Polydactylus longipes Motomura, Okamoto and Iwatsuki, 2001 **Fig. 91; Plate IIh**

Polydactylus longipes Motomura, Okamoto and Iwatsuki, 2001: 1087, fig. 1 [type locality: Davao market, Mindanao Island, Philippines; holotype (USNM 363173, 159 mm standard length); 2 paratypes (FSKU-P 19840, 134 mm standard length; MUFS 20290, 152 mm standard length)].

Synonyms: None.

FAO Names: En - Long-limb threadfin; **Fr** - Barbure longs-doigts; **Sp** - Barbudo de dedos largos.

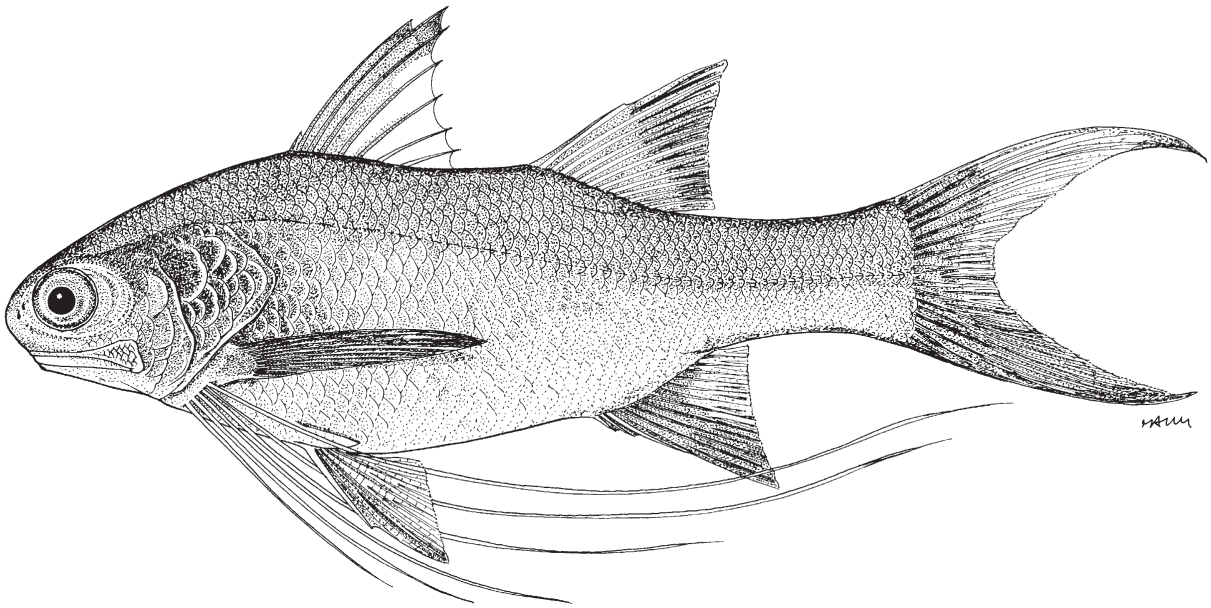

Fig. 91 ***Polydactylus longipes***

Diagnostic Features: A small- to medium-sized species. Body depth at first dorsal-fin origin 29 to 32% (mean 30%) of standard length; head length 35% of standard length. Snout pointed; occipital profile nearly straight. Posterior margin of maxilla reaching to level of posterior margin of adipose eyelid; upper-jaw length 17 to 18% (mean 17%) of standard length; depth of posterior margin of maxilla less than eye diameter; lip on lower jaw well developed, dentary teeth restricted to dorsal surface; teeth villiform in broad bands on vomer, palatines and ectopterygoids. Posterior margin of preopercle serrated. First dorsal fin with VIII spines, thickness of all first dorsal-fin spine bases similar; second dorsal fin with I spine and 12 soft rays; anal fin with III spines and 11 soft rays, anal-fin base slightly less than second dorsal-fin base; pectoral fin with 13 rays (all rays unbranched), its length 28 to 29% (mean 28%) of standard length, posterior tip reaching to or extending slightly beyond level of posterior tip of pelvic fin; pectoral filaments 6, first filament shortest, extending well beyond level of pelvic-fin origin; second pectoral filament reaching to or just short of level of posterior tip of pectoral fin; third pectoral filament reaching to or just short of level of anal-fin origin; fourth pectoral filament extending beyond midpoint of anal-fin base; fifth pectoral filament extending slightly beyond midpoint of caudal peduncle; sixth pectoral filament longest, its length 71 or 72% (mean 71%) of standard length, extending well beyond midpoint of caudal peduncle; caudal fin deeply forked, upper and lower caudal-fin lobes not filamentous, upper caudal-fin lobe 40 to 44% (mean 42%) and lower lobe 38 to 40% (mean 38%) of standard length. Pored lateral-line scales 54 or 55 (mode 55); lateral line simple, extending from upper end of gill opening to upper end of lower caudal-fin lobe; scale rows above lateral line 6, below 11. Gillrakers 13 or 14 (mode 13) on upper limb, 18 on lower limb, 31 or 32 (mode 31) total. Vertebrae 10 precaudal and 14 caudal; supraneural bones 3. Swimbladder present, well developed. **Colour:** Upper sides of head and trunk tinged greyish black, becoming lighter grey on lower sides; opercular region black; all spines of first dorsal fin black, tip of membrane between third and fifth spines black, interspinous membrane otherwise transparent; pectoral-fin membranes greyish black; posterior-most portions of second dorsal and anal fins white, all spines and first and second soft rays dusky, remainder greyish black; tip of anterior margin of pelvic fin white, remainder of fin dusky; pectoral filaments and caudal fin greyish black.

