

Revision of the Indo-Pacific Threadfin Genus *Polydactylus* (Perciformes, Polynemidae) with a Key to the Species

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Abstract A revision of Indo-Pacific species of genus *Polydactylus* (Polynemidae), for which 26 nominal species were originally described, recognizes 14 as valid: viz. *Polydactylus bifurcus* (southern Indonesia), *P. longipes* (Philippines), *P. macrochir* (northern Australia and southern New Guinea), *P. macrophthalmus* (Indonesia), *P. malagasyensis* (east coast of Africa, including Madagascar), *P. microstomus* (eastern Indian and western Pacific Oceans), *P. mullani* (northern Arabian Sea), *P. multiradiatus* (Australia and southern Indonesia), *P. nigripinnis* (Australia and southern Indonesia and New Guinea), *P. persicus* (Persian Gulf), *P. plebeius* (Indo-Pacific), *P. sexfilis* (Indo-Pacific), *P. sextarius* (eastern Indian and western Pacific Oceans) and *P. siamensis* (Thailand). Of these species, *P. macrophthalmus* is restricted to freshwater basins, the remainder occurring in coastal and brackish waters. A diagnosis, synonymy, distribution, type material and references are given for each species, in addition to keys to the genera of Polynemidae and all Indo-Pacific *Polydactylus* species. All known available nominal species of Indo-Pacific *Polydactylus* are also listed.

Key words: Taxonomy, Pisces, Perciformes, Polynemidae, threadfin, *Polydactylus*, Indo-Pacific.

Introduction

The Polynemidae, a worldwide, circumtropical family occurring in coastal, brackish and freshwater habitats, comprises eight genera (Motomura & Iwatsuki, 2001a), viz., *Eleutheronema* Bleeker, *Filimanus* Myers, *Galeoides* Günther, *Leptomelanosoma* Motomura and Iwatsuki, *Pentanemus* Günther, *Parapolynemus* Feltes, *Polydactylus* Lacepède and *Polynemus* Linnaeus. The worldwide genus *Polydactylus* is the most speciose group among the family (including about half of the currently-known members), having greatest species' diversity in the Indo-Pacific. Although *Polydactylus* species are important food fishes in the tropical Indo-Pacific region, with large quantities taken commercially, those species have long been confused taxonomically. Thus, the establishment of an acceptable, soundly-based taxonomy for this entire group was a necessary precursor to an appreciation of their biodiversity and ongoing resource management studies.

Recently, however, detailed taxonomic studies of the Indo-Pacific *Polydactylus* species have been separately published, giving emphasis to species' groups, by the author and colleagues (e.g., Motomura *et al.*, 2000b, 2001a, c–f, 2002b; Motomura & Iwatsuki, 2001b), resulting in 14 of the 26 available nominal species being regarded as valid (Table 1).

This article reviews the Indo-Pacific *Polydactylus* species based mainly on previous reports (see above) with some additional material. A diagnosis, full synonymy, distribution (based on specimens), type material (all available types) and references (recent references containing important taxonomic information) are presented for each species. Furthermore, keys to the genera of the family Polynemidae (including a recently described genus, *Leptomelanosoma*) and Indo-Pacific species of *Polydactylus* are provided for the first time. In addition, all known available nominal species of Indo-Pacific *Polydactylus* are listed.

Table 1. All known available nominal species of Indo-Pacific *Polydactylus* listed in alphabetical order of specific name.

Nominal species	Status	Present identification ^a	Reference
<i>Polydactylus agonasi</i> Jordan & McGregor, 1906	Synonym	<i>P. plebeius</i>	Motomura <i>et al.</i> (2001c)
<i>Polydactylus auratus</i> McKay, 1970	Synonym	<i>P. multiradiatus</i>	Motomura <i>et al.</i> (2002b)
<i>Polydactylus bifurcus</i> Motomura, Kimura & Iwatsuki, 2001	Valid	<i>P. bifurcus</i>	Motomura <i>et al.</i> (2001d)
<i>Polynemus commersonii</i> Shaw, 1804	Synonym	<i>P. plebeius</i>	Motomura <i>et al.</i> (2001c)
<i>Polynemus emoi</i> Lacepède, 1803	Synonym	<i>P. plebeius</i>	Motomura <i>et al.</i> (2001c)
<i>Polynemus kuru</i> Bleeker, 1853	Synonym	<i>P. sexfilis</i>	Motomura <i>et al.</i> (2001a)
<i>Polynemus lineatus</i> Lacepède, 1803	Synonym	<i>P. plebeius</i>	Motomura <i>et al.</i> (2001c)
<i>Polydactylus longipes</i> Motomura, Okamoto & Iwatsuki, 2001	Valid	<i>P. longipes</i>	Motomura <i>et al.</i> (2001e)
<i>Polynemus lydiae</i> Curtiss, 1938	Synonym	<i>P. plebeius</i>	Motomura <i>et al.</i> (2001c)
<i>Polynemus macrochir</i> Günther, 1867	Valid	<i>P. macrochir</i>	Motomura <i>et al.</i> (2000b)
<i>Polynemus macrophthalmus</i> Bleeker, 1858	Valid	<i>P. macrophthalmus</i>	Motomura <i>et al.</i> (2001f)
<i>Polydactylus malagasyensis</i> Motomura & Iwatsuki, 2001	Valid	<i>P. malagasyensis</i>	Motomura & Iwatsuki (2001b)
<i>Polynemus microstoma</i> Bleeker, 1851	Valid	<i>P. microstomus</i>	Motomura & Iwatsuki (2001b)
<i>Polynemus multiradiatus</i> Günther, 1860	Valid	<i>P. multiradiatus</i>	Motomura <i>et al.</i> (2002b)
<i>Polydactylus nigripinnis</i> Munro, 1964	Valid	<i>P. nigripinnis</i>	Motomura <i>et al.</i> (2002b)
<i>Polynemus niloticus</i> Shaw, 1804	Synonym	<i>P. plebeius</i>	Motomura <i>et al.</i> (2001c)
<i>Polydactylus persicus</i> Motomura & Iwatsuki, 2001	Valid	<i>P. persicus</i>	Motomura & Iwatsuki (2001b)
<i>Polynemus plebeius</i> Broussonet, 1782	Valid	<i>P. plebeius</i>	Motomura <i>et al.</i> (2001c)
<i>Polynemus sexfilis</i> Valenciennes, 1831 ^b	Valid	<i>P. sexfilis</i>	Motomura <i>et al.</i> (2001a)
<i>Polynemus sextarius</i> Bloch & Schneider, 1801	Valid	<i>P. sextarius</i>	Motomura & Iwatsuki (2001b)
<i>Polynemus sextarius mullani</i> Hora, 1926	Valid	<i>P. mullani</i>	Motomura & Iwatsuki (2001b)
<i>Polynemus sheridani</i> Macleay, 1884	Synonym	<i>P. macrochir</i>	Motomura <i>et al.</i> (2000b)
<i>Polydactylus siamensis</i> Motomura, Iwatsuki & Yoshino, 2001	Valid	<i>P. siamensis</i>	Motomura <i>et al.</i> (2001c)
<i>Polynemus specularis</i> De Vis, 1883	Synonym	<i>P. multiradiatus</i>	Motomura <i>et al.</i> (2002b)
<i>Polynemus taeniatus</i> Günther, 1860	Synonym	<i>P. plebeius</i>	Motomura <i>et al.</i> (2001c)
<i>Polydactylus zophomus</i> Jordan & McGregor, 1907 ^c	Synonym	<i>P. microstomus</i>	Motomura & Iwatsuki (2001b)

^a All “P.” = *Polydactylus*.

^b Valenciennes *in* Cuvier & Valenciennes, 1831.

^c Jordan & McGregor *in* Jordan & Seale, 1907.

Materials and Methods

Counts and measurements follow Motomura *et al.* (2000b, 2002a). Pectoral-fin ray counts included only those rays interconnected by membrane; the lower free rays are given separately; counts of pectoral filaments begin with the anterior (ventralmost) element. Standard length is expressed as SL. The key to genera and generic description of *Polydactylus* are based on the publications of Feltes (1993), Motomura *et al.* (2000b, 2001a–f, 2002a–b) and Motomura & Iwatsuki (2001a–b). Institutional codes follow Leviton *et*

al. (1985), with additional institutional abbreviations as follows: Center for Research and Development of Oceanology, Indonesian Institute of Science, Ambon, Indonesia (CRDOA); Kanagawa Prefectural Museum of Natural History, Odawara, Japan (KPM-NI); Division of Fisheries Sciences, Faculty of Agriculture, Miyazaki University, Miyazaki, Japan (MUFS); Phuket Marine Biological Center, Phuket, Thailand (PMBC); Department of Biology, Faculty of Science, Prince of Songkhla University, Songkhla, Thailand (PSUZC); Shanghai Fisheries University, Shanghai, China (SFU); Raffles Museum of Bio-

diversity Research, Department of Biological Sciences, National University of Singapore, Singapore (ZRC, formerly NMS).

Key to the Genera of the Family Polynemidae

- 1a. Pectoral-fin insertion well below midline of body; eye diameter 1.3 or less in snout length2
- 1b. Pectoral-fin insertion near midline of body; eye diameter 1.3 or more in snout length ...7
- 2a. Anterior part of lower jaw with small teeth extending onto lateral surface, adjacent portion of lip absent
.....*Eleutheronema* (Indo-West Pacific)
- 2b. Lip present (well- or poorly developed) on anterior part of lower jaw3
- 3a. Anal-fin base length greater than head length; anal-fin soft rays 24–30.....
.....*Pentanemus* (west coast of Africa)
- 3b. Anal-fin base length less than head length; anal-fin soft rays 10–184
- 4a. Pectoral-fin base length (including pectoral-filament base) greater than or equal to upper-jaw length; lateral-line simple, extending to lower end of upper caudal-fin lobe; swimbladder present, extending beyond anal-fin origin
.....*Galeoides* (west coast of Africa)
- 4b. Pectoral-fin base length (including pectoral-filament base) less than upper-jaw length; lateral-line simple, extending to upper end of lower caudal-fin lobe or mid-distal margin of caudal fin, or bifurcate on caudal-fin base, extending to posterior margins of upper and lower caudal-fin lobes; swimbladder absent or if present, not extending beyond anal-fin origin5
- 5a. Space separating premaxillary teeth bands two or more times width of each band; basisphenoid not in contact with prootic
.....*Filimanus* (Indo-West Pacific)
- 5b. Space separating premaxillary teeth bands less than width of each band; basisphenoid in contact with prootic6
- 6a. Tips of upper and lower caudal-fin lobes fil-

- amentous; sphenotics exposed dorsally between anterior margins of parietal and pterotic
.....*Leptomelanosoma* (Indo-West Pacific)
- 6b. Tips of upper and lower caudal-fin lobes not filamentous; sphenotics not exposed dorsally between anterior margins of parietal and pterotic*Polydactylus* (worldwide)
- 7a. Posterior margin of preopercle serrate
.....*Polynemus* (Indo-West Pacific)
- 7b. Posterior margin of preopercle not serrate ...
.....*Parapolynemus* (northern Australian and southern New Guinea)

Genus *Polydactylus* Lacepède

Polydactylus Lacepède, 1803: 419 [type species: *Polydactylus plumierii* Lacepède 1803, presently regarded as a junior synonym of *Polydactylus virginicus* (Linnaeus, 1758)].

