

standard length, and in a later paper (Morgans, 1982) he reported a ripe female of 955 mm standard length. Morgans (1959) reported "Stomachs contained fish remains almost exclusively but one cephalopod beak was found." According to van der Elst (1981) *E. tukula* eats a wide variety of reef fishes, skates, crabs and spiny lobsters; he also reported that this species is "exceedingly territorial, and is very aggressive towards unwelcome intruders." The large size and territorial behaviour of *E. tukula* makes it especially vulnerable to spearfishermen, hence spearfishing for this species is illegal in South African waters.

Size: *E. tukula* is one of the largest species of grouper known; it attains at least 150 cm total length and 90 kg. According to van der Elst (1988), it attains 200 cm total length.

Interest to Fisheries: Although *E. tukula* is not common, it is an important species in the sportfishery of South Africa and Australia. Caught with hook-and-line and spear.

Local Names: AUSTRALIA: Potato cod; JAPAN: Kasurihata; SEYCHELLES: Vieille tukula; SOUTH AFRICA: Potato bass.

Literature: Randall (1990); Randall and Heemstra (1991).

Remarks: The absence of *E. tukula* at most of the Indian Ocean islands is puzzling. The distinctive colour pattern makes *E. tukula* easy to identify and difficult to confuse with other species of groupers. The name "potato grouper" refers to the potato-shaped dark blotches on the body.

Epinephelus undulatostriatus (Peters, 1867)

Fig. 431; Pl. XXIVE

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Serranus undulatostriatus Peters, 1867:518 (type locality: Sydney, Australia).

Synonyms: *Serranus guttulatus* Macleay, 1879:33, pl. 2 (type locality: Port Jackson [Sydney], New South Wales).

FAO Names: En - Maori grouper; Fr - M  rou maori; Sp - Mero Maori.

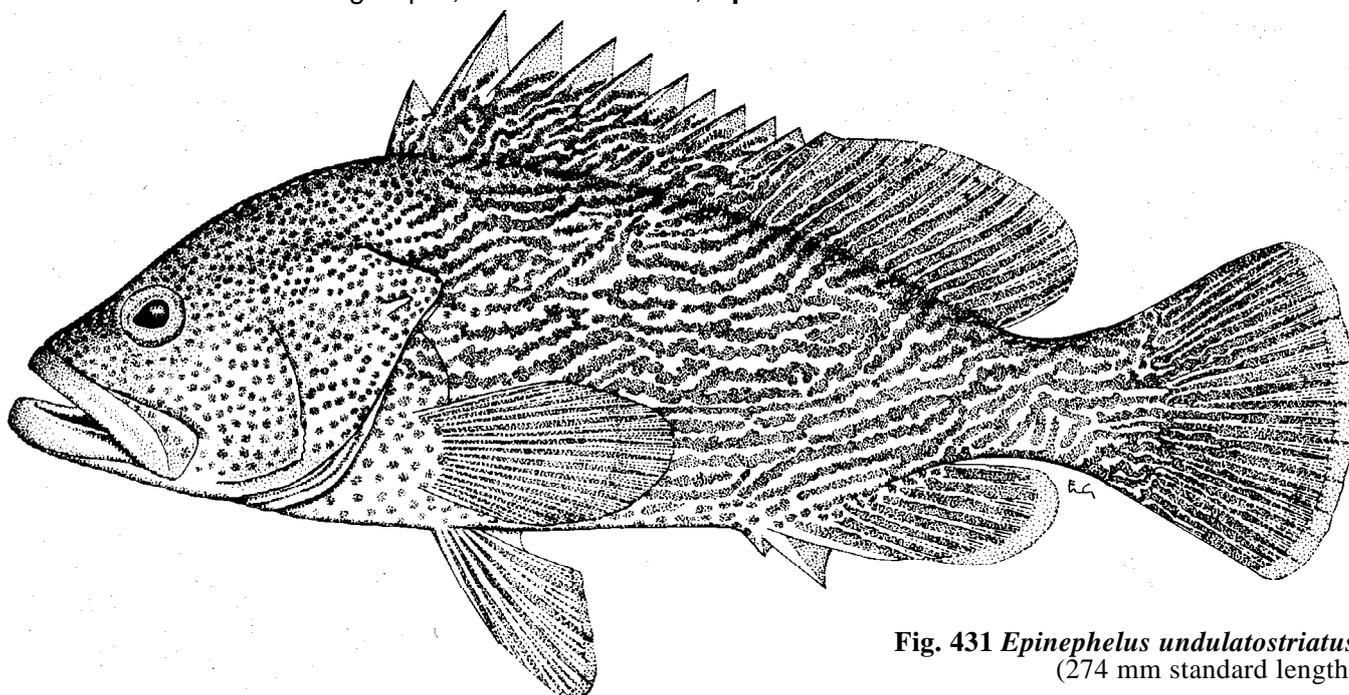


Fig. 431 *Epinephelus undulatostriatus*
(274 mm standard length)