Geographical Distribution: Currently known only from Mindanao Island, Philippines (Fig. 92).

Habitat and Biology: No data are available.

Size: Maximum standard length at least 16 cm (Motomura, Okamoto and Iwatsuki, 2001).

Interest to Fisheries: None.

Local Names: None known.

Literature: Motomura, Okamoto and Iwatsuki (2001); Motomura (2002).

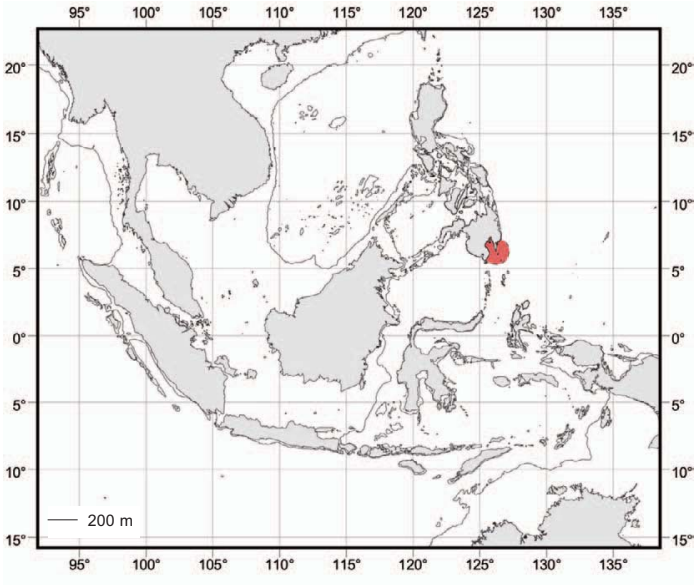

Fig. 92 ***Polydactylus longipes***
Known distribution

Remarks: Although ***P. longipes*** is similar to ***P. macrophthalmus*** in having long pectoral filaments which extend well beyond the midpoint of the anal-fin base, ***P. longipes*** differs from the latter in having 6 pectoral filaments (7 in the latter). In ***P. longipes*** the upper 2 pectoral filaments extend beyond the midpoint of the caudal peduncle, not reaching the caudal-fin base. In ***P. macrophthalmus*** the upper 3 filaments extend beyond the caudal-fin base, the fifth extending beyond the caudal-fin lobe tip. Furthermore, ***P. longipes*** is clearly distinguished from ***P. macrophthalmus*** by lower dorsal-fin soft ray counts (12 versus 13 or 14 in the latter), fewer pored lateral-line scales (54 or 55 versus 87 to 94 in ***P. macrophthalmus***) and scales above and below the lateral line (6 and 11 versus 10 to 12 and 15 or 16, respectively), and higher gill-raker counts (31 or 32 versus 25 to 29 in ***P. macrophthalmus***).

Polydactylus species with 6 pectoral filaments now include 6 valid species from the Indo-Pacific: ***P. longipes***, ***P. malagasyensis***, ***P. nigripinnis***, ***P. persicus***, ***P. sexfilis*** and ***P. sextarius***. ***Polydactylus nigripinnis*** further differs from ***P. longipes*** in having higher pectoral-fin ray counts [16 to 18 (mode 17) versus 13 in the latter], lower counts of pored lateral-line scales and gillrakers [46 to 50 (mode 47) and 24 to 29 (mode 27) versus 54 or 55 (mode 55) and 31 or 32 (mode 31), respectively], and vomerine teeth absent (present in ***P. longipes***).