Diagnosis and description. Body oblong to moderately deep; adipose eyelid well-developed; eye diameter greater than snout length; lip on lower jaw well-developed, dentary teeth restricted to dorsal surface except in adults of *Polydactylus opercularis*; width of tooth band on upper and lower jaws greater than space (on symphysis) separating tooth bands on opposing premaxillae; teeth villiform in broad bands on jaws, palatines and ectopterygoids; vomerine tooth plate without teeth in some species; posterior margin of maxilla just short of, reaching to, or extending beyond level of posterior margin of adipose eyelid; posterior margin of preopercle serrate; basisphenoid in contact with prootic; sphenotics not exposed dorsally between anterior margins of parietal and pterotic; first dorsal fin with 8 spines; second dorsal fin with 1 spine and 11–15 soft rays; anal fin with 3 spines and 10–18 soft rays; anal-fin base length less than head length; pectoral fin with 12–18 rays; pectoral-fin insertion well below midline of body; pectoral-fin base (including base of pectoral filaments) length less than upper-jaw length; pectoral filaments 4–9, not extending beyond level of posterior tip of caudal fin; caudal fin deeply forked, upper and lower

caudal-fin lobes not filamentous; pored lateral-line scales 45–94; scale rows above lateral line 5–11, below 8–16; gill rakers 21–38; vertebrae 10 precaudal and 14 caudal; supraneural bones 2 or 3; swimbladder absent or present, not extending beyond anal-fin origin.

Key to the Indo-Pacific species of *Polydactylus*

- 1a. A large black spot present anteriorly on lateral line2
- 1b. No large black spot anteriorly on lateral line6
- 2a. Pectoral filaments 5 (rarely asymmetrically 5 and 6); body and fins tinged with yellowish-silver
.....*P. microstomus* (India to New Caledonia)
- 2b. Pectoral filaments 6 or 7; body and fins tinged with silver3
- 3a. Pectoral filaments 7 (rarely asymmetrically 6 and 7); second spine of first dorsal fin more robust than other dorsal-fin spines
.....*P. mullani* (northern Arabian Sea)
- 3b. Pectoral filaments 6; all first dorsal-fin spines of similar thickness4
- 4a. Gill rakers 25–30 (mode 28); second dorsal-fin spine short (mean 6% of SL); swimbladder atrophied
.....*P. sextarius* (India to New Guinea)
- 4b. Gill rakers 29–35 (mode 31); second dorsal-fin spine long (mean 7% of SL); swimbladder well-developed5
- 5a. Pectoral-fin rays 14; scales below lateral line 10 (rarely 9); palatines inwardly turned anteriorly; pectoral fin long (mean 24% of SL); pectoral filaments short (mean 29% of SL)
.....*P. malagasyensis* (east coast of Africa and Madagascar)
- 5b. Pectoral-fin rays 12- or 13 (mode 12, rarely 14); scales below lateral line 9 (rarely 8); palatines straight anteriorly; pectoral fin short (mean 19% of SL); pectoral filaments long (mean 32% of SL)
.....*P. persicus* (Persian Gulf)
- 6a. Pectoral filaments 57
- 6b. Pectoral filaments 6 or 710
- 7a. Posterior margin of maxilla extending considerably beyond posterior margin of adipose eyelid; occipital profile concave in adults
.....*P. macrochir* (northern Australia and southern New Guinea)
- 7b. Posterior margin of maxilla reaching to or extending only slightly beyond posterior margin of adipose eyelid; occipital profile nearly straight throughout life8
- 8a. Lateral line bifurcate on caudal-fin base, extending to posterior margins of upper and lower caudal-fin lobes; second spine of first dorsal fin more robust than other spines
.....*P. bifurcus* (southern Indonesia)
- 8b. Lateral line unbranched on caudal-fin base, extending to posterior margins of lower caudal-fin lobe; thickness of all first dorsal-fin spines similar9
- 9a. Pored lateral-line scales 60–68 (mode 63); gill rakers 24–32 (mode 26); scale rows above lateral line 8 or 9 (mode 8), below 12 or 13 (mode 12); upper jaw short (mean 15% of SL).....
.....*P. plebeius* (Indo-Pacific)
- 9b. Pored lateral-line scales 54–58 (mode 54); gill rakers 22–24 (mode 23); scale rows above lateral line 7, below 10 or 11 (mode 11); upper jaw long (mean 17% of SL)
.....*P. siamensis* (Thailand)
- 10a. Longest pectoral filament extending beyond midpoint of caudal peduncle11
- 10b. Longest pectoral filament not reaching midpoint of caudal peduncle12
- 11a. Pectoral filaments 6; pored lateral-line scales 54 or 55 (mode 55); scale rows above lateral line 6, below 11; gill rakers 31 or 32 (mode 31)*P. longipes* (Philippines)
- 11b. Pectoral filaments 7; pored lateral-line scales 87–94 (mode 88); scale rows above lateral line 10–12 (mode 11), below 15 or 16 (mode 16); gill rakers 25–29 (mode 27)
.....*P. macrophthalmus* (Indonesia; freshwater rivers)
- 12a. Anal-fin soft rays 16–18 (mode 16); pec-

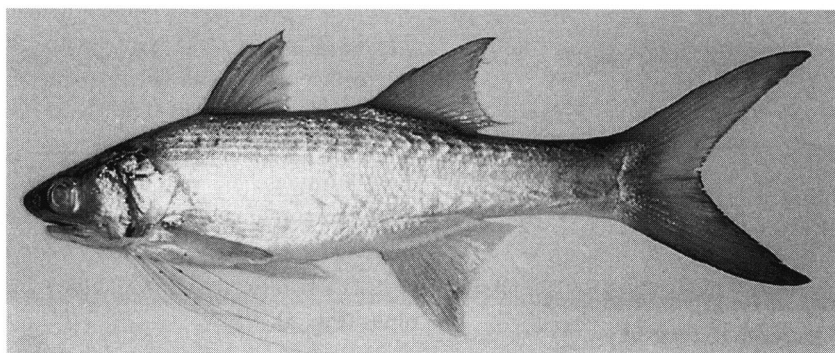


Fig. 1. *Polydactylus bifurcus* (NSMT-P 60494, holotype, 144 mm SL, Kuta beach, Lombok Island, Indonesia; photo by S. Kimura).

toral filaments 7 (rarely 6, asymmetrically 6 and 7 or 7 and 8)

.....*P. multiradiatus* (northern Australia and southern Indonesia)

12b. Anal-fin soft rays 11 or 12; pectoral filaments 613

13a. Vomerine teeth absent; pored lateral-line scales 46–50 (mode 47); swimbladder absent

.....*P. nigripinnis* (northern Australia, and southern Indonesia and Papua New Guinea)

13b. Vomerine teeth present; pored lateral-line scales 61–67 (mode 64); swimbladder present

.....*P. sexfilis* (Indo-Pacific)

***Polydactylus bifurcus* Motomura,**

Kimura & Iwatsuki

[English name: slender fivefinger threadfin]

(Fig. 1)

Polydactylus bifurcus Motomura, Kimura & Iwatsuki, 2001d: 299, figs. 1–3 (type locality: Kuta beach, Lombok Island, Indonesia).

Diagnosis. First dorsal fin with 8 spines, second spine more robust than others; second dorsal fin with 1 spine and 13 soft rays; anal fin with 3 spines and 11 or 12 (mode 11) soft rays; pectoral fin with 15 rays (several rays branched), its length 19–21% (mean 20%) of SL, posterior tip not reaching to level of posterior tip of pelvic fin; pectoral filaments 5, fourth filament longest, its length 35–38% (mean 36%) of SL, extending

well beyond level of posterior tip of pelvic fin, but not reaching to level of anal-fin origin; pored lateral-line scales 69–72; lateral line bifurcate on caudal-fin base, extending to posterior margins of upper and lower caudal-fin lobes; scale rows above lateral line 8 or 9 (mode 8), below 10–12 (mode 12); gill rakers 12 or 13 (mode 13) on upper limb, 17 or 18 (mode 17) on lower limb, 30 total; occipital profile nearly straight throughout life; posterior margin of maxilla extending slightly beyond level of posterior margin of adipose eyelid; depth of posterior margin of maxilla less than eye diameter; vomerine teeth present; swimbladder present, well-developed; 8 or 9 dark stripes along longitudinal scale rows above lateral line, 8 or 9 faint stripes below. A detailed description and proportional measurements as percentages of SL of *P. bifurcus* were given by Motomura *et al.* (2001d).

Distribution. *Polydactylus bifurcus* is currently known only from the south coast of the Greater Sunda Islands: Nias, Java and Lombok Island (Fig. 5).

Remarks. *Polydactylus bifurcus* was originally described on the basis of a single specimen from Lombok Island, Indonesia. Subsequently, two additional specimens (examined herein) from Java and Nias were found in the ZMA collection (R. M. Feltes, pers. comm.), representing a distributional range extension for the species.

Type material. *Polydactylus bifurcus*: NSMT-P 60494 (holotype), 144 mm SL, Kuta beach,

Lombok Island, Indonesia, 12 July 1996, beach seine in 1.5 m, collected by S. Kimura and T. Peristiwady.

Other material. ZMA 114-500, 272 mm SL, south coast of eastern Java, Indonesia; ZMA 116-717, 199 mm SL, Nias, northwest of Sumatra, Indonesia.

***Polydactylus longipes* Motomura,**

Okamoto & Iwatsuki

[English name: long-limb threadfin]

(Fig. 2)

Polydactylus longipes Motomura, Okamoto & Iwatsuki, 2001e: 1087, fig. 1 (type locality: Davao market, Mindanao, Philippines).

Diagnosis. First dorsal fin with 8 spines, thickness of all spines similar; second dorsal fin with 1 spine and 12 soft rays; anal fin with 3 spines and 11 soft rays; pectoral fin with 13 rays (all rays unbranched), its length 28–29% (mean 28%) of SL, posterior tip reaching to or extending slightly beyond level of posterior tip of pelvic fin; pectoral filaments 6, sixth filament longest, its length 71–72% (mean 71%) of SL, extending well beyond midpoint of caudal peduncle; pored lateral-line scales 54 or 55 (mode 55); lateral line unbranched; scale rows above lateral line 6, below 11; gill rakers 13 or 14 (mode 13) on upper limb, 18 on lower limb, 31 or 32 (mode 31) total; occipital profile nearly straight; posterior margin of maxilla reaching to level of posteri-

or margin of adipose eyelid; depth of posterior margin of maxilla less than eye diameter; vomerine teeth present; swimbladder present, well-developed; grayish black body without stripes or spots. A detailed description and proportional measurements as percentages of SL of *P. longipes* were given by Motomura *et al.* (2001e).

