Paradiplospinus Andriashev, 1960

GEMP Para

Paradiplospinus Andriashev, 1960:244, figs 1, 2. Type species, ***Paradiplospinus antarcticus*** Andriashev, 1960, by original designation (also monotypic).

Synonyms: None.

Field Characters: Body extremely elongate. Anus situated much nearer tip of caudal-fin origin than tip of snout, distance to first anal-fin spine much shorter than head length. Second dorsal-fin base less than half of first dorsal-fin base.

Diagnostic Features: Body extremely elongate and compressed; in adults, maximum body depth 12 to 17 times in standard length; body width 1.9 to 2.4 times in body depth: position of anus about twice nearer tip of caudal fin than to tip of snout and its distance to first anal-fin spine not more than snout length. Lower jaw extends anterior to upper jaw; tip of both jaws without dermal process; prominent interorbital slits developed between frontal and upper suborbital; several gently curved fangs on anterior part of upper jaw and a pair on tip of lower jaw, lateral teeth strongly compressed, pointed and irregularly spaced; vomer edentate, uniserial; minute teeth on palatines.Length of second dorsal-fin base less than half of first dorsal-fin base, first dorsal fin with XXXV to XXXIX spines, second dorsal fin with 26 to 34 soft rays; anal fin with II small free spines in front of 24 to 31 soft rays, anterior soft part of anal fin fairly high, with fin membrane; pectoral fins with 12 to 14 soft rays; pelvic fins with of I spine (in juveniles) or absent. A single midlateral lateral line.Vertebrae total 60 to 67, including 35 to 39 precaudal and 23 to 28 caudal. **Colour:** Body brownish black or silvery white; buccal and branchial cavities black.

Biology, Habitat and Distribution: Benthopelagic (***P. antarcticus*** may be pelagic) feeds on micronektonic fish and invertebrates. Known from southern East Atlantic and in the Southern Ocean.

Interest to Fisheries: No data available.

Species: Two species described, that are often considered synonymous, but they can be separated by the following key.

Remarks: Karrer (1975), Fitch and Gotshall (1972) and Russo (1983) considered ***Paradiplospinus*** as a synonym of ***Diplospinus.***

Key to Species of *Paradiplospinus:*

1a. Head length 4.9 to 5.4 times in standard length; distance from anus to first anal-fin spine equal to snout length; vertebrae total 64 to 67; body silvery . . . . . ***P. antarcticus***

1b. Head length 4.5 to 4.9 times in standard length; distance from anus to first anal-fin spine 1.1 to 1.4 times in snout length; vertebrae total 60 to 64; body in adults brownish black . . . . . ***P. gracilis***

Paradiplospinus antarcticus Andriashev, 1960

Fig. 66

GEMP Para 1

Paradiplospinus antarcticus Andriashev, 1960:245-248, figs 1, 2 (Antarctic Seas: 63º02'S, 121º08'E).

Synonyms: None, In the belief that there was only a single species of ***Paradiplospinus*** many authors used the name ***P. gracilis*** as including ***P. anturcticus.***

FAO Names: En - Antarctic escolar; **Fr** - Escolier antarctique; **Sp** - Escolar antartico.

Field Characters: Distance from anus to first anal-fin spine equal to snout length. Body silvery.

Diagnostic Features: Body extremely elongate, its depth 13 to 17 times in standard length; anus situated below the 32nd to 34th dorsal-fin spine; distance from anus to first anal-fin spine equal to snout length. Head length 4.9 to 5.4 times in standard length, in specimens more than 30 cm standard length; anteriorly in upper jaw 3 to 6 fangs and 1 fang anteriorly on each side of lower jaw. Second dorsal-fin base 2.1 to 2.6 times in length of first dorsal-fin base, first dorsal fin with XXXVI to XXXIX spines, second with 28 to 34 soft rays (total 66 to 71 fin elements); anal fin with II free spines and 25 to 31 soft rays. Pyloric caeca 6. Vertebrae total 64 to 67, including 37 to 39 precaudal and 26 to 28 caudal.

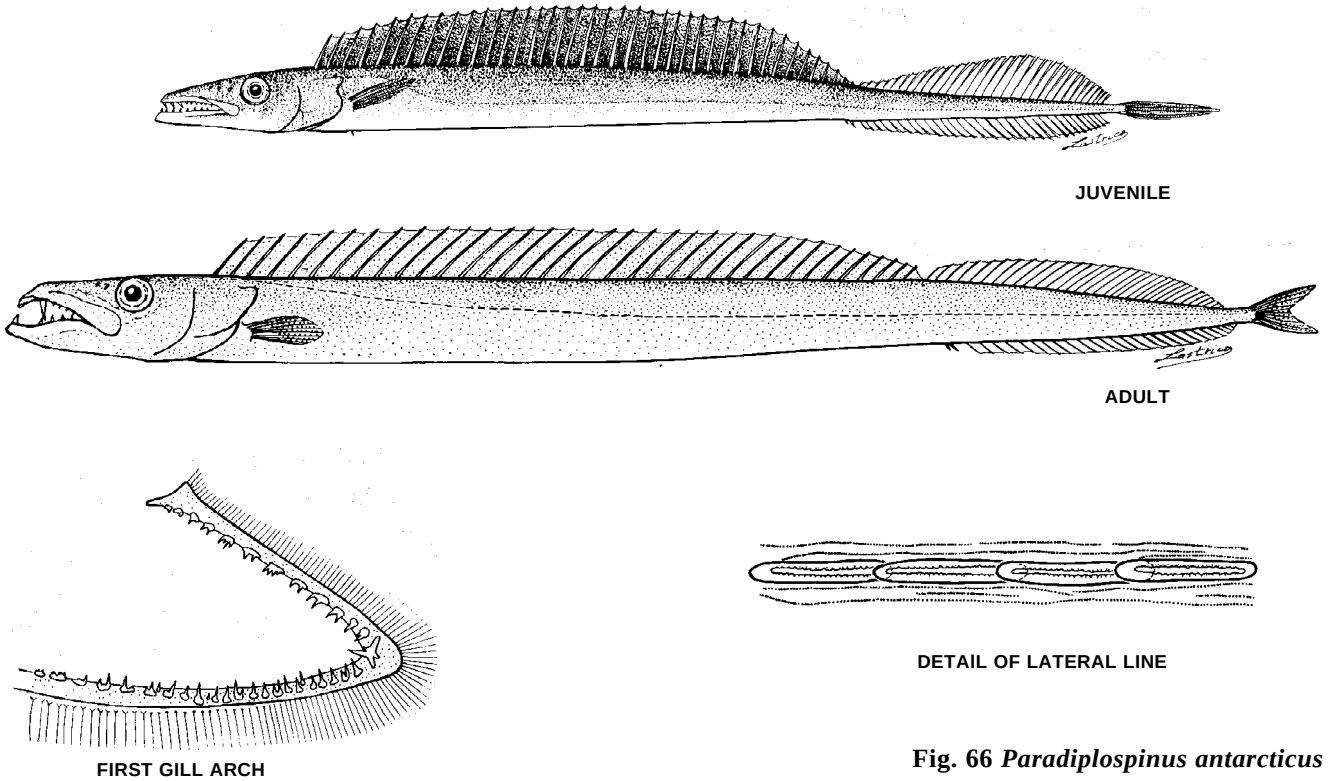


Fig. 66 ***Paradiplospinus antarcticus***

Colour: Body silvery white without any conspicuous marks except 40 to 50 narrow longitudinal lines of pale melanophores; dorsal-fin base, opercular region and caudal-fin origin dark brownish.

Geographical Distribution: Circumpolar, in Antarctic and Subantarctic areas. Larval and juvenile specimens mostly obtained between southern land masses and the Antarctic Continent (Fig. 67).

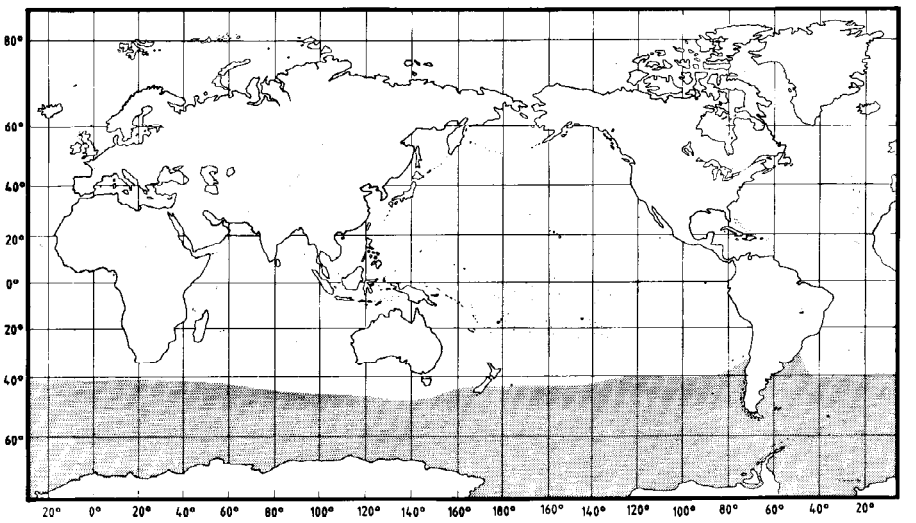


Fig. 67

Habitat and Biology: Adults and subadults epi- to mesopelagic, or mesobenthopelagic at shelves and slopes from surface to 830 m (temperature 0º to 4ºC). Larvae and juveniles probably meso- to bathypelagic, down to 2 830 m (Bussing, 1965). Feeds on krill, squid and fishes (predominantly myctophids), weighs 165 g (average) at 41 to 46 cm standard length. No spawning or post-spawning fish found in Scotia Sea during late summer (February to March) in 1965 and 1967 (Permitin, 1969).