Polydactylus sexfilis differs from ***P. longipes*** in having higher counts of pectoral-fin rays [15 or 16 (mode 16) versus 13 in the latter], pored lateral-line scales [60 to 67 (mode 64) versus 54 or 55 (mode 55 in ***P. longipes***)], and scales above and below the lateral line [8 or 9 (mode 9) and 12 to 14 (mode 13) versus 6 and 11, respectively].

Polydactylus malagasyensis, ***P. persicus*** and ***P. sextarius*** are also clearly distinguished from ***P. longipes*** as follows: all pectoral-fin rays (except upper 1 or 2) branched (all unbranched in the latter), vomerine teeth absent (present), and a large black spot present anteriorly on the lateral line (absent).

Polydactylus longipes appears to be one of the rarest polynemids, being known only from the 3 type specimens.

Polydactylus macrochir (Günther, 1867)

Fig. 93; Plate IIIa

Polynemus macrochir Günther, 1867: 60 [type locality: New South Wales, Australia (but probably Queensland, see Motomura *et al.*, 2000); holotype (BMNH 1866.2.13.17, 171 mm standard length)].

Synonyms: ***Polynemus sheridani*** Macleay, 1884: 21 (type locality: Mary River, Queensland, Australia; type material apparently lost, see Motomura *et al.*, 2000).

FAO Names: En - King threadfin; **Fr** - Barbure gros-doigts; **Sp** - Barbudo de manos grandes.

