

## A REVIEW OF THE MARINE CATFISH GENUS *PARAPLOTOSUS* (PLOTOSIDAE) WITH THE DESCRIPTION OF A NEW SPECIES FROM NORTH-WESTERN AUSTRALIA

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**ABSTRACT.** - The marine catfish genus *Paraplotosus* Bleeker is reviewed. Three species are recognised: *P. albilabris* (Valenciennes) from the Indo-Australian Archipelago, *P. muelleri* (Klunzinger) from north-western Australia and adjacent Northern Territory, and an undescribed species from northern Australia. *Paraplotosus butleri*, new species, is described from 40 specimens, 26-325 mm SL, collected mainly from coastal seas of northwestern Australia. It is clearly distinguishable from congeners by its black colouration, longer dorsal fin, longer barbels, and greater number of lower-limb gill rakers and upper procurent caudal rays. *Paraplotosus muelleri* and *P. albilabris* are similar in appearance and habits, but are separable on the basis of dorsal fin height and eye size, which are invariably greater in *P. muelleri*.

**KEYWORDS.** - Ichthyology, taxonomy, Australia, south-east Asia.

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### INTRODUCTION

The plotosid catfish genus *Paraplotosus* was previously represented by a single species, *P. albilabris* Valenciennes, which ranges widely in shallow seas of the Indo-Australian Archipelago. Collections over the past three decades in north-western Australia have revealed the presence of two additional species, reviewed herein.

The three species exhibit similar behaviour and ecological preferences. They are inhabitants of shallow reef areas, usually encountered in less than 10 m depth. During the day they are mainly sedentary, frequently seen resting on the bottom under rock or coral outcrops on substrata containing substantial amounts of sand, silt, mud, or algae. Presumably they are active nocturnally, and are known to feed on small invertebrates, particularly gastropod molluscs and crustaceans.

## MATERIALS AND METHODS

Methods of counting and measuring are as follows: counts for *upper procurent caudal rays*, *caudal rays*, *anal rays*, and *vertebrae* were made from radiographs; *standard length (SL)* - measured from the tip of the upper lip to the caudal-fin base; *head length (HL)* - measured from the tip of the upper lip to the upper posterior margin of the gill opening; *preanal distance* - measured between the tip of the upper lip and the anal-fin origin; *base of dorsal-caudal fin* - measured between the origin of the second dorsal fin (ie. upper procurent caudal fin) and the caudal-fin base; *snout length* - measured from the tip of the upper lip to the anterior margin of the eye; *width of bony interorbital* - measured between the eyes by pressing the callipers firmly between the upper margin of the orbits; *nasal barbel length* - measured between the base of the longest nasal barbel and its tip; *dorsal fin height* - measured between the base of the dorsal-fin spine and the tip of the longest ray; *pectoral fin length* - measured between the base of the pectoral -fin spine and the tip of the longest ray; *pelvic-fin length* - measured between the base of the first ray and the tip of the longest ray.

Type specimens of *P. butleri* are deposited at American Museum of Natural History, New York (AMNH), Australian Museum, Sydney (AMS), Muséum National d'Histoire Naturelle, Paris (MNHN), Queensland Museum, Brisbane (QM), National Museum of Natural History, Washington, D.C. (USNM), and Western Australian Museum, Perth (WAM).

## TAXONOMY

### *Paraplotosus* Bleeker, 1862

*Paraplotosus* Bleeker, 1862: 100 (type species, *Plotosus albilabris* Valenciennes in Cuvier and Valenciennes 1840, by monotypy).

*Endorhrhis* Ogilby, 1898: 283 (type species, *Copidoglanis longifilis* Macleay 1881, by original designation).

**Diagnosis.** - Dorsal-fin rays I,4 or 5 (last ray often consisting of two small rays arising from same pterigiophore); upper procurent caudal rays 93-125; caudal rays 8-11; anal rays 78-102; free precaudal vertebrae posterior to Weberian apparatus 9-13; free caudal vertebrae 44-58; total free vertebrae posterior to Weberian apparatus 56-69; pectoral rays I,11-15; pelvic rays 12-15; gill rakers on first arch 5-8 + 15-19; branchiostegal rays 8-11.

Head length 17-23 percent of SL; body depth 11-15 percent of SL; preanal distance 33-42 percent of SL; base of dorsal-caudal fin 65-80 percent of SL; snout length 34-46 percent of head length; eye diameter 14-24 percent of head length; width of bony interorbital 17-33 percent of head length; nasal barbel length 55-167 percent of head length; dorsal fin height 48-160 percent of head length; pectoral fin length 53-94 percent of head length; pelvic fin length 34-69 percent of head length.

Other salient features include an elongate eel-like body with tapering caudal fin, a well developed lateral line, a pair of dendritic organs near anus, four pairs of sensory barbels around the mouth, thick lips with a strongly papillose surface, a pair of short, tubular anterior nostrils on lower side of upper lip and directed downward, branchiostegal membranes broadly united, gill rakers confined to first two arches, premaxillary teeth conical with rounded to pointed tips, arranged in two small triangular to subcircular patches, a triangular patch of

molariform teeth on palate, and band of stout peg-like teeth in lower jaw with flattened to rounded tips.

**Remarks.** - *Paraplotosus* is confined to Australia and the Indo-Australian Archipelago (Singapore to Philippines and Papua New Guinea). It contains three species, which are separable on the basis of characters given in the following key.