Diagnostic Features: Body depth contained 2.5 to 2.9 times in standard length (for fish 11 to 39 cm standard length), Head length contained 2.3 to 2.5 times in standard length; interorbital area convex, the dorsal head profile almost straight; preopercle subangular, the serrae at corner slightly enlarged; upper edge of operculum almost straight; nostrils subequal; maxilla reaches to or slightly past vertical at rear edge of eye; midlateral part of lower jaw with 2 rows of teeth. Gill rakers 9 or 10 on upper limb, 15 or 16 on lower limb. Dorsal fin with XI spines and 15 to 17 rays, the third or fourth spine longest, its length contained 2.2 to 2.8 times in head length and longer than longest dorsal-fin rays; interspinous dorsal-fin membranes distinctly incised; anal fin with III spines and 8 rays; pectoral fins fleshy, with 17 to 19 rays; pectoral-fin length contained 1.6 to 2.0 times in head length; pelvic fins not reaching anus (except in small juveniles), pelvic-fin length contained 1.8 to 2.0 times in head length; caudal fin rounded. Lateral-body scales ctenoid, with auxiliary scales; lateral-line scales 48 to 55; lateral-scale series 98 to 108. Pyloric caeca 11. **Colour:** Body buff,

covered with close-set wavy longitudinal brownish orange, golden brown, or reddish brown stripes; some stripes broken into series of small spots; head pale greyish brown, covered with small spots like those on body; maxillary streak orange-brown; fin rays pale, with small brown spots, the interradiated membranes dark brown; median fins with narrow yellow margin; pectoral fins diffusely yellow distally. According to Marshall (1964), the ground colour of juveniles is lavender.

Geographical Distribution: *E. undulatostratus* is endemic to Australia, from southern Queensland (most northern record, One Tree Island, Great Barrier Reef at 23°30'S) to Bateman's Bay (35°44'S) New South Wales (Fig. 432). One specimen was reported from Kangaroo Island, South Australia.

Habitat and Biology: Coral reefs and rocky areas in depths of 27 to 80 m. *E. undulatostratus* is an active swimmer that will leave the bottom to take a floating bait.

Size: Attains 61 cm total length, 5 kg.

Interest to Fisheries: *E. undulatostratus* is an esteemed food fish and important species in the hook-and-line fishery of Australia's east coast. Caught with hook-and-line and spear.

Local Names: AUSTRALIA: Maori cod, Red-speckled rock-cod.

Literature: Marshall (1964); Randall and Heemstra (1991).

Remarks: Colour illustrations of *E. undulatostratus* were published by Deas (1971), Parish (1974), Coleman (1980), Grant (1975, 1982, 1987), Randall (1990), Randall and Heemstra (1991).

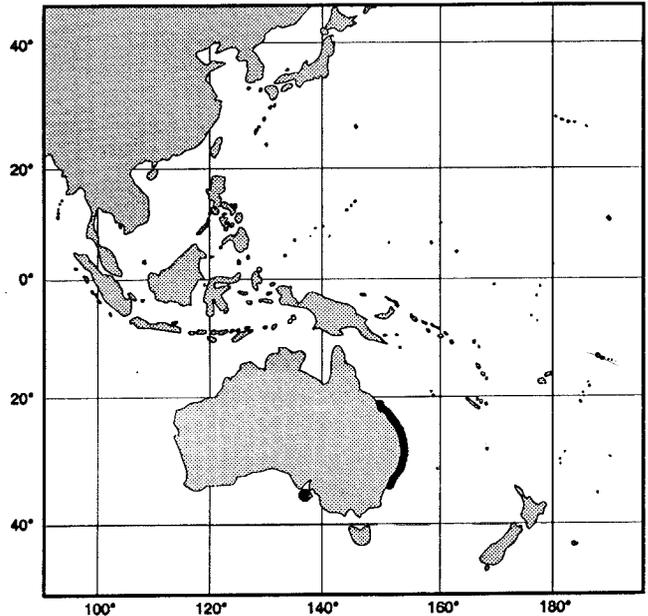


Fig. 432

Epinephelus undulosus (Quoy and Gaimard, 1824)

Fig. 433; Pls XXVIF, XXVA

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Bodianus undulosus Quoy and Gaimard, 1824:310 (type localities: Waigeo [off north coast of New Guinea] and "Rawak" [= ?Sarawak]).