Distribution. *Polydactylus longipes* is currently known only from Mindanao Island, Philippines (Fig. 5).

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

Type material. *Polydactylus longipes*: USNM 363173 (holotype), 159 mm SL, Davao market, Mindanao, Philippines, 10 Jan. 1977, purchased by H. Ida; FSKU-P 19840 (paratype), 134 mm SL, same data as holotype; MUFS 20290 (paratype), 152 mm SL, same data as holotype.

***Polydactylus macrochir* (Günther)**

[English name: king threadfin]

(Fig. 3)

Polynemus macrochir Günther, 1867: 60 (type locality: New South Wales, Australia, but probably Queensland, Australia; type locality discussed by Motomura *et al.*, 2000b).

Polynemus sheridani Macleay, 1884: 21 (type locality: Mary River, Queensland, Australia; synonymized by Motomura *et al.*, 2000b).

Polydactylus macrochir: Motomura *et al.*, 2000b: 57, figs.

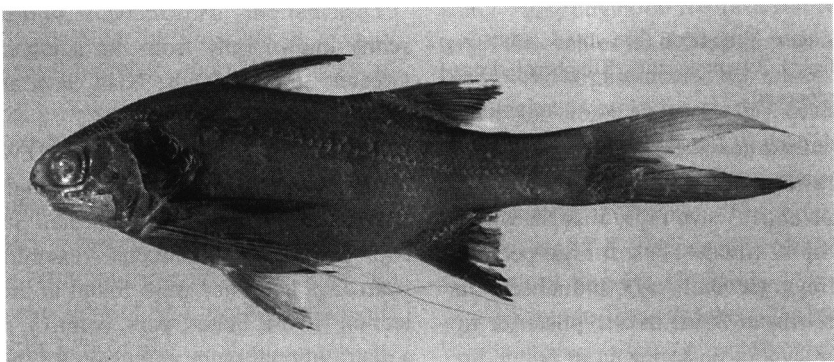


Fig. 2. *Polydactylus longipes* (USNM 363173, holotype, 159 mm SL, Davao market, Mindanao Island, Philippines).

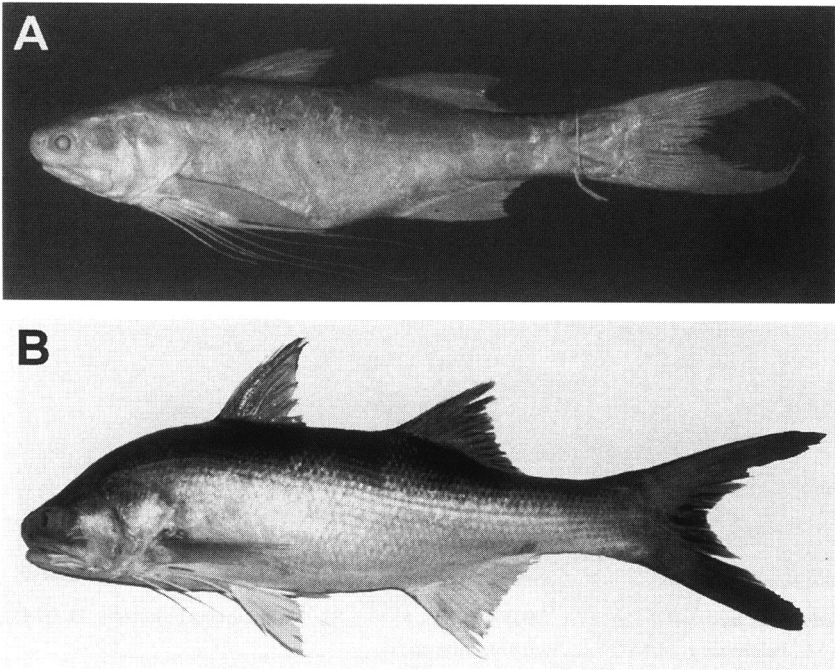


Fig. 3. *Polydactylus macrochir* (A, BMNH 1866.2.13.17, holotype of *Polynemus macrochir*, 171 mm SL, Australia; B, MUFS 17787, 442 mm SL, mouth of Mary River, Queensland, Australia).

1–2 (Australia; redescription); Motomura *et al.*, 2001f: 293 (Irian Jaya, Indonesia); Motomura *et al.*, 2002b: xxx (Australia and New Guinea; notes on distributional implications).

Diagnosis. First dorsal fin with 8 spines, second spine more robust than others; second dorsal fin with 1 spine and 11–13 (mode 12) soft rays; anal fin with 3 spines and 10–12 (mode 11) soft rays; pectoral fin with 14 or 15 (mode 14) rays (all rays unbranched), its length 22–27% (mean 24%) of SL, posterior tip just reaching to or not reaching to level of posterior tip of pelvic fin; pectoral filaments 5, fourth pectoral filament longest, its length 40–53% (mean 46%) of SL, extending well beyond level of anal-fin origin; pored lateral-line scales 70–76 (mode 72); lateral line unbranched; scale rows above lateral line 8–11 (mode 9), below 12–15 (mode 12); gill rakers 13–15 (mode 14) on upper limb, 18–20 (mode 20) on lower limb, 32–35 (mode 34) total; occipital profile nearly straight in young but concave in adults; posterior margin of maxilla extending considerably beyond level of posterior margin of

adipose eyelid; depth of posterior margin of maxilla greater than eye diameter in adults (over ca. 200 mm SL); vomerine teeth present; swimbladder present, well-developed; golden or silver body without stripes or spots. A detailed description and proportional measurements as percentages of SL of *P. macrochir* were given by Motomura *et al.*, 2000b.

Distribution. *Polydactylus macrochir* is currently known from northern Australia [Broom, Western Australia (Kailola & Stewart, 1993) to Brisbane River, Queensland] and southern New Guinea (Irian Jaya, Indonesia and Gulf of Papua, Papua New Guinea) (Fig. 5).

Remarks. Most Australian authors (e.g., Marshall, 1964; Grant, 1982, 1995; Kailola & Stewart, 1993; Yearsley *et al.*, 1999) have treated this species as *P. sheridani*. However, Motomura *et al.* (2000b) pointed out that *P. macrochir* is a senior synonym of *P. sheridani*, after examining the type and a large number of additional specimens.

Type material. *Polynemus macrochir*:

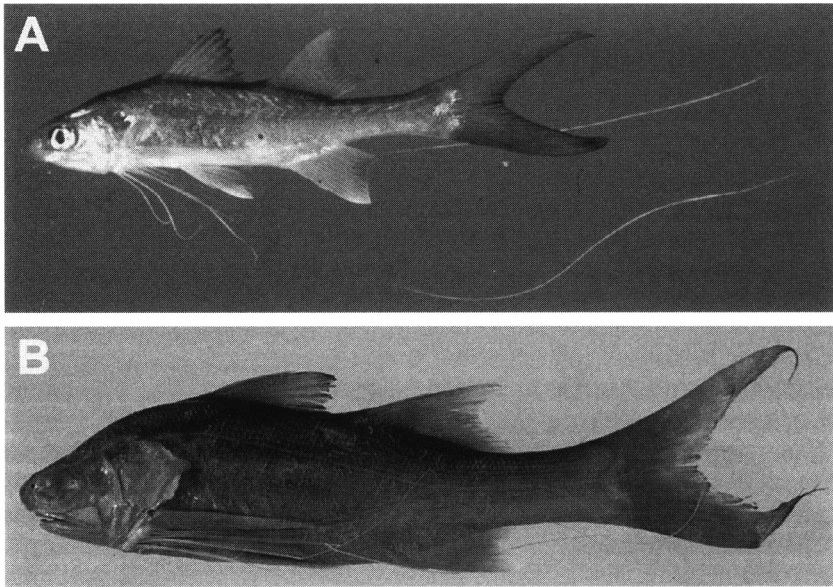


Fig. 4. *Polydactylus macrophthalmus* (A, MUFS 18293, 88 mm SL, Kalimantan, Indonesia; B, UMMZ 171714, 184 mm SL, Palembang, Musi River, Sumatra, Indonesia).

BMNH 1866.2.13.17 (holotype), 171 mm SL, New South Wales (but probably Queensland), Australia, purchased by Krefft. *Polynemus sherdani*: type material apparently lost (see Motomura *et al.*, 2000b).

Other material. 40 specimens (58–442 mm SL), as listed in Motomura *et al.* (2000b, 2001f).

***Polydactylus macrophthalmus* (Bleeker)**

[English name: river threadfin]

(Fig. 4)

Polynemus macrophthalmus Bleeker, 1858: 10 (type locality: Palembang, Musi River, Sumatra, Indonesia).

Polydactylus macrophthalmus; Motomura *et al.*, 2001f: 289, figs. 1–2 (Indonesia; redescription, designation of lectotype, publication date of original description determined, and distributional implications discussed).

Diagnosis. First dorsal fin with 8 spines, second spine more robust than others; second dorsal fin with 1 spine and 13 or 14 (mode 14) soft rays; anal fin with 3 spines and 10 or 11 (mode 11) soft rays; pectoral fin with 13 or 14 (mode 14) rays (all rays unbranched), its length 24–26% (mean 24%) of SL, posterior tip not reaching to

level of posterior tip of pelvic fin; pectoral filaments 7, fifth filament longest, its length 161–192% (mean 176%) of SL, extending beyond posterior tips of caudal-fin lobes; pored lateral-line scales 87–94 (mode 88); lateral line unbranched; scale rows above lateral line 10 to 12 (mode 11), below 15 or 16 (mode 16); gill rakers 10–12 (mode 11) on upper limb, 15–17 (mode 16) on lower limb, 25–29 (mode 27) total; occipital profile concave in adults (over ca. 180 mm SL); posterior margin of maxilla extending well beyond level of posterior margin of adipose eyelid; depth of posterior margin of maxilla approximately equal to or less than eye diameter; vomerine teeth present; swimbladder present, well-developed; body without stripes or spots. A detailed description and proportional measurements as percentages of SL of *P. macrophthalmus* were given by Motomura *et al.* (2001f).

Distribution. *Polydactylus macrophthalmus* is currently known only from three rivers on two Indonesian islands: Kapuas River, Kalimantan, and Musi and Batanghari Rivers, Sumatra (Fig. 5).