### Key to the species of *Paraplotosus*

1. Dorsal fin extremely tall, its height usually greater than head length, ranging between 93-160 percent of head length; nasal barbel elongate, usually longer than head length ..... *Paraplotosus butleri*, new species
- Dorsal fin not extremely tall, its height usually less than head length or about equal to head length, ranging between 48-104 percent of head length; nasal barbel length usually less than head length ..... 2
2. Dorsal fin longer than pectoral fin and 74-104 percent of head length; eye diameter 20-25 percent of head length ..... *Paraplotosus muelleri*
- Dorsal fin shorter or about equal to pectoral fin and 48-70 percent of head length; eye diameter 14-20 percent of head length ..... *Paraplotosus albilabris*

### *Paraplotosus albilabris*

White-lipped Catfish

(Fig. 1)

*Plotosus albilabris* Valenciennes, in Cuvier and Valenciennes, 1840: 427 (Batavia [Jakarta], Indonesia).

*Plotosus macrophthalmus* Bleeker, 1847:179 (Batavia, Java).

*Copidoglanis longifilis* Macleay, 1881: 207: (Torres Straits, Queensland)

**Material examined.** - (162 specimens, 24-365 mm SL; specimens from Western Australia unless indicated otherwise): USNM 219571, 3 specimens, 34.8-61.6 mm SL, Trobriand Islands, Papua New Guinea; USNM 219572, 69 mm SL, Darvel Bay, Sabah, Malaysia; USNM 219573, 4 specimens, 130-245 mm SL, One Tree Island, Great Barrier Reef, Queensland, Australia; USNM 220001, 5 specimens, 76-155 mm SL, Palawan Province, Philippines (10°51.2'N, 121°0.2'E); USNM 220002, 4 specimens, 130-245 mm SL, One Tree Island, Great Barrier Reef, Queensland, Australia; USNM 228797, 3 specimens, 32.3-60.0 mm SL, mainland of Irian Jaya E of Yapen Island, Indonesia (1°30.8'S, 137°20.7'E); USNM 300572, 2 specimens, 89-91 mm SL, One Tree Island, Great Barrier Reef, Queensland, Australia; USNM 219573, 4 specimens, 71-168 mm SL, One Tree Island, Great Barrier Reef, Queensland, Australia; WAM P.7624-025, 2 specimens, 135-295 mm SL, Port Sampson; WAM P.7974-093, 20 specimens, 52-146 mm SL, Rottneest Island; WAM P.8492-001, 301 mm SL, Rottneest Island; WAM P.8495-001, 191 mm SL, Shark Bay; WAM P.8509-001, 294 mm SL, Perth vicinity; WAM P.8510-017, 5 specimens, 28-128 mm SL, Rottneest Island; WAM P.8520-001, 4 specimens, 57-99 mm SL, Rottneest Island; WAM P.8524-001, 128 mm SL, Rottneest Island; WAM P.8525-001, 85 mm SL, Rottneest Island; WAM P.8554-056, 3 specimens, 64-134 mm SL, Rottneest Island; WAM P.9136-001, 223 mm SL, Shark Bay; WAM P.12112-001, 310 mm SL, Onslow; WAM P.12113-001, 300 mm SL, Onslow; WAM P. 21169-070, 2 specimens, 223-263 mm SL, Dampier Archipelago; WAM P.25117-005, 3 specimens: 33-150 mm SL, Dampier Archipelago; WAM P.25532-002, 2 specimens, 81-103 mm SL, Shark Bay; WAM P.25852-001, 217 mm SL, Abrolhos Islands; WAM P.25999-003, 2 specimens; 149-168 mm SL, Point Peron; WAM P.26069-006, 2 specimens, 72-83 mm SL, Abrolhos Islands; WAM P.26616-001, 3 specimens, 78-86 mm SL, Point Clune; WAM P.26619-002, 319 mm SL, Rottneest Island; WAM P.26620-003, 140 mm SL, Rottneest Island; WAM P.26636-024, 7 specimens, 85-265 mm SL, North West Cape; WAM P.26678-011, 152 mm SL, Shark Bay; WAM P.27283-003, 3 specimens, 60-94 mm SL, Breton Bay; WAM P.27586-004, 2 specimens, 62-83 mm SL, Abrolhos Islands; WAM P.27616-007, 250 mm SL, Rottneest Island; WAM P.27671-018, 5 specimens, 117-256 mm SL, Lacepede Islands; WAM P.27274-002, 8 specimens, 107-365 mm SL,