Size: Maximum 52 cm standard length, common to 30 to 40 cm.

Interest to Fisheries: No special fishery for this species.

Local Names:

Literature: Bussing (1965, as ***P. gracilis)***; Permitin (1969, as ***P. gracilis***); Parin and Becker (1972, as ***P. gracilis***); Parin et al. (1974, 1990a, as ***P. gracilis***); Karrer (1975); Nakamura (1982a, 1990b, as ***P. gracilis***); Nishikawa (1984, as ***P. gracilis***); Becker (1985, as ***P. gracilis***); Becker and Evseenko (1986, as ***P. gracilis***); Pavlov and Andrianov (1986, as ***P. gracilis***).

Paradiplospinus gracilis (Brauer, 1906) Fig. 68 **GEMP Para 2**

Lepidopus gracilis Brauer, 1906:291, pl. 12, fig. 1 (off Walvis Bay, South Africa: 21º53'S, 6º58'E).

Synonyms: None.

FAO Names: En - Slender escolar**; Fr -** Escolier élégant**; Sp -** Escolar magro.

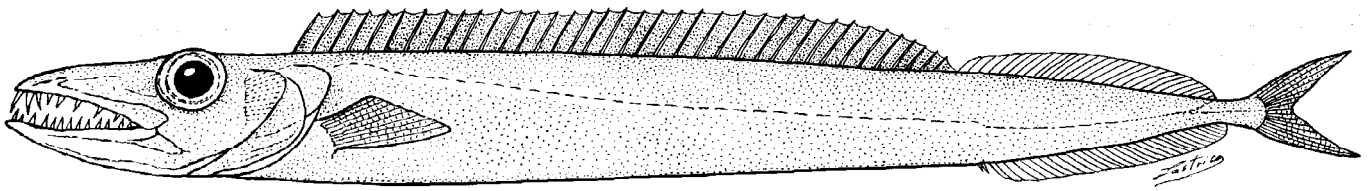


Fig. 68 ***Paradiplospinus gracilis***
(adapted from Lloris, 1986)

Field Characters: Distance from anus to first anal-fin spine less than snout length. Body brownish black.

Diagnostic Features: Body depth contained 12 to 16 times in standard length; anus situated below 30th to 32nd dorsal-fin spine; distance from anus to first anal-fin spine 1.2 to 1.4 (rarely 1 .1) times in snout length. Head length 4.5 to 4.9 times in standard length, in specimens more than 35 cm standard length; anteriorly in upper jaw 3 immovable and 1 to 3 movable fangs and 1 fang anteriorly on each side of lower jaw, Length of second dorsal-fin base 2.8 to 3.0 times in length of base of first dorsal fin, dorsal fin with XXXV to XXXVIII spines and 26 to 30 soft rays (total 63 to 68 fin-elements); anal fin with II free spines and 24 to 29 rays. Pyloric caeca 6. Vertebrae total 60 to 64, including 35 to 38 precaudal and 23 to 26 caudal. **Colour:** Body and fins brownish black.

Geographical Distribution: Known only from off Namibia and western South Africa, from 17º30'S to 31ºS (Fig. 69).

Habitat and Biology: Benthopelagic to upper continental slope (depth 368 to 626 m), juveniles pelagic (probably mesopelagic). Specimens 35 to 40 cm standard length collected with ripe gonads.

Size: Maximum 43 cm standard length (Mikhailin, 1986b).

Interest to Fisheries: No special fishery for this species.

Local Names: JAPAN: Minamihoso-kurotachi.

Literature: Karrer (1973, 1975); Mikhailin (1976b); Parin and Golovan (1976); Lloris (1986); Nakamura (1986a); Parin (1990c).

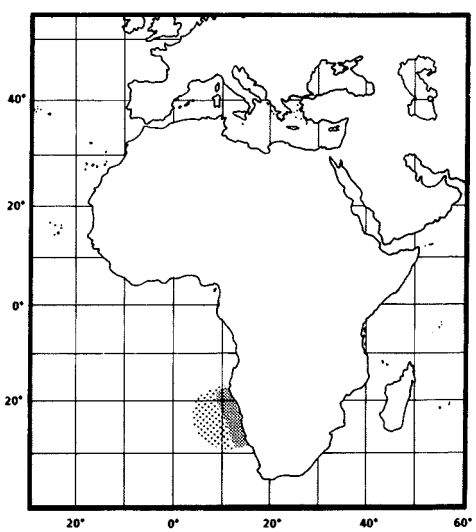


Fig. 69

Promethichthys Gill, 1893 **GEMP Prom**

Promethichthys Gill, 1893:115, 123. Type species, ***Prometheus atlanticus*** Lowe, 1838, by monotypy and subsequently by replacement name (replacement for ***Prometheus*** Lowe,1838, preoccupied by Hübner, 1824).

Synonyms: ***Prometheus*** Lowe, 1838 (preoccupied). ?***Dicrotus*** Günther,1860.

Diagnostic Features: See species.

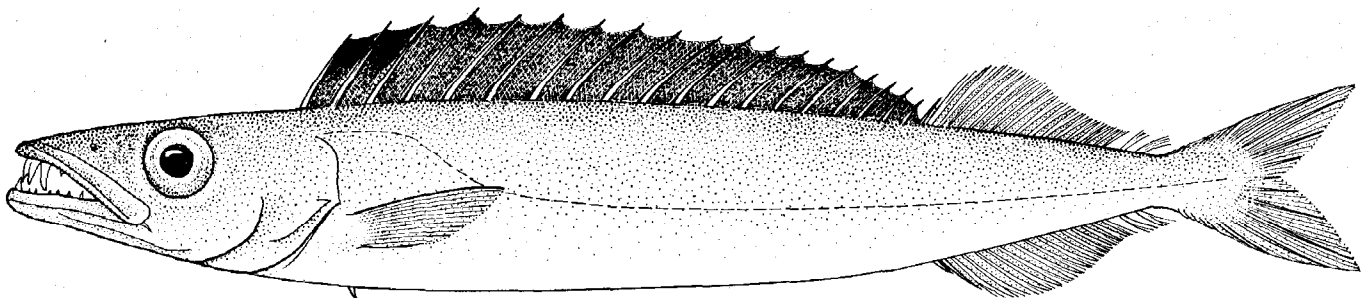
Species: One species recognized so far.

Promethichthys Prometheus (Cuvier, 1832) Fig: 70 **GEMP Prom 1**

Gempylus prometheus Cuvier in Cuv. and Val., 1832:213, pl. 222 (St. Helena Is.).

Synonyms: ***Prometheus atlanticus*** Lowe, 1838.?***Dicrotus armatus*** Günther, 1860. ***Thyrsites ballieui*** Sauvage, 1882. ?***Dicrotus parvipinnis*** Goode and Bean, 1896. ***Promethichthys pacificus*** Seale, 1906.

FAO Names: En - Roudi escolar**; Fr -** Escolier clair**; Sp -** Escolar prometeo.



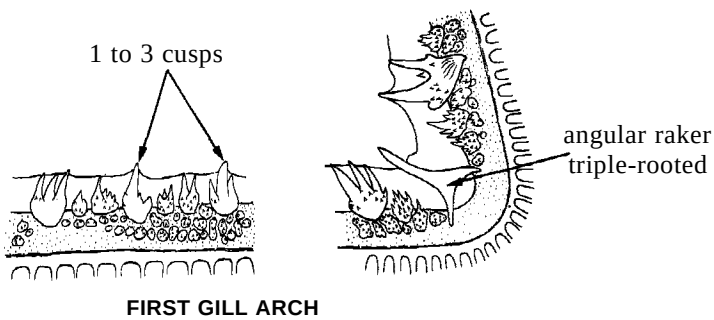


Fig. 70 ***Promethichthys Prometheus***

Field Characters: Body moderately elongate and compressed. A single lateral line, dorsolateral anteriorly, bending downward below fourth to sixth spines of first dorsal fin and becomes midlateral and horizontal for most of its length. Dorsal and anal finlets present.