Remarks. Since its original description, *Poly-*

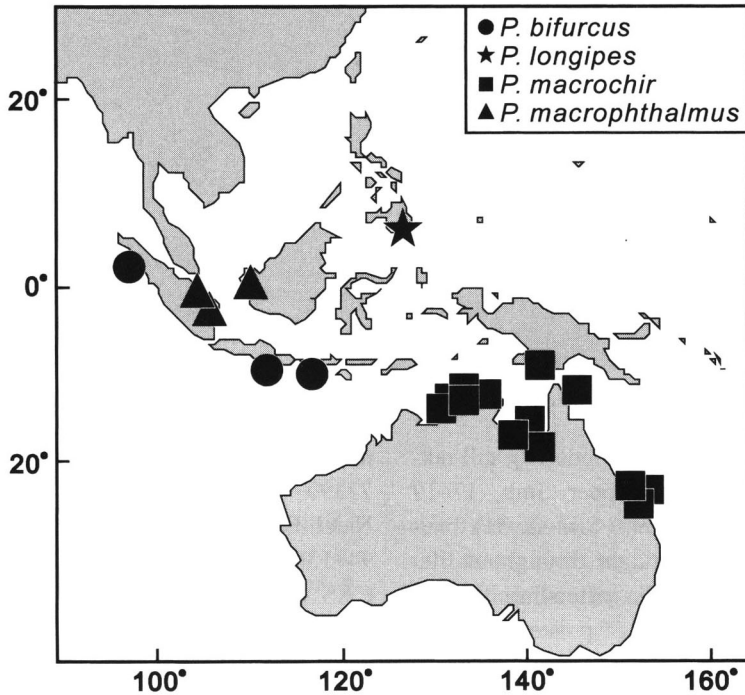


Fig. 5. Geographical distribution of *Polydactylus bifurcus*, *P. longipes*, *P. macrochir* and *P. macrophthalmus*.

dactylus macrophthalmus has usually been treated as a member of *Polynemus* (e.g., Weber & de Beaufort, 1922; Myers, 1936; Roberts, 1989; Kottelat *et al.*, 1993). However, the species was included in the genus *Polydactylus* by Motomura *et al.* (2001f).

Type material. *Polynemus macrophthalmus*: RMNH 6015 (lectotype), 129 mm SL, Palembang, Musi River, Sumatra, Indonesia, collected by J. T. van Bloemen Waanders; RMNH 33967 (paralectotype), 117 mm SL, same data as lectotype.

Other material. 7 specimens (88–344 mm SL), as listed in Motomura *et al.* (2001f). Five additional specimens (73–208 mm SL): ZRC 39003, 208 mm SL, Jambi (=Telanai Pura), Sumatra, Indonesia; ZRC 43023, 73 mm SL, Jambi, Sumatra, Indonesia; ZRC 44130, 98 mm SL, Jambi, Sumatra, Indonesia; ZRC 46369 (2 specimens), 88–109 mm SL, Palembang, Sumatra, Indonesia.

Polydactylus malagasyensis

Motomura & Iwatsuki

[English name: African blackspot threadfin]

(Fig. 6)

Polydactylus malagasyensis Motomura & Iwatsuki, 2001b: 338, figs. 1, 7A, 8A [type locality: estuary of Mananjary River (ca. 100 m from sea), Mananjary, eastern Madagascar (21°05'S, 48°27'E)].

Diagnosis. First dorsal fin with 8 spines, second spine slightly more robust than or similar to others; second dorsal fin with 1 spine, its length 7–9% (mean 8%) of SL, and 12 or 13 (mode 13) soft rays; anal fin with 3 spines and 12 soft rays; pectoral fin with 14 rays (all rays unbranched, except uppermost 1 or 2), its length 21–26% (mean 24%) of SL, posterior tip not reaching to level of posterior tip of pelvic fin; pectoral filaments 6, sixth filament longest, its length 27–31% (mean 29%) of SL, just short of or extending slightly beyond level of posterior tip of pectoral fin; pored lateral-line scales 46–51 (mode 47); lateral line unbranched; scale rows above lateral line 5

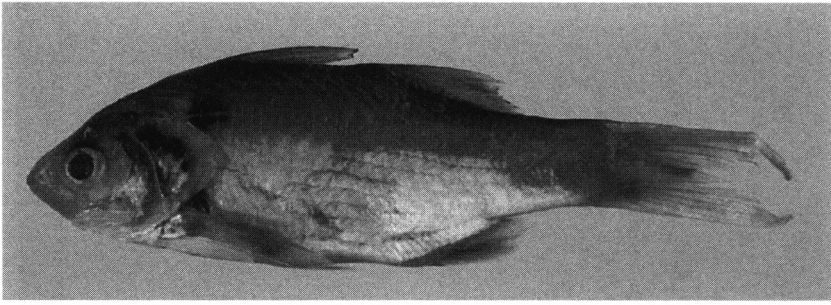


Fig. 6. *Polydactylus malagasyensis* (AMNH 88029, holotype, 125 mm SL, estuary of Mananjary River, eastern Madagascar).

or 6 (mode 6), below 9 or 10 (mode 10); gill rakers 12–16 (mode 13) on upper limb, 17–19 (mode 18) on lower limb, 29–34 (mode 31) total; occipital profile nearly straight throughout life; posterior margin of maxilla extending slightly beyond or reaching to level of posterior margin of adipose eyelid; depth of posterior margin of maxilla less than eye diameter; vomerine teeth absent; palatines inwardly turned anteriorly; swimbladder present, well-developed; body and fins tinged with silver; a large black spot anteriorly on lateral line. A detailed description and proportional measurements as percentages of SL of *P. malagasyensis* were given by Motomura & Iwatsuki (2001b).

Distribution. *Polydactylus malagasyensis* is currently known only from the east coast of Africa, where it ranges from Kenya to South Africa and Madagascar (Fig. 10).

Remarks. *Polydactylus malagasyensis*, previously identified as *P. sextarius* (e.g., Smith, 1986; Menon & Babu Rao, 1984), was recently described by Motomura & Iwatsuki (2001b) as a new species on the basis of 36 specimens.

Type material. *Polydactylus malagasyensis*: AMNH 88029 (holotype), 125 mm SL, estuary of Mananjary River (ca. 100 m from sea), Mananjary, eastern Madagascar (21°05'S, 48°27'E), 30 June 1988, collected by M. L. J. Stiassny and P. N. Reinthal; AMNH 231222 (3 paratypes), 95–141 mm SL, same data as holotype; AMS I. 28114009 (2 paratypes), 102–104 mm SL, northwest of Madagascar; ANSP 54807 (paratype), 59

mm SL, Durban, Natal, South Africa; ANSP 77390 (paratype), 127 mm SL, Tugela River, Natal, South Africa; ANSP 86372 (2 paratypes), 94–136 mm SL, Delagoa Bay, Mozambique; CAS 66577 (3 paratypes), 99–117 mm SL, off Nosy Be, northern Madagascar; CAS 131390 (2 paratypes), 144–148 mm SL, Natal, South Africa; MUFS 20381 (paratype), 104 mm SL, same data as holotype; NRM 10479 (3 paratypes), 135–149 mm SL, Majunga, Madagascar; NRM 10480 (4 paratypes), 74–87 mm SL, Majunga, Madagascar; USNM 171045 (paratype), 126 mm SL, Madagascar; USNM 278209 (paratype), 113 mm SL, Malindi, Kenya; USNM 301505 (paratype), 125 mm SL, same data as holotype; USNM 307631 (paratype), 129 mm SL, Pebane, Mozambique; USNM 358684 (3 paratypes), 124–139 mm SL, Mozambique Channel (16°11'S, 43°53'E); USNM 363484 (3 paratypes), 63–126 mm SL, northwestern coast of Madagascar (13°24'S, 48°42'E); SAM 34057 (3 paratypes), 121–134 mm SL, off Mozambique (17°56'S, 37°42'E).

Other material. BMNH 1867.3.9.66 (dried specimen), 122 mm SL, Zanzibar, Tanzania.

***Polydactylus microstomus* (Bleeker)**

[English name: small-mouth threadfin]

(Fig. 7)

Polynemus microstoma Bleeker, 1851: 217 (type locality: Bulukumba, Sulawesi, Indonesia).

Polydactylus zophomus Jordan & McGregor in Jordan &

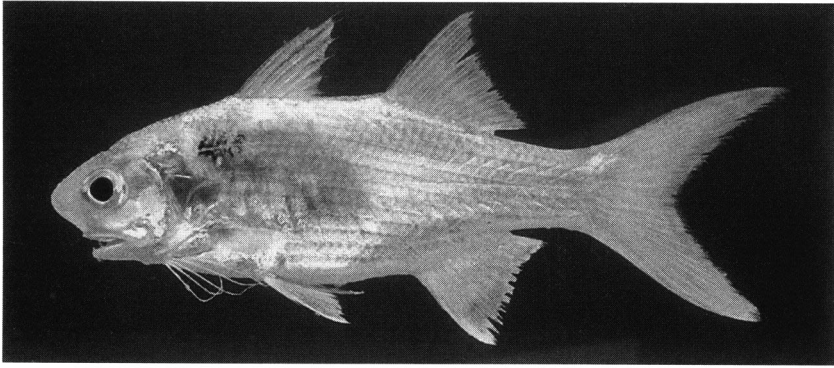


Fig. 7. *Polydactylus microstomus* (FRLM 23520, 101 mm SL, Passo, Baguala Bay, Ambon, Indonesia; photo by S. Kimura).

Seale, 1907: 11, fig. 4 (type locality: Cavite, Luzon Island, Philippines; synonymized by Motomura & Iwatsuki, 2001b; type status discussed by Motomura & Iwatsuki, 2001b).

Polydactylus microstomus: Motomura & Iwatsuki, 2001b: 339, figs. 3, 7B (eastern Indian to western Pacific Oceans; redescription; holotype determined from 9 Bleeker specimens).

Diagnosis. First dorsal fin with 8 spines, second spine slightly more robust than or similar to others; second dorsal fin with 1 spine, its length 6–10% (mean 8%) of SL, and 12–14 (mode 13) soft rays; anal fin with 3 spines and 11 or 12 (mode 12) soft rays; pectoral fin with 13 or 14 (mode 13, rarely 12 or 15) rays (all rays unbranched, except uppermost 1 or 2), its length 17–20% (mean 18%) of SL, posterior tip not reaching to level of posterior tip of pelvic fin; pectoral filaments 5 (rarely asymmetrically 5 and 6), fifth filament longest, its length 21–30% (mean 26%) of SL, just short of or extending slightly beyond level of posterior tip of pectoral fin; pored lateral-line scales 46–49 (mode 47); lateral line unbranched; scale rows above lateral line 6 or 7 (mode 6), below 9 or 10 (mode 10, rarely 8); gill rakers 10–14 (mode 13) on upper limb, 13–18 (mode 16) on lower limb, 24–33 (mode 29) total; occipital profile nearly straight throughout life; posterior margin of maxilla reaching to or slightly short of level of posterior margin of adipose eyelid; depth of posterior mar-

gin of maxilla less than eye diameter; vomerine teeth absent; palatines inwardly turned anteriorly; swimbladder present, well-developed; body and fins tinged with yellowish-silver; a large black spot anteriorly on lateral line. A detailed description and proportional measurements as percentages of SL of *P. microstomus* were given by Motomura & Iwatsuki (2001b).

