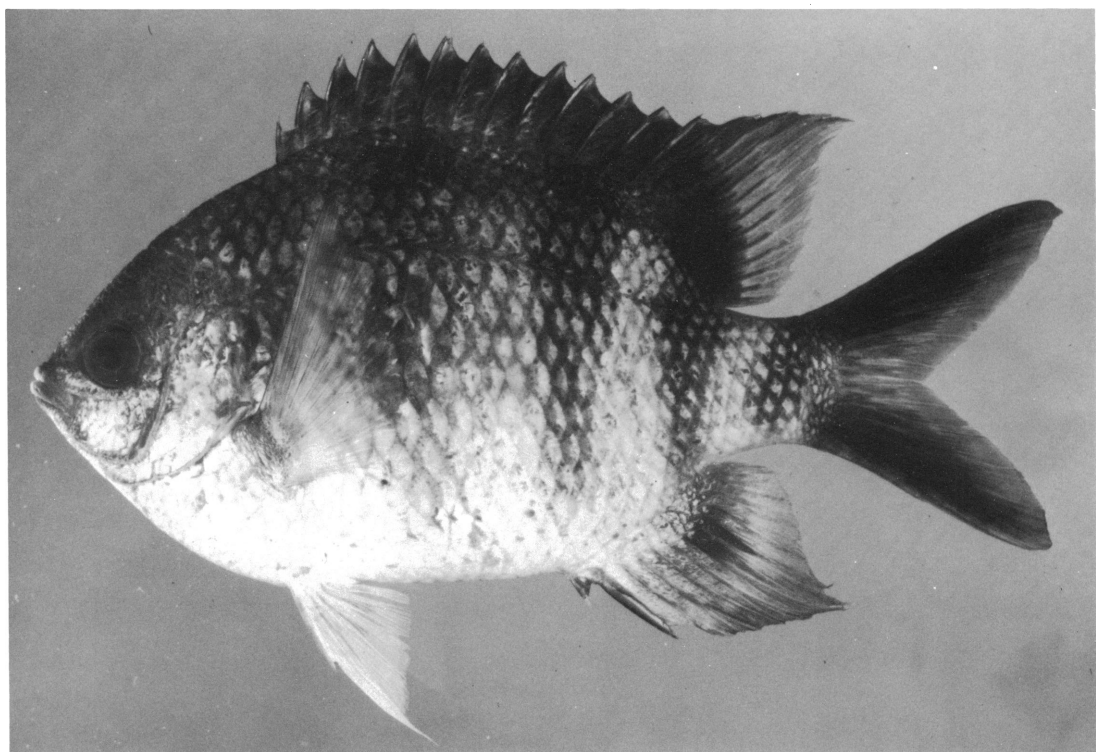


Fig. 29. *Abudehduf sexfasciatus*, BPBM 12992, 132 mm SL.

AMNH 72780, 4: 21–26 mm SL; AMNH 72785, 6: 13.5–19.5 mm SL; BPBM 12863, 120 mm SL; BPBM 12886, 127 mm SL; BPBM 12992, 3: 128–132 mm SL; BPBM 17209, 4: 19–23 mm SL.

Abudehduf sordidus (Forsskal, 1775): BPBM 12932, 177 mm SL; BPBM 17236, 23 mm SL.

Chromis sp.: BPBM 12958, 93 mm SL. To be described by the first author in a revision of the genus. Also collected at islands of the Pitcairn Group.

Chromis agilis Smith, 1960: BPBM 13306, 33 mm SL (Marotiri); also a sight record for Rapa.

Chromis atripectoralis Welander and Schultz, 1951: BPBM 12860, 20: 34–58 mm SL; BPBM 17323, 3: 40–68 mm SL.

Chromis vanderbilti (Fowler, 1941): BPBM 12883, 23 mm SL.

Chrysiptera galba (Allen and Randall, 1974) (fig. 30): AMNH 72846, 5: 18–19 mm SL; AMS I.17347-001, 40.5 mm SL; BPBM 11237, 2: 38.5–41.5 mm SL; BPBM 11243,

2: 49.5–59.5 mm SL (paratypes); BPBM 11244, 54 mm SL (holotype). Described from specimens from Mangareva, Pitcairn Group, Rapa, Tubuai, and Rarotonga.

Dascyllus aruanus (Linnaeus, 1758): AMNH 72782, 26 mm SL; AMNH 72783, 3: 25.5–41 mm SL; AMNH 72784, 4: 10.5–32.5 mm SL; BPBM 12852, 4: 25–28 mm SL; BPBM 17298, 39 mm SL.

Dascyllus flavicaudus Allen and H. Randall, 1977 (fig. 31): BPBM 13031, 87 mm SL (holotype). This Pacific Plate species is recorded from the Society Islands, Tuamotu Archipelago, Pitcairn Groups, and Rapa. Recently collected by the first author at Christmas Island, Line Islands.

Plectroglyphidodon imparipennis (Vaillant and Sauvage, 1875): AMNH 72781, 19 mm SL; BPBM 13301, 2: 27–31 mm SL (Marotiri); BPBM 13416, 6: 21–36 mm SL (Marotiri).

Plectroglyphidodon johnstonianus (Fowler and Ball, 1924): BPBM 12985, 73 mm SL.

Plectroglyphidodon leucozona (Bleeker,

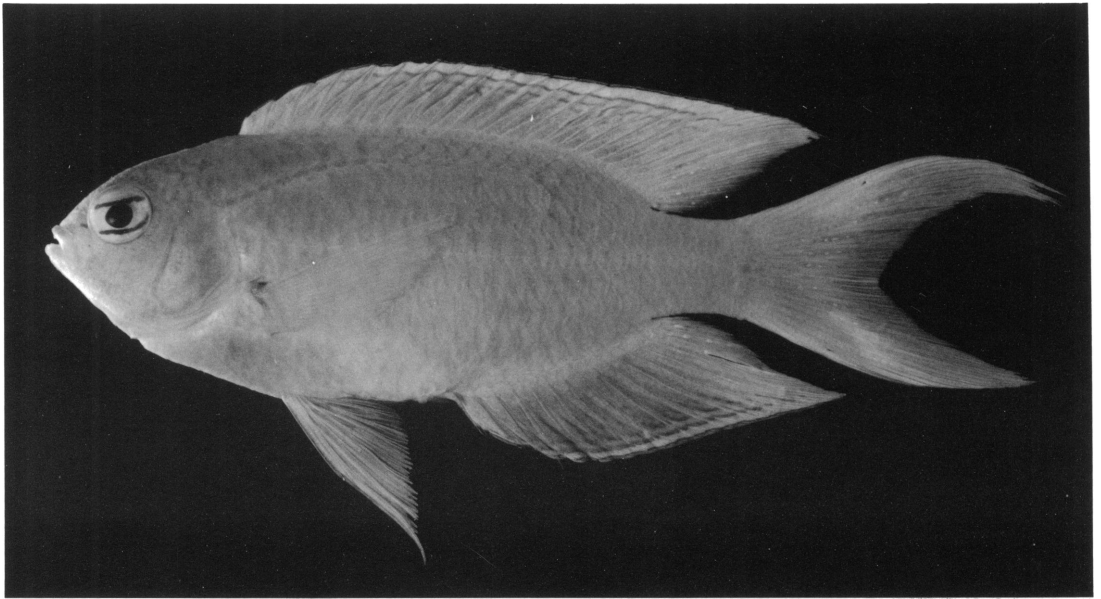


Fig. 30. *Chrysiptera galba*, holotype, BPBM 11244, 54 mm SL.

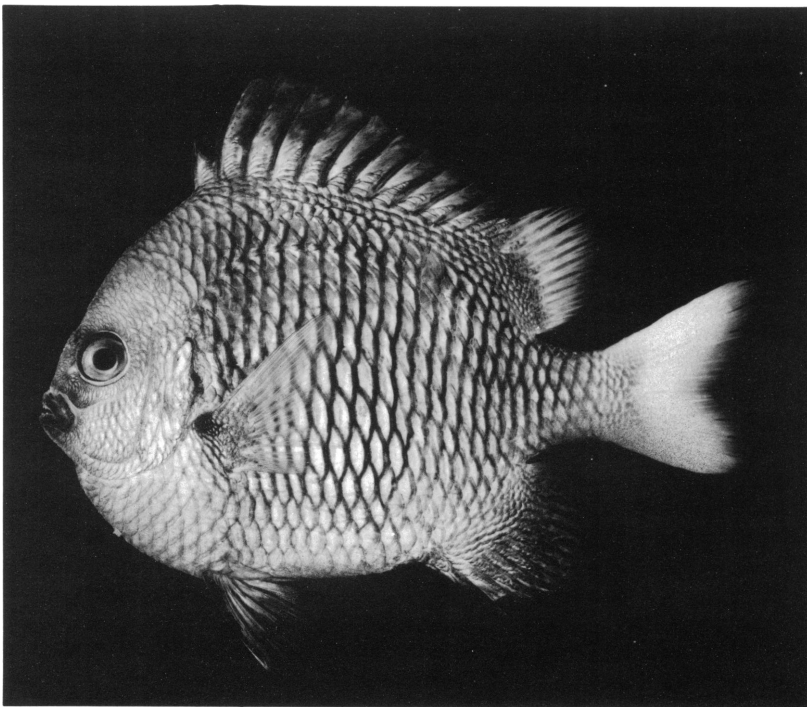


Fig. 31. *Dascyllus flavicaudus*, holotype, BPBM 13031, 87 mm SL.