Broome; WAM P.27311-001, 186 mm SL, Port Hedland; WAM P.27900-002, 2 specimens, 62-84 mm SL, Kalbarri; WAM P.27959-002, 2 specimens, 83-95 mm SL, Kalbarri; WAM P.28059-011, 90 mm SL, Broome; WAM P.28194-024, 123 mm SL, Bristow Island, near Daru, Papua New Guinea; WAM P.29933-019, 3 specimens, 77-275 mm SL, Rottneest Island; WAM P.30086-101, 121 mm SL, Shark Bay; WAM P.30087-001, 177 mm SL, Shark Bay; WAM P.30088-001, 3 specimens, 48-160 mm SL, Shark Bay; WAM P.30166-001, 167 mm SL, Shark Bay; WAM P.30167-001, 5 specimens, 130-166 mm SL, Shark Bay; WAM P.30169-001, 3 specimens, 90-121 mm SL, Shark Bay; WAM P.30171-001, 2 specimens, 98-179 mm SL, Shark Bay; WAM P.30246-001, 4 specimens, 190-230 mm SL, Point Peron; WAM P. 30688-002, 135 mm SL, Monte Bello Islands; WAM P. 30298-009, 181 mm SL, Monte Bello Islands; WAM P.30307-026, 120 mm SL, Long Reef, Kimberley District; WAM P.30898-001, 2 specimens, 24-190 mm SL, Sunday Island, Kimberley District; WAM 30833-001, 5 specimens, 50-105 mm SL, Abrolhos Islands; WAM 30877-001, 115 mm SL, Abrolhos Islands; WAM P.30900-001, 282 mm SL, Sunday Island, Kimberley District; WAM P.31013-003, 152 mm SL, Exmouth Gulf; WAM P. 31015-003, 4 specimens, 103-130 mm SL, Exmouth Gulf; WAM P. 31078-004, 2 specimens, 70-164 mm SL, Jones Island, Kimberley District; WAM P.31203-004, 275 mm SL, Bigge Island, Kimberley District; WAM P.31305-001, 3 specimens, 122-167 mm SL, Bintan Island, Indonesia (approximately 1°11'N, 104°19'E).

**Diagnosis.** - A species of *Paraplotus* separable from *P. butleri* n. sp. on the basis of its shorter dorsal fin and shorter nasal barbels, rounded pectoral-fin shape, fewer upper procurent caudal fin rays, and fewer gill rakers. It is similar to *P. muelleri*, but differs in having a shorter dorsal fin and smaller eye. The differences are discussed in more detail under the remarks section below and in the remarks section for *P. butleri* n. sp.

**Description.** - Dorsal-fin rays I,4 (last ray often consisting of 2-3 small rays arising from same pterigiophore); upper procurent caudal rays 93-111 (usually 97-105); caudal rays 8-11 (usually 9); anal rays 78-95; free precaudal vertebrae posterior to Weberian apparatus 11-13 (usually 11 or 12); free caudal vertebrae 44-56 (usually 49-53); total free vertebrae posterior to Weberian apparatus 56-68 (usually 60-64); pectoral rays I,11-14; pelvic rays 12-14; gill rakers on first arch 5-7 + 16-19 (usually 6 + 16-17); branchiostegal rays 8-11 (usually 9-10).

Head length 18-22 percent of SL; body depth 11-15 percent of SL; preanal distance 34-42 percent of SL; base of dorsal-caudal fin 65-75 percent of SL; snout length 36-40 percent of head length; eye diameter 14-20 percent of head length; width of bony interorbital 18-25 percent of head length; nasal barbel length 55-68 percent of head length; dorsal fin height 48-70 percent of head length; pectoral fin length 53-66 percent of head length; pelvic fin length 34-48 percent of head length.

Head more or less wedge-shaped, the anterior part flattened dorsoventrally, its width about equal to greatest body depth; dorsal profile of head nearly straight or slightly concave; snout bluntly rounded in lateral view, its length about equal to that of pelvic fins; mouth subterminal; lips fleshy, plicate and papillose; anterior nostril tubular, protruding from lower part of upper lip; posterior nostril forming a narrow slit immediately behind nasal barbel; eyes moderate-sized, at middle of head and close to dorsal profile; nasal barbel relatively short, reaching beyond eye, but falling well short of opercular margin; maxillary barbel reaching to level below eye; outer mental barbel distinctly longer than maxillary barbel, reaching to opercular margin; inner mental barbel reaching ventral margin of gill cover on isthmus; dermal fold on chin forming deep groove about midway between lower lip and ventral gill opening; branchiostegal membranes united to each other on mid-ventral line; oral dentition composed of relatively stout conical teeth in several rows on upper and lower jaws, with broad v-shaped or triangular patch of molariform teeth on palate.





Fig. 1. *Paraplotosus albilabris*, 282 mm SL, Sunday Island, Kimberley District, Western Australia (WAM P. 30900-001).

Body eel-like, relatively long and slender, strongly compressed laterally, and tapering posteriorly; dorsal fin relatively short, about equal to length of pectoral fin and much shorter than head, its tip blunt, originating above posterior margin of head and base of pectoral fins; pectoral fins inserted just behind opercular margin; tips of pectoral fins rounded; dorsal-caudal fin originating far forward, a short distance behind first dorsal fin; a pair of well-developed dendritic organs between anus and anal fin origin.

Colour in alcohol: overall dark brown to blackish, sometimes with lighter mottling; belly and ventral part of head lighter; lips yellowish or tan.

Colour in life: highly variable ranging from pale grey or yellowish brown to dark brown, nearly blackish, sometimes with pronounced dark mottling; generally whitish on belly and ventral part of head; fins brown to blackish, frequently darker than body.

**Remarks.** - *Paraplotosus albilabris* is clearly separable from *P. butleri* on the basis of its shorter dorsal fin and shorter nasal barbels (Fig. 3). It is generally similar in colouration and overall shape to *P. muelleri*, but is separable on the basis of its shorter dorsal fin and smaller eye (see remarks section for *P. muelleri*).

The holotype (MNHN A.9544) of *Plotosus albilabris*, 320 mm SL, was examined for the author by Martine Desoutter. Additionally, the syntypes of *Copidoglanis longifilis*, two specimens, 277-313 mm SL, in the collection of the Australian Museum (AMS I.16269-001) were examined for the author by Sally Reader.