Distribution. *Polydactylus microstomus* is currently known from the Indian Ocean, where it ranges from Tamil Nadu, east of the southernmost tip of India, Sri Lanka, Myanmar and Phuket Island, Thailand, to the West Pacific where it ranges from Taiwan (Shen, 1984; 1993) to New Caledonia, being relatively common in the eastern part of Indonesia and Philippines (Fig. 10). The species has at no time (apparently) been collected from Australian waters.

Remarks. *Polydactylus zophomus*, frequently regarded as a valid species (e.g., Jordan & Richardson, 1908; Seale, 1910), was synonymized under *P. microstomus* by Motomura & Iwatsuki (2001b).

Type material. *Polynemus microstomus*: RMNH 6044 (holotype), 53 mm SL, Bulukumba, Sulawesi, Indonesia. *Polydactylus zophomus*: CAS 120113 (formerly SU 20113; holotype), 138 mm SL, Cavite Province, Manila Bay, Luzon Island, Philippines; USNM 55598 (2 specimens including a paratype and non-type specimen), 137–151 mm SL, same data as holotype.

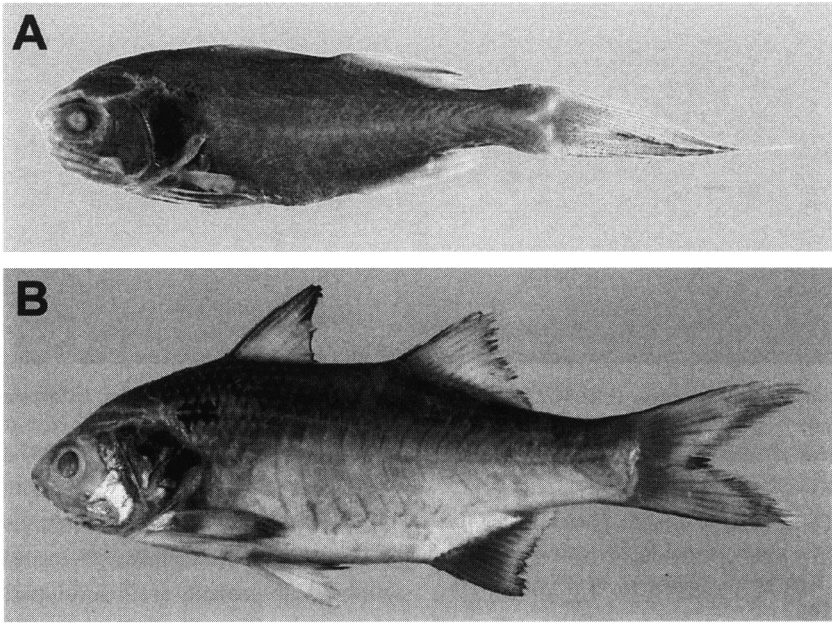


Fig. 8. *Polydactylus mullani* (A, ANSP 77527, 49 mm SL, off Mumbai, Maharashtra, India; B, MUFS 19127, 169 mm SL, Mumbai, Maharashtra, India).

Other material. 47 specimens (51–158 mm SL), as listed in Motomura & Iwatsuki (2001b).

Polydactylus mullani (Hora)

[English name: Arabian blackspot threadfin]

(Fig. 8)

Polynemus sextarius mullani Hora, 1926: 453 (type locality: Mumbai, Maharashtra, India).

Polydactylus mullani: Motomura & Iwatsuki, 2001b: 344, figs. 4, 7C (northern Arabian Sea; redescription; elevation to species level; comments on morphological changes with growth).

Diagnosis. First dorsal fin with 8 spines, second spine more robust than others; second dorsal fin with 1 spine, its length 7–12% (mean 8%) of SL, and 12 or 13 (mode 13) soft rays; anal fin with 3 spines and 11 or 12 (mode 12) soft rays; pectoral fin with 13 or 14 (mode 13) rays (all rays unbranched, except uppermost 1 or 2), its length 19–22% (mean 20%) of SL, posterior tip not reaching to level of posterior tip of pelvic fin; pectoral filaments 7 (rarely asymmetrically 6 and 7), seventh filament longest, its length 28–45%

(mean 33%) of SL, extending well beyond level of posterior tip of pectoral fin and not reaching to (in adults over ca. 60 mm SL) or reaching to (in young) level of anal-fin origin; pored lateral-line scales 46–50 (mode 48); lateral line unbranched; scale rows above lateral line 5–7 (mode 6), below 9 or 10 (mode 10); gill rakers 13–16 (mode 14) on upper limb, 18–21 (mode 18) on lower limb, 31–35 (mode 32) total; occipital profile nearly straight throughout life; posterior margin of maxilla just reaching to or not reaching to (in adults over ca. 60 mm SL), or extending well beyond (in young) level of posterior margin of adipose eyelid; depth of posterior margin of maxilla less than eye diameter; vomerine teeth absent; palatines inwardly turned anteriorly; swimbladder well-developed; body and fins tinged with pale silver; a large black spot anteriorly on lateral line. A detailed description and proportional measurements as percentages of SL of *P. mullani* were given by Motomura & Iwatsuki (2001b).

Distribution. *Polydactylus mullani* is currently known only from the northern Arabian Sea, the species being relatively common in that

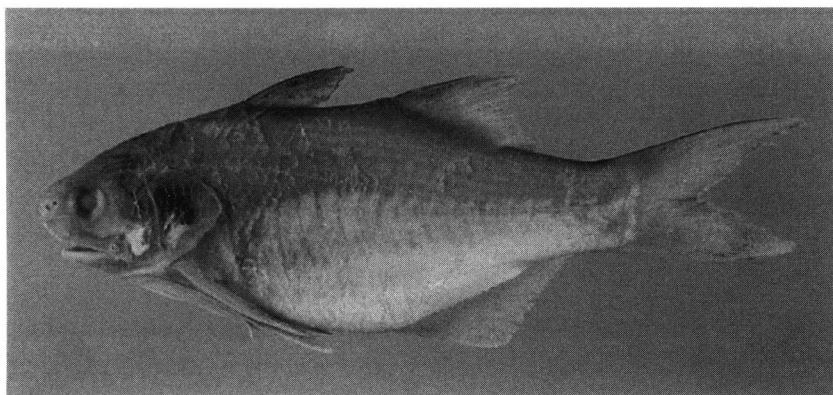


Fig. 9. *Polydactylus multiradiatus* (FRLM 21460, 150 mm SL, Arafura Sea).

area (Fig. 10).

Remarks. *Polynemus sextarius mullani*, originally described as a new subspecies, was elevated to specific status (as *Polydactylus mullani*) by Motomura & Iwatsuki (2001b).

Type material. *Polynemus sextarius mullani*: ZSI-F 10747 (holotype), 157 mm SL, Mumbai, Maharashtra, India, purchased by J. P. Mullan; ZSI-F 10748-10750 (3 paratypes), 92–106 mm SL, same data as holotype.

Other material. 41 specimens (42–188 mm SL), as listed in Motomura & Iwatsuki (2001b).

***Polydactylus multiradiatus* (Günther)**

[English name: Australian threadfin]

(Fig. 9)

Polynemus multiradiatus Günther, 1860: 324 (type locality: China, but probably erroneous; see Motomura *et al.*, 2002b).

Polynemus specularis De Vis, 1883: 285 (type locality: Brisbane River, Queensland, Australia; synonymized by Motomura *et al.*, 2002b).

Polydactylus auratus McKay, 1970: 8 (type locality: Napier Broome Bay, Western Australia, Australia; synonymized by Motomura *et al.*, 2002b).

Polydactylus multiradiatus: Motomura *et al.*, 2002b: xxx, fig. 1 (southern Indonesia and northern Australia; re-description; notes on distributional implications and sexuality).

Diagnosis. First dorsal fin with 8 spines, thickness of all spines similar; second dorsal fin

with 1 spine and 13–15 (mode 14) soft rays; anal fin with 3 spines and 16–18 (mode 16) soft rays; pectoral fin with 14–17 (mode 15) rays (all rays unbranched), its length 25–30% (mean 28%) of SL, posterior tip not reaching to level of posterior tip of pelvic fin; pectoral filaments 7 (rarely 6 on each side, asymmetrically 6 and 7, or 7 and 8), seventh filament longest, its length 26–32% (mean 30%) of SL, not extending to posterior tip of pectoral fin; pored lateral-line scales 49–56 (mode 52); lateral line unbranched; scale rows above lateral line 7 or 8 (mode 8), below 14 or 15 (mode 14); gill rakers 11–14 (mode 12) on upper limb, 16–20 (mode 17) on lower limb, 27–33 (mode 30) total; occipital profile nearly straight throughout life; posterior margin of maxilla not reaching or extending slightly beyond level of posterior margin of adipose eyelid; vomerine teeth present; swimbladder absent; silver body without stripes or spots; upper part of first dorsal fin usually black. A detailed description and proportional measurements as percentages of SL of *P. multiradiatus* were given by Motomura *et al.* (2002b).

Distribution. *Polydactylus multiradiatus* is currently known only from southern Indonesia (Timor and Arafura Seas) and Australia (Exmouth Gulf, Western Australia to Clarence River, New South Wales) (Fig. 10).

Remarks. *Polydactylus auratus*, of somewhat equivocal status, and *Polynemus specularis*, treat-

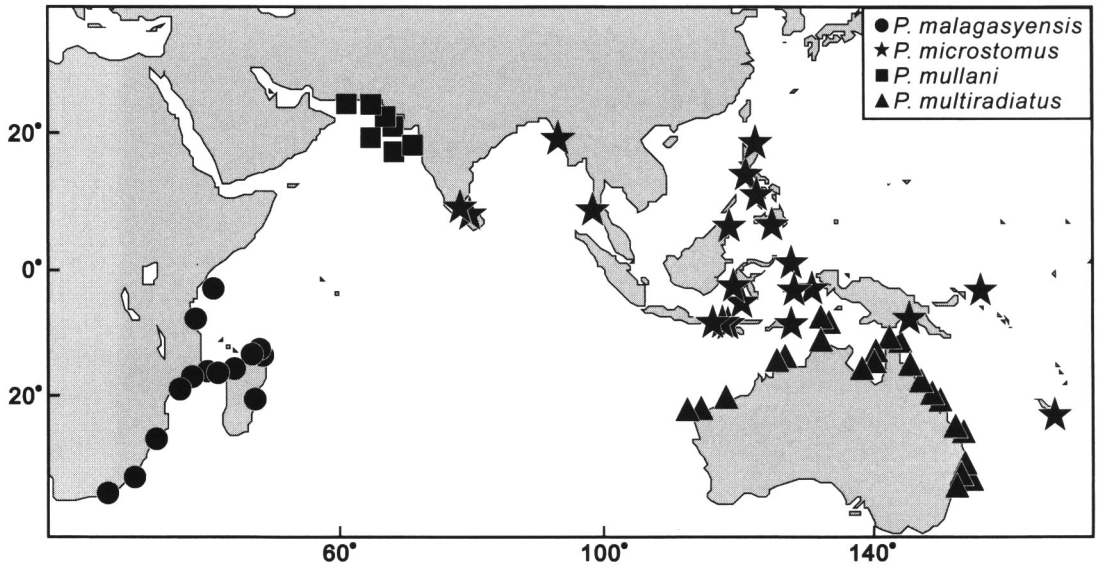


Fig. 10. Geographical distribution of *Polydactylus malagasyensis*, *P. microstomus*, *P. mullani* and *P. multiradiatus*.

ed either as a valid species (e.g., Macleay, 1884; McKay, 1970) or as a junior synonym of *Polydactylus multiradiatus* (e.g., Sainsbury *et al.*, 1985), were both recently synonymized under *P. multiradiatus* by Motomura *et al.* (2002b), following consideration of the available types and a large number of additional specimens.

