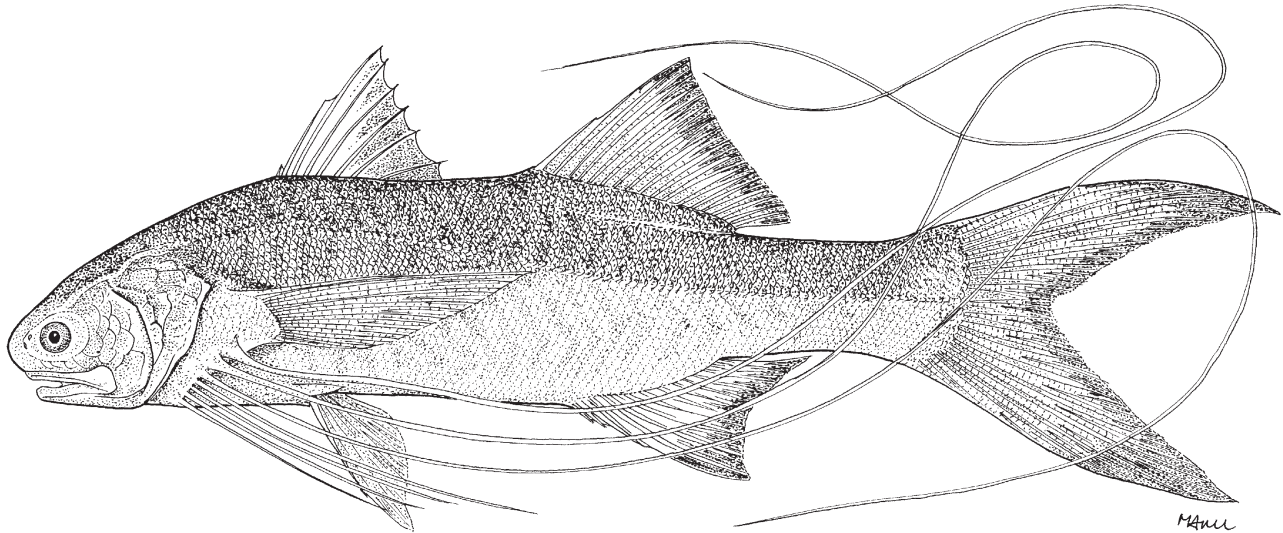


***Polynemus aquilonaris* Motomura, 2003****Fig. 136; Plate VIa**

*Polynemus aquilonaris* Motomura, 2003a: 155, figs 1a-b, 3 [type locality: Chao Phraya River, Thailand; holotype (URM-P 13930, 136 mm standard length); 12 paratypes (ANSP 177982, 108 mm standard length; ANSP 177984, 2 specimens, 88 to 96 mm standard length; CAS 92821, 114 mm standard length; NRM 24267, 104 mm standard length; UMMZ 181145, 3 specimens, 132 to 139 mm standard length; UMMZ 195407, 105 mm standard length; UMMZ 224815, 64 mm standard length; UMMZ 232331, 2 specimens, 138 to 145 mm standard length)].