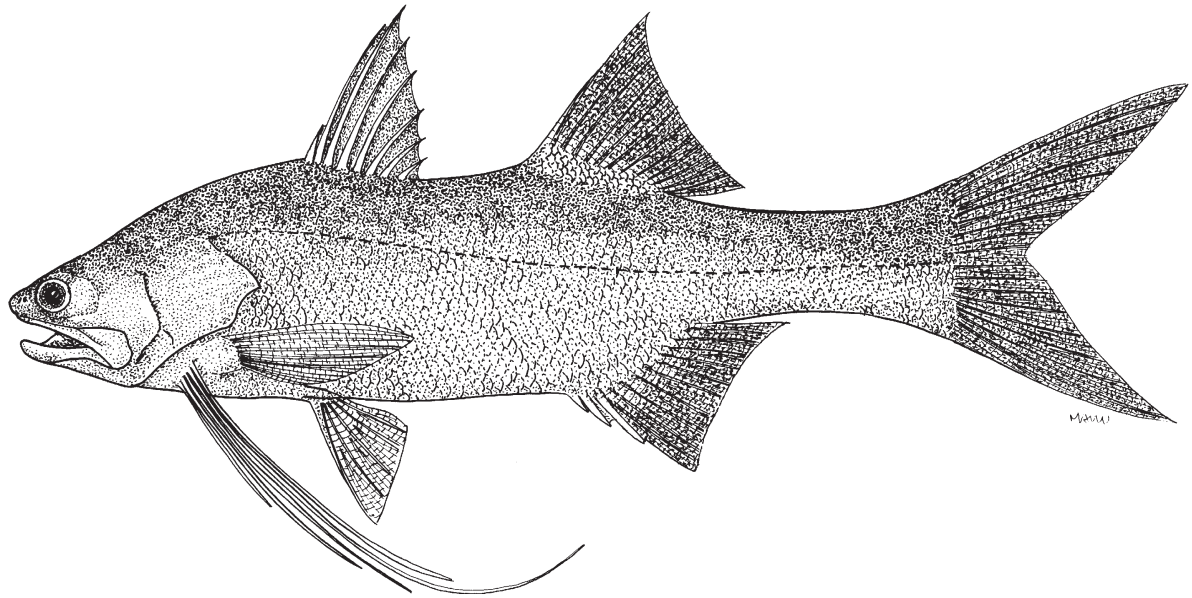

Fig. 93 ***Polydactylus macrochir***

Diagnostic Features: A large species. Body depth at first dorsal-fin origin 23 to 28% (mean 25%) of standard length; head length 28 to 34% (mean 30) of standard length. Snout pointed; occipital profile nearly straight in young but concave in adults. Posterior margin of maxilla extending considerably beyond level of posterior margin of adipose eyelid; upper-jaw length 13 to 17% (mean 15%) of standard length; depth of posterior margin of maxilla greater than eye diameter in adults (over about 200 mm standard length); lip on lower jaw well developed and dentary teeth restricted to dorsal surface; teeth villiform in broad bands on vomer, palatines and ectopterygoids. Posterior margin of preopercle serrated. First dorsal fin with VIII spines, second spine more robust than others; second dorsal fin with I spine and 11 to 13 (mode 12) soft rays; anal fin with III spines and 10 to 12 (mode 11) soft rays, anal-fin base approximately equal to second dorsal-fin base; pectoral fin with 14 or 15 (mode 14) rays (all rays unbranched), its length 22 to 27% (mean 24%) of standard length, posterior tip just reaching to or not reaching to level of posterior tip of pelvic fin; pectoral filaments 5, first filament shortest, extending well beyond level of pelvic-fin origin; second pectoral filament extending well beyond level of posterior tip of pelvic fin; third and fifth pectoral filaments extending beyond level of anal-fin origin; fourth pectoral filament longest, its length 40 to 53% (mean 46%) of standard length, extending well beyond level of anal-fin origin; caudal fin deeply forked, upper and lower caudal-fin lobes not filamentous, upper caudal-fin lobe 33 to 41% (mean 35%) and lower lobe 31 to 46% (mean 33%) of standard length. Pored lateral-line scales 70 to 76 (mode 72); lateral line simple, extending from upper end of gill opening to upper end of lower caudal-fin lobe; scale rows above lateral line 8 to 11 (mode 9), below 12 to 15 (mode 12). Gillrakers 13 to 15 (mode 14) on upper limb, 18 to 20 (mode 20) on lower limb, 32 to 35 (mode 34) total. Vertebrae 10 precaudal and 14 caudal; supraneural bones 3. Swimbladder present, well developed. **Colour:** Upper sides of head and trunk tinged golden silver, becoming more silver on lower sides; first and second dorsal fins pale brown; pectoral and pelvic fins vivid yellow; anterior part of anal fin yellow, other parts yellowish white; pectoral filaments white or yellowish white; posterior margin of caudal fin greyish black, other parts greyish.

Geographical Distribution: Endemic to northern Australia and southern Papua New Guinea (Fig. 94). The species is currently known from Broome, Western Australia to Brisbane River, Queensland, northern Australia, and from south coast of Irian Jaya, Indonesia to south coast of Papua New Guinea. Girija Kumari, Ratnamala and Seshagiri-Rao (1985) reported that 9 specimens of ***Polydactylus macrochir*** (as ***Polynemus sheridani***) were collected from Bay of Bengal, India. However, the description of those specimens given by Girija Kumari, Ratnamala and Seshagiri-Rao (1985), which includes 19 gillrakers, caudal-fin lobes filamentous and greyish body colour, are closer to the diagnosis of ***Leptomelanosoma indicum***.

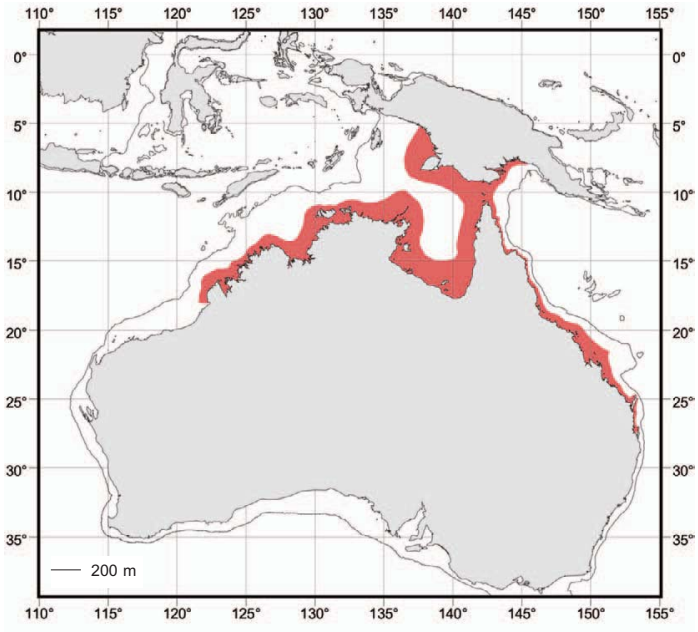

Fig. 94 ***Polydactylus macrochir***
Known distribution

Habitat and Biology: Inhabits turbid coastal waters, estuaries and mangrove creeks as well as mangrove-lined rivers and is taken from depths of 0.2-6 m. Feeds mainly on crustaceans and fishes.