Type material. *Polynemus multiradiatus*: BMNH 1852.5.4.5 (stuffed holotype), 147 mm SL, China (probably erroneous), purchased by Warwick. *Polynemus specularis*: type material apparently lost (see Motomura *et al.*, 2002b). *Polydactylus auratus*: WAM-P 16792-001 (holotype), 115 mm SL, Napier Broome Bay, Western Australia, Australia; WAM-P 16793-001 (paratype), 106 mm SL, same data as holotype; WAM-P 16794-001 (paratype), 129 mm SL, Admiralty Gulf, Western Australia, Australia; WAM-P 16795-001 (paratype), 99 mm SL, Admiralty Gulf, Western Australia, Australia.

Other material. 59 specimens (32–177 mm SL), as listed in Motomura *et al.* (2002b).

Polydactylus nigripinnis Munro

[English name: blackfin threadfin]

(Fig. 11)

Polydactylus nigripinnis Munro, 1964: 156, fig. 4 (type locality: 4 km off east head of Purari River, Gulf of Papua, Papua New Guinea); Motomura *et al.*, 2002b: xxx (northern Australia, southern Indonesia, and Papua New Guinea; brief diagnosis).

Diagnosis. First dorsal fin with 8 spines, thickness of all spines similar; second dorsal fin with 1 spine and 12 or 13 (mode 13) soft rays; anal fin with 3 spines and 11–13 (mode 12) soft rays; pectoral fin with 16–18 (mode 17) rays (all rays unbranched), its length 29–34% (mean 31%) of SL, posterior tip extending well beyond level of posterior tip of pelvic fin; pectoral filaments 6, sixth filament longest, its length 26–35% (mean 32%) of SL, just short of level of posterior tip of pectoral fin; pored lateral-line scales 46–50 (mode 47); lateral line unbranched; scale rows above lateral line 7, below 11–13 (mode 11); gill rakers 10–13 (mode 11) on upper limb, 14–16 (mode 15) on lower limb, 24–29 (mode 27) total; occipital profile nearly straight throughout life; posterior margin of maxilla extending slightly beyond level of posterior margin of adipose eye-

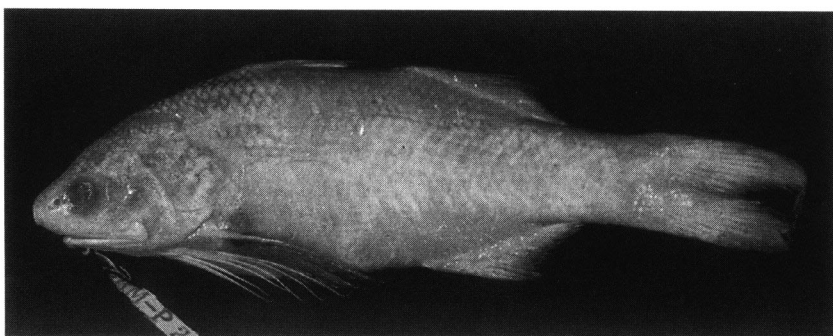


Fig. 11. *Polydactylus nigripinnis* (URM-P 20814, 149 mm SL, Kerema Bay, Gulf of Papua, Papua New Guinea).

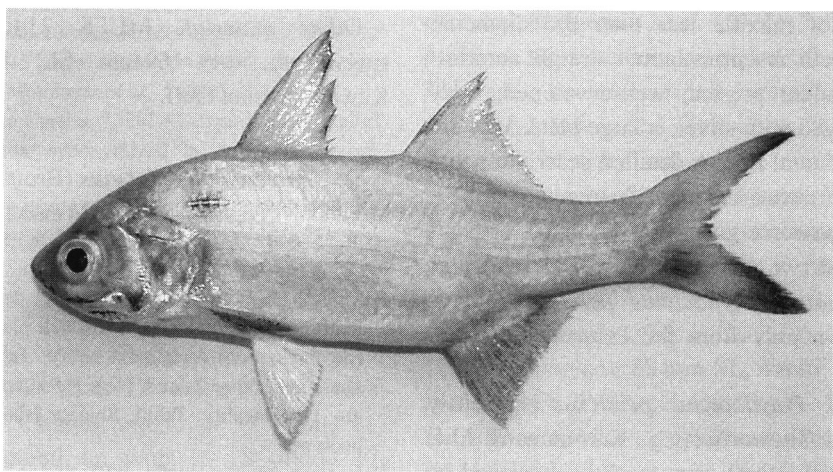


Fig. 12. *Polydactylus persicus* (MUFS 21402, 149 mm SL, Kuwait Bay, Kuwait, Persian Gulf).

lid; depth of posterior margin of maxilla less than eye diameter; vomerine teeth absent; swim-bladder absent; golden or silver body without stripes or spots; pectoral fin dense black.

Distribution. *Polydactylus nigripinnis* is currently known only from Papua New Guinea (Gulf of Papua), Australia (Cambridge Gulf, Western Australia to Van Diemen Gulf, Northern Territory) and the Arafura Sea (Fig. 14).

Type material. *Polydactylus nigripinnis*: CSIRO A. 1828 (holotype), 103 mm SL, Purari River, Gulf of Papua, Papua New Guinea; CSIRO A. 1827 (paratype), 96 mm SL, Kerema Bay, Gulf of Papua, Papua New Guinea; CSIRO A. 1829–1830 (2 paratypes), 100–108 mm SL, same data as holotype.

Other material. 13 specimens (24–171 mm SL), as listed in Motomura *et al.* (2002b).

***Polydactylus persicus* Motomura & Iwatsuki**

[English name: Persian blackspot threadfin]

(Fig. 12)

Polydactylus persicus Motomura & Iwatsuki, 2001b: 347, figs. 5, 7D, 8B (type locality: Kuwait Bay, Kuwait, Persian Gulf).

Diagnosis. First dorsal fin with 8 spines, second spine slightly more robust than others; second dorsal fin with 1 spine, its length 6–9% (mean 7%) of SL, and 12 or 13 (mode 13) soft rays; anal fin with 3 spines and 12 soft rays; pectoral fin with 12–14 (mode 12) rays (all rays un-

branched, except uppermost 1 or 2), its length 18–20% (mean 19%) of SL, posterior tip not reaching to level of posterior tip of pelvic fin; pectoral filaments 6, sixth filament longest, its length 26–36% (mean 32%) of SL, extending well beyond level of posterior tip of pectoral fin; pored lateral-line scales 46–49 (mode 48); lateral line unbranched; scale rows above lateral line 5 or 6 (mode 6), below 8 or 9 (mode 9); gill rakers 12–16 (mode 13) on upper limb, 17–20 (mode 19) on lower limb, 29–35 (mode 32) total; occipital profile nearly straight throughout life; posterior margin of maxilla not reaching to level of posterior margin of adipose eyelid; depth of posterior margin of maxilla less than eye diameter; vomerine teeth absent; palatines straight anteriorly; swimbladder present, well-developed; body and fins tinged with silver; a large black spot anteriorly on lateral line. A detailed description and proportional measurements as percentages of SL of *P. persicus* were given by Motomura & Iwatsuki (2001b).

Distribution. *Polydactylus persicus* is currently known only from the Persian Gulf (Fig. 14).

Remarks. *Polydactylus persicus*, previously identified as *P. sextarius* (e.g., Kuronuma & Abe, 1972; Randall, 1995), was recently described by Motomura & Iwatsuki (2001b) as a new species, on the basis of 13 specimens.

Type material. *Polydactylus persicus*: MCZ 60001 (holotype), 121 mm SL, Kuwait Bay,

Kuwait, Persian Gulf (29°30'N, 47°50'E), July 1982, collected by R. G. Arndt; AMS I. 40432-001 (paratype), 103 mm SL, same data as holotype; BMNH 2000.9.25.1 (paratype), 93 mm SL, same data as holotype; KU 10528 (paratype), 112 mm SL, Al Faw, Iraq; MCZ 59251 (5 paratypes, including 1, 63 mm SL, cleared and stained), 48–80 mm SL, mouth of Qasr River, Kuwait Bay, Kuwait, Persian Gulf (29°30'N, 48°15'E); MCZ 158350 (2 paratypes), 92–121 mm SL, same data as holotype; MUFS 20410 (paratype), 124 mm SL, same data as MCZ 59251; USNM 363075 (paratype), 96 mm SL, same data as holotype.

Other material. MUFS 21402-21403 (2 specimens), 149–169 mm SL, Kuwait Bay, Kuwait, Persian Gulf.

Polydactylus plebeius (Broussonet)

[English name: striped threadfin]

(Fig. 13)

Polynemus plebeius Broussonet, 1782: described on 27th page from a table of contents, 8th plate (7th species) (no pagination) (original locality: Tahiti, Society Islands and Tanna Island, New Hebrides Islands, Vanuatu; type locality: Tahiti, Society Islands, based on a neotype).

Polynemus emoi Lacepède, 1803: 410, 412 (type locality: Tahiti, Society Islands; replacement name for *P. plebeius* Broussonet; synonymized by Motomura *et al.*, 2001c).

Polynemus lineatus Lacepède, 1803: 410, pl. 13, fig. 2 (type locality: Réunion Island, Mascarene Islands; syn-

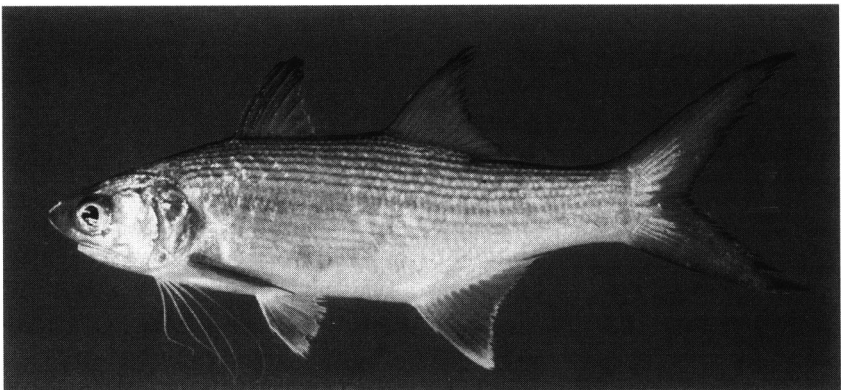


Fig. 13. *Polydactylus plebeius* (MUFS 15761, 203 mm SL, Kushima, Miyazaki, Japan).