*Paraplotosus albilabris* is the most widely distributed species in the genus (Fig. 2), occurring in the Indo-Australian Archipelago, New Guinea, and Australia. Weber and de Beaufort (1913) reported it from Singapore and the Indonesian islands of Bintan, Belitung, Java (Jakarta area), and southern Sulawesi (Bulukomba). Kailola (1987) added the Trobriand Islands, Papua New Guinea to the distributional range. Other than Kailola's record and juvenile specimens examined at USNM from Sabah, Philippines, and Irian Jaya there are no recent reports of this species occurring outside of Australia. Therefore the status of populations outside of Australia is uncertain. I have not encountered the species in fish markets or while diving at numerous localities across the Indonesian Archipelago.

The Australian distribution was summarised by Paxton et al. (1989). It extends from Geographe Bay (33°35'S) on the west coast northward and eastward to the Pacific coast of Queensland. Its southern limit on the east coast is the Capricorn Group (23°30'S) on the Great Barrier Reef. Judging from collection records, it is relatively scarce on the east coast of Australia. The majority of records are from the west and north coasts eastward to Torres

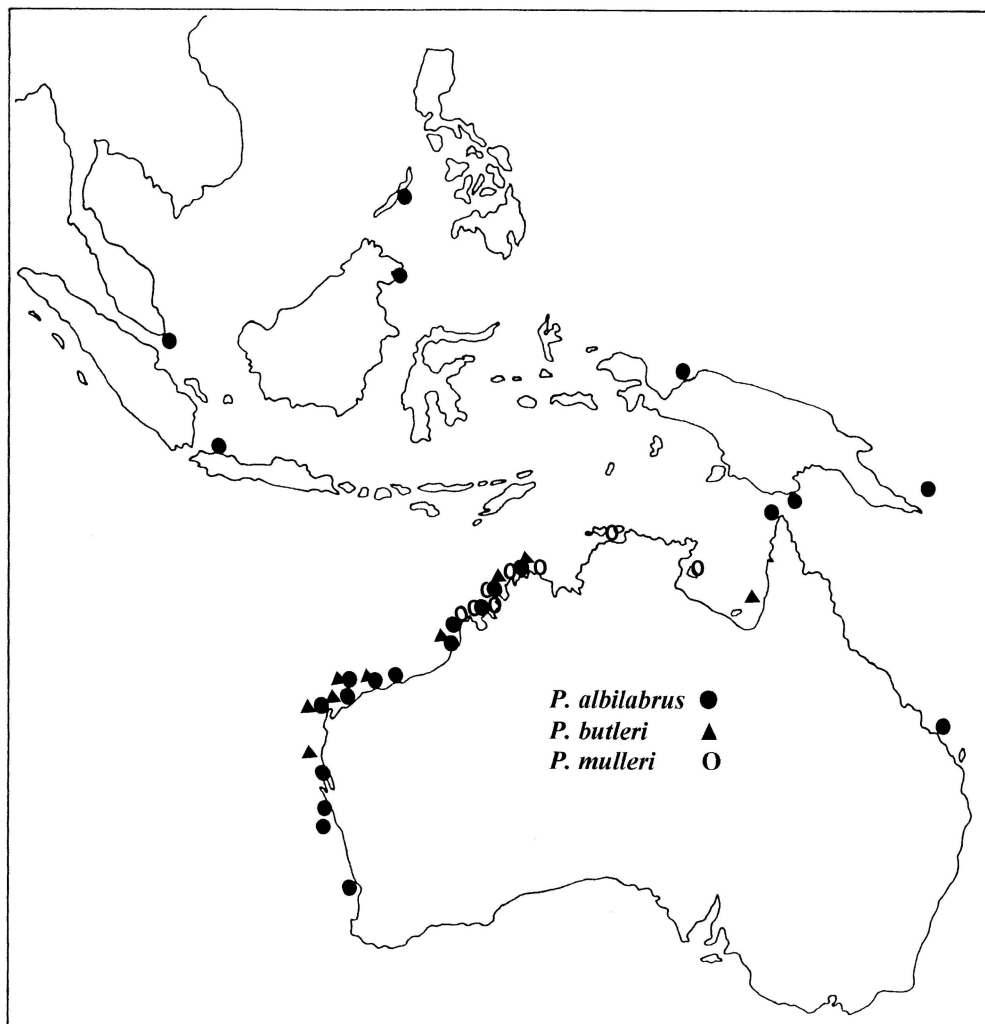


Fig. 2. Map of Australia and South-east Asia showing collection localities for *Paraplotosus*.

Straits. The only east coast collections are from One Tree Island in the Capricorn Group and Lindeman Island in the Cumberland Group (approximately 20°S). Although its distribution extends into temperate latitudes on the west coast, it is mainly an inhabitant of tropical waters. Its appearance well south of the Tropic of Capricorn on the west coast is no doubt influenced by the southward flowing Leeuwin Current, which is believed responsible for the occurrence of many other tropical fishes in the vicinity of Perth (Hutchins, 1994).

In tropical Australia *P. albilabris* is most often associated with coral reef habitats in both clear and turbid waters. It is frequently collected with rotenone from shallow pools or reef flats at extreme low tide. Individuals observed while diving are frequently encountered in mixed sand, weed, and coral areas. It is sometimes seen resting in shady crevices of coral bommies or under large plates of dead coral at depths ranging from about 1-10 m.