**Synonyms:** None.

**FAO Names:** **En** - Northern paradise fish; **Fr** - Barbure paradis du nord; **Sp** - Barbudo paraíso norteño.

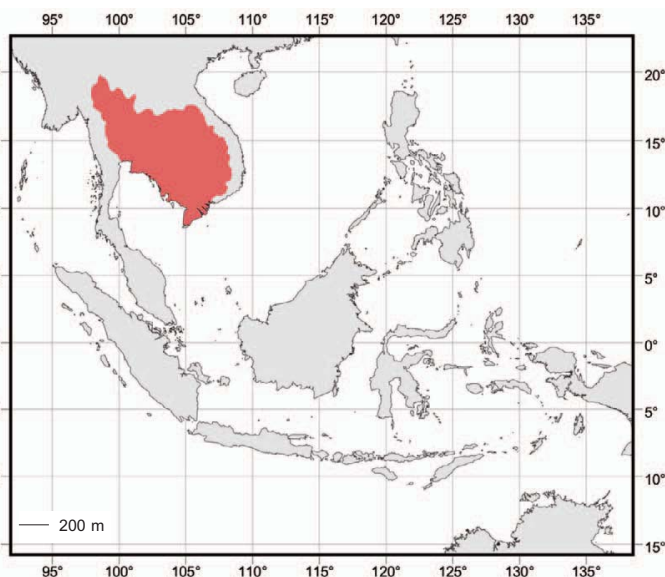


**Fig. 136** *Polynemus aquilonaris*

**Diagnostic Features:** A medium-sized species. Body depth at first dorsal-fin origin 23 to 26% (mean 25%) of standard length; head length 24 to 29% (mean 26%) of standard length. Snout pointed; occipital profile nearly straight. Posterior margin of maxilla extending well beyond level of posterior margin of adipose eyelid; upper-jaw length 10 to 12% (mean 11%) of standard length, approximately equal to caudal-peduncle depth [10 to 12% (mean 11%) of standard length]; depth of posterior margin of maxilla [2 to 3% (mean 3%) of standard length] slightly less than eye diameter [3 to 4% (mean 3%) of standard length]; 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, all spine bases of similar thickness; second dorsal fin with I spine and 15 to 19 (mode 16) soft rays; anal fin with III spines and 11 to 13 (mode 12) soft rays, anal-fin base less than second dorsal-fin base; pectoral fin with 15 to 17 (mode 16) rays (all rays unbranched), its length 34 to 41% (mean 37%) of standard length, posterior tip just short of or extending slightly beyond level of anal-fin origin; pectoral filaments 7; first pectoral filament shortest, not reaching to level of posterior tip of pelvic fin; second pectoral filament extending slightly beyond or not reaching to level of posterior tip of pelvic fin; third pectoral filament extending beyond (rarely just short of) level of posterior tip of pelvic fin; fourth pectoral filament extending beyond level of anal-fin origin or level of posterior base of anal fin; fifth pectoral filament extending beyond level of posterior tips of caudal-fin lobes; sixth, usually longest, its length 260 to 371% (mean 308%) of standard length, and seventh pectoral filaments longer than other filaments, extending well beyond posterior tips of caudal-fin lobes; caudal fin deeply forked, upper and lower caudal-fin lobes not filamentous, upper caudal-fin lobe 39 to 44% (mean 43%) and lower lobe 33 to 41% (mean 38%) of standard length. Pored lateral-line scales 80 to 86 (mode 81); lateral line simple, extending from upper end of gill opening to mid-distal margin of caudal-fin membrane; scale rows above lateral line 6 to 8 (mode 7), below 13 to 17 (mode 14). Gillrakers 9 to 11 (mode 10) on upper limb, 16 to 18 (mode 17) on lower limb, 25 to 29 (mode 27) total. Vertebrae 10 precaudal and 15 caudal; supraneural bones 2. Swimbladder not apparent or present (varying in size less than about 23% of standard length). **Colour:** Head and body greyish silver dorsally, silver ventrally; anterior margin of first dorsal fin and posterior margin of second dorsal fin blackish, remaining parts translucent; pectoral fin translucent; base of pectoral filaments white, becoming blackish on posterior tips; base and posterior margin of pelvic fin white, remaining parts translucent; posterior margin of anal fin translucent, remaining parts white; posterior margin of caudal fin translucent, remaining parts white.

**Geographical Distribution:** Currently known from the Chao Phraya River system (Thailand), Mekong River system below the Khone waterfalls of Lao People's Democratic Republic (Cambodia, southernmost of Lao People's Democratic Republic and southern Viet Nam), and Lake Tonle Sap and related rivers (Cambodia) (Fig. 137). Two specimens (NSMT-P 21772, 21776, 133 to 138 mm standard length), collected from the Chao Phraya River at Nakhon Sawan, Thailand, represent the northernmost reliable record of the species.

*Polynemus aquilonaris* is currently known from Indochina, whereas a related species, *P. dubius*, is distributed in rivers on the Malay Peninsula, Sumatra and Kalimantan. The distributions of both species are most likely to be as relics, and are consistent with the location of Sundaland during the last Pleistocene glacial period. According to Bornbusch and Lundberg (1989), Sundaland was drained by several major river systems, at least 2 of which may have participated in faunal mixing. These included the South Indo-China River and North Sunda River which are now restricted to drainages on Indochina, and Malay Peninsula, Sumatra and Kalimantan, respectively, following submergence of Sundaland owing to increased sea levels. The present distributional ranges of *P. aquilonaris* and *P. dubius* indicate that they evidently originated in the South Indo-China and North Sunda rivers, respectively.