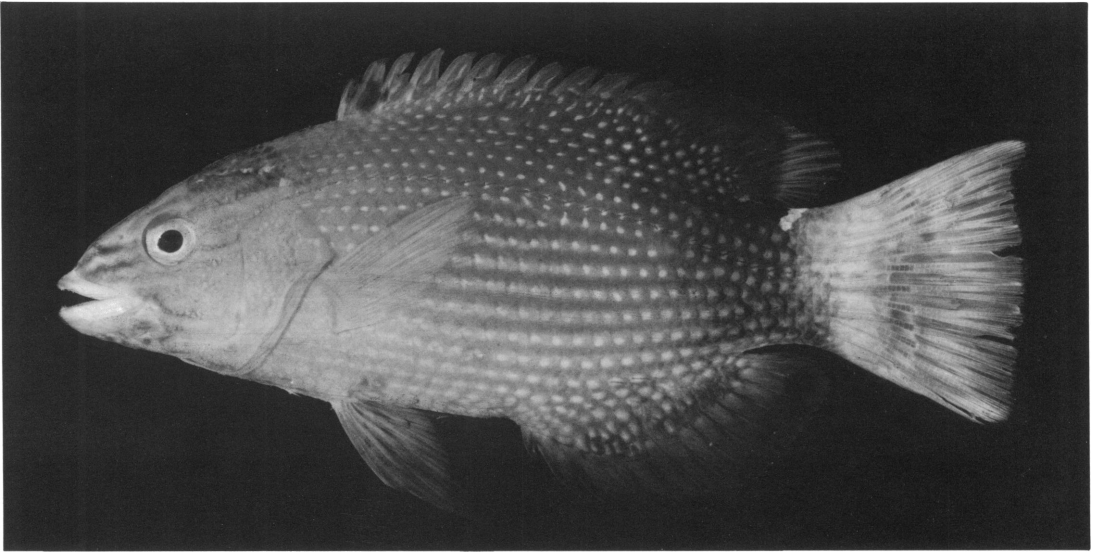


Fig. 32. *Bodianus loxozonus*, BPBM 12890, 247 mm SL.

1859): BPBM 13055, 2: 95–106 mm SL. Collected from a large tidepool at Marotiri.

Stegastes fasciolatus (Ogilby, 1889): AMNH 72841, 2: 17–? (part missing) mm SL; AMNH 72842, 3: 17.5–37 mm SL; AMNH 72843, 5: 15.5–30.5 mm SL; AMNH 72844, 16: 15–19 mm SL; AMNH 72845, 9: 15–55.5 mm SL; BPBM 12840, 111 mm SL; BPBM 12891, 8: 52–122 mm SL; BPBM 13411, 4: 35.5–97 mm SL; BPBM 17208, 3: 24–37 mm SL.

MUGILIDAE (MULLET)

Chaenomugil leuciscus (Günther, 1871): AMNH 72864, 47.5 mm SL.

Crenimugil crenilabis (Forsskal, 1775): AMNH 72862, 5: 118–129 mm SL; AMNH 72863, 10: 33–43 mm SL.

Liza vaigiensis (Quoy and Gaimard, 1825): BPBM 13072, 266 mm SL.

Mugil cephalus Linnaeus, 1758: AMNH 72865, 3: 51–63 mm SL; AMNH 72866, 26 mm SL; AMNH 72867, 3: 27–30 mm SL; AMNH 72868, 21: 33–58.5 mm SL; AMNH 72869, 43: 30.5–139 mm SL; BPBM 13060, 2: 222–260 mm SL.

Valamugil engeli (Bleeker, 1858): AMNH 72867, 3: 27–30 mm SL.

SPHYRAENIDAE (BARRACUDAS)

Sphyræna genie Klunzinger, 1870: BPBM 13286, 400 mm SL.

POLYNEMIDAE (THREADFINS)

Polydactylus sexfilis (Valenciennes, 1831): BPBM 13289, 360 mm SL.

LABRIDAE (WRASSES)

Anampses caeruleopunctatus Rüppell, 1828: BPBM 11604, 46 mm SL; reported from Rapa by Randall (1972: fig. 1). A small juvenile, AMNH 72807, 17 mm SL, is tentatively identified as this species.

Anampses femininus Randall, 1972: BPBM 11603, 57 mm SL (paratype); MNHN 1971-127, 103 mm SL (paratype). Paratypes of this southern subtropical species were also designated from Easter Island, Pitcairn, New Caledonia, and Lord Howe Island.

Anampses twistii Bleeker, 1857: AMNH 72811, 6: 25–31 mm SL.

Bodianus axillaris (Bennett, 1831): BPBM 12849, 152 mm SL.

Bodianus loxozonus (Snyder, 1908) (figs. 32, 33): BPBM 12890, 247 mm SL; BPBM 12954, 94 mm SL; BPBM 12969, 237 mm SL; BPBM 12970, 225 mm SL; BPBM 13010,

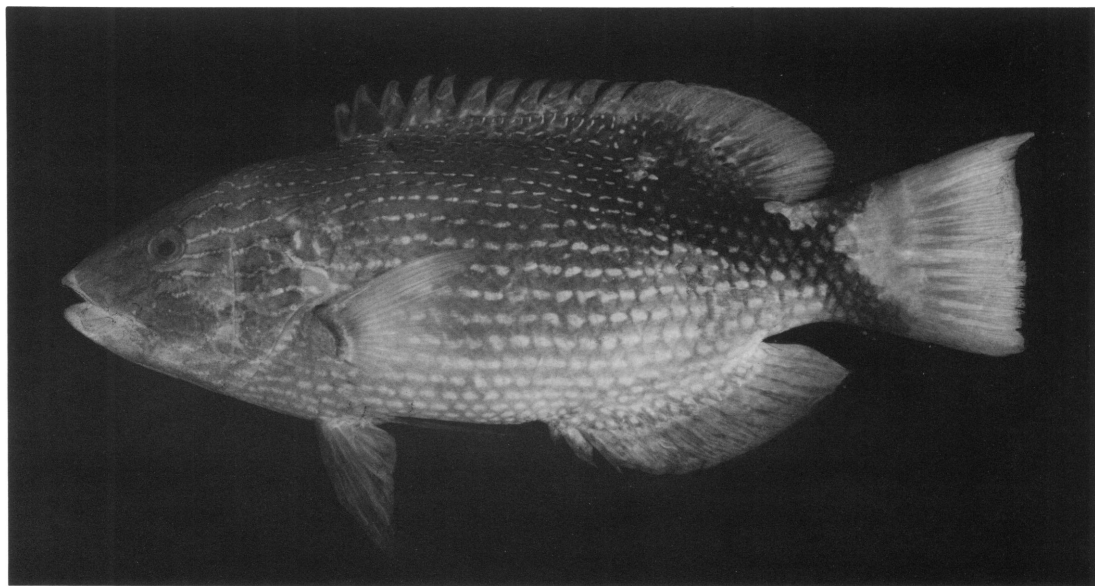


Fig. 33. *Bodianus loxozonus*, BPBM 13010, 96 mm SL.

96 mm SL; BPBM 13046, 192 mm SL (Marotiri).

Bodianus oxycephalus (Bleeker, 1862): BPBM 12972, 2: 293–295 mm SL. Observed but not collected at Marotiri. Gomon and Randall (1978) placed *B. oxycephalus* in the synonymy of *B. vulpinus* (Richardson, 1850). Martin F. Gomon (personal commun.) now restricts *vulpinus* to a southwestern Australian form and will use *oxycephalus* for the Pacific form (also antitropical in distribution).

Bodianus perditio (Quoy and Gaimard, 1834): BPBM 12968, 268 mm SL. Reported as having antitropical distribution by Randall (1982a).

Cheilinus chlorourus (Bloch, 1791): BPBM 13287, 208 mm SL.

Cheilinus unifasciatus Streets, 1877: BPBM 12944, 264 mm SL. As noted by Randall et al. (1985), most authors have misidentified this species as *Cheilinus rhodochrous* Playfair and Günther, named from Zanzibar. *C. unifasciatus* does not range into the western Indian Ocean.

Cheilio inermis (Forsskål, 1775): AMNH 72810, 24.5 mm SL; BPBM 12951, 194 mm SL.

Coris sp. (fig. 34): AMNH 72763, 2: 23–

32.5 mm SL; BPBM 12927, 2: 69–80 mm SL; BPBM 12934, 181 mm SL; BPBM 12964, 8: 17–105 mm SL; BPBM 13021, 203 mm SL. A new species which will be described by the first author in a revision of the genus; it is in a complex which includes *Coris dorsomacula* Fowler and *C. caudimaculata* (Quoy and Gaimard). Also represented by specimens from Mangareva and the Pitcairn Group.

Coris aygula Lacepède, 1801: BPBM 12947, 285 mm SL. Two other specimens, 410 and 435 mm SL, were collected for analysis of stomach and gut contents and then discarded. The three fish had eaten mainly hermit and brachyuran crabs, and mollusks. The largest was a female, but longer individuals were seen with larger humps on their foreheads, which were probably males.

Gomphosus varius Lacepède, 1801: BPBM 13016, 184 mm SL.

Hemigymnus fasciatus (Bloch, 1792): BPBM 12839, 109 mm SL.

Hologymnosus annulatus (Lacepède, 1801): No specimens obtained, but two individuals of the dark female form were observed at Rapa (this sight record reported by Randall, 1982b, in his review of the genus).

Labroides dimidiatus (Valenciennes, 1839):



Fig. 34. *Coris* sp., BPBM 13021, 203 mm SL.

AMNH 72809, 22 mm SL; BPBM 12854, 82 mm SL; BPBM 17272, 86 mm SL. Observed but not collected at Marotiri.

Pseudochielinus sp.: BPBM 17331, 49 mm SL. A new species, which will be described by the first author. Orange-yellow in life, the first two dorsal spines of large adults prolonged. Also collected in the Pitcairn Group.