Diagnostic Features: Body moderately elongate and compressed; its depth 6.5 to 7 times in standard length. Head length 3.5 to 3.7 times in standard length; lower jaw extends slightly anterior to upper jaw; tip of both jaws without dermal processes; strong jaw dentition including 3 or 4 immovable and 0-3 movable fangs anteriorly in upper jaw; 1 shorter fang anteriorly on each side of lower jaw and numerous lateral compressed teeth; no vomerine teeth; palatine teeth present. Spinescent gill rakers on first arch with 1 to 3 cusps and many small spines; the angular raker long and triple-rooted. First dorsal fin with XVII to XVIII (rarely XIX) spines, second dorsal fin with I spine and 17 to 20 soft rays followed by 2 finlets, base of first dorsal fin 2.5 times longer than base of second dorsal fin; anal fin with II (rarely III) comprised spines and 15 to 17 soft rays followed by 2 finlets; pectoral fins with 13 or 14 (rarely 15) soft rays, a little shorter to a little longer than half of head length; pelvic fins entirely absent at more than 40 cm standard length (in smaller specimens represented by I spine that reduces with growth), underskin articulation on pelvic girdle before pectoral-fin base. A single lateral line running subdorsally from above upper angle of

gill opening to under the fourth spine of the first dorsal fin, than abruptly curving down and, from under sixth spine, midlateral to caudal-fin origin, Body entirely scaled at more than 20 to 25 cm standard length. Pyloric caeca 7 or 8. Vertebrae total 33 to 35, including 18 to 20 precaudal and 14 to 16 caudal; epineurals from 2nd to 30th; epipleurals from 21st to 30th vertebra. **Colour:** Body greyish to copper brown; fins blackish at more than 40 cm standard length, yellowish with blackish tips in smaller specimens (first dorsal fin with a black blotch on two anteriormost membranes); buccal and branchial cavities black.

Geographical Distribution: Tropical and warm temperate waters of all oceans, but absent from East Pacific Ocean except at Sala y Gomez Ridge (Fig. 71).

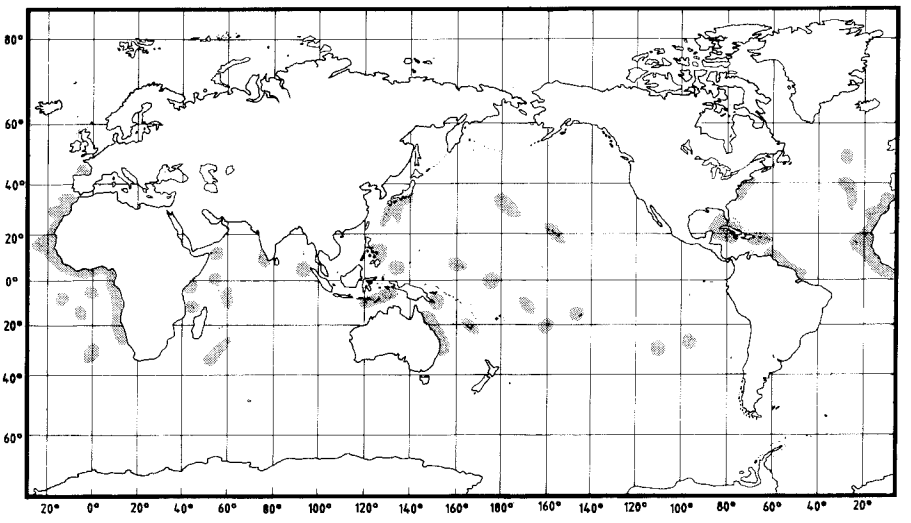


Fig. 71

Habitat and Biology: Benthopelagic at continental slopes, around oceanic islands and submarine rises at 100 to 750 m. Migrates to midwater at night, feeds on fish, cephalopods and crustaceans. Reproductive season from August to September near Madeira, probably throughout the year in warmer seas.

Size: Maximum 100 cm standard length, perhaps longer.

Interest to Fisheries: No special fishery for this species.

Local Names: AUSTRALIA: Single-line gemfish; JAPAN: Kuroshibi-kamasu; USSR: Prometikht.

Literature: Matsubara and Iwai (1952, 1958); Munro (1958); Grey (1960); Forster et al. (1970); Legand et al. (1972); Parin and Becker (1972); Quero (1973); Parin and Golovan (1976); Nakamura (1977, 1981, 1982b, 1984a,b); Parin et al. (1978); Golovan (1978); Gushchin and Kukuev (1981); Pakhorukov (1981); Fujii (1983); Gloerfelt-Tarp and Kailola (1984); Duhamel (1984); Randall and Egaña (1984); Wass (1984); Machida (1985); Parin and Prutko (1985); Parin (1986, 1990b,c); Shcherbachev et al. (1985, 1986); Borets (1986); Shcherbachev (1987); Golovan and Pakhorukov (1988); Parin and Paxton (1990).

Rexea Waite, 1911

GEMP Rexea

Rexea Waite, 1911 a:49. Type species, ***Rexea furcifera*** Waite, 1911 a, by original designation.

Synonyms: ***Jordanidia*** Snyder, 1911.

Field Characters: Body moderately elongated and compressed.Body depth 5 to 7 times in standard length. Two lateral lines, the lower originates below third to seventh spine of first dorsal fin and runs midlaterally or submidlaterally posteriorly. Dorsal and anal finlets present.

Diagnostic Features: Body moderately elongate and compressed; body depth 5 to 7 times in standard length, Lower jaw extends anterior to upper jaw; tip of both jaws without dermal processes; strong jaw dentition including anterior fangs and lateral compressed teeth; no vomerine teeth (present in juveniles): uniserial small teeth on palatines. Gill rakers on first arch tuberculous with a few cusps and many small

spines; the angular raker long and triple-rooted. First dorsal fin with XVII to XIX spines, second dorsal fin with I spine and 14 to 19 soft rays followed by 2 finlets; anal fin with I free and I comprised spine, and 11 to 16 soft rays followed by 2 finlets; pectoral fins with 12 to 15 soft rays; pelvic fins small, with I spine and 2 or 3 soft rays, or reduced. Two lateral lines, the upper follows dorsal contour of body, the lower originates below third to seventh spine of first dorsal fin, descends gradually backward and runs midlaterally or sublaterally; body entirely scaled or naked except a scaly part on caudal peduncle. Vertebrae total 33 to 36, including 19 or 20 precaudal and 14 to 16 caudal; epineurals from 2nd to 15th to 30th vertebrae; epipleurals from 19th or 20th to the 28th to 30th vertebrae, or absent. **Colour:** Body silvery to brown; black blotch at anterior part of first dorsal fin: buccal and branchial cavities black.

Biology, Habitat and Distribution: Benthopelagic, dwelling from lower shelves to middle slopes (also around islands and seamounts) at 100 to 800 m depth. Feeds on fish, squid and crustaceans. Known from tropical and temperate waters of the Indian and west to southern East Pacific Oceans.

Species: Six species are recognized following Parin's (1989) review.

Illustrated Key to Species of *Rexea:*

1a. Pelvic fins with I spine and 2 or 3 tiny soft rays, originate below the posterior margin of pectoral-fin base or further posteriorly; body entirely scaled at more than 20 cm standard length; epineurals present only at precaudal vertebrae, epipleurals absent; vertebrae total 34 to 36 ..... → ***2***

1b. Pelvic fins with I spine at less than 20 to 25 cm standard length, reduced to a subdermal knob in larger specimens, originate below the middle of pectoral-fin base or further anteriorly; body naked or scales present only on caudal peduncle and along posterior part of lower lateral line; epineurals present at precaudal and caudal vertebrae (except 5 to 7 of the last), epipleurals present or absent; vertebrae total 34. ..... → ***3***

2a. Upper lateral line extends beyond origin of second dorsal fin, usually terminates below 8th to 12th soft ray; dorsal-fin spines usually XVIII; vertebrae total 36 (rarely 35) of which 16 are caudal vertebrae; epineurals to 14 to 16th precaudal vertebrae (Fig. 72) ..... ***R. solandri***

2b. Upper lateral line not extending beyond origin of second dorsal fin, usually terminates below the 13th to 16th spine of first dorsal fin; dorsal-fin spines XVII; vertebrae total 34 of which 15 are caudal vertebrae; epineurals to the last precaudal vertebra (Fig. 73) ..... ***R. brevilineata***