*Paraplotosus butleri*, new species

Sailfin Catfish

(Fig. 3)

*Paraplotosus* sp. Allen, 1985: fig. 35 (North West Cape, Western Australia).*Paraplotosus* sp. Allen & Swainston, 1988:36, fig. 130 (N. Western Australia).*Paraplotosus* sp. Allen 1997:60, fig. 11-7 (N. Western Australia).

**Material examined.** - Holotype: WAM P. 27368-021, 325 mm SL, near Broome, Western Australia (approximately 17°58'S, 122°14'E), hook and line, P. Good, July 1981. Paratypes: AMNH 33974, 80 mm SL, near mouth of Mandu Mandu Creek, North West Cape, Western Australia; 0-1.5 m depth; G. Nelson, H. Butler, and D. Rosen, 3-4 April 1969; AMS I.15557-038, 145 mm SL, Gulf of Carpentaria, Queensland (16°05'S, 141°15'E), collected by staff of Fisheries Division, Commonwealth Scientific and Industrial Research Organisation, 17 July 1964; AMS I.18719-001, 302 mm SL, collected with AMNH paratype; ANSP 134247, 304 mm SL, collected with AMNH paratype; BMNH 1976-3.8:1, 291 mm SL, collected with AMNH paratype; CAS 35534, 164 mm SL, collected with AMNH paratype; MNHN 1976-6, 261 mm SL, collected with AMNH paratype; QM I.13532, 80 mm SL, collected with AMNH paratype; SAM F4158, 98.5 mm SL, collected with AMNH paratype; USNM 215286, 186 mm SL, collected with AMNH paratype; WAM P.24084-001, 238 mm SL, Kendrew Island, Dampier Archipelago, Western Australia (approximately 20°28.5'S, 116°32'E), spear, B. Hutchins, 22 October 1973; WAM P.24270-001, 257 mm SL, Kendrew Island, Dampier Archipelago, Western Australia, spear, B. Hutchins, 22 February 1974; WAM P. 25108-022, 104 mm SL, Kendrew Island, Dampier Archipelago, Western Australia, in 6-10 m depth, rotenone, G. Allen, 23 October 1974; WAM P. 25117-006, 40.5 mm SL, Lady Nora Island, Dampier Archipelago, Western Australia (approximately 20°28'S, 116°36'E), in 0.3-0.4 m, G. Allen & R. Steene, 15 November 1974; WAM P.25368-007, 80 mm SL, lagoon off Tantabiddi Creek, North West Cape, Western Australia, in 2-3 m depth, G. Allen, 25 July 1975; WAM P.25374-009, 5 specimens, 100-115, lagoon off Tantabiddi Creek, North West Cape, Western Australia, in 3-4 m depth, G. Allen, 2 July 1975; WAM P.25711-001, 199 mm SL, collected with AMNH paratype; WAM P.25813-013, 2 specimens, 79-111 mm SL, South Murion Island, Western Australia (approximately 21°40'S, 114°20'E), rotenone, B. Hutchins, 5 June 1977; WAM P.27967-004, 90 mm SL, Fitzroy Reefs, Point Quobba, Western Australia (approximately 24°29'S, 113°25'E), in 4-5 m depth, rotenone, B. Hutchins, 25 April 1983; WAM P.27980-013, 2 specimens, 168-281 mm SL, South-east Island, Monte Bello Islands, Western Australia (approximately 20°26'S, 115°35'E) in 1-3 m depth, rotenone, G. Allen, 25 May 1983; WAM P.28416-009, 5 specimens, 67-265 mm SL, off Gantheume Point, Broome, Western Australia (approximately 17°58'S, 122°10'E), in 2-5 m depth, rotenone, N. Sarti & A. Williams, 13 September, 1982; WAM P.31091-003, 3 specimens, 26-130 mm SL, W. side of West Governor Island, Napier Broome Bay, Western Australia (approximately 13°56'S, 126°38'E), in 0.2-1.5 m depth, rotenone, B. Hutchins, 26 November 1995; WAM P.30847-014, 225 mm SL, W. side of Cassini Island, Western Australia (approximately 13°57'S, 125°37'E), in 0-1 m depth; rotenone, G. Allen & B. Morrison, 22 September 1994; WAM P.31088-008, 4 specimens, 42-183 mm SL, E. side of Lewis Island, Napier Broome Bay, Western Australia (approximately 14°01'S, 126°32'E), in 0.1-0.6 m depth, rotenone, B. Hutchins, 25 November 1995.

**Diagnosis.** - A species of *Paraplotosus* separable from *P. albilabris* and *P. muelleri* by its tall, sail-like first dorsal fin and extremely elongate nasal barbels, which extend posteriorly to the basal third of the pectoral fin or beyond. In addition, small juveniles have a unique colouration consisting of a black head and body with a broad white to yellow margin on the first dorsal fin and continuous dorsal-caudal-anal fin. The differences are discussed in more detail under the remarks section below.

**Description.** - Dorsal-fin rays I,4 or 5 (I,4)(last ray often consisting of two small rays arising from same pterigiophore); upper procurent caudal rays 111-125 (125); caudal rays 8-9 (9); anal rays 87-102 (101); free precaudal vertebrae posterior to Weberian apparatus 9-12 (11); free caudal vertebrae 53-58 (55); total free vertebrae posterior to Weberian apparatus 63-69 (66); pectoral rays I,13-15 (I,13); pelvic rays 12-15 (12); gill rakers on first arch 6 or 7 + 15-17 (6 + 16); branchiostegal rays 9 or 10.