Pseudojuloides atavai Randall and Randall, 1981: BPBM 12955, 77 mm SL (paratype); MNHN 1979-670, 64 mm SL (paratype). Also known from the Society Islands, Tuamotu Archipelago, and the Pitcairn Group.

Pseudolabrus fuentesi (Regan, 1913): AMNH 72828, 59 mm SL; AMNH 72829, 54 mm SL; AMNH 72830, 20: 12–67 mm SL; AMNH 72831, 33: 13–83.5 mm SL; AMNH 72832, 43: 28–77 mm SL; AMNH 72833, 14: 9.5–62 mm SL; AMNH 72834, 4: 35.5–81.5 mm SL; BPBM 13311, 6: 37–75 mm SL (Marotiri); BPBM 13412, 36 mm SL (Marotiri); BPBM 17184, 2: 35–112 mm SL; BPBM 17221, 13: 32–90 mm SL. The most common fish on Rapan reefs and rocky inshore areas. Also known from Easter Island, Pitcairn Group, and the Austral Islands.

Pseudolabrus torotai Russell and Randall, 1981 (fig. 35): AMS I.20219-001, 129.5 mm SL (paratype); BPBM 12836, 139 mm SL

(paratype); BPBM 13040, 158 mm SL (holotype); MNHN 1979-6-77, 147 mm SL (paratype); USNM 220915, 152 mm SL (paratype). Known only from Rapa and Marotiri (sight record only); named from the Rapan common name. Closely related to *P. semifasciatus* (Rendahl) from Easter Island.

Stethojulis bandanensis (Bleeker, 1851): AMNH 72808, 61.5 mm SL; BPBM 12871, 88 mm SL.

Thalassoma lutescens (Lay and Bennett, 1839): AMNH 72812, 79.5 mm SL; BPBM 13304, 49 mm SL (Marotiri); BPBM 17191, 53 mm SL; BPBM 17228, 31 mm SL; BPBM 17266, 3: 34–46 mm SL.

Thalassoma purpureum (Forsskål, 1775): BPBM 13057, 2: 53–127 mm SL; BPBM 17327, 5: 32–79 mm SL. The initial phase of this species, described as *Julis umbrostygmia* by Rüppell (1835), is difficult to distinguish from the comparable phase of *T. trilobatum* (Lacepède). Randall and Edwards (1984) effected a separation by the higher gill-raker count of *purpureum* (20–25, modally 23, compared with 17–24, modally 20 for *trilobatum*) and a difference in the pattern of maroon bands on the side of the snout.

Thalassoma trilobatum (Lacepède, 1801): BPBM 17235, 43 mm SL. Large adult males observed but not collected.

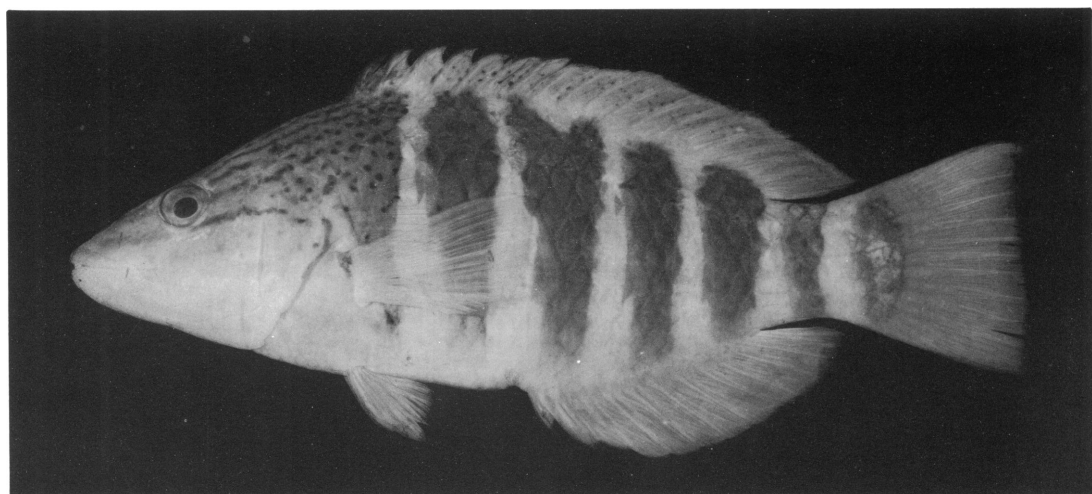


Fig. 35. *Pseudolabrus torotai*, paratype, BPBM 12836, 139 mm SL.

SCARIDAE (PARROTFISHES)

Leptoscarus vaigiensis (Quoy and Gaimard, 1824): BPBM 12867, 212 mm SL; BPBM 12931, 252 mm SL. G. Paulay (personal commun.) informed us that this parrotfish is the most important locally caught fish at Rapa. It is abundant on rocky bottom with heavy algal cover.

Scarus sp.: AMNH 72757, 11 mm SL; AMNH 72758, 2: 21.5–23 mm SL. We are unable to identify these small juvenile scarids to species with confidence.

Scarus altipinnis (Steindachner, 1879): BPBM 13045, 333 mm SL. *S. brevifilis* (Günther) is a junior synonym.

Scarus forsteni (Bleeker, 1861): BPBM 13033, 284 mm SL; BPBM 12949, 402 mm SL (saved head and tail). Randall and Choat (1980) mistakenly reported this species from Rapa as *S. tricolor* Bleeker. Choat and Randall (1986) have differentiated the closely related *S. forsteni* and *S. tricolor*.

Scarus frenatus Lacepède, 1802: BPBM 12027, 346 mm SL; BPBM 13005, 306 mm SL.

Scarus ghobban Forsskål, 1775: BPBM 12986, 203 mm SL. This species ranges from the Red Sea to the tropical and subtropical eastern Pacific.

Scarus gibbus Rüppell, 1828: AMNH 72754, 2: 17–21.5 mm SL; BPBM 12976,

340 mm SL; BPBM 13068, 332 mm SL. Illustrated in color by Randall (1974). The color form of this species that is light red with yellow fins was observed, but not collected, at Rapa.

Scarus globiceps Valenciennes, 1840: BPBM 13035, 2: 189–201 mm SL.

Scarus longipinnis Randall and Choat, 1980: BPBM 13043, 237 mm SL (paratype); BPBM 17195, 35 mm SL (paratype); CAS 44581, 197 mm SL (paratype). This species occurs in deeper water, generally, than other scarids; usually it is seen in more than 20 m, and it has been observed at a depth of 55 m. A southern subtropical species that ranges from the Pitcairn Group to the southern Great Barrier Reef.

Scarus psittacus Forsskål, 1775: BPBM 17219, 32 mm SL; BPBM 17308, 5: 29–72 mm SL.

Scarus schlegeli (Bleeker, 1861): BPBM 12835, 2: 201–210 mm SL; BPBM 13008, 225 mm SL.

Scarus sordidus Forsskål, 1775: AMNH 72755, 25.5 mm SL; BPBM 12858, 22 mm SL; BPBM 12993, 177 mm SL; BPBM 17238, 2: 28–33 mm SL; BPBM 17258, 22 mm SL.

BLENNIIDAE (BLENNIES)

Alticus sp. (fig. 36): BPBM 17325, 81 mm SL. Specimen on loan to Jeffrey T. Williams,

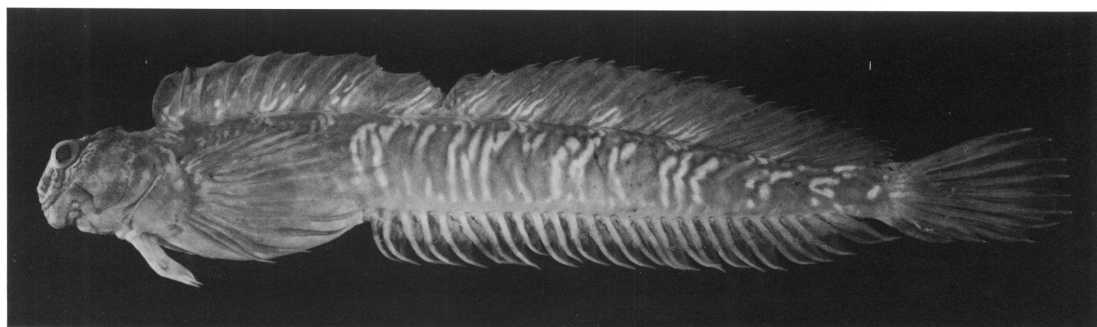


Fig. 36. *Alticus* sp., BPBM 17325, 81 mm SL.

USNM, who has commenced a systematic study of the genus.

Cirripectes alboapicalis (Ogilby, 1899) (fig. 37): BPBM 12916, 2: 39–59 mm SL; BPBM 13308, 2: 39–46 mm SL (Marotiri); BPBM 13413, 5: 31–46 mm SL; BPBM 17222, 8: 31–56 mm SL; BPBM 17302, 4: 32–40 mm SL. Identified by J. T. Williams. Known also from Easter Island, Pitcairn Group, Cook Islands, Kermadec Island, Norfolk Island, Lord Howe Island, and Queensland.

Enchelyurus ater (Günther, 1877): AMNH 72804, 33.5 mm SL; AMNH 72805, 41.5 mm SL; AMNH 72806, 2: 30–35.5 mm SL. Reported from Rapa by Springer (1972a).

Entomacrodus caudofasciatus (Regan, 1909): BPBM 17207, 30 mm SL. Range ex-

tended to Pitcairn Group by Springer (1972b). This form lacks the dark humeral blotch distinctive of most populations. It is color pattern 5 of Springer (1967) and was described by Whitley (1965) as *Salarias rarotongensis*. It is known only from Tahiti, Makatea, Rapa, Raroia, Rarotonga, and Pitcairn.