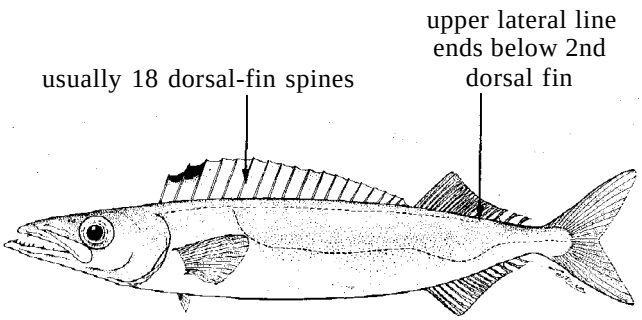


Fig. 72 ***Rexea solandri***

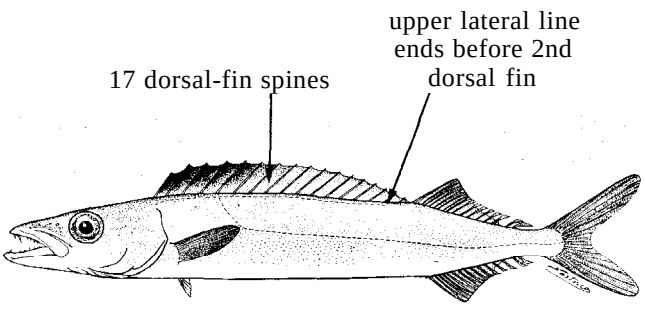


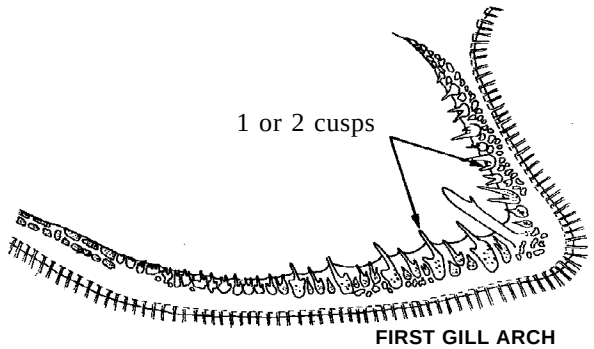
Fig. 73 ***Rexea brevilineata***

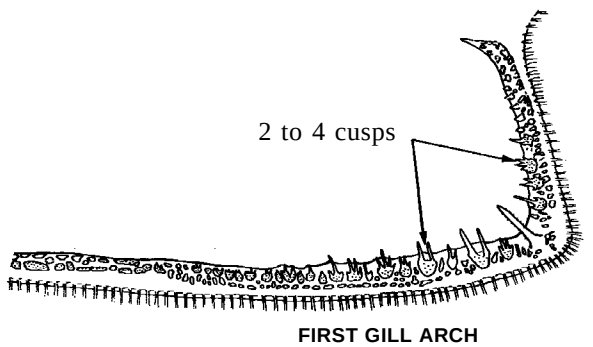
3a. Base of first dorsal fin 2.3 to 2.5 times longer than base of second dorsal fin (including finlets); pectoral fins usually with 13 soft rays, their length 2.2 to 2.4 times in head length; pelvic fins originates below pectoral-fin base; 15 caudal vertebrae; epipleurals present or absent ..... → ***4***

3b. Base of first dorsal fin 2.7 to 3.4 times longer than base of second dorsal fin (including finlets); pectoral fins usually with 14 soft rays, their length 1.6 to 2.0 times in head length (in specimens longer than 12 cm standard length); pelvic fins originates before pectoral-fin base; 14 caudal vertebrae; epipleurals present ..... → ***5***

4a. At greater than 30 cm standard length, lower lateral line sublateral, under the mid-part of first dorsal fin, it runs twice nearer ventral than dorsal contour of body; spinescent gill rakers with 1 or 2 cusps; epipleurals absent (Fig. 74) ..... ***R. nakamurai***

4b. Lower lateral line running midlateral; spinescent gill rakers with 2 to 4 cusps; epipleurals present (Fig. 75) ..... ***R. prometheoides***





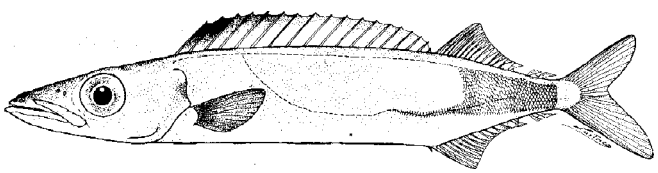


Fig. 74 ***Rexea nakamurai***

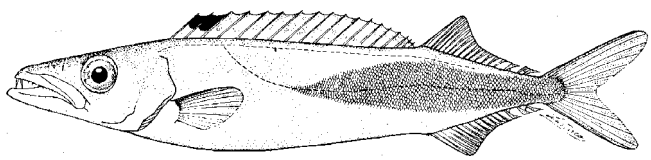


Fig. 75 ***Rexea prometheoides***

5a. Lateral line bifurcating below the middle of interspace between the fourth and fifth spine of first dorsal fin or further anterior; pyloric caeca 8 or 9 (rarely 10); maximum size up to 72 cm standard length, matures at more than 25 cm standard length (Fig. 76). ..... ***R. antefurcata***

5b. Lateral line bifurcating below the fifth spine of first dorsal fin or further posterior; pyloric caeca 7 (rarely 8); maximum size about 20 cm standard length, matures at about 10 cm standard length (Fig. 77) ..... ***R. bengalensis***

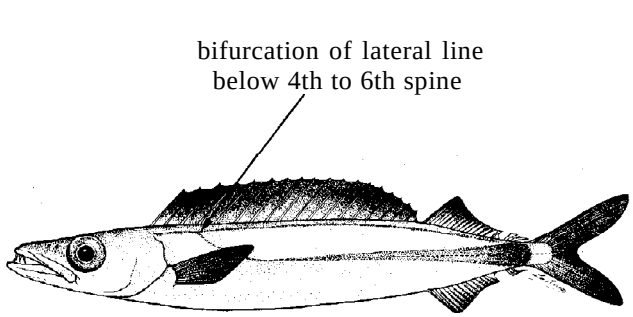


Fig. 76 ***Rexea antefurcata***

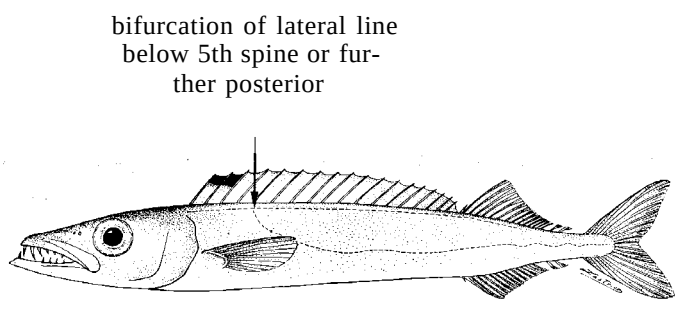


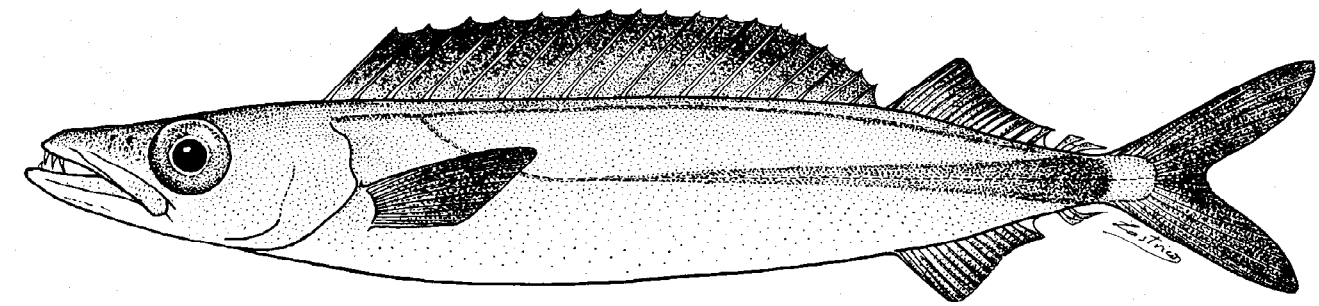
Fig. 77 ***Rexea bengalensis***

Rexea antefurcala Parin, 1989 | Fig. 78 | **GEMP Rexea 2**

Rexea antefurcata Parin, 1989:19-21 , fig. 6 (Sala y Gomez Submarine Ridge: 25º34'S, 89º12'W).

Synonyms: None.

FAO Names: En - Long-finned escolar**; Fr -** Escolier longues ailes**; Sp -** Escolar de aleta larga.



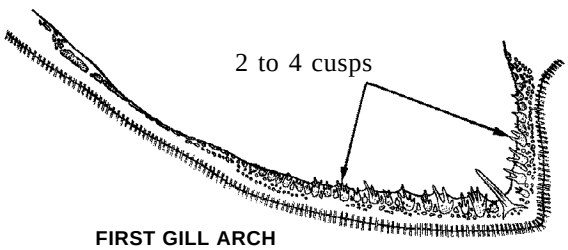


Fig. 78 ***Rexea antefurcata*** **(after Parin, 1989)**

Field Characters: Body naked except at caudal peduncle and along posterior part of lateral lines. Lower lateral line originates before fifth spine of first dorsal fin and runs midlaterally. Base of first dorsal fin about 3 times longer than base of second dorsal fin. Pectoral fins equal or longer than half of head length. Pelvic fins with I spine (in smaller specimens) or absent.

Diagnostic Features: Body depth 6 to 7 times in standard length; body width 2.1 to 2.6 times in body depth. Head length 3 to 3.5 times in standard length; anteriorly in upper jaw 3 to 5 immovable and 1 to 3 movable fangs and 1 fang anteriorly on each side of lower jaw; palatine teeth 9 to 16. Spinescent gill rakers with 2 to 4 cusps. First dorsal fin with XVIII (rarely XIX) spines, second dorsal fin with I spine and 15 to 17 soft rays followed by 2 finlets, base of first dorsal fin 2.8 to 3.1 times longer than base of second dorsal fin; anal fin with I free andI comprised spine and 12 to 34 soft rays followed by 2 finlets; pectoral fins with 14 (rarely 13) soft rays, their length equal or longer than half of head length; pelvic fins entirely absent at more than 25 cm standard length (represented by a single spine in smaller specimens), underskin articulation of pelvic girdle in front of or below anterior edge of pectoral-fin base. Lateral line bifurcating below third to fifth spine of first dorsal fin: upper lateral line reaches at least to end of soft dorsal-fin base; lower lateral line midlateral. Most of body naked except wedge-shaped stripe of squamation extending forward from caudal peduncle along horizontal part of lower lateral line and **a** few scales along posterior part of upper lateral line. Pyloric caeca 8 to 10. Vertebrae total 34, including 20 precaudal and 14 caudal; epineurals and epipleurals to 29th or 30th vertebra. **Colour:** Body greyish or brownish with metallic tint; anterior 3 membranes of first dorsal fin jet-black, rest of fin blackish; pectoral fins grey posteriorly.