**Fig. 137** *Polynemus aquilonaris*  
■ Known distribution

**Habitat and Biology:** Occurs on sandy or muddy bottoms in fresh-water rivers and estuaries. The species feeds on crustaceans, small fishes and benthic organisms. Gonad examinations (based on 12 specimens) of the species by the author revealed that the species should be considered as probably having separate sexes (hermaphroditism not present).

**Size:** Maximum standard length at least 16 cm (Motomura, 2003a).

**Interest to Fisheries:** Esteemed as a food fish at least along the Chao Phraya and Mekong rivers, and Lake Tonle Sap. The species has been often exported to Japan as an aquarium fish.

**Local Names:** CAMBODIA: Trey pream sor; LAO PEOPLE'S DEMOCRATIC REPUBLIC: Jin.

**Literature:** Motomura (2003a).

**Remarks:** *Polynemus aquilonaris* previously identified as *P. dubius* or *P. longipectoralis* (e.g. Rainboth, 1996; Kottelat, 2001), has recently been described as a new species by Motomura (2003a).

Larger specimens (over about 110 mm standard length) of *Polynemus aquilonaris* collected from Lake Tonle Sap had a fleshy lip on the upper jaw, smaller specimens (less than about 100 mm standard length) from the lake and all those from other localities having a relatively thin lip. Apart from the lip condition in larger specimens, however, the 2 forms were difficult to distinguish between because their meristic characters and proportional measurements fully overlapped. Therefore, the difference in lip condition between the 2 forms is considered to represent geographical variation. More studies of the 2 forms of *P. aquilonaris* are needed to assess whether the 2 represent separate subspecies like *P. melanochir dulcis* and *P. m. melanochir* or not.

Although *P. aquilonaris* is very similar to *P. dubius*, the former can be clearly distinguished from the latter by having higher counts of pored lateral-line scales [80 to 86 (mode 81) versus 69 to 79 (mode 78) in *P. dubius*] and scale rows below the lateral line [14 to 17 (mode 14, rarely 13 or 17) versus 13 (rarely 12) in *P. dubius*], and lower counts of gillrakers [9 to 11 (mode 11) in upper series, 16 to 18 (mode 17) in lower and 25 to 29 (mode 27) total versus 11 to 13 (mode 12), 18 to 21 (mode 18) and 29 to 33 (mode 30), respectively]. Furthermore, *P. aquilonaris* differs from *P. dubius* in having a slightly higher second dorsal-fin soft ray counts (15 to 19 versus 14 to 16 in *P. dubius*) and lower pectoral-fin ray counts (15 to 17 versus 16 to 18).