The species exhibits protandry. According to Kailola and Stewart *in* Kailola *et al.* (1993), individuals between 700 and 1 000 mm fork length may be transitional hermaphrodites. However, most less than 800 mm fork length are males and most more than 950 mm fork length are females. In the Gulf of Carpentaria and along the northeastern Queensland coastline, Australia, transitional ***P. macrochir*** are found in the months from June to September. In north Australian waters, it is known to spawn over the summer months from October to February or March, with a peak during December.

Size: Although ***P. macrochir*** was stated to reach a weight of about 45 kg (Macleay, 1884), such examples are not seen today (Marshall, 1964). Kailola and Stewart *in* Kailola *et al.* (1993), recorded the species at 140 cm fork length and 32 kg in the Gulf of Carpentaria, and more than 150 cm fork length in Princess Charlotte Bay. Validated ageing studies indicated that the species can live for more than 20 years, with an estimated maximum attainable size of 170 cm fork length and more than 40 kg (Kailola and Stewart *in* Kailola *et al*., 1993).

Interest to Fisheries: ***P. macrochir*** is one of the most important species in the fisheries at Northern Territory, Queensland and Western Australia. The species is caught mainly by coastal set gillnets, but also by fixed tidal traps, beach seines, ring nets and handlines. In the southern Gulf of Carpentaria, Australia, the fishery for the species is largely based on male 3- to 6-year-old fish (Kailola and Stewart *in* Kailola *et al*., 1993). From the Gulf of Carpentaria gillnet fishery between 1980 and 1987, the species averaged 30% by weight of total landings (Kailola and Stewart *in* Kailola *et al.*, 1993). It is also an important sport fish in northern Australian waters. They are caught with rod and reel or handlines, from shore or boat.

Local Names: AUSTRALIA: Burnett salmon, Gold threadfin, King salmon, King threadfin, Sheridan's threadfin; PAPUA NEW GUINEA: Longfinned threadfin.

Literature: Motomura *et al*. (2000); Motomura (2002).

Remarks: ***Polydactylus sheridani*** has been regarded as a valid species (e.g. Marshall, 1964; Munro, 1967; Menon, 1974; Grant, 1982). However, the characters of ***P. sheridani***, which includes maxilla large, posterior margin of maxilla extending beyond posterior margin of eye and second spine of first dorsal fin very strong, as described by Macleay (1884), were found to be consistent with those of the holotype of ***P. macrochir***. Comparison of a range of material with the latter and the original description of ***P. sheridani***, led to the conclusion that ***P. macrochir*** was a senior synonym of ***P. sheridani*** (see Motomura *et al*., 2000).

Polydactylus macrochir and 4 other Indo-West Pacific species included in this genus: ***P. bifurcus***, ***P. microstomus***, ***P. plebeius*** and ***P. siamensis***, are characterized by 5 pectoral filaments. ***Polydactylus macrochir*** can be easily distinguished from the 4 species by the posterior margin of the maxilla extending considerably beyond the level of the posterior margin of the adipose eyelid (slightly short of, reaching to, or extending slightly beyond in the other 4 species).

Polydactylus macrochir further differs from ***P. microstomus*** in lacking a large black spot anteriorly on the lateral line (present in the latter). In overall body appearance, ***P. macrochir*** is similar to ***P. bifurcus***, ***P. plebeius*** and ***P. siamensis***. However, ***P. macrochir*** differs from ***P. bifurcus*** in having higher counts of gillrakers [32 to 35 (mode 34) versus 30 in the latter] and a simple lateral line (bifurcated in ***P. bifurcus***). ***Polydactylus macrochir*** is distinguished from ***P. plebeius*** and ***P. siamensis*** by having higher counts of pored lateral-line scales [70 to 76 (mode 72) versus 60 to 68 (mode 63) in ***P. plebeius*** and 54 to 58 (mode 54) in ***P. siamensis***], higher counts of gillrakers [32 to 35 (mode 34) versus 24 to 32 (mode 26) in ***P. plebeius*** and 22 to 24 (mode 23) in ***P. siamensis***], occipital profile concave in adults (nearly straight throughout life in ***P. plebeius*** and ***P. siamensis***), and the second spine of the first dorsal fin more robust than the other spines of the first dorsal fin (all spines similar in ***P. plebeius*** and ***P. siamensis***).