Geographical Distribution: Known from the southern East Pacific (on seamounts of Nazca and Sala y Gomez Ridges and at Easter Island), from the Tasman Sea (from 23º to 37ºS along east coast of Australia and on seamounts), and from southern Fiji (Fig. 79).

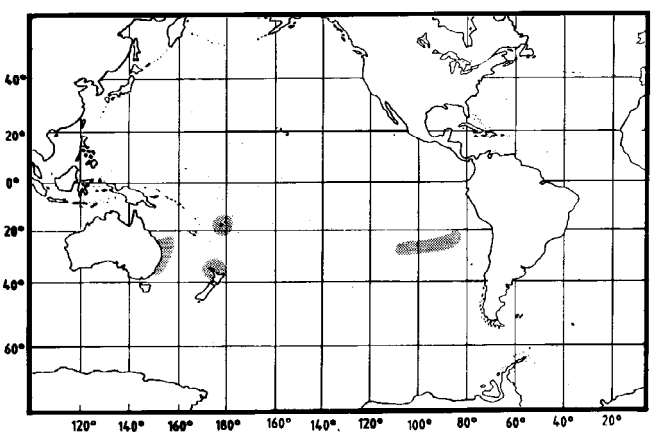


Fig. 79

Habitat and Biology: Benthopelagic from 126 to 770 m depth. Probably schooling, migrates to midwater at night. Feeds on fishes (myctophids, *Maurolicus*, eels, macrourids, carangids, emmelichthyids, etc.), prawn and squid; larger prey items are swallowed in parts (Parin et al., 1990b). Matures at about 25 cm standard length.

Size: Maximum 72.5 cm standard length.

Interest to Fisheries: No special fishery for this species, but appears as a bycatch of deep-water prawn trawl fishery in New South Wales, Australia.

Local Names: AUSTRALIA: Long-finned gemfish; RUSSIA: Dlinnokrylaya reksiya.

Literature: Parin and Paxton (1990); Parin (1990b).

Rexea bengalensis (Alcock, 1894) Fig. 80 **GEMP Rexea 3**

Thyrsites bengalensis Alcock, 1894:117-118, pl. VI, fig. 1 (Bay of Bengal off Madras).

Synonyms: None.

FAO Names: En - Bengal escolar**; Fr -** Escolier bengalais**: Sp -** Escolar bengali.

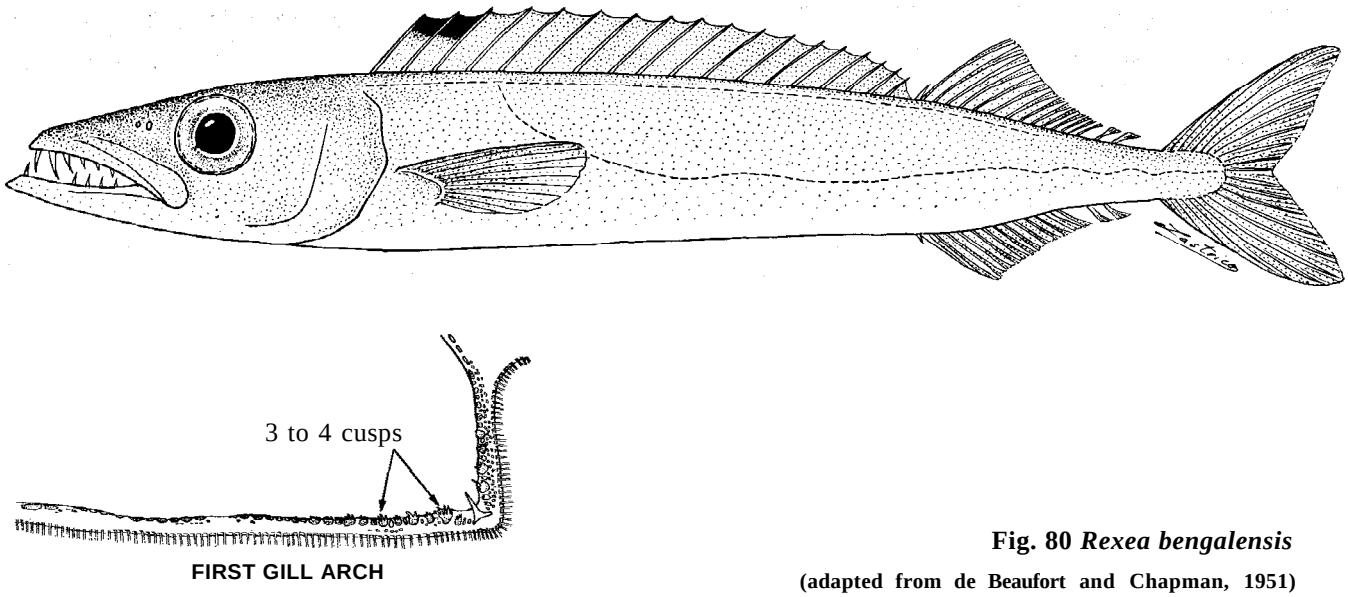


Fig. 80 ***Rexea bengalensis***
(adapted from de Beaufort and Chapman, 1951)

Field Characters: Body naked. Lower lateral line originating under or a little behind fifth spine of first dorsal fin and runs midlaterally. Base of first dorsal fin about 3 times longer than base of second dorsal fin. Pectoral fin length equal to or longer than half of head length. Pelvic fins with I spine.

Diagnostic Features: Body depth 6 to 7 times in standard length; body width 2.3 to 2.6 times in body depth. Head length 2.9 to 3.4 times in standard length; anteriorly in upper jaw 6 fangs and 1 smaller fang anteriorly on each side of lower jaw; palatine teeth present. Spinescent gill rakers with 3 or 4 cusps. First dorsal fin with XVIII (rarely XIX) spines, second dorsal fin with I spine and 14 to 16 soft rays followed by 2 finlets, base of first dorsal fin 2.7 to 3.3 times longer than base of second dorsal fin; anal fin with I free and I comprised spine and 11 to 13 soft rays followed by 2 finlets; pectoral fins with 14 (rarely 13 or 15) soft rays, at more than 12 cm standard length their length equal to or longer than half of head length; pelvic fins represented by I spine, very short in larger specimens, originates before or below anterior edge of pectoral-fin base. Lateral line bifurcating from below fifth to before sixth spine of first dorsal fin; upper lateral line reaching at least to end of soft dorsal-fin base; lower lateral line midlateral. Entire body without scales. Pyloric caeca 7 or 8. Vertebrae total 34, including 20 precaudal and 14 caudal; epineurals and epipleurals to 29th or 30th vertebra. **Colour:** Body brownish with silvery tint; fins hyaline; anterior 3 membranes of first dorsal fin black, rest of fin black-edged; tips of caudal-fin lobes greyish.

Geographical Distribution: Indo-West Pacific species recorded from Mozambique Channel, Saya de Malha Bank, Maldives Islands, India, Sri Lanka, Arafura and Java Seas, Makassar Strait, northwestern and northeastern Australia and southern Japan (Fig. 81).

Habitat and Biology: Benthopelagic from 143 to 820 m depth. Matures at about 10 cm standard length. A squid was found in the stomach of one specimen.

Size: Maximum 20 cm standard length.

Interest to Fisheries: No special fishery for this species.

Local Names: AUSTRALIA: Small gemfish; RUSSIA: Malaya reksiya.

Literature: Alcock (1899); de Beaufort and. Chapman (1951, as ***R. prometheoides***); Parin and Becker (1972, as ***R. prometheoides,*** in part); Parin (1989); Parin and Paxton (1990).

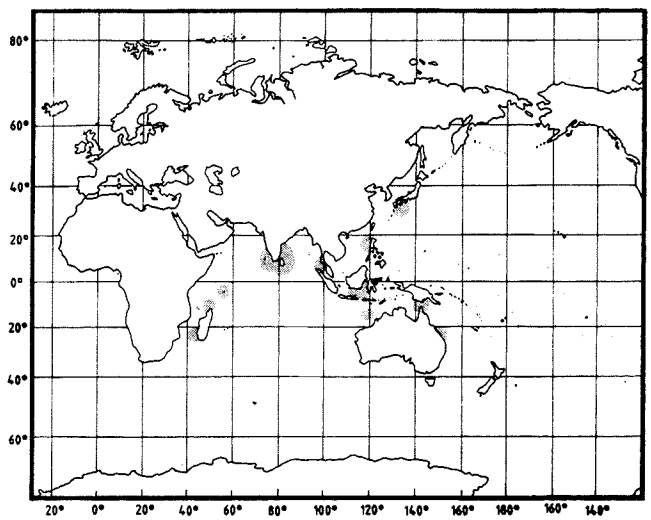


Fig. 81

Rexea brevilineata Parin, 1989

Fig. 82

GEMP Rexea 4

Rexea brevilineata Parin, 1989:13-1 4, fig. 3 (Nazca Submarine Ridge: 24º4 1'S, 85º29'W).