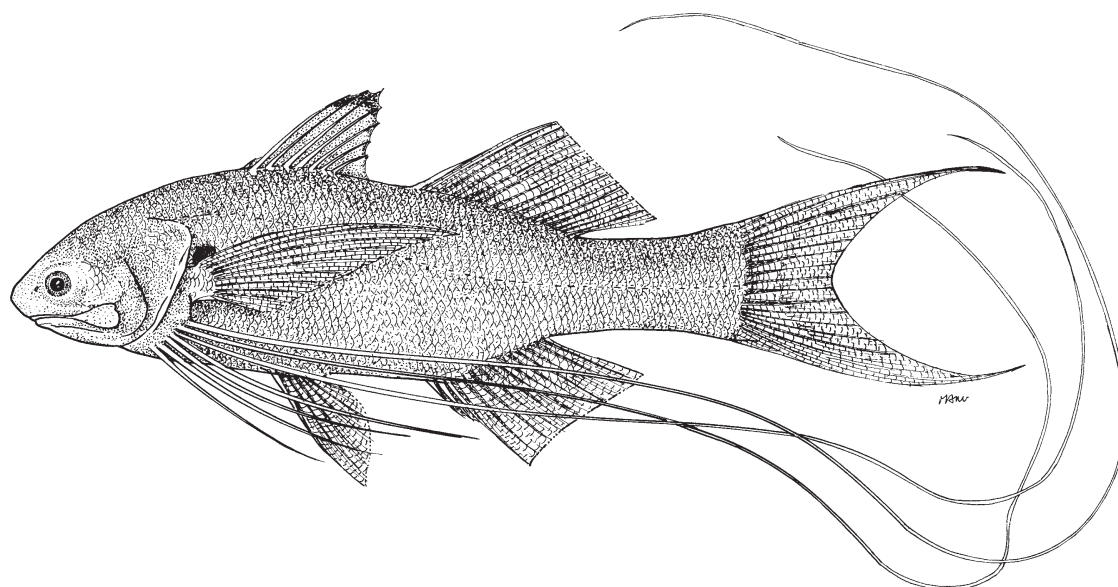
*Polynemus dubius* Bleeker, 1854

**Fig. 138; Plate VIb**

*Polynemus dubius* Bleeker, 1854: 92 [type locality: Banjarmasin, Sampit or Palembang, Indonesia; lectotype (RMNH 6014, 126 mm standard length) designated by Motomura, 2003a; 7 paralectotypes (RMNH 34452, 77 to 132 mm standard length)].

**Synonyms:** *Polynemus longipectoralis* Weber and de Beaufort, 1922: 213 [type locality: Banjarmasin, Kalimantan, Indonesia; holotype (ZMA 112570, 133 mm standard length)].

**FAO Names:** **En** - Eastern paradise fish; **Fr** - Barbure paradis d'Orient; **Sp** - Barbudo paraíso oriental.



**Fig. 138** *Polynemus dubius*

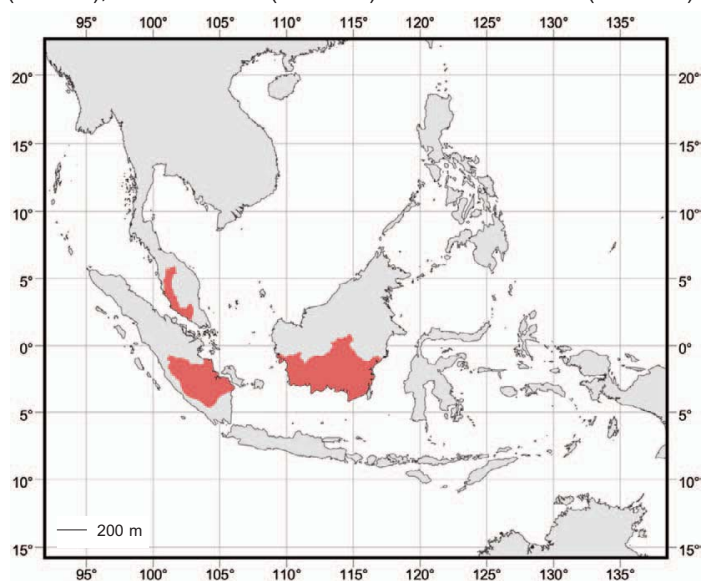
**Diagnostic Features:** A medium-sized species. Body depth at first dorsal-fin origin 23 to 28% (mean 24%) of standard length; head length 25 to 27% (mean 26%) of standard length. Snout pointed; occipital profile nearly straight. Posterior margin of maxilla extending well beyond level of posterior margin of adipose eyelid; upper-jaw length 11 to 13% (mean 11%) of standard length, approximately equal to caudal-peduncle depth [11 to 13% (mean 11%) of standard length]; depth of posterior margin of maxilla [3 to 4% (mean 3%) of standard length] slightly greater than eye diameter [2 to 3% (mean 3%) of standard length]; 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, all spine bases of similar thickness; second dorsal fin with I spine and 14 to 16 (mode 16) soft rays; anal fin with III spines and 12 soft rays, anal-fin base less than second dorsal-fin base; pectoral fin with 16 to 18 (mode 16) rays (all rays unbranched), its length 30 to 40% (mean 37%) of standard length, posterior tip just short of or extending slightly beyond level of anal-fin origin; pectoral filaments 7; first pectoral filament shortest, not reaching to level of posterior tip of pelvic fin; second pectoral filament extending slightly beyond or not reaching to level of posterior tip of pelvic fin; third pectoral filament extending beyond (rarely just short of) level of posterior tip of pelvic fin; fourth pectoral filament extending beyond level of anal-fin origin or level of posterior base of anal fin; fifth pectoral filament extending beyond level of posterior tips of caudal-fin lobes; sixth, usually longest, its length 264 to 312% (mean 293%) of standard length, and seventh pectoral filaments longer than other filaments, extending well beyond posterior tips of caudal-fin lobes; caudal fin deeply forked, upper and lower caudal-fin lobes not filamentous, upper caudal-fin lobe 35 to 50% (mean 42%) and lower lobe 33 to 47% (mean 39%) of standard length. Pored lateral-line scales 69 to 79 (mode 78); lateral line simple, extending from upper end of gill opening to mid-distal margin of caudal-fin membrane; scale rows above lateral line 6 to 8 (mode 7), below 12 or 13 (mode 13). Gillrakers 11 to 13 (mode 12) on upper limb, 18 to 21 (mode 18) on lower limb, 29 to 33 (mode 30) total. Vertebrae 10 precaudal and 15 caudal; supraneural bones 2. Swimbladder not apparent. **Colour:** (preserved specimens) Head and body grey dorsally, pale silver ventrally; anterior margin and posterior tip of first dorsal fin blackish, remaining parts yellowish silver; posterior margins of second dorsal, anal and caudal fins translucent, remaining parts pale yellow; pectoral fin and filaments translucent or white without melanophores; pelvic fin pale yellow.