Polydactylus macrophthalmus (Bleeker, 1858)

Figs 95-96; Plate IIIb

Polynemus macrophthalmus Bleeker, 1858b: 10 [type locality: Palembang, Musi River, Sumatra, Indonesia; lectotype (RMNH 6015, 129 mm standard length) designated by Motomura *et al*., 2001c; paralectotype (RMNH 33967, 117 mm standard length); date of publication of original description determined by Motomura *et al*., 2001c].

Synonyms: None.

FAO Names: En - River threadfin; **Fr** - Barbure de rivière; **Sp** - Barbudo de rio.

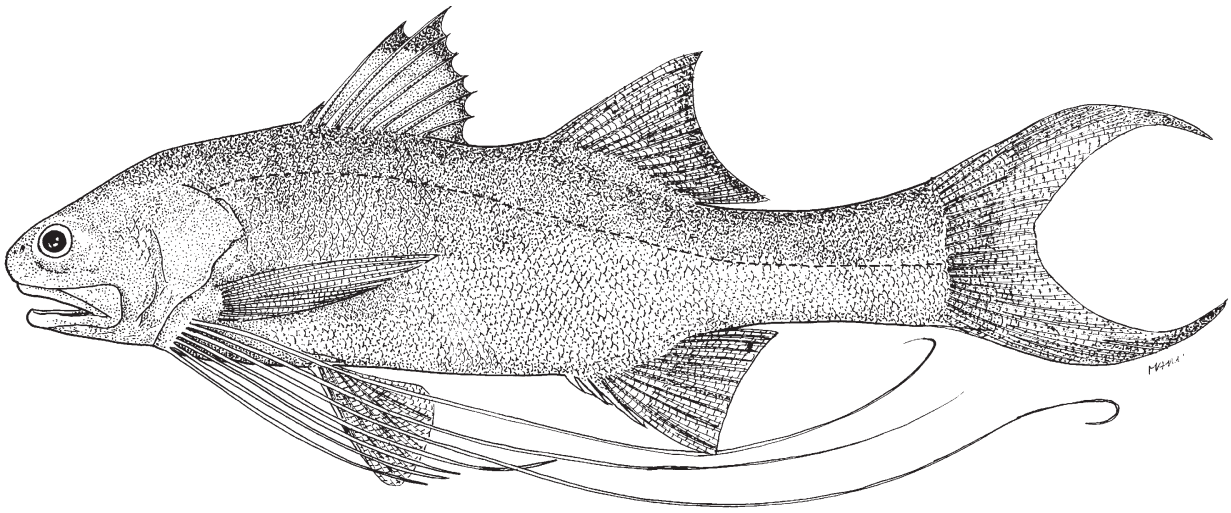

Fig. 95 ***Polydactylus macrophthalmus*** **(adult)**

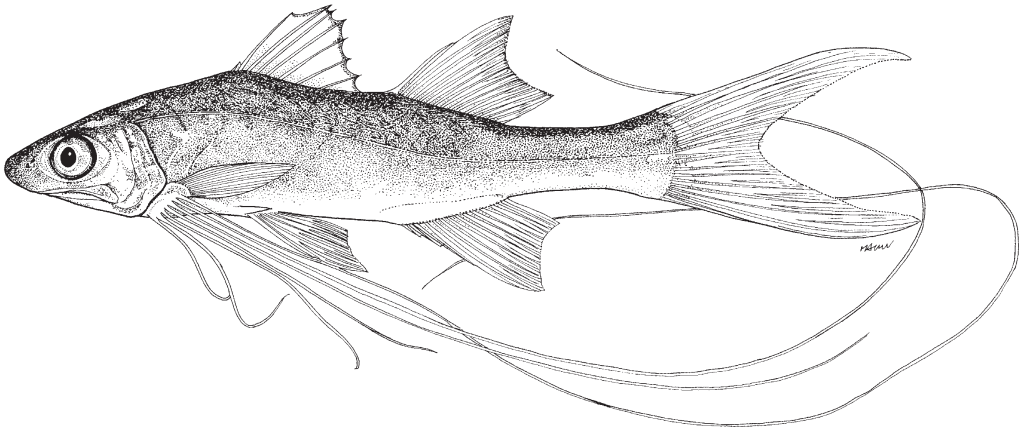

Fig. 96 ***Polydactylus macrophthalmus*** **(juvenile)**

Diagnostic Features: A medium- to large-sized species. Body depth at first dorsal-fin origin 22 to 28% (mean 25%) of standard length; head length 29 to 33% (mean 31%) of standard length. Snout pointed; occipital profile nearly straight in young but concave in adults. Posterior margin of maxilla extending well beyond level of posterior margin of adipose eyelid; upper-jaw length 13 to 15% (mean 14%) of standard length; depth of posterior margin of maxilla approximately equal to or less than eye diameter; lip on lower jaw well developed, dentary teeth restricted to dorsal surface; teeth villiform in broad bands on vomer, palatines and ectopterygoids. Posterior margin of preopercle serrated. First dorsal fin with VIII spines, second spine more robust than others; second dorsal fin with I spine and 13 or 14 (mode 14) soft rays; anal fin with III spines and 10 or 11 (mode 11) soft rays, anal-fin base less than second dorsal-fin base; pectoral fin with 13 or 14 (mode 14) rays (all rays unbranched), its length 24 to 26% (mean 24%) of standard length, posterior tip not reaching to level of posterior tip of pelvic fin; pectoral filaments 7, upper 3 filaments extending beyond caudal-fin base; first to third pectoral filaments not reaching to level of