Synonyms: None.

FAO Names: En - Short-lined escolar**; Fr -** Escolier barracuda**; Sp -** Escolar de rayas cortas.

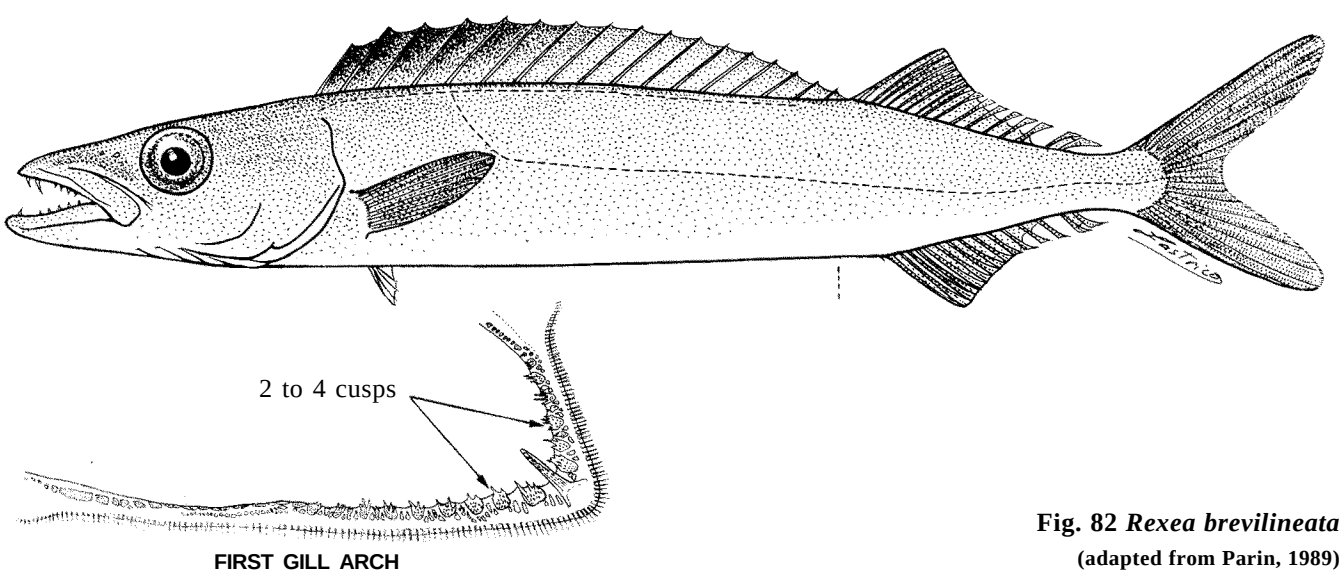


Fig. 82 ***Rexea brevilineata***
(adapted from Parin, 1989)

Field Characters: Body entirely scaled at more than 20 cm standard length. Pelvic fins with I spine and 3 soft rays. Upper lateral line barely reaching origin of second dorsal fin.

Diagnostic Features: Body depth 6 to 7 times in standard length; body width 2.0 to 2.6 times in body depth. Head length 2.7 to 3.4 times in standard length; anteriorly in upper jaw 3 to 5 immovable and 1 to 3 movable fangs and 1 fang anteriorly on each side of lower jaw; palatine teeth 8 to 23. Spinescent gill rakers with 2 to 4 cusps. First dorsal fin with XVII spines, second dorsal fin with I spine and 15 to 18 soft rays followed by 2 finlets, base of first dorsal fin 2.3 to 2.7 times longer than base of second dorsal fin; anal fin with I free spine, I comprised spine and 12 to 14 soft rays followed by 2 finlets; pectoral fins with 14 (rarely 13) soft rays, shorter in length than half of head length; pelvic fins with I spine and 3 soft rays,

originating below or behind posterior edge of pectoral-fin base. Lateral line bifurcating below fifth to seventh spine of first dorsal fin, upper rarely reaching origin of second dorsal fin, usually terminating below third to last spine of first dorsal fin, lower midlateral, sometimes undulating on caudal peduncle. Body entirely scaled at more than 20 cm standard length. Pyloric caeca 7 or 8. Vertebrae total 34, including 19 precaudal and 15 caudal (very rarely total 33, 19 precaudal and 14 caudal); epineurals to 19th to 20th vertebra; no epipleurals. **Colour:** Body brown with silvery tint; anterior 2 membranes of first dorsal fin black, rest of fin black-edged; posterior part of pectoral fins black.

Geographical Distribution: Known only from seamounts of Nazca Submarine Ridge and adjacent parts of Sala y Gomez Ridge (Fig. 83).

Habitat and Biology: Benthopelagic from 180 to 400 m depth. Feeds on squid and fish. Matures at about 25 cm. Longevity up to 15 years (Kotlyar and Parin, 1990).

Size: Maximum 43 cm standard length.

Interest to Fisheries: No special fishery for this species.

Local Names: RUSSIA: Naskanskaya reksiya.

Literature: Parin (1990b).

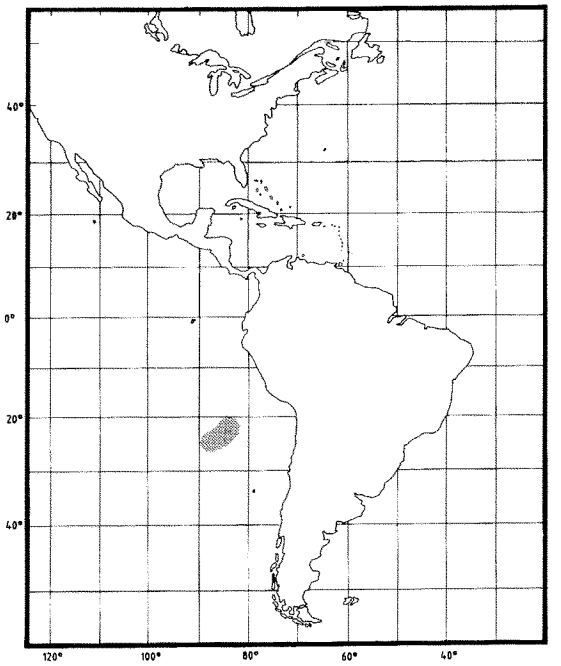


Fig. 83

Rexea nakamurai Parin, 1989 Fig. 84 **GEMP Rexea 5**

Rexea nakamurai Parin, 1989:14-16, fig. 4 (Kyushu-Palau Ridge: 26º11'N, 135º48'E).

Synonyms: None.

FAO Names: En - Nakamura's escolar**; Fr -** Escolier dentu**; Sp -** Escolar de Nakamura.

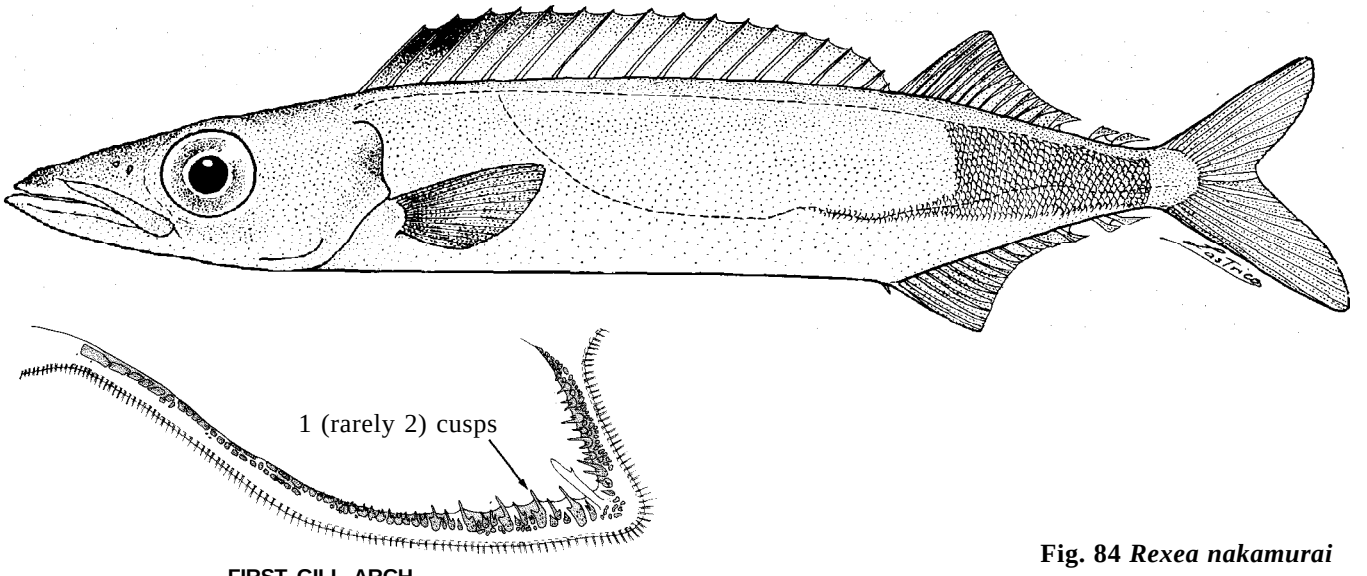


Fig. 84 ***Rexea nakamurai***
(adapted from Parin, 1989)

Field Characters: Body naked except a limited scaly area between the second dorsal and anal fin. Lower lateral line originating between fifth and sixth spine of first dorsal fin, running sublaterally. Base of first dorsal fin about 2.5 times longer than base of second dorsal fin. Pectoral fin length shorter than half of head length. Pelvic fins with I spine (in smaller specimens) or absent.