Head length 17-23 (17.8) percent of SL; body depth 11-14 (13.1) percent of SL; preanal distance 33-41 (34.0) percent of SL; base of dorsal-caudal fin 74-80 (76.0) percent of SL; snout length 37-46 (42.1) percent of head length; eye diameter 16-23 (17.5) percent of head length; width of bony interorbital 21-33 (28.9) percent of head length; nasal barbel length 80-167 (114.0) percent of head length; dorsal fin height 93-160 (159.6) percent of head length; pectoral fin length 69-94 (73.7) percent of head length; pelvic fin length 47-69 (52.6) percent of head length.

Head more or less wedge-shaped, the anterior part flattened dorsoventrally, its width about equal to greatest body depth; dorsal profile of head nearly straight; snout bluntly rounded in lateral view, its length about equal to that of pelvic fins; mouth subterminal; lips fleshy, plicate and papillose; anterior nostril tubular, protruding from lower part of upper lip; posterior nostril forming a narrow slit immediately behind nasal barbel; eyes moderate-sized, at middle of head and close to dorsal profile; nasal barbel extremely elongate, reaching beyond opercular margin to basal third of pectoral fin or beyond; maxillary barbel reaching to posterior margin of operculum; outer mental barbel slightly longer than maxillary barbel, reaching to base of pectoral fin or slightly beyond; inner mental barbel reaching ventral margin of gill cover on isthmus; dermal fold on chin forming deep groove about midway between lower lip and ventral gill opening; branchiostegal membranes nearly united to each other on mid-ventral line; oral dentition composed of relatively stout conical teeth in several rows on upper and lower jaws, with broad v-shaped or triangular patch of molariform teeth on palate.

Body eel-like, relatively long and slender, strongly compressed laterally, and tapering posteriorly; dorsal fin relatively tall, much longer than head, its tip pointed, originating above posterior margin of head and base of pectoral fins; pectoral fins inserted just behind opercular margin; tips of pectoral fins rounded; dorsal-caudal fin originating far anterior, a short distance behind first dorsal fin; a pair of well-developed dendritic organs between anus and anal fin origin.

Colour in life: Adults entirely black. Juveniles under about 60-70 mm SL have a broad white to yellow margin on the margin of all fins, except the pelvics, which are entirely white or yellow. Small juveniles from the Northern Territory have a complete or partial broad, white bar extending across the nape and joining each pectoral fin.

Colour in alcohol: dark brown to blackish, some specimens slightly lighter on abdomen and ventral surface of head.

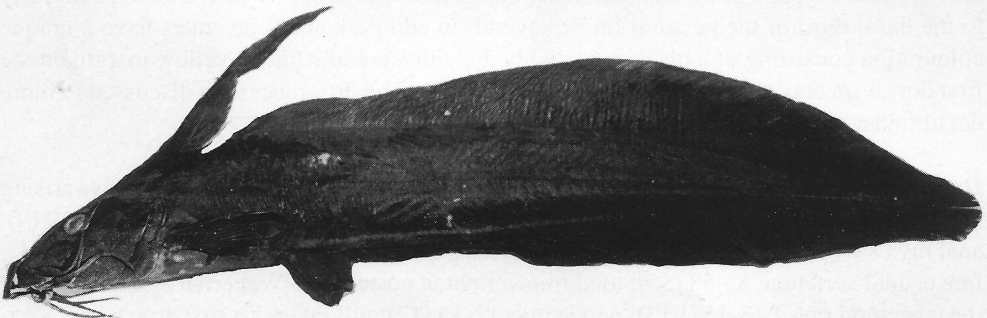


Fig. 3. *Paraplotosus butleri*, holotype, 325 mm SL, near Broome, Kimberley District, Western Australia (WAM P.27368-021).

**Remarks.** - *Paraplotosus butleri* is readily distinguishable from *P. albilabris* and *P. muelleri* by its tall sail-like dorsal fin (Fig. 4). The fin is usually much longer than the head in *P. butleri* and shorter than the head in the congeners. In addition, the pectoral fin outline is relatively angular in *P. butleri* in comparison with the fan-shaped, more rounded pectorals of *P. albilabris* and *P. muelleri*. There are also differences in the number of upper procurent caudal rays (usually exceeding 111 in *P. butleri* and less than 110 in *P. albilabris* and *P. muelleri*), modal counts of lower-limb gill rakers (21-23 in *P. butleri* versus 16-19 in *P. albilabris* and *P. muelleri*), and length of the barbels (significantly shorter in *P. albilabris* and *P. muelleri*, in which the nasal barbel rarely reaches the posterior margin of the operculum).