posterior tip of pelvic fin; fourth pectoral filament extending slightly beyond anal-fin origin; fifth pectoral filament longest, its length 161 to 192% (mean 176%) of standard length, extending beyond posterior tips of caudal-fin lobes; caudal fin deeply forked, upper and lower caudal-fin lobes not filamentous, upper caudal-fin lobe 38 to 46% (mean 42%) and lower lobe 36 to 40% (mean 38%) of standard length. Pored lateral-line scales 87 to 94 (mode 88); lateral line simple, extending from upper end of gill opening to upper end of lower caudal-fin lobe; scale rows above lateral line 10 to 12 (mode 11), below 15 or 16 (mode 16). Gillrakers 10 to 12 (mode 11) on upper limb, 15 to 17 (mode 16) on lower limb, 25 to 29 (mode 27) total. Vertebrae 10 precaudal and 14 caudal; supraneural bones 3. Swimbladder present, well developed. **Colour:** Upper sides of head and trunk tinged silvery blue, becoming more silver on lower sides; posterior margins of first dorsal, second dorsal and caudal fins greyish black, other parts hyaline; tips of pelvic and anal fins white, other parts transparent; pectoral fin hyaline; pectoral filaments white.

Geographical Distribution: Currently known only from 3 rivers on 2 Indonesian islands: Kapuas River, Kalimantan, and Musi and Batanghari Rivers, Sumatra (Fig. 97). These rivers were part of a single large river, the ancient Central or North Sunda River, on the Sundaland during the Pleistocene, the last cold period being about 12 000 years ago (see Morley and Flenley *in* Whitmore, 1987: fig. 5.5; Motomura *et al*., 2001c: fig. 3). Geographical evidence indicates that the species was well adapted to the fresh-water basins in this extensive Pleistocene River, whereas other ***Polydactylus*** species are generally found in salt water habitats. The Sundaland presently being submerged to a depth of about 100 m, ***P. macrophthalmus*** is now restricted to the 3 presently-known localities in the South China Sea.