Diagnostic Features: Body depth (in adults) about 6 times in standard length; body width 1.9 to 2.5 times in body depth. Head length 3.0 to 3.2 times in standard length; anteriorly in upper jaw 2 to 4 immovable and 1 to 3 movable fangs and I fang anteriorly on each side of lower jaw; palatine teeth 9 to 19. Spinescent gill rakers with 1, rarely 2 cusps. First dorsal fin with XVIII spines, second dorsal fin with I spine and 15 to 18 soft rays followed by 2 finlets, base of first dorsal fin 2.3 to 2.5 times longer than base of second dorsal fin; anal fin with I free and I comprised spine and 12 or 13 soft rays followed by 2 finlets; pectoral fins with 13 (very rarely 12) soft rays, shorter than half of head length; pelvic fins entirely absent at more than 25 cm standard length (represented by a single spine in smaller specimens, underskin articulation on pelvic girdle behind anterior edge of pectoral-fin base). Lateral line bifurcating below interspace between fifth to sixth spine of first dorsal fin; upper lateral line reaching base of first dorsal finlet; lower lateral line sublateral, running 1.5 to 2 times nearer ventral than dorsal profile of body. Most of body naked except almost rectangular stripe of squamation extending forward from caudal peduncle to behind the origins of second dorsal-fin base and anal-fin base. Pyloric caeca 8 or 9. Vertebrae total 34 (rarely 33), including 19 (rarely 18) precaudal and 15 caudal; epineurals to 27th to 29th vertebra; no epipleurals. **Colour:** Body greyish brown; anterior 2 membranes of fist dorsal fin black, rest of fin greyish, black-edged.

Geographical Distribution: Known from tropical Pacific (Kyushu-Palau Ridge and off Oahu) and Indian Ocean (Nazareth Bank and off Sumatra) (Fig. 85).

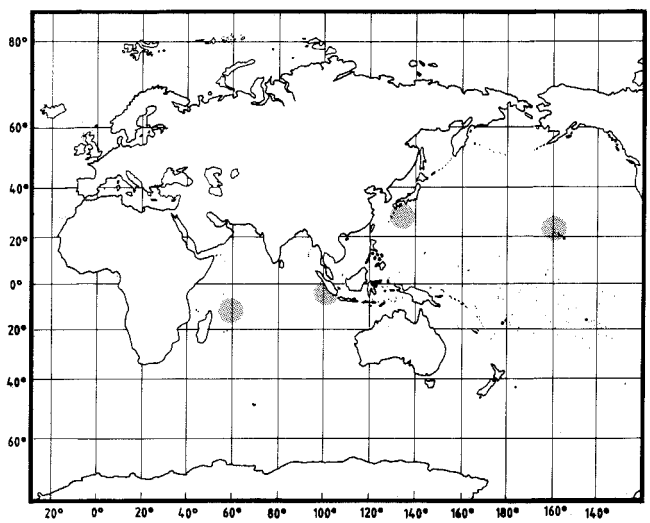


Fig. 85

Habitat and Biology: Benthopelagic from 340 to 370 m depth. Matures at about 25 cm standard length.

Size: Maximum 38 cm standard length.

Interest to Fisheries: No special fishery for this species.

Local Names: RUSSIA: Polucheshujnaya reksiya.

Literature: Nakamura (1982b, as ***R. prometheoides).***

Rexea prometheoides (Bleeker, 1856) Fig. 86 **GEMP Rexea 1**

Thyrsites prometheoides Bleeker, 1856:42 (Amboina Island, Indonesia).

Synonyms: ***Jordanidia raptoria*** Snyder, 1911.

FAO Names: En - Royal escolar**; Fr-** Escolier royal**; Sp -** Escolar real.

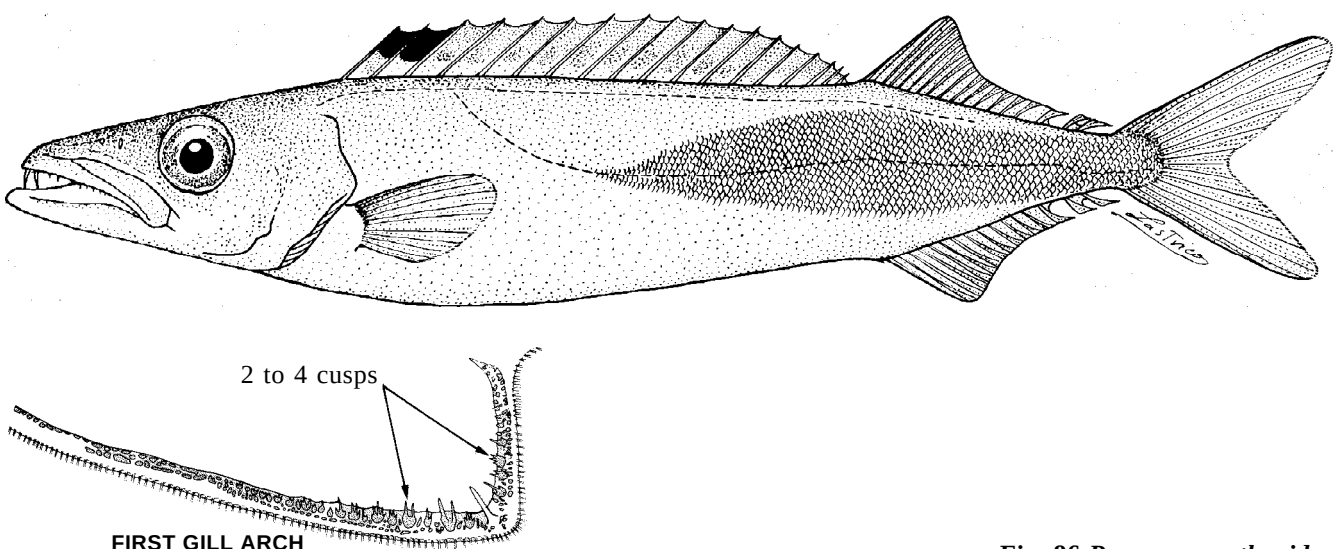


Fig. 86 ***Rexea prometheoides***

Field Characters: Body naked except a large scaly area in its posterior part, extending around lower lateral line which originates between fourth to fifth spine of first dorsal fin and runs midlaterally. Base of first dorsal fin about 2.5 times longer than base of second dorsal fin.Pectoral fins shorter than half of head length. Pelvic fins with I spine (in juveniles and smaller specimens) or absent.

Diagnostic Features: Body depth 5 to 6 times in standard length; body width 1.8 to 2.8 times in body depth. Head length 3.1 to 3.4 times in standard length; anteriorly in upper jaw 5 or 6 fangs and 1 smaller fang anteriorly on each side of lower jaw; palatine teeth 11 to 16. Spinescent gill rakers with 2 to 4 cusps. First dorsal fin with XVIII (rarely XIX) spines, second dorsal fin with I spine and 14 to 17 soft rays followed by 2 finlets, base of first dorsal fin 2.2 to 2.5 times longer than base of second dorsal fin; anal fin with I free and I comprised spine and 12 to 15 soft rays followed by 2 finlets; pectoral fins with 13 (rarely 12 or 14) soft rays, its length shorter than half of head length; pelvic fins entirely absent at more than 18 to 20 cm standard length (represented by a single spine in smaller specimens), underskin articulation on pelvic girdle below pectoral base. Lateral line bifurcated below fourth to fifth spine of first dorsal fin, upper line reaches middle to end of second dorsal-fin base, lower line midlateral. Most of body naked except a large lancet-shaped stripe of squamation extending forward from caudal peduncle to below middle of first dorsal-fin base. Pyloric caeca 8 (rarely 7). Vertebrae total 34, including 19 precaudal and 15 caudal; epineurals and epipleurals to 28th to 30th vertebra. **Colour:** Body greyish with silvery tint; fins hyaline except a black blotch on membranes between first and second dorsal-fin spine, rest of second dorsal blackish or grey.

Geographical Distribution: Known in the Indo-West Pacific from off Mozambique, Kenya, Reunion Island, Saya de Malha Bank, North Australia, Indonesia, Vietnam, Philippines, Riu-Kiu Islands, and southern Japan (Fig. 87).

Habitat and Biology: Benthopelagic from 135 to 540 m.

Size: Maximum 40 cm standard length.

interest to Fisheries: No special fishery for this species.

Local Names: AUSTRALIA: Prometheus gemfish; JAPAN: Kagokamasu; RUSSIA: Prometeeva reksiya.