Entomacrodus epalzeocheilus (Bleeker, 1859): BPBM 13309, 2: 112–113 mm SL (Marotiri). Springer (1972b) discussed the possibility that this species is not distinct from *E. niuafoouensis* (Fowler, 1932).

Entomacrodus niuafoouensis (Fowler, 1932) (fig. 38): BPBM 17324, 27: 24–122 mm SL. Identified by V. G. Springer.

Entomacrodus striatus (Valenciennes, 1836): AMNH 55476, 32 mm SL; AMNH

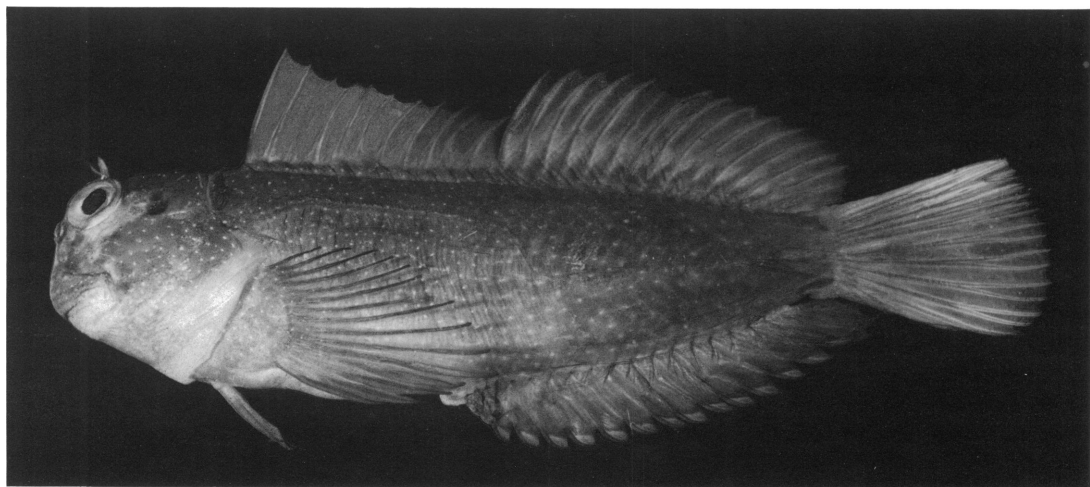


Fig. 37. *Cirripectes alboapicalis*, BPBM 12916, 59 mm SL.

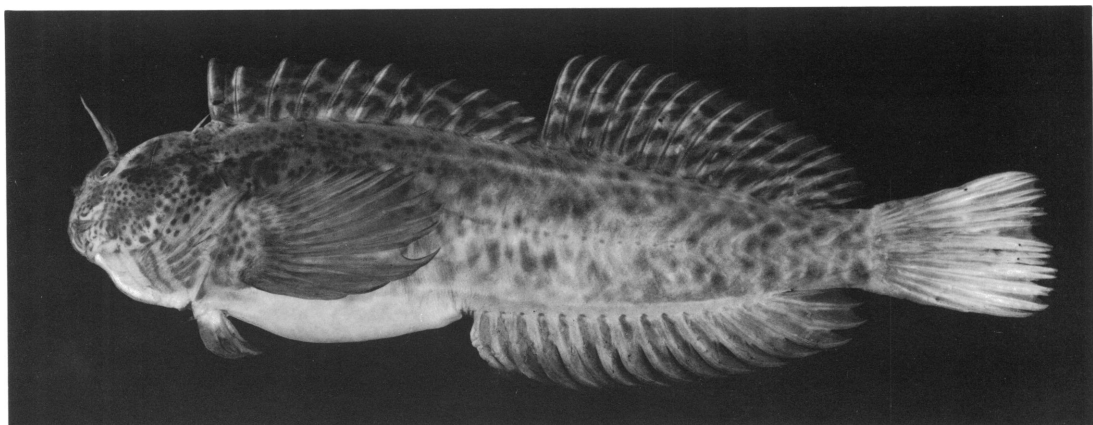


Fig. 38. *Entomacrodus niuafoouensis*, BPBM 17324, 116 mm SL.

55477, 9: 21–59.5 mm SL; BPBM 17217, 54 mm SL; BPBM 17237, 52 mm SL. Identified by V. G. Springer.

Exallias brevis (Kner, 1868): BPBM 12869, 80 mm SL; BPBM 12884, 87 mm SL.

Istiblennius edentulus (Bloch and Schneider, 1801): BPBM 12879, 5: 84–126 mm SL.

Plagiotremus tapeinosoma (Bleeker, 1857): BPBM 12855, 57 mm SL; BPBM 17278, 52 mm SL. Also observed at Marotiri.

Praealticus sp. (fig. 39): BPBM 12877, 2: 49–51 mm SL; BPBM 12878, 48.5 mm SL. This genus is presently being studied by Hans Bath, Frankfurt, F. R. Germany. These specimens appear to represent an undescribed species. They have the following characters: dorsal rays XIII, 19–20; anal rays II, 20–21; pectoral rays 15; gill rakers 10–12; edges of

lips smooth; supraorbital cirrus thin, broad basally, tapering, branches on each side, length longer than orbit diameter; a well-developed crest on head; no nuchal cirrus; body slender, depth at anus about 7 in SL.

TRIPTERYGIIDAE (TRIPLEFINS)

Enneapterygius sp.: AMNH 55475, 23 mm SL; AMNH 72850, 23.5 mm SL; AMNH 72851, 5: 12–21 mm SL; AMNH 72852, 13: 16.5–24.5 mm SL; BPBM 13001, 2: 24–26 mm SL; BPBM 13307, 2: 21.5–23 mm SL (Marotiri); BPBM 13410, 8: 16–28.5 mm SL; BPBM 17210, 21.5 mm SL; BPBM 17230, 5: 21.5–27 mm SL; BPBM 17285, 14 mm SL. This is an undescribed species. Specimens have been examined by V. G. Springer, USNM, Graham S. Hardy, National Mu-

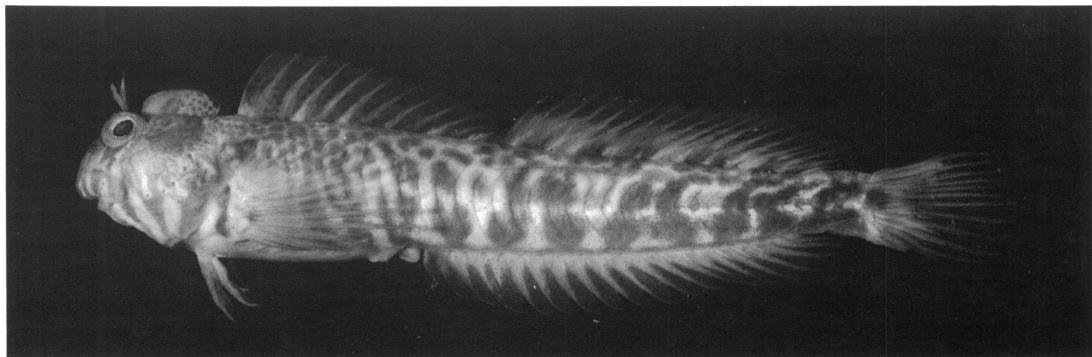


Fig. 39. *Praealticus* sp., BPBM 12877, 51 mm SL.

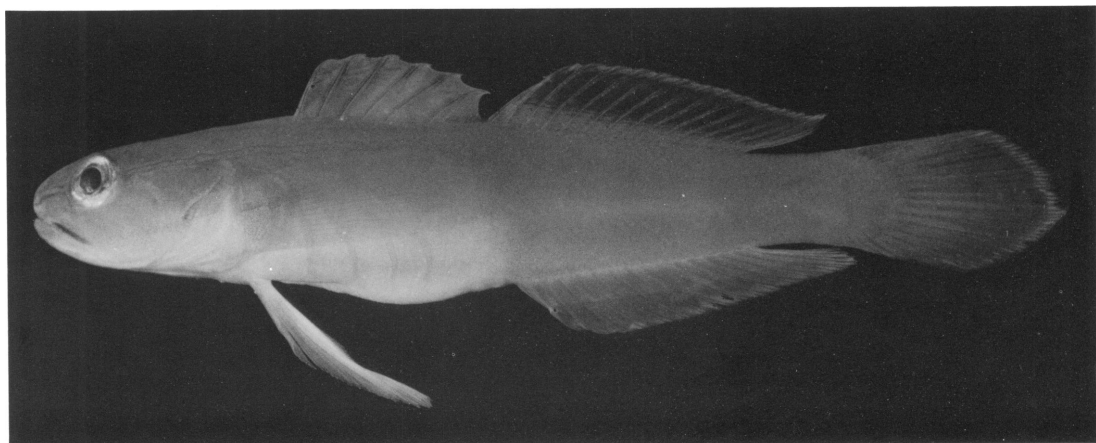


Fig. 40. *Amblygobius nocturnus*, BPBM 12978, 41 mm SL.

seum of New Zealand, and Ronald Fricke, Staatliches Naturhistorisches Museum, Braunschweig, F. R. Germany.

Norfolkia thomasi Whitley, 1964: AMNH 72849, 20 mm SL; BPBM 13018, 3: 18–32 mm SL. Identification provided by R. Fricke.

GOBIIDAE (GOBIES)

Acentrogobius suluensis (Herre, 1927): AMNH 72741, 6: 13–29.5 mm SL; AMNH 72745, 10: 15–28.5 mm SL; AMNH 72746, 55: 10.5–35.5 mm SL. Identified by Douglass F. Hoese, AMS, who reports that this is the easternmost record of the genus.