**Geographical Distribution:** Currently known from the Kangsar and Muar rivers (western Malaysia in Malay Peninsula), Musi and Batanghari rivers (southeastern Sumatra, Indonesia), and Sampit and Barito rivers (southern Kalimantan, Indonesia) (Fig. 139).

**Habitat and Biology:** Occurs on sandy or muddy bottoms in fresh-water rivers and estuaries. Feeds on crustaceans, small fishes and benthic organisms.

**Size:** Maximum standard length at least 18 cm (Motomura, 2003a).

**Interest to Fisheries:** Unknown.



**Fig. 139** *Polynemus dubius*  
■ Known distribution

**Local Names:** None known.

**Literature:** Motomura (2003a).

**Remarks:** *P. dubius* was described by Bleeker (1854) on the basis of Bleeker's (1851a, 1852) descriptions of a species originally believed by him to represent *P. longifilis* (true *P. longifilis* Cuvier in Cuvier and Valenciennes, 1829b has recently been regarded as a junior synonym of *P. paradiseus*; see Motomura *et al.*, 2002b). Although *P. dubius* has been regarded as a valid species (e.g. Kottelat *et al.*, 1993; Randall and Lim, 2000), *P. longipectoralis* has also been regarded as a valid species by many researchers (e.g. Chevey, 1932; Kottelat, 1989, 2001; Talwar and Jhingran, 1991; Mishra and Krishnan, 1993), but without comparisons of each nominal species. Weber and de Beaufort (1922), Myers (1936) and Rainboth (1996) regarded both species as valid, the first-mentioned believing *P. dubius* and their new species, *P. longipectoralis*, to be distinguished by the number of lateral-line scales [stated as 67 in *P. dubius* (based on a single specimen) versus 84 in *P. longipectoralis* (based on the holotype), but in fact 79, according to examination of that specimen by the author]. The diagnostic characters (seven pectoral filaments, 8 spines in the first dorsal fin, 79 pored lateral-line scales, 13 scale rows below lateral line, vomer with villiform teeth and posterior portion of the maxilla less than orbit diameter) found in the holotype of *P. longipectoralis* are consistent with those of specimens of *P. dubius*. Therefore, *P. longipectoralis* is regarded as a junior synonym.

Rainboth (1996) also distinguished between the 2 nominal species by the number of lateral-line scales (65-67 in *P. dubius* versus 80-85 in *P. longipectoralis*). However, his *P. longipectoralis* is in fact *P. aquilonaris* (see account of *P. aquilonaris*). Myers (1936) distinguished the 2 nominal species by the number of first dorsal-fin spines (7 in *P. dubius* versus 8 in *P. longipectoralis*). However, *P. dubius*, including the holotype of *P. longipectoralis*, in fact has 8 spines in the first dorsal fin. *Polynemus hornadayi* and *P. paradiseus* are the only polynemid species with 7 spines in the first dorsal fin.