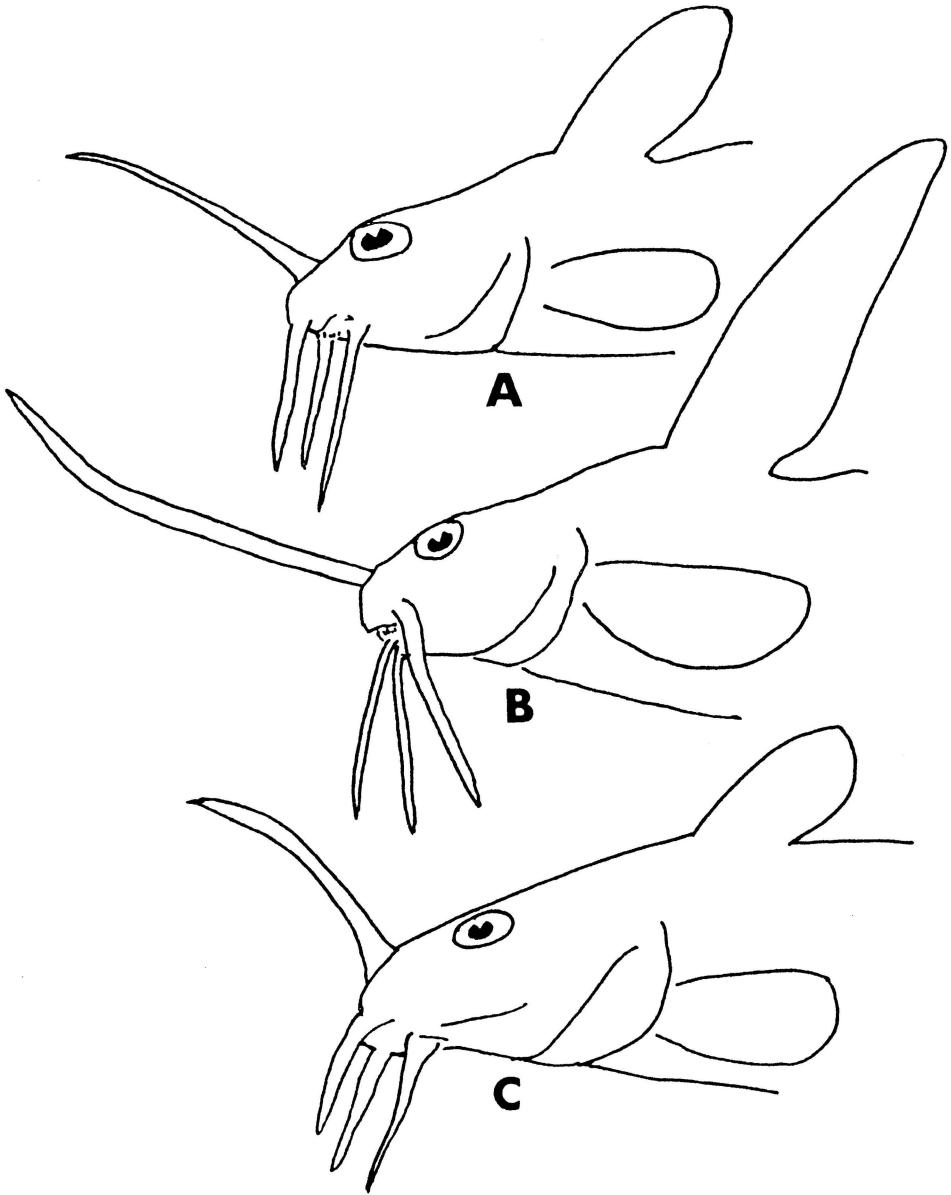


Fig. 4. Comparison of dorsal fin shapes and barbel lengths of species of *Paraplotosus*: A) *P. muelleri*, B) *P. butleri*, and C) *P. albilabris*.

*P. butleri* is apparently restricted to coastal reefs of northern Australia (Fig. 2), ranging from Shark Bay on the west coast northward and eventually eastward to the Gulf of Carpentaria. It is never sighted in large numbers, but is relatively secretive, sheltering in reef holes or under large rocks. It is presumably active at night.

**Etymology.** - Named in honour of W. "Harry" Butler, who assisted with the collection of many of the paratypes. He has also offered generous financial support over the years to WA Museum biologists for field work via the Butler Fund.

*Paraplotosus muelleri*

Kimberley Catfish

(Fig. 5)

*Cnidoglanis muelleri* Klunzinger, 1880: 411 (Port Darwin).

**Material examined.** - (45 specimens, 22-268 mm SL; all WAM specimens from the Kimberley district of Western Australia unless indicated otherwise): USMN 173545, 4 specimens, 94-250 mm SL, East Point Reef, near Darwin, Northern Territory ; USNM 173546, 5 specimens, 83-268 mm SL, north-west end of Groote Eylandt, Northern Territory ; USNM 317741, 240 mm SL, Darwin Harbour, Northern Territory; USNM 325877, 3 specimens, Gunn Point, near Darwin, Northern Territory; WAM P. 20954-001, 238 mm SL, Dampier Archipelago; WAM P.30302-008, 4 specimens, 162-204 mm SL, Leseur Island (approximately 13°48'S, 127°15'E); WAM P.30320-037, 233 mm SL, Powerful Island (approximately 16°05'S, 123°27'E); WAM P.30908-001, 2 specimens, 115-168 mm SL, Mermaid Island (approximately 16°26'S, 123°21'E); WAM P.30910-002, 4 specimens, 25-156 mm SL, Bedford Islands (approximately 16°09'S, 123°20'E); WAM P.30929-002, 122 mm SL, Whirlpool Pass (approximately 16°16'S, 123°30'E); WAM P. 31085-003, 8 specimens, 22-230 mm SL, Long Island (approximately 13°59'S, 126°20'E); WAM P.31092-006, 4 specimens, 41-197 mm SL, Cape Talbot (approximately 13°45'S, 126°45'E); WAM P.31907-008, 3 specimens, 29-116 mm SL, SE of Cape Londonderry (approximately 13°45'S, 126°48'E); WAM P.31204, 215 mm SL, Kingfisher Island (16°07.4'S, 124°04.75'E); WAM P.31239-001, 245 mm SL, Lamark Island (approximately 14°46.5'S, 125°01'E); WAM P.31242-005, 2 specimens, 168-261 mm SL, Marett Islands (approximately 14°25.6'S, 124°58.9'E).