Amblygobius nocturnus (Herre, 1945) (fig. 40): AMNH 72733, 42 mm SL; AMNH 72747, 22: 30.5–40.5 mm SL; AMNH 72748, 41.5 mm SL; AMNH 72795, 40.5 mm SL; BPBM 12978, 3: 24–41 mm SL; BPBM 17316, 2: 36–37 mm SL.

Amblygobius phalaena (Bleeker, 1851) (fig. 41): BPBM 12997, 98 mm SL.

Asterropteryx semipunctatus Rüppell, 1930: AMNH 51713, 2: 10–14.5 mm SL; AMNH 72723, 5: 8.5–18.5 mm SL; AMNH 72724, 7: 14–39 mm SL; AMNH 72725, 9: 10–39 mm SL. AMNH 72726, 5: 9–33.5 mm SL; AMNH 72727, 95: 11–99 mm SL; BPBM 17299, 3: 15–31 mm SL.

Bathygobius cocosensis (Bleeker, 1854) (fig. 42): AMNH 72735, 17: 9.5–23 mm SL; AMNH 72736, 54: 9–33.5 mm SL; AMNH 72740, 6: 10–38 mm SL; AMNH 73115, 15 mm SL; AMNH 73118, 46: 9.5–48.5 mm SL;

BPBM 13302, 32 mm SL (Marotiri); BPBM 17215, 8: 18–34 mm SL; BPBM 17260, 29: 15–41 mm SL; BPBM 29199, 12.5 mm SL.

Bryaninops yongei (Davis and Cohen, 1969): BPBM 17190, 19 mm SL. Reported from Rapa by Larson (1985).

Eviota sp.: BPBM 13824, 8 mm SL; BPBM 17252, 12 mm SL; BPBM 17253, 11 mm SL; BPBM 17254, 2: 11–12 mm SL. An undescribed species under study by Susan L. Jewett and Ernest A. Lachner, USNM. Also occurs at Tahiti.

Eviota sp.: AMNH 73117, 13 mm SL. Appears to be an undescribed species of the *E. epiphanes* group (see Karnella and Lachner, 1981). Three narrow dark bars below eye; five dorsally on the postorbital head and nape. Two dark spots narrowly joined, one above the other, on pectoral-fin base.

Eviota albolineata Jewett and Lachner, 1983: BPBM 17188, 17 mm SL.

Eviota infulata (Smith, 1956): AMNH 39047, 11 mm SL. Reported from Rapa by Lachner and Karnella (1980).

Eviota saipanensis Fowler, 1945: AMNH 55470, 12 mm SL; AMNH 55471, 13.5 mm SL; AMNH 55472, 14 mm SL; AMNH 55474, 11: 9.5–17.5 mm SL; AMNH 72743, 11 mm SL; AMNH 73119, 12 mm SL; BPBM 17220, 6: 10–16 mm SL; BPBM 17256, 7: 11–19 mm SL; BPBM 17261, 13 mm SL. AMNH specimens identified by Susan Jewett, USNM.

Feia sp.: BPBM 17255, 16.5 mm SL; BPBM

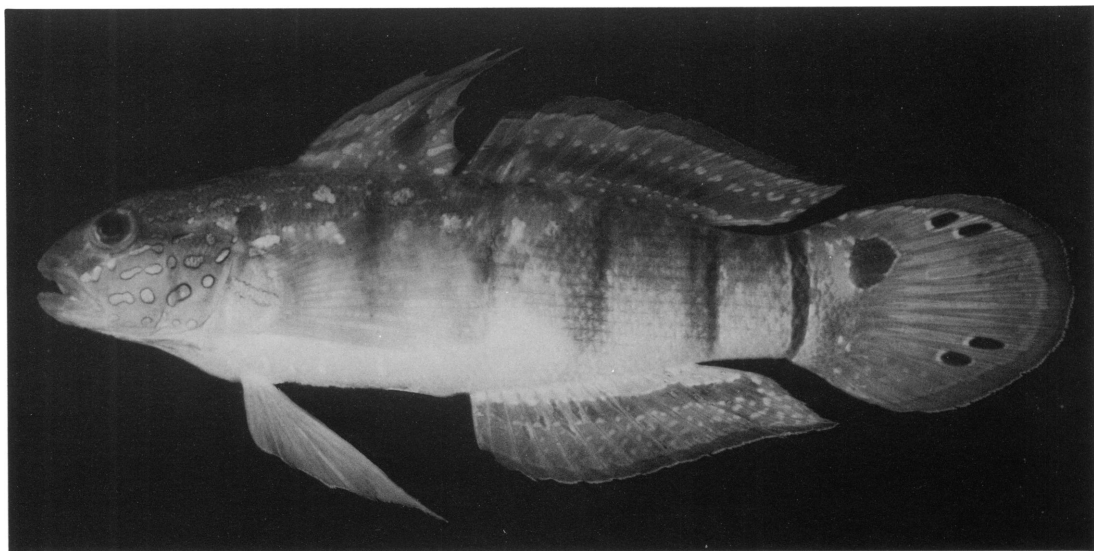


Fig. 41. *Amblygobius phalaena*, BPBM 12997, 98 mm SL.

17305, 15.5 mm SL. Specimens examined by J. Francis McKinney who stated (personal commun.) that they represent a species that is close to *F. nympha* Smith.

Fusigobius neophytus (Günther, 1877): AMNH 72742, 37.5 mm SL; BPBM 17280, 2: 14–28 mm SL; BPBM 17310, 42 mm SL.

Gnatholepis anjerensis (Bleeker, 1850) (fig. 43): BPBM 12965, 56 mm SL; BPBM 17183, 7: 30–36 mm SL; BPBM 17267, 2: 33–38 mm SL; BPBM 17276, 2: 36–42 mm SL; BPBM 17319, 5: 25–43 mm SL. The iden-

tification of these specimens is tentative, pending a much-needed revision of the genus.

Gobiodon sp.: AMNH 72794, 4: 36–40.5 mm SL; BPBM 12853, 28 mm SL. Pectoral rays 19; four small canine teeth on each side at front of lower jaw; gill opening extending nearly to level of lower base of pectoral fin; yellow in life with four vertical blue lines (two below eye, one on opercle, one extending dorsally from pectoral-fin base).

Gobiodon sp.: BPBM 17227, 17 mm SL.

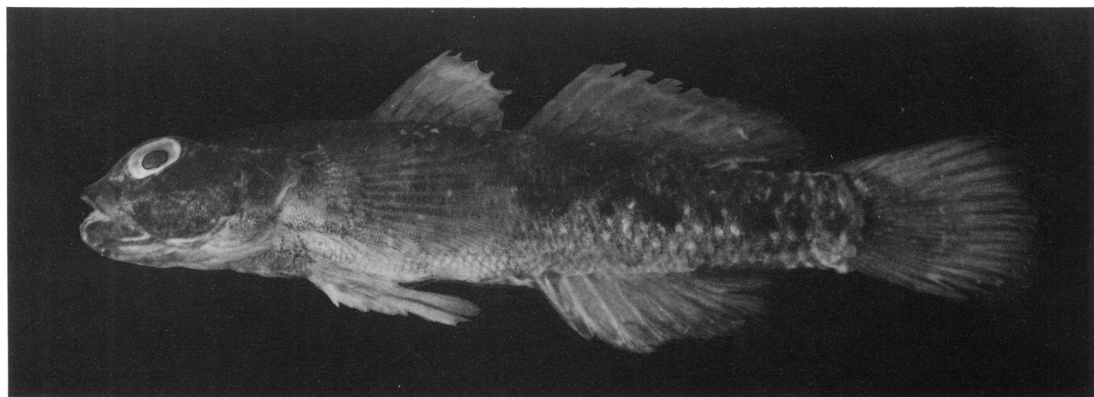


Fig. 42. *Bathygobius cocosensis*, BPBM 17215, 34 mm SL.

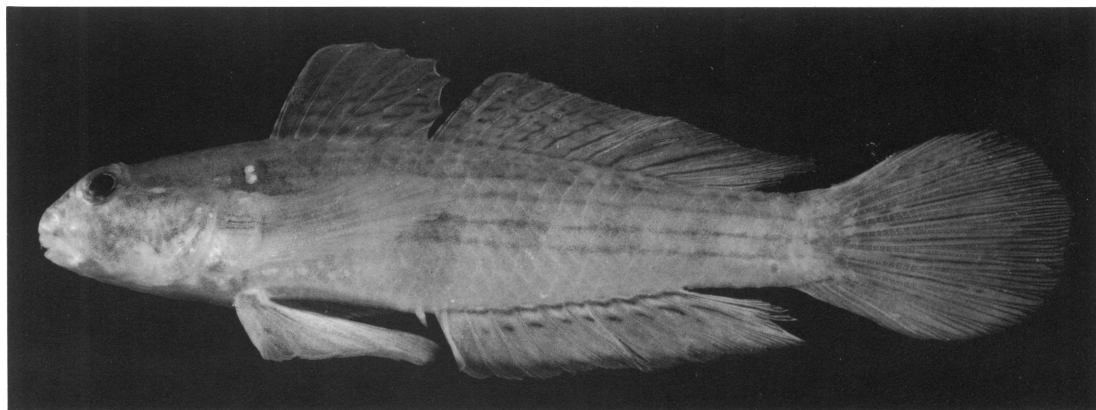


Fig. 43. *Gnatholepis anjerensis*, BPBM 17319, 43 mm SL.

Pectoral rays 18; one canine tooth on each side near front of lower jaw; gill opening nearly reaching level of lower base of pectoral fin; uniformly brown in preservative (under a microscope, light brown, finely flecked with dark brown).

Gobiodon sp.: BPBM 17263, 23 mm SL; BPBM 24770, 21 mm SL. Pectoral rays 19; a canine tooth on each side near front of lower jaw; gill opening nearly reaching level of lower base of pectoral fin; yellowish brown in preservative with two wavy, vertical, brown-edged pale lines extending above and below eye, five on postorbital head, and many on body (faint posteriorly).