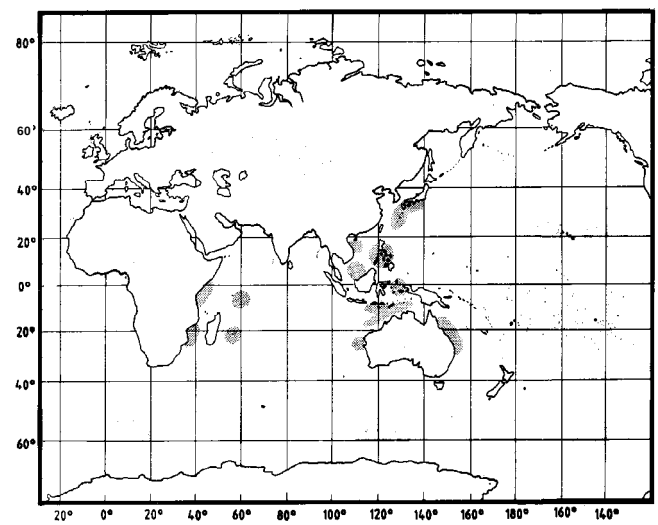


Fig. 87

Literature: Snyder (1912, as ***Jordanidia raptoria***); Schmidt (1931); Kamohara (1938); Matsubara and Iwai (1952); Smith (1968); Parin and Becker (1972); Gloerfelt-Tarp and Kaiola (1984); Nakamura (1984a,b); Machida (1985); Parin and Paxton (1990).

Rexea solandri (Cuvier, 1832) Fig. 88 **GEMP Rexea 6**

Gempylus solandri Cuvier in Cuv. and Val., 1832:215 (Bay of Islands, New Zealand).

Synonyms: ***Thyrsites micropus*** McCoy, 1873. ***Rexea furcifera*** Waite, 1911 a.

FAO Names: En - Silver gemfish**; Fr -** Escolier tifiati**; Sp -** Escolar plateado.

Field Characters: Body entirely scaled at more than 25 cm standard length. Pelvic fins with I spine and 2 or 3 soft rays, Two lateral lines, the upper usually reaching middle to end of second dorsal-fin base.

Diagnostic Features: Body depth 5 to 6 times in standard length; body width 2.4 to 2.8 times in body depth. Head length 3.1 to 3.9 times in standard length; anteriorly in upper jaw 3 or 4 immovable and 0 to 3 movable fangs and 1 smaller fang anteriorly on each side of lower jaw; palatine teeth present. Spinescent gill rakers with 2 or 3 cusps. First dorsal fin with XVIII (rarely XVII) spines, second dorsal fin with I spine and 16 to 19 soft rays followed by 2 finlets, base of first dorsal fin 2.3 to 2.6 times longer than base of second dorsal fin; anal fin with I free and I comprised spine, very indistinct in larger specimens, and 13 to 16 soft rays followed by 2 finlets; pectoral fins with 14 (rarely 13 or 15) soft rays, their length

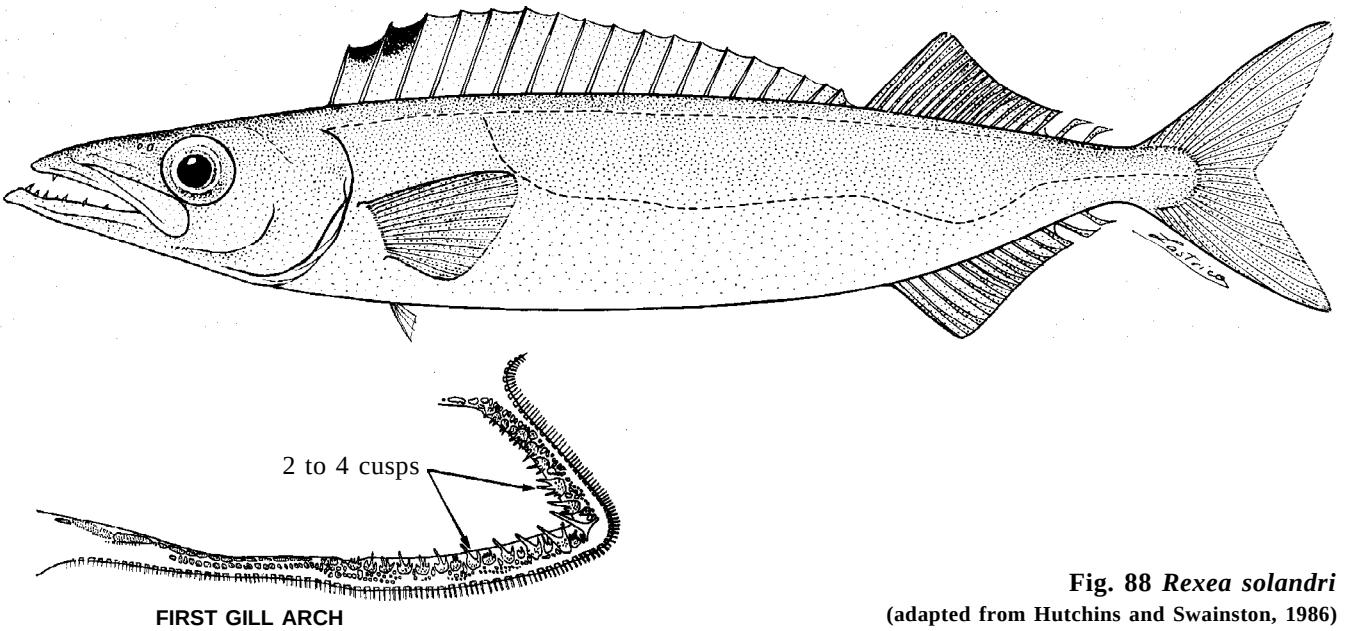


Fig. 88 ***Rexea solandri***
(adapted from Hutchins and Swainston, 1986)

almost equal to half of head length; pelvic fins normally developed with I spine and 2 or 3 soft rays, originating behind posterior end of pectoral-fin base. Lateral line bifurcating below fifth to sixth spine of first dorsal fin, upper reaches beyond origin of second dorsal fin, usually terminating between 8th to 12th soft ray, lower line midlateral, undulating above anal-fin base. Body entirely scaled at more than 25 cm standard length. Pyloric caeca 7 or 8. Vertebrae total 36 (exceptionally 35), including 20 precaudal and 16 caudal; epineurals to 15th or 16th vertebra; no epipleurals. **Colour:** Body bluish above, silvery below; black blotch distally on two anterior membranes of first dorsal fin, rest of fin greyish; second dorsal, anal and caudal fins orange or greyish.

Geographical Distribution: Off southern, southwestern and southeastern Australia (occasionally as far north as 27ºS), Tasmania and New Zealand (Fig. 89).

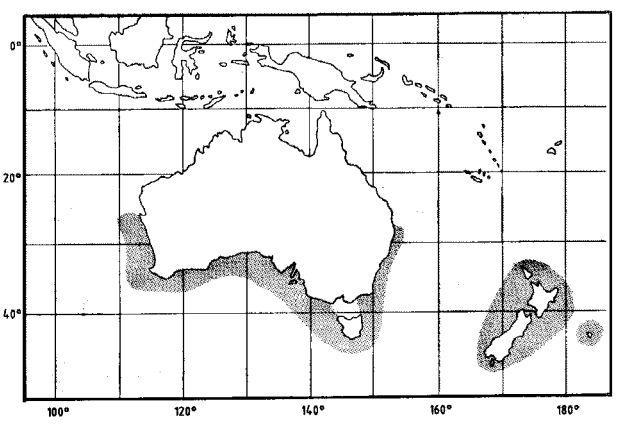


Fig. 89

Habitat and Biology: Benthopelagic on continental slope from 100 to 800 m; juveniles pelagic, adults also occur near surface off Tasmania and New Zealand. Schooling species. Feeds on fish and squid. Attains length of 104 cm after 13 years (Withell and Wankowsky, 1989). Maturesat 4 to 6 years at about 50 to 60 cm for males and 60 to 70 cm for females (Rowling, 1987). In southeastern Australia concentrated in spawning aggregations in winter (May to September) off New South Wales coast at 300 to 450 m, non-breeding fish found off Tasmania in summer.

Size: Maximum about 110 cm standard length, maximum weight about 8 kg.

Interest to Fisheries: One of the most important commercial fish species in southeastern Australia, also caught in New Zealand. Taken by trawls in New South Wales during summer months and in Tasmania at winter. Occasionally trolled near Tasmanian and New Zealand coasts. From 1983 to 1990, annual catches reported by Australia varied from 2 796 to 5 912 t and by New Zealand from 3 416 to 5 429 t (FAO, 1992). Flesh of good edible quality and especially tasty when smoked.

Local Names: AUSTRALIA: Common gemfish, Hake, (silver or southern) Kingfish, King barracuda; JAPAN: Ookagokamasu; NEW ZEALAND: Southern kingfish, Hake; RUSSIA: Bolshaya reksiya.

Literature: Waite (1911 b); Graham (1956); Scott (1962); Parin and Becker (1972); Scott et al. (1980); Last et al. (1983); Hutchins and Swainston (1986); Nakamura (1990a); Parin (1989); Parin and Paxton (1990).