- onymized by Motomura *et al.*, 2001c).
- Polynemus niloticus* Shaw, 1804: 151 (type locality: Nile River, Africa, based on figure and description by J. Bruce; type locality discussed by McClelland, 1843; synonymized by Motomura *et al.*, 2001c).
- Polynemus commersonii* Shaw, 1804: 156 (type locality: Indian seas, based on figure by P. Commerson; replacement name for *P. lineatus* Lacepède; synonymized by Motomura *et al.*, 2001c).
- Polynemus lineatus* (not of Lacepède) Günther, 1860: 327 (type locality: Ambon, Indonesia and Guadalcanal, Solomon Islands; primary homonym of *P. lineatus* Lacepède).
- Polynemus taeniatus* Günther, 1860: 526 (type locality: Ambon, Indonesia and Guadalcanal, Solomon Islands; replacement name for *P. lineatus* Günther; synonymized by Motomura *et al.*, 2001c).
- Polydactylus agonasi* Jordan & McGregor, 1906: 814, figure on p. 815 (type locality: Tokyo, Japan; synonymized by Motomura *et al.*, 2001c).
- Polynemus lydiae* Curtiss, 1938: 43 (type locality: Tahiti, Society Islands; synonymized by Motomura *et al.*, 2001c).
- Polydactylus plebeius*: Motomura *et al.*, 2001c: 118, fig. 1A (Indo-Pacific; redescription; designation of neotype).

Diagnosis. First dorsal fin with 8 spines, thickness of all spines similar; second dorsal fin with 1 spine and 12 or 13 (mode 13) soft rays; anal fin with 3 spines and 11 or 12 (mode 11) soft rays; pectoral fin with 16–18 (mode 17, rarely 15) rays (all rays unbranched), its length 17–28% (mean 20%) of SL, posterior tip not reaching to level of posterior tip of pelvic fin; pectoral filaments 5, fifth filament longest, its length 22–40% (mean 32%) of SL, reaching or extending beyond level of posterior tip of pelvic fin; pored lateral-line scales 60–68 (mode 63); lateral line unbranched; scale rows above lateral line 8 or 9 (mode 8), below 12 or 13 (mode 12); gill rakers 9–14 (mode 11) on upper limb, 13–18 (mode 15) on lower limb, 24–32 (mode 26) total; occipital profile nearly straight throughout life; posterior margin of maxilla reaching or extending slightly beyond level of posterior margin of adipose eyelid; upper-jaw length 13–16% (mean 15%) of SL; depth of posterior margin of maxilla less than eye diameter; vomerine teeth present; longest second dorsal-fin ray length 19–28%

(mean 22%) of SL; swimbladder present, well-developed; 7 or 8 prominent dark stripes along scale rows above lateral line, 7–9 faint stripes below. A detailed description and proportional measurements as percentages of SL of *P. plebeius* were given by Motomura *et al.* (2001c).

Distribution. *Polydactylus plebeius* is widely distributed in the Indo-Pacific, ranging from South Africa to French Polynesia (Fig. 14). Although widespread in the Indian Ocean, there are no records of *P. plebeius* having been collected from the Red Sea or Persian Gulf.

Remarks. *Polydactylus plebeius* is the oldest available name for Indo-Pacific species of *Polydactylus*. Motomura *et al.* (2001c) redescribed *P. plebeius* as a senior synonym of *P. agonasi*, *Polynemus commersonii*, *P. emoi*, *P. lineatus*, *P. lydiae*, *P. niloticus* and *P. taeniatus*, following examination of types and a large number of non-type specimens. Although Fricke (1999) synonymized *Sciaena pentadactyla* Lacepède, 1802 with *P. plebeius*, the former is, in fact, a nomen dubium (see Motomura *et al.*, 2001c).

Type material. *Polynemus plebeius*: FMNH 108655 (neotype), 88 mm SL, Tahiti, Society Islands, 6 Feb. 1962, collected by A. R. Watkins. *Polynemus emoi*: no types known (see Motomura *et al.*, 2001c). *Polynemus lineatus*: MNHN A. 5440 (holotype), 255 mm SL, Réunion Island, Mascarene Islands. *Polynemus niloticus*: no types known (see Motomura *et al.*, 2001c). *Polynemus commersonii*: no types known (see Motomura *et al.*, 2001c). *Polynemus taeniatus*: BMNH 1855.11.7.35 (syntype), 139 mm SL, Guadalcanal, Solomon Islands; BMNH 1858.4.21.85 (syntype), 147 mm SL, Ambon, Indonesia. *Polydactylus agonasi*: USNM 55608 (holotype), 155 mm SL, Tokyo, Japan; CAS 109879 (2 paratypes), 105–148 mm SL, Tokyo, Japan. *Polynemus lydiae*: no types known (see Motomura *et al.*, 2001c).

Other material. 110 specimens (43–331 mm SL), as listed in Motomura *et al.* (2001c). Three additional specimens (132–394 mm SL): ANSP 25840, 394 mm SL, Lake St. Lucie estuary, north Zululand, Natal, South Africa; UMMZ 235248,

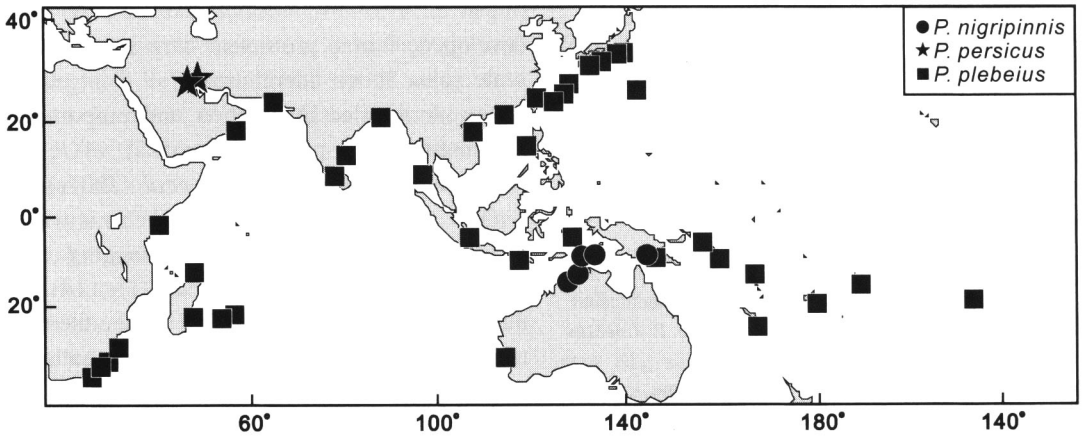


Fig. 14. Geographical distribution of *Polydactylus nigripinnis*, *P. persicus* and *P. plebeius*.

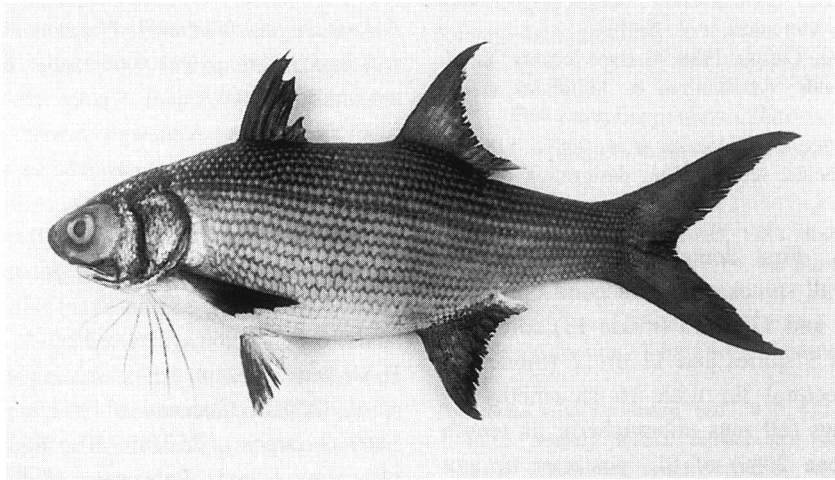


Fig. 15. *Polydactylus sexfilis* (KPM-NI 8127, 456 mm SL, off Ishizumi, Hachijo-jima, Izu Islands, Japan; photo by H. Senou).

132 mm SL, Farafangana market, Madagascar; RUSI 19493, 315 mm SL, Swartkops River, Eastern Cape, South Africa.

Polydactylus sexfilis (Valenciennes)
 [English name: golden sixthread tasselfish]
 (Fig. 15)

Polynemus sexfilis Valenciennes in Cuvier & Valenciennes, 1831: 515 (type locality: Mauritius).
Polynemus kuru Bleeker, 1853: 600 (type locality: Jakarta, Java, Indonesia); 2 syntypes determined from 5 Bleeker specimens by Motomura *et al.*, 2001a; synonymized by Motomura *et al.*, 2001a).

Polydactylus sexfilis: Motomura *et al.*, 2000a: 115, fig. 1 (Japan; distributional range extension; distributional implications in Japanese waters); Motomura *et al.*, 2001a: 83, fig. 1 (Indo-Pacific; redescription; designation of lectotype); Motomura & Senou, 2002: 27, fig. 1 (Hachijo-jima, Izu Islands, Japan; distributional range extension; largest record; comments on morphological changes with growth).

Diagnosis. First dorsal fin with 8 spines, thickness of all spines similar; second dorsal fin with 1 spine and 12 or 13 (mode 13) soft rays; anal fin with 3 spines and 11 or 12 (mode 11) soft rays; pectoral fin with 15 or 16 (mode 16)

rays, its length 20–23% (mean 21%) of SL, posterior tip not reaching to level of posterior tip of pelvic fin; all pectoral-fin rays unbranched except larger specimens (in larger specimen, third ray bifurcate at tip, fourth and fifth rays divided into 3 at tip, and remaining rays unbranched); pectoral filaments 6, sixth filament longest, its length 28–41% (mean 35%) of SL, not reaching or extending beyond level of posterior tip of pelvic fin; pored lateral-line scales 60–67 (mode 64); lateral line unbranched; scale rows above lateral line 8–10 (mode 9), below 12–14 (mode 13); gill rakers 11–14 (mode 13) on upper limb, 15–18 (mode 17) on lower limb, 27–31 (mode 30) total; occipital profile nearly straight throughout life; posterior margin of maxilla reaching to level of posterior margin of adipose eyelid; depth of posterior margin of maxilla less than eye diameter; vomerine teeth present; longest second dorsal-fin ray length 21–30% (mean 26%) of SL; swimbladder present, well-developed; 7–9 prominent dark stripes along longitudinal scale rows above lateral line, 1–12 faint stripes below (sometimes no stripes, especially in smaller specimens). A detailed description and proportional measurements as percentages of SL of *P. sexfilis* were given by Motomura *et al.* (2001a).