**Diagnosis.** - A species of *Paraplotosus* separable from *P. butleri* on the basis of its shorter dorsal fin and shorter nasal barbels, rounded pectoral-fin shape, fewer upper procurent caudal fin rays, and fewer gill rakers. It is similar to *P. albilabris*, but differs in having a taller dorsal fin and larger eye. The differences are discussed in more detail under the remarks section below and in the remarks section for *P. butleri*.

**Description.** - Dorsal-fin rays I,4 (last ray often consisting of two small rays arising from same pterigiophore); upper procurent caudal rays 93-106 (96); caudal rays 9-11 (10); anal rays 80-95; free precaudal vertebrae posterior to Weberian apparatus 11-12 (11); free caudal vertebrae 44-52 (49); total free vertebrae posterior to Weberian apparatus 63-69; pectoral rays I,13-14 (I,13); pelvic rays 12-13 (12); gill rakers on first arch 5-8 + 17-19 (8+19); branchiostegal rays 9 or 10.

Head length 18-22 (20.0) percent of SL; body depth 12-15 (12.8) percent of SL; preanal distance 35-41 (37.9) percent of SL; base of dorsal-caudal fin 69-75 (72.7) percent of SL; snout length 34-43 (39.1) percent of head length; eye diameter 20-24 (21.7) percent of head length; width of bony interorbital 17-25 (17.4) percent of head length; nasal barbel length 60-91 (60.9) percent of head length; dorsal fin height 74-105 (77.0) percent of head length; pectoral fin length 62-73 (62.0) percent of head length; pelvic fin length 48-57 (48.7) percent of head length.



Head more or less wedge-shaped, the anterior part flattened dorsoventrally, its width about equal to greatest body depth; dorsal profile of head nearly straight or slightly concave; snout bluntly rounded in lateral view, its length generally less than that of pelvic fins; mouth subterminal; lips fleshy, plicate and papillose; anterior nostril tubular, protruding from lower part of upper lip; posterior nostril forming a narrow slit immediately behind nasal barbel, surrounded by low fleshy rim; eyes moderate-sized (diameter about one-third height of dorsal fin), at middle of head and close to dorsal profile; nasal barbel extending beyond eye to middle part of postorbital space, often reaching to posterior edge of operculum or slightly posterior; maxillary barbel reaching to level of posterior margin of eye or beyond; outer mental barbel longer than maxillary barbel, reaching to posterior margin of operculum, sometimes to pectoral-fin base; inner mental barbel reaching ventral margin of gill cover on isthmus or slightly beyond; dermal fold on chin forming pronounced groove about midway between lower lip and ventral gill opening; oral dentition composed of oval patch of stout conical teeth in upper jaw, band with several rows of chisel-like, conical and rounded teeth across lower jaw, and broad triangular patch of molariform teeth on palate.

Body eel-like, relatively long and slender, strongly compressed laterally, and tapering posteriorly; dorsal fin moderately tall, exceeding length of pectoral fin, but significantly shorter than head, its tip more or less pointed, originating above posterior margin of head and base of pectoral fins; pectoral fins inserted just behind opercular margin; tips of pectoral fins blunt; dorsal-caudal fin originating far forward, a short distance behind first dorsal fin; a pair of well-developed dendritic organs between anus and anal fin origin.

Colour in life: entirely brown, except belly area and ventral surface of head whitish.

Colour in alcohol: generally light grey to grey brown, although fins may be slightly darker; ventral portion of head and body tan to whitish; lower lip and ventral surface of upper lip tan to whitish. Small juveniles (less than about 50-60 mm SL) mainly dark brown with darker brown to blackish fins (including pectorals and pelvics).

**Remarks.** - This species is very similar in colouration and general shape to *P. albilabris*. However, the two are separable on the basis of dorsal fin height and eye size. Dorsal fin height and eye diameter of *P. muelleri* are invariably greater than for *P. albilabris*. The dorsal fin height of 19 specimens of *P. muelleri*, 116-261 mm SL, ranged between 13.9-20.5 (average 16.1) percent of the SL. The range for 19 specimens of *P. albilabris*, 16-345 mm SL, was 8.6-14.0 (average 11.9) percent of the SL. Eye diameter in these same specimens ranged between 4.0-4.7 (average 4.3) percent of the SL for *P. muelleri* and 2.8-4.1 (average 3.6) percent of the SL for *P. albilabris*.



Fig. 5. *Paraplotosus muelleri*, 238 mm SL, Dampier Archipelago, Western Australia (WAMP. 20954-001).

The holotype of *Cnidoglanis muelleri*, a specimen 144 mm SL, in the collection of the Natural History Museum in Stuttgart, Germany (SMNS 2519) was examined for the author by Ronald Fricke.

The distribution of *P. muelleri* (Fig. 2) extends from the Dampier Archipelago in northern Western Australia to the eastern Gulf of Carpentaria. It co-occurs in this region with *P. albilabris* and *P. butleri*. It is apparently restricted to turbid coastal reefs of the mainland and nearby islands. Most specimens were obtained from rock and coral pools at extreme low tide, but due to massive tides in the region these same areas are 6-8 m deep at extreme high water.

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