Heteroleotris sp. (fig. 44): AMNH 72728, 2: 21–26 mm SL; AMNH 72729, 16: 18.5–

30 mm SL; AMNH 72730, 8: 15.5–22.5 mm SL; AMNH 72731, 4: 11–21.5 mm SL; AMNH 72732, 22: 13–28 mm SL; BPBM 17185, 19 mm SL; BPBM 17213, 4: 18–29 mm SL; BPBM 17251, 12: 11–26 mm SL; BPBM 17283, 6: 16–29 mm SL. These specimens represent a new species which will be described by D. F. Hoese, AMS. This species and a closely related one from Easter Island will probably be classified by Hoese in a new genus. The specimens have brown-edged scales except ventrally and three longitudinal rows of small brown blotches on the body, one along the back, one midlateral, and one above the base of the anal fin.

Priolepis sp. (fig. 45): AMNH 39008, 12 mm SL; AMNH 72734, 5: 24–32.5 mm SL;

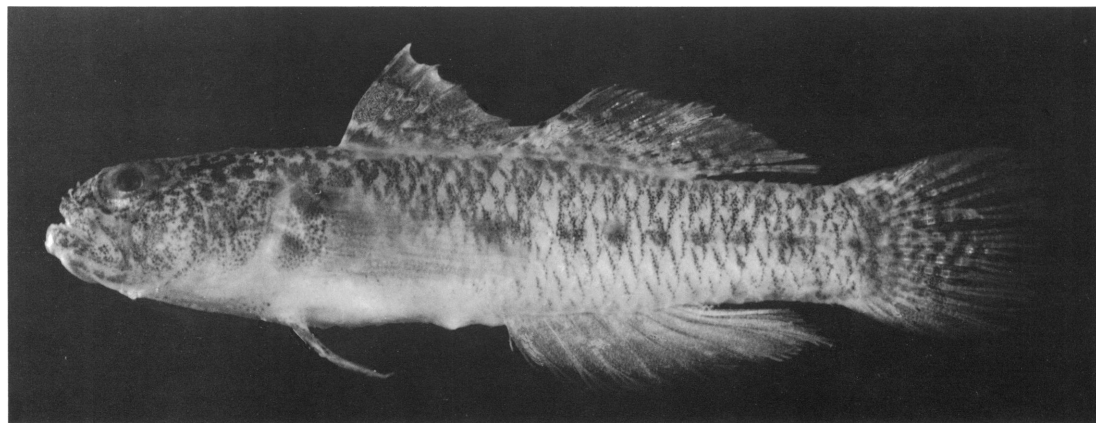


Fig. 44. *Heteroleotris* sp., BPBM 17213, 29 mm SL.

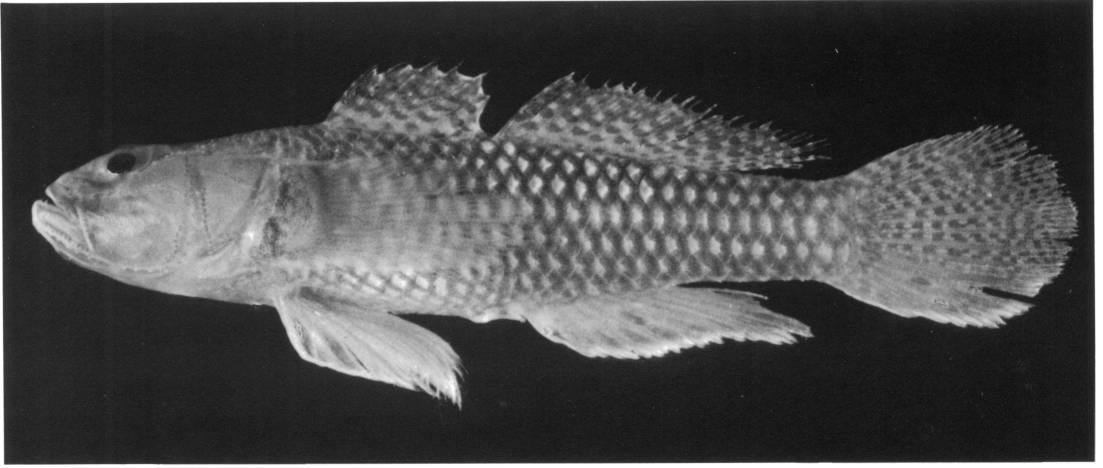


Fig. 45. *Priolepis* sp., BPBM 17306, 35 mm SL.

AMNH 72737, 9: 20–30 mm SL; AMNH 72739, 3: 20–27 mm SL; AMNH 72744, 9: 11–28 mm SL; BPBM 17200, 27 mm SL; BPBM 17270, 25: 14–35 mm SL; BPBM 17281, 14 mm SL; BPBM 17306, 12: 21–35 mm SL; BPBM 17328, 3: 17–22 mm SL. These specimens are on loan to D. F. Hoese, AMS, who reports that they represent an undescribed species that also occurs at Easter Island. Most species of this genus have been classified previously in *Quisquilius* Jordan and Evermann, now regarded as a junior synonym of *Priolepis* Valenciennes.

Sicyopterus sp. (fig. 46): AMNH 19941, 7:

48–66 mm SL; AMNH 72762, 4: 43.5–67.5 mm SL; BPBM 12923, 17: 39–75 mm SL. The first lot was collected in 1934 by the Crocker “Zaca” Expedition. The other specimens were collected from fresh water draining to Haurei Bay. Second dorsal rays I, 11; pectoral rays 19; scale rows from upper end of gill opening to base of caudal fin 60–62; predorsal scales about 14. Narrow dark bar runs ventrally from eye. John A. Maciolek has informed us that these specimens represent an undescribed species which will be described by him and Lynn Parenti who is revising the genus.

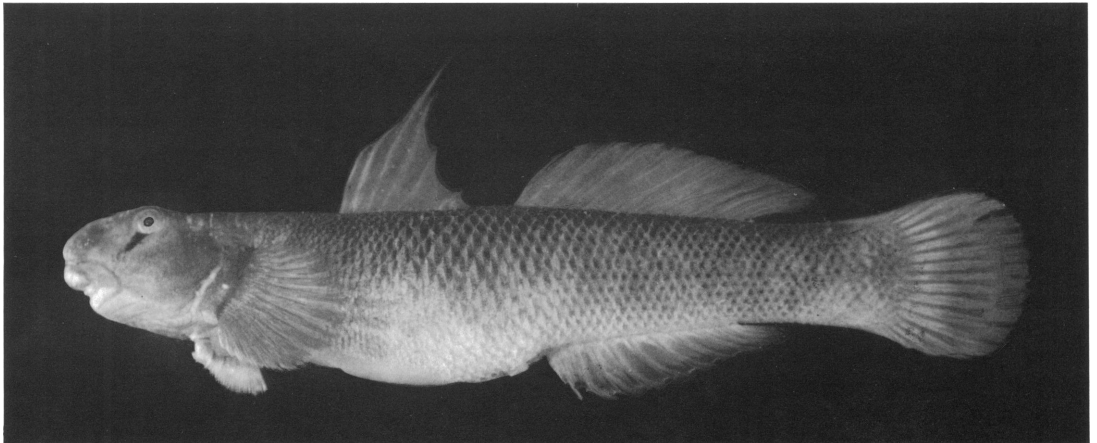


Fig. 46. *Sicyopterus* sp., BPBM 12923, 65 mm SL.

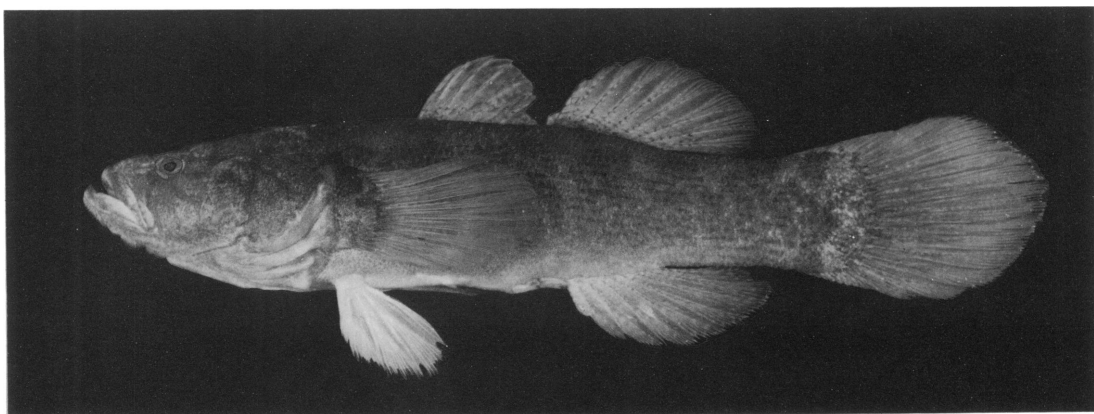


Fig. 47. *Eleotris fusca*, BPBM 12922, 136 mm SL.

Trimma sp.: BPBM 12966, 23 mm SL; BPBM 17189, 21 mm SL; BPBM 17281, 13.5 mm SL; BPBM 17328, 3: 15.5–19.5 mm SL. These specimens are under study by Richard Winterbottom of the Royal Ontario Museum who is revising the genus. They were primarily yellow in life.

Trimmatom sp.: BPBM 17192, 16.5 mm SL; BPBM 17249, 7: 15–21.5 mm SL; BPBM 17282, 11 mm SL; BPBM 17301, 5: 14.5–16.5 mm SL. Also being studied by Winterbottom. This species is similar in color to *T. eviotops* (Schultz).