Distribution. *Polydactylus sexfilis* is widely distributed in the Indo-Pacific region (Fig. 18), generally in the vicinity of oceanic islands. In Australian territorial waters, the species is currently known only from the Cocos-Keeling Islands and Coral Sea (G. R. Allen, pers. comm.), at no time having been reported from the coast of the Australian continent.

Remarks. Both *P. sexfilis* and *P. kuru* were regarded as valid species until Motomura *et al.* (2001a) redescribed *P. sexfilis* as a senior synonym of the latter, following examination of types and a large number of non-type specimens.

Type material. *Polynemus sexfilis*: MNHN 9731 (lectotype), 265 mm SL, Mauritius, collected by J.-F. Desjardins; MNHN A. 3027, 9728 (2 paralectotypes), 92–96 mm SL, Mauritius. *Polynemus kuru*: RMNH 6006 (2 syntypes), 87–198 mm SL, Jakarta, Java, Indonesia.

Other material. 43 specimens (32–456 mm SL), as listed in Motomura *et al.* (2000a, 2001a) and Motomura & Senou (2002). Three additional specimens (50–220 mm SL): ANSP 119661, 82 mm SL, Micro beach, Saipan; CSIRO A. 89, 50 mm SL, Vahsel Harbour, New Britain; CSIRO C. 1021, 220 mm SL, Langemak Bay, Papua New Guinea.

Polydactylus sextarius (Bloch & Schneider)

[English name: blackspot threadfin]

(Fig. 16)

Polynemus sextarius Bloch & Schneider, 1801: 18, pl. 4 (type locality: Tranquebar, Tamil Nadu, India).

Polydactylus sextarius: Motomura *et al.*, 1999: 57, fig. 1 (Miyazaki, Japan; distributional range extension); Motomura & Iwatsuki, 2001b: 349, figs. 6, 7E (eastern Indian to western Pacific Oceans; redescription).

Diagnosis. First dorsal fin with 8 spines, thickness of all spines similar; second dorsal fin with 1 spine, its length 5–8% (mean 6%) of SL, and 12 or 13 (mode 13) soft rays; anal fin with 3 spines and 11–13 (mode 12) soft rays; pectoral fin with 13–15 (mode 14) rays (all rays unbranched, except uppermost 1 or 2), its length 19–25% (mean 22%) of SL, posterior tip not reaching to level of posterior tip of pelvic fin; pectoral filaments 6, sixth pectoral filament longest, its length 20–29% (mean 25%) of SL, not reaching to level of posterior tip of pectoral fin; pored lateral-line scales 45–51 (mode 46); lateral line unbranched; scale rows above lateral line 5 or 6 (mode 6), below 8–11 (mode 11); gill rakers 10–14 (mode 12) on upper limb, 14–18 (mode 16) on lower limb, 25–30 (mode 28) total; occipital profile nearly straight throughout life; posterior margin of maxilla not reaching or extending slightly beyond level of posterior margin of adipose eyelid; depth of posterior margin of maxilla less than eye diameter; vomerine teeth absent; palatines inwardly turned anteriorly; swimbladder atrophied, like a fine string; body and fins tinged with silver; a large black spot anteriorly on lateral line. A detailed description and proportional measurements as percentages of SL

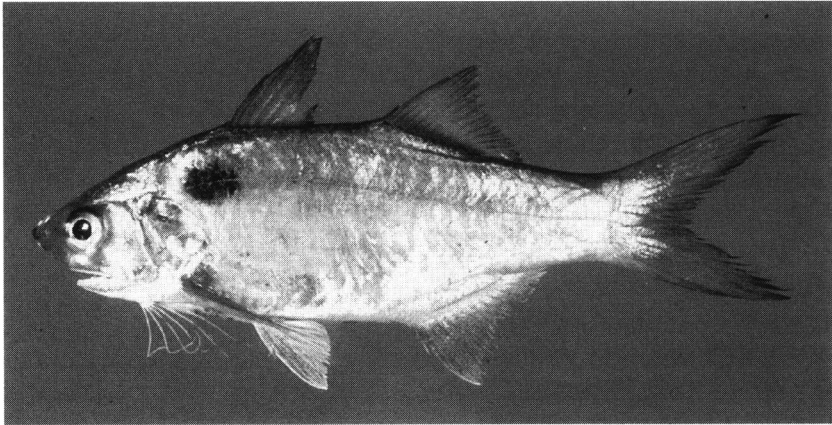


Fig. 16. *Polydactylus sextarius* (MUFS 16643, 164 mm SL, Kushima, Miyazaki, Japan).

of *P. sextarius* were given by Motomura & Iwatsuki (2001b).

Distribution. *Polydactylus sextarius* is known from the eastern Indian to western Pacific Oceans where it ranges from southwestern India to Papua New Guinea and Miyazaki, Kyushu Island, Japan (Fig. 18). Although Munro (1967) reported a single example (CSIRO C. 1002, 157 mm SL) of the species collected from Papua New Guinea, *P. sextarius* is considered to occur rarely west of Huxley's line, viz. Philippines, eastern Indonesia, including the Lesser Sunda Islands, Sulawesi Island, Moluccas and Irian Jaya, and Papua New Guinea. The species has at no time (apparently) been collected from Australian waters.

Remarks. Fricke (1999) synonymized *Polynemus sexfilis* and *P. astrolabi* Sauvage, 1881 under *Polydactylus sextarius*. However, *P. sexfilis* is now recognized as a valid species and *Polynemus astrolabi* has been synonymized with *Galeoides decadactylus* (Bloch, 1795) (see Motomura *et al.*, 2001b).

Type material. *Polynemus sextarius*: ZMB 565 (holotype), 125 mm SL, Tranquebar, Tamil Nadu, India.

Other material. 47 specimens (57–168 mm SL), as listed in Motomura & Iwatsuki (2001b).

***Polydactylus siamensis* Motomura,
Iwatsuki & Yoshino**

[English name: large mouth striped threadfin]

(Fig. 17)

Polydactylus siamensis Motomura, Iwatsuki & Yoshino, 2001c: 122, fig. 1B (type locality: Samyan market, Bangkok, Thailand); Motomura & Senou, 2002: 29 (Andaman Sea; comments on distributional implications).

Diagnosis. First dorsal fin with 8 spines, thickness of all spines similar; second dorsal fin with 1 spine and 12 or 13 (mode 13) soft rays; anal fin with 3 spines and 11 soft rays; pectoral fin with 15 rays (all rays unbranched), its length 20–22% (mean 21%) of SL, posterior tip not reaching to level of posterior tip of pelvic fin; pectoral filaments 5, fifth filament longest, its length 31–43% (mean 36%) of SL, reaching to or extending beyond level of posterior tip of pelvic fin; pored lateral-line scales 54–58 (mode 54); lateral line unbranched; scale rows above lateral line 7, below 10 or 11 (mode 11); gill rakers 9 or 10 (mode 10) on upper limb, 13 or 14 (mode 13) on lower limb, 22–24 (mode 23) total; occipital profile nearly straight throughout life; posterior margin of maxilla extending slightly beyond level of posterior margin of adipose eyelid; upper-jaw length 16–17% (mean 17%) of SL; depth of posterior margin of maxilla less than eye

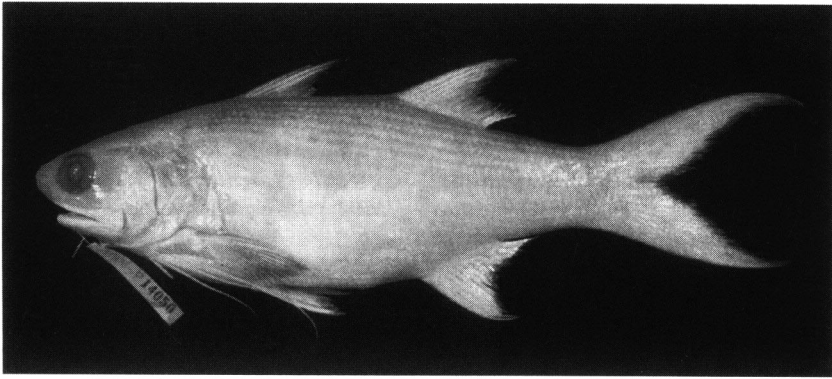


Fig. 17. *Polydactylus siamensis* (URM-P 14050, holotype, 252 mm SL, Samyan market, Bangkok, Thailand).

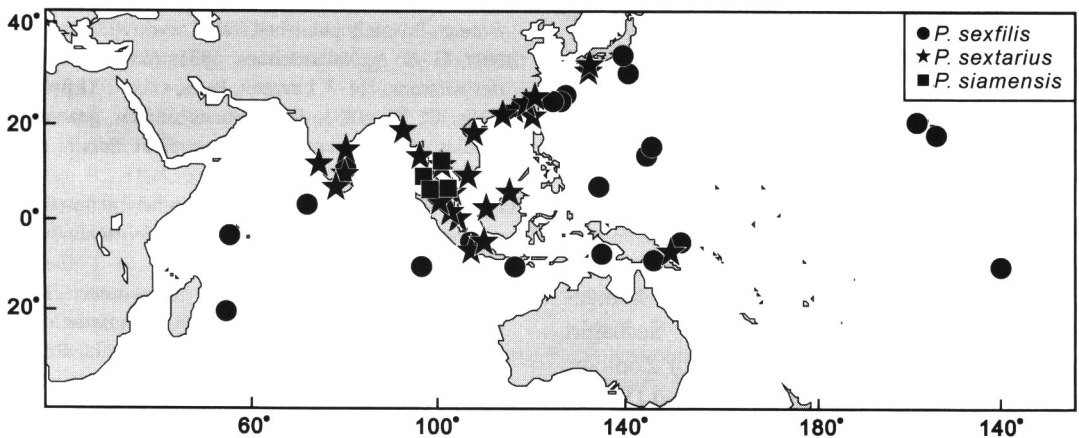


Fig. 18. Geographical distribution of *Polydactylus sexfilis*, *P. sextarius* and *P. siamensis*.

diameter; vomerine teeth present; swimbladder absent; 7 or 8 prominent dark stripes along scale rows above lateral line, 7–9 faint stripes below. A detailed description and proportional measurements as percentages of SL of *P. siamensis* were given by Motomura *et al.* (2001c).

Distribution. *Polydactylus siamensis* is currently known only from Bangkok, Songkhla and Phuket, Thailand (Fig. 18). The species rarely occurs in the Gulf of Thailand, being mainly distributed in the Andaman Sea.

Type material. *Polydactylus siamensis*: URM-P 14050 (holotype), 252 mm SL, Samyan market, Bangkok, Thailand, 14 Feb. 1984, purchased by H. Senou; MUFS 18280 (paratype), 137 mm SL, same data as holotype.

Other material. 6 specimens (128–239 mm

SL), as listed in Motomura *et al.* (2001c). An additional specimen: ZRC 859, 175 mm SL, Andaman Sea (7°41'30"N, 98°29'30"E).

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