Synonyms: *Serranus lineatus* Valenciennes in Cuv. and Val., 1828:312 (type locality: Pondichery, India). *Serranus amboinensis* Bleeker, 1852a:258 (type locality: Ambon, Indonesia).

FAO Names: En - Wavy-lined grouper (formerly: Midwater grouper); Fr - Mérou ondulé; Sp - Mero ondulado.

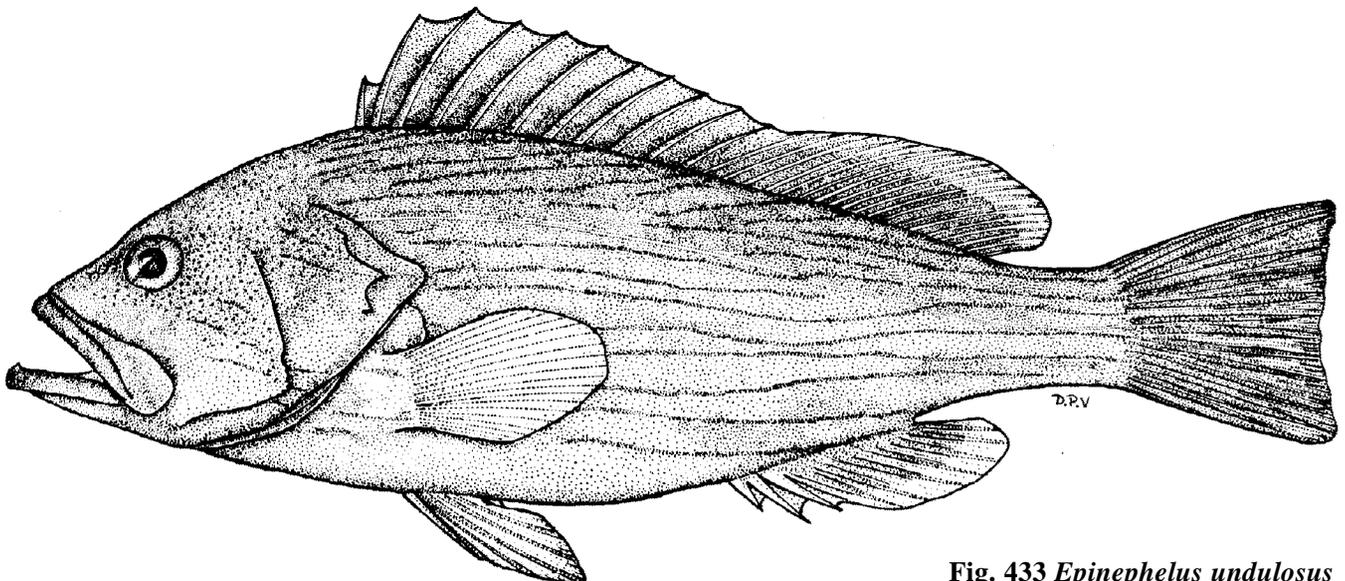


Fig. 433 *Epinephelus undulosus*
(300 mm standard length)

Diagnostic Features: Body depth contained 2.7 to 3.1 times in standard length (for fish 11 to 60 cm standard length). Head length contained 2.5 to 2.7 times in standard length; interorbital area convex; preopercle angular, with a notch above the corner and the serrae at the corner enlarged; upper edge of operculum straight or slightly concave; nostrils subequal or the posterior ones slightly larger; maxilla reaches to vertical at rear edge of eye; adults with a prominent knob or hook-like process on ventral edge of maxilla (covered by upper lip); midlateral part of lower jaw with 2 rows of teeth. Gill rakers longer and more numerous than other species of *Epinephelus*, 12 to 16 on upper limb, 20 to 23 on lower limb; total 32 to 38; 1 or 2 rudimentary rakers in juveniles, but none in adults. Dorsal fin with XI spines and 17 to 19 rays, the third or fourth spine longest, its length contained 2.5 to 3.4 times in head length and longer than longest dorsal-fin ray; interspinous membranes of dorsal fin not incised; anal fin with III spines and 8 rays; pectoral-fin rays 18 or 19; pectoral fins shorter than pelvic fins, pectoral-fin length contained 1.7 to 2.3 times in head length; pelvic fins not reaching anus (except for juveniles), pelvic-fin length contained 1.6 to 2.2 times in head length; caudal fin truncate to emarginate. Lateral-body scales distinctly ctenoid, with numerous auxiliary scales; lateral-line scales 63 to 76; lateral-scale series 124 to 150. **Colour:** Head, body, and fins purplish grey to brownish grey, with brown to golden-brown dots on head and wavy longitudinal lines of the same colour on dorsal part of body (lines faint or absent on large specimens); margin of spinous dorsal fin narrowly blackish.