Vanderhorstia ornatissima Smith, 1959: AMNH 72738, 10: 25–35.5 mm SL; AMNH 72753, 7: 14–32 mm SL.

ELEOTRIDIDAE (SLEEPERS)

Eleotris fusca (Schneider, 1801) (fig. 47): BPBM 12922, 2: 100–136 mm SL; BPBM 12924, 144 mm SL. Collected in fresh water from a river at the head of Haurei Bay.

MICRODESMIDAE

(WORMFISHES AND DARTFISHES)

Ptereleotris evides (Jordan and Hubbs, 1925): BPBM 12930, 39 mm SL. Reported from Rapa by Randall and Hoese (1985), who provisionally transferred the genus *Ptereleotris* from the Gobiidae to the Microdesmidae. A possibility exists that *Ptereleotris* and *Nemateleotris* will ultimately be classified in a separate family.

ACANTHURIDAE (SURGEONFISHES)

Acanthurus guttatus Schneider, 1801: BPBM 13290, 67 mm SL.

Acanthurus leucopareius (Jenkins, 1903): AMNH 72870, 3: 35–36.5 mm SL; AMNH 72871, 35 mm SL; AMNH 72874, 178 mm SL; BPBM 12865, 2: 165–180 mm SL; BPBM 13297, 4: 37–43 mm SL (Marotiri); BPBM 17201, 40 mm SL. Randall (1982a) reported this central and western Pacific species from Rapa and Marotiri and pointed out that its distribution is antiequatorial.

Acanthurus nigrofasciatus (Forsskål, 1775): BPBM 12935, 127 mm SL; BPBM 17303, 39 mm SL.

Acanthurus thompsoni (Fowler, 1923): BPBM 13013, 51 mm SL.

Acanthurus triostegus triostegus (Linnaeus, 1758): AMNH 72873, 24 mm SL; BPBM 13295, 4: 32.5–35 mm SL; BPBM 17216, 5: 19–31 mm SL; BPBM 17231, 120: 25–37 mm SL.

Ctenochaetus striatus (Quoy and Gaimard, 1825): BPBM 13034, 173 mm SL.

Ctenochaetus strigosus (Bennett, 1828) (fig. 48): BPBM 13032, 37 mm SL. This juvenile was bright yellow when alive with a narrow blue margin on the dorsal and anal fins, the iris mostly bright blue.

Naso lituratus (Schneider, 1801): No specimens collected, but the species is known to the Rapans who call it *ume tarei*.

Naso unicornis (Forsskål, 1775): BPBM 12990, saved tail only; the tail with blue cau-

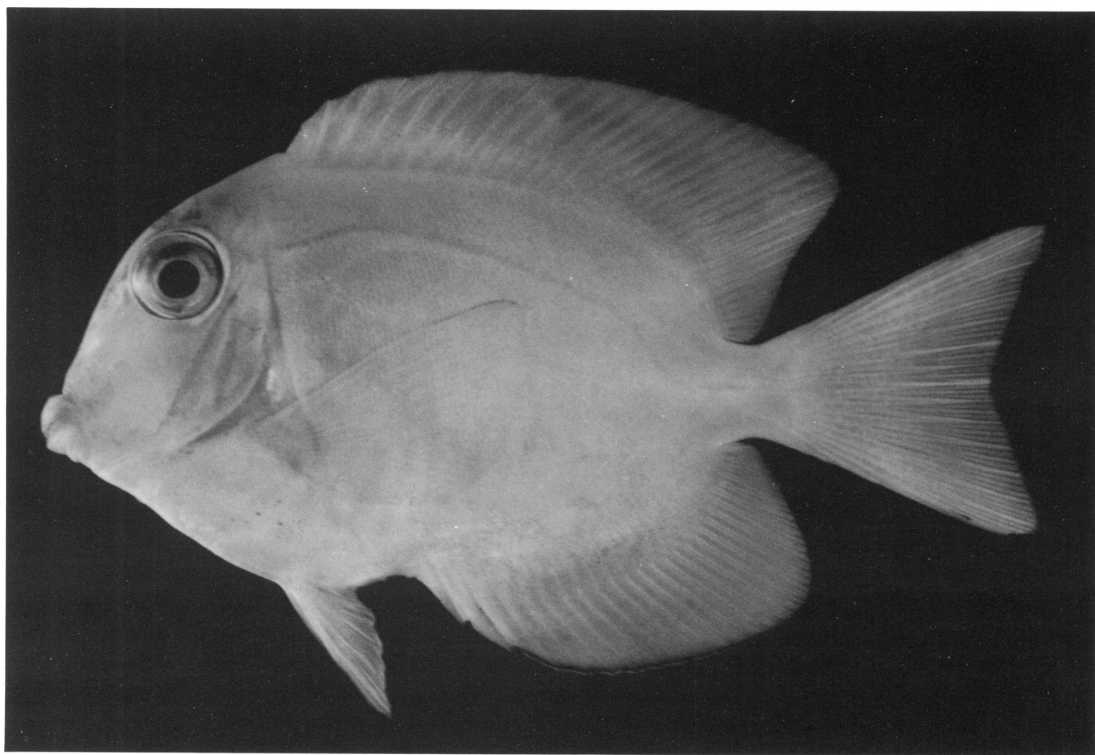


Fig. 48. *Ctenochaetus strigosus*, BPBM 13032, 37 mm SL.

dal spines was obtained from a Rapan fisherman.

Zebrasoma rostratum (Günther, 1873): BPBM 12847, 135 mm SL. Otherwise known from the Society Islands, Tuamotu Archipelago, Marquesas, and the Line Islands.

Zebrasoma scopes (Cuvier, 1829): BPBM 12995, 72 mm SL.

Zebrasoma veliferum (Bloch, 1795): BPBM 12933, 213 mm SL.

ZANCLIDAE (MOORISH IDOLS)

Zanclus cornutus (Linnaeus, 1758): BPBM 12987, 107 mm SL. Observed but not collected at Marotiri.

SIGANIDAE (RABBITFISHES)

Siganus argenteus (Quoy and Gaimard, 1825): BPBM 13025, 177 mm SL.

CENTROLOPHIDAE (MEDUSAFISHES)

Schedophilus labyrinthicus McAllister and Randall, 1975: BPBM 12253, 512 mm SL. Reported from Rapa by McAllister and Ran-

dall but not designated as a paratype. No information is available on the depth of capture for the Rapa fish, but a paratype from Easter Island was taken in about 300 m.

SCOMBRIDAE (MACKERELS AND TUNAS)

Acanthocybium solandri (Cuvier, 1831): BPBM 13064, 1600 mm FL (saved only the head and tail).

Gymnosarda unicolor (Rüppell, 1836): No specimens obtained, but this species is well known to Rapan fishermen who call it *va'u*.

Katsuwonus pelamis (Linnaeus, 1758). A photograph by G. Paulay of this species from the catch of a Rapan fisherman confirms the presence of this cosmopolitan pelagic species in Rapan waters.

Thunnus albacares (Bonnaterre, 1788): BPBM 13062, 745 mm FL (saved head and tail).

XIPHIIDAE (SWORDFISHES)

Xiphias gladius Linnaeus, 1758: AMNH 8257, 113 mm caudal end of specimen ob-

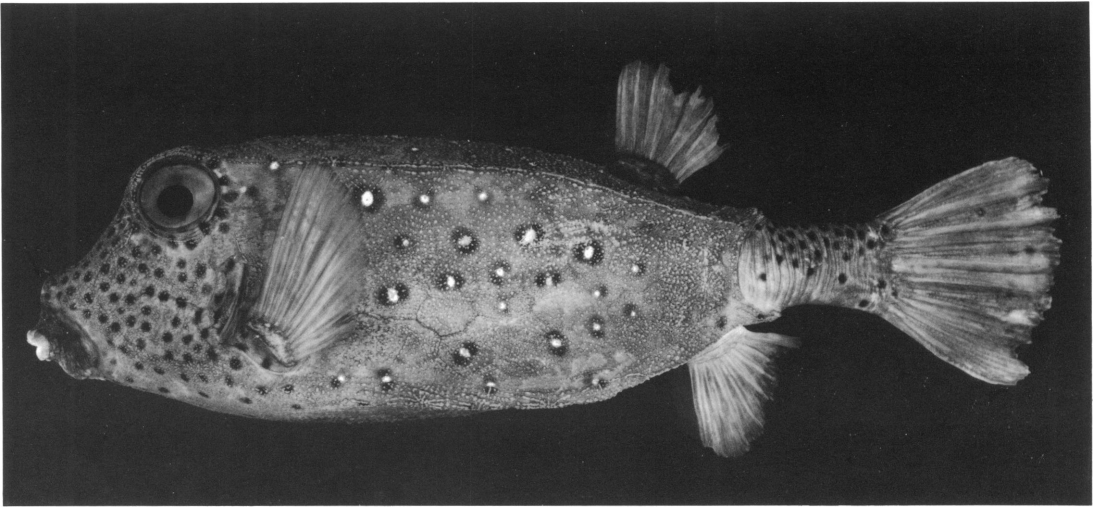


Fig. 49. *Ostracion cubicus*, BPBM 12453, 111 mm SL.

tained from the gullet of a tropic bird; described as a new genus and species, *Phaethonichthys tuberculatus*, by Nichols (1923). Norman (1957) placed this in the synonymy of *X. gladius*, perhaps as a result of the study of the life history of this majestic fish by Nakamura et al. (1951).

BOTHIDAE (LEFT EYE FLOUNDERS)

Bothus mancus (Broussonet, 1782): BPBM 13071, 223 mm SL.

BALISTIDAE (TRIGGERFISHES)

Sufflamen bursa (Bloch and Schneider, 1801): BPBM 12962, 162 mm SL.