*Polynemus dubius* is easily distinguished from *P. kapuasensis* and *P. multifilis* by having 7 pectoral filaments (13 to 16 in the latter). *Polynemus melanochir dulcis* and *P. m. melanochir* lack villiform teeth on the vomer and have black pigmentation on (usually) more than half of the posterior margin of the pectoral fins, whereas *P. dubius* has villiform vomerine teeth and lacks black pigmentation on the pectoral fins. Furthermore, *P. dubius* differs from both of the above subspecies in having longer pectoral-fin rays [34 to 40% (mean 37%) of standard length in *P. dubius* versus 31 to 35% (mean 33%) in *P. m. dulcis* and 30 to 35% (mean 32%) in *P. m. melanochir*] and pectoral filaments [longest filament 264 to 312% (mean 293%) of standard length in *P. dubius* versus 128 to 153% (mean 141%) and 141 to 193% (mean 159%), respectively]. Comparisons of *P. dubius* with *P. aquilonaris* are given in the account of the latter.

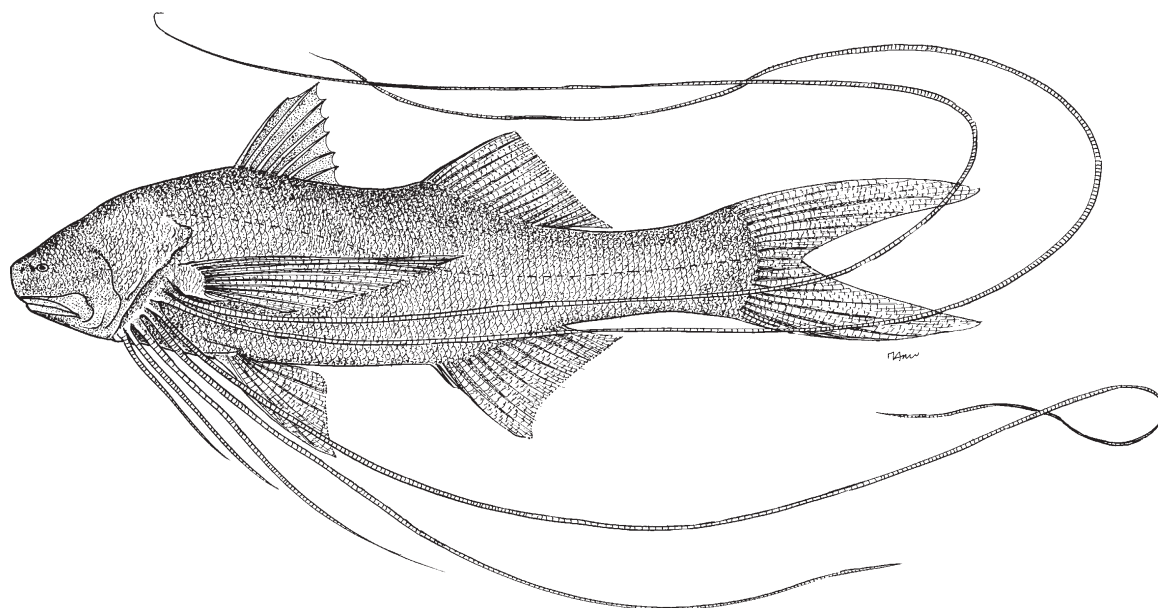
***Polynemus hornadayi* Myers, 1936**

**Fig. 140; Plate VIc**

*Polynemus hornadayi* Myers, 1936: 376, fig. 1 [type locality: Ensengi River (emptying into the Sadong River), Sarawak, Kalimantan, Malaysia; holotype (USNM 100632, 193 mm standard length); 9 paratypes presently known (BMNH 1935.8.29.31, 142 mm standard length; USNM 35719, 8 specimens, 109 to 146 mm standard length)].

**Synonyms:** None.

**FAO Names:** **En** - Hornaday's paradise fish; **Fr** - Barbure paradis de Hornaday; **Sp** - Barbudo paraíso de Hornaday.



**Fig. 140** *Polynemus hornadayi*