Geographical Distribution: *E. undulosus* occurs in the northern Indian Ocean (Kenya, Somalia, Yemen, Gulf of Oman, Gulf of Aden, Laccadive Islands, India, Sri Lanka, and the Andaman Islands), and it is also known from Indonesia, Sarawak, New Guinea, Papua New Guinea, Solomon Islands, and the Philippines (Fig. 434). It has not been reported from the Red Sea, Persian Gulf, or Australia.

Habitat and Biology: *E. undulosus* is found on banks (rather than coral reefs) at depths of 24 to 90 m. According to Morgans (1982), it feeds on a variety of small fishes, small crustaceans (especially stomatopods), shrimp, and pelagic tunicates (*Thalia* and *Pyrosoma* sp). Females were estimated to be mature at 46 cm standard length (55 cm total length).

Size: Attains at least 73 cm total length, 6.4 kg. According to Talwar and Kacker (1984), *E. undulosus* attains a length of 122 cm total length.

Interest to Fisheries: *E. undulosus* is (or was) common on the North Kenya Banks off Lamu and in the Wadge Bank trawl fishery off the west coast of Sri Lanka (Morgans, 1964, 1982). Talwar and Kacker (1984) reported that this species is of some importance in the fishery along the Tamil Nadu coast of India. Caught with hook-and-line, vertical longlines, and with trawls.

Local Names: INDIA (Marathi): Hekaru, Gobra; KENYA: Seyu (Lamu).

Literature: Randall and Heemstra (1991).

Remarks: Although the gill rakers of *E. undulosus* are more numerous and longer than the gill rakers of any other species of *Epinephelus*, its diet (as reported by Morgans, 1982) is not different from that of other species of groupers. It is a generalized predator that usually feeds on a variety of fishes and crustaceans that live on or near the bottom. Like other groupers, it will take macrozooplankton (e.g., pelagic tunicates) if such prey are available.

E. undulosus also differs from most other groupers in its high number of dorsal-fin rays and the well-developed bony knob or hook on the ventral edge of the maxilla.

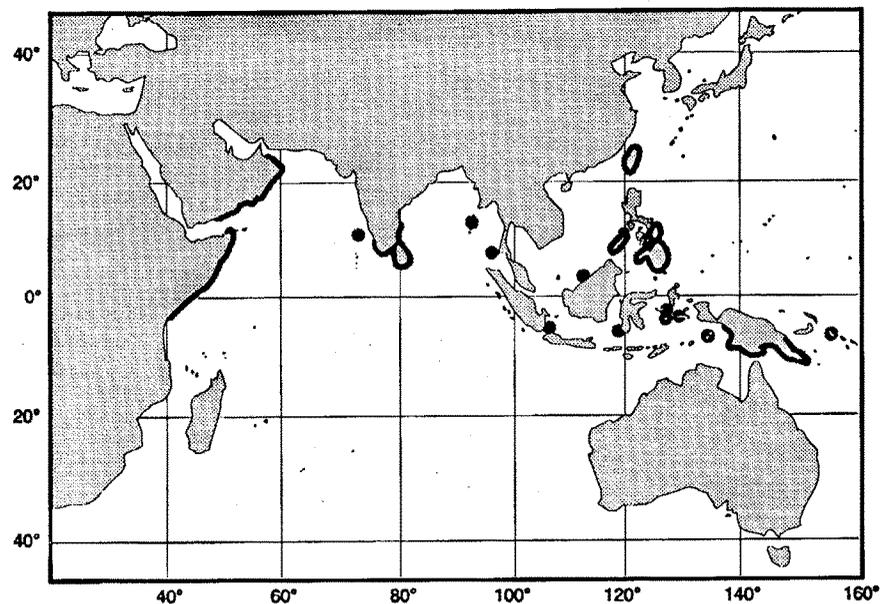


Fig. 434