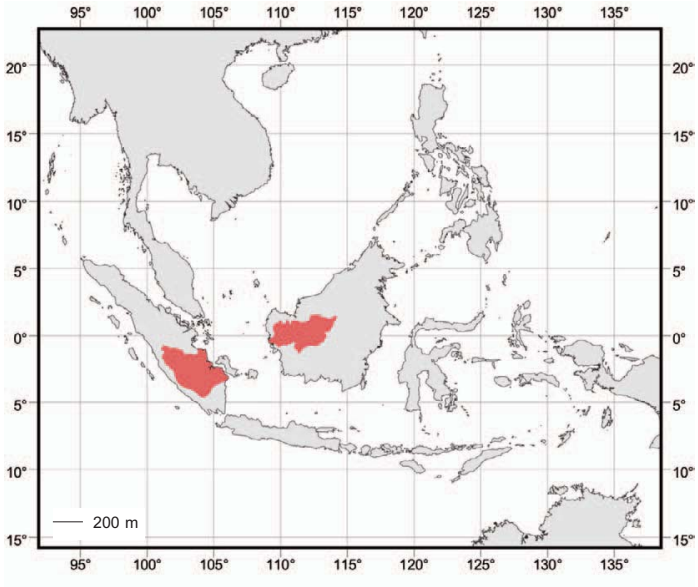

Fig. 97 ***Polydactylus macrophthalmus***
Known distribution

Habitat and Biology: ***P. macrophthalmus*** has much longer pectoral filaments and a more slender body than other ***Polydactylus*** species, which generally inhabit marine waters. Such morphological characters are considered as an adaptation to a fresh-water existence, owing to their occurrence in ***Polynemus*** species restricted to fresh-water and/or estuarine habitats. The character of the long pectoral filaments is probably useful as a sense organ to search for food in muddy waters. Furthermore, they had been collected from Jambi and Palembang, located about 75 km up the Batanghari and Musi rivers, respectively (i.e. completely fresh-water basins). Accordingly, ***P. macrophthalmus*** is considered to be more heavily dependent upon a fresh-water habitat than other congeners.

Size: Maximum standard length at least 52 cm (Feltes *in* Carpenter and Niem, 2001).

Interest to Fisheries: Esteemed as a food fish at least along the Kapuas River, Kalimantan, Indonesia. The species has been often exported to Japan as an aquarium fish.

Local Names: None known.

Literature: Motomura *et al*. (2001c); Motomura (2002).

Remarks: ***P. macrophthalmus*** has long been treated as a member of ***Polynemus*** since its original description (e.g. Weber and de Beaufort, 1922; Myers, 1936; Roberts, 1989; Kottelat *et al*., 1993). However, the species differs from ***Polynemus*** species in having the pectoral-fin insertion well below the midline on the lateral body (versus near midline), a basisphenoid present (versus absent) and 24 vertebrae (versus 25), and clearly conform to the following diagnostic characters of ***Polydactylus***: tooth plate on vomer simple; width of tooth band on upper and lower jaws wider than space separating tooth bands on opposing premaxilla; basisphenoid in contact with prootic; pectoral-fin base including base of pectoral filaments less than upper-jaw length; swimbladder simple, not extending beyond anal-fin origin. Accordingly, the species was included in the genus ***Polydactylus*** by Motomura *et al*. (2001c).

Polydactylus macrophthalmus can be easily distinguished from other congeners (except ***P. longipes***) by the very long upper 3 pectoral filaments, extending beyond the caudal-fin base (not reaching caudal-fin base in the latter). ***Polydactylus macrophthalmus*** is similar to ***P. longipes*** in having long pectoral filaments, but the former differs from the latter in having 7 pectoral filaments (6 in the latter). Further comparisons of ***P. macrophthalmus*** with ***P. longipes*** are given in the account of the latter.

The Indo-Pacific ***Polydactylus*** with 7 pectoral filaments includes only 3 species: ***P. macrophthalmus***, ***P. multiradiatus*** and ***P. mullani***. In addition to the difference in pectoral-filament length, ***P. macrophthalmus*** differs from ***P. multiradiatus*** in having lower anal-fin ray counts [10 or 11 (mode 11) versus 16 to 18 (mode 16) in the latter], higher pored lateral-line scale counts [87 to 94 (mode 88) versus 49 to 56 (mode 52) in ***P. multiradiatus***] and a concave occipital profile in adults (nearly straight in ***P. multiradiatus***). Furthermore, ***P. macrophthalmus*** is clearly distinguished from ***P. mullani*** by the higher counts of pored lateral-line scales, and scales above and below the lateral line [87 to 94 (mode 88) and 10 to 12 (mode 11) / 15 or 16 (mode 16), respectively versus 46 to 50 (mode 48) and 5 to 7 (mode 6) / 9 or 10 (mode 10), respectively, in the latter], lower gill-raker counts [25 or 29 (mode 27) versus 31 to 35 (mode 32) in ***P. mullani***], a concave occipital profile in adults (nearly straight in ***P. mullani***), vomerine tooth present (absent), unbranched pectoral-fin rays (branched except uppermost 1 or 2 rays in ***P. mullani***), and a large black spot absent anteriorly on the lateral line (present in ***P. mullani***).

Polydactylus macrophthalmus is similar to ***P. macrochir*** in having a concave occipital profile in adults and the second spine of the first dorsal fin more robust than other spines of the first dorsal fin. However, ***P. macrophthalmus*** differs from the latter in having higher counts of pectoral filaments (7 versus 5 in the latter) and pored lateral-line scales [87 to 94 (mode 88) versus 70 to 76 (mode 72) in ***P. macrochir***], and lower gill-raker counts [25 to 29 (mode 27) versus 32 to 35 (mode 34) in ***P. macrochir***].