Xanthichthys mento (Jordan and Gilbert, 1881). Sight record at Marotiri. Antitropical distribution.

MONACANTHIDAE (FILEFISHES)

Cantherhines dumerilii (Hollard, 1854): BPBM 13044, 295 mm SL.

Cantherhines pardalis (Rüppell, 1837): BPBM 12919: 74 mm SL; BPBM 12941, 74 mm SL.

OSTRACIIDAE (TRUNKFISHES)

Lactoria fornasini (Bianconi, 1846): AMNH 72872, 63 mm SL; BPBM 12859, 58 mm SL.

Ostracion cubicus Linnaeus, 1758 (fig. 49):

BPBM 12453, 111 mm SL; BPBM 13030, 102 mm SL.

Ostracion meleagris Shaw, 1796 (fig. 50): BPBM 12837, 104 mm SL; BPBM 12981, 118 mm SL.

TETRAODONTIDAE (PUFFERS)

Arothron hispidus (Linnaeus, 1758): One adult was speared twice in 27 m, but each time the spear passed entirely through the fish, and it ultimately escaped.

Arothron meleagris (Lacepède, 1789): BPBM 13073, 248 mm SL.

Canthigaster rapaensis Allen and Randall, 1977 (fig. 51): AMS I.16588-001, 97 mm SL (paratype); BPBM 12662, 83.5 mm SL (paratype); BPBM 12952, 78 mm SL (holotype); BPBM 12983, 61 mm SL (paratype); USNM 208277, 73.5 mm SL (paratype) USNM 208346, 81.5 mm SL (paratype). Known only from Rapa. A close relative of *C. epilampra* (Jenkins).

DIODONTIDAE (PORCUPINEFISHES)

Diodon hystrix Linnaeus, 1758: BPBM 12975, 355 mm SL.

DISCUSSION

We record a total of 268 species of fishes in 66 families from Rapa. Undoubtedly more

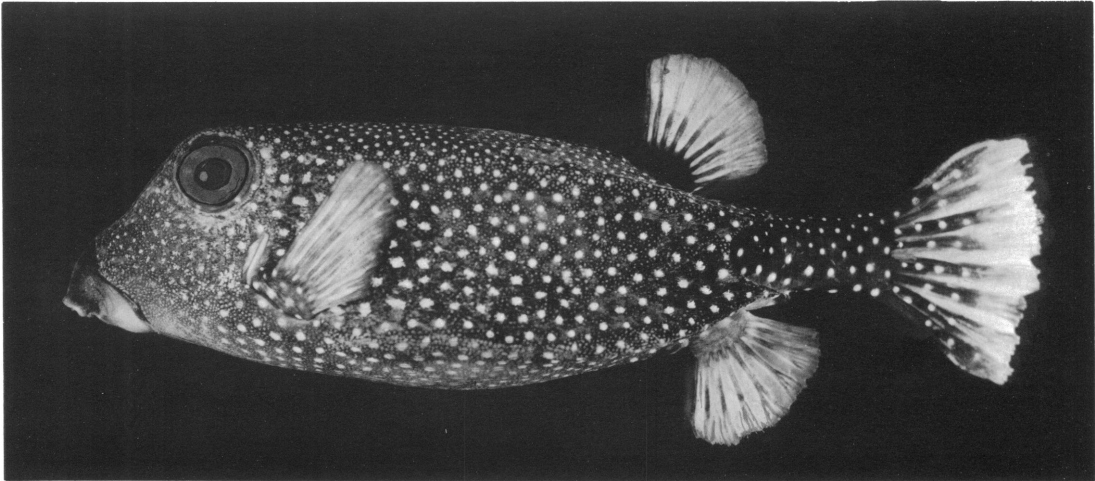


Fig. 50. *Ostracion meleagris*, female, BPBM 12837, 104 mm SL.

species remain to be collected, particularly from deeper water, which was not adequately sampled. However, for the reef and shore fishes, we estimate that our records include more than 90 percent of the species present. The number of species is notably small for an island in the Pacific but not unexpected in view of the isolation, southern location, and small size of Rapa.

The following shallow-water families, of which there are wide-ranging species on the Pacific Plate including elsewhere in French Polynesia, were not found at Rapa: Hemigaleidae (the genus *Triaenodon*), Dasyatidae, Myliobatidae, Chlopsidae (Xenocoelidae), Antennariidae, Clupeidae, Engraulidae, Carapidae, Platycephalidae, Pseudochromidae, Plesiopidae, Malacanthidae, Echeiidae,

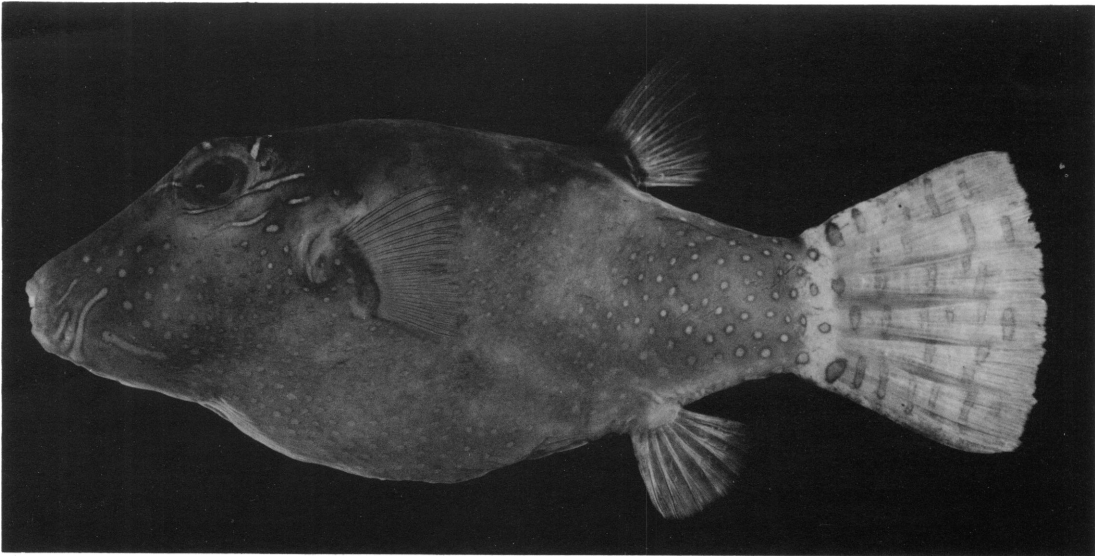


Fig. 51. *Canthigaster rapaensis*, holotype, BPBM 12952, 78 mm SL.

Mugiloididae, Ephippididae, Creediidae, Trichonotidae, Callionymidae, Kraemeriidae, Pleuronectidae, and Soleidae. Probably some of these families occur at Rapa but were not encountered during our periods of fish collecting. Also conspicuous by their apparent absence are any species of the following large genera of families that do occur at Rapa: *Scorpaenopsis*, *Pseudanthias*, *Lethrinus*, *Pomacentrus*, *Halichoeres*, *Cirrhilabrus*, *Heniochus*, *Pomacanthus*, *Amblyeleotris*, *Valenciennae*, and *Rhinecanthus*.

In spite of its southern location, 73 percent of the fishes at Rapa are tropical Indo-Pacific species (i.e., they range into tropical central or western Pacific localities and may extend into the Indian Ocean as well). Species that are southern subtropical in distribution (by definition occurring at least at one other subtropical island, but some extending from Easter Island to Lord Howe Island or the Great Barrier Reef) constitute 10 percent of the Rapa fish fauna; 5.4 percent are antiequatorial in distribution; 4.3 percent are endemic (though undoubtedly most of these species, which include unidentified gobies, will ultimately be found elsewhere); 3.9 percent are cosmopolitan nonpelagic; 2.7 percent are pelagic; and 0.8 percent are eastern Pacific in origin.

Nine species of fishes occur from Easter Island to Rapa (two of these extend their range westward to the Australs), and three species, still undescribed, are common to Pitcairn and Rapa (one of which has also been collected at Mangareva).

Springer (1982) called attention to the significance of the Pacific Plate as a major subunit of the Indo-Pacific region, based principally on the knowledge of the distributions of fishes and the surprising number of species that are endemic to the plate. Of the 268 species of fishes reported herein from Rapa, 45, from presently known distribution patterns, are confined to the Pacific Plate.

The family of fishes with the greatest representation at Rapa is Labridae with 24 species. Next largest is Gobiidae with 23 species, then Apogonidae with 16 species and Serranidae with 14, followed by Chaetodontidae and Pomacentridae, with 13 species each.

The most common species observed by di-

vers on Rapa reefs are *Pseudolabrus fuentesi*, *Thalassoma lutescens*, *Stegastes fasciolatus*, *Acanthurus leucopareius*, *Chrysiptera galba*, and *Chromis* sp. Representing a second level of abundance among Rapa reef fishes are *Sargocentron* sp., *Scarus gibbus*, *Chaetodon smithi*, *Abudefduf sexfasciatus*, *Epinephelus fasciatus*, *E. merra*, *Parupeneus multifasciatus*, *Plectroglyphidodon johnstonianus*, *Scarus schlegeli*, *Chaetodon flavirostris*, and *Cheilinus unifasciatus*. *Leptoscarus vaigiensis* is abundant in heavy benthic algal growth but often hides in the algae with the approach of danger. As indicated by our collections, some of the gobiids, apogonids, tripterygiids, and muraenids are abundant but they are not readily seen by divers. In protected bays around beds of *Acropora*, *Dascyllus aruanus* and *Chromis atripectoralis* are the dominant fishes. In brackish Haurei Bay, *Mugil cephalus* is common and sought by Rapan fishermen.

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