

AN ACCOUNT OF FISHES OF THE FAMILY POLYNEMIDAE (THREADFIN) FROM PAKISTAN

Muhammad Moazzam¹ and Hamid Badar Osmany²

¹WWF-Pakistan, Plot No. 11, Block 7/8, KMCHS, Karachi 75400, Pakistan (mmoazzamkhan@gmail.com)

²Marine Fisheries Department, Government of Pakistan, Fish Harbour, West Wharf, Karachi 74000, Pakistan

ABSTRACT

Threadfins are considered commercially important fish species that are found in coastal waters as well as on the continental shelf, estuaries, and even in freshwater. Fourfinger threadfin (*Eleutheronema tetradactylum*) and Indian threadfin (*Leptomelanosoma indicum*) fetch high prices in the local market. *L. indicum* is known to ascend the River Indus, as this species can be found in areas with low salinities. Members of the genera *Polydactylus* and *Filimanus* are of small sizes and mainly used in the production of fishmeal, whereas *Polynemus paradiseus* is of extremely rare occurrence. Commercial landings of threadfin fish in Pakistan during the last ten years are estimated to be between 2,500 and 3,000 m. tons with the highest landings of 3,150 m. tons were recorded in 2021. Indian threadfin is exported in small quantities to Taiwan (through mainland China and Thailand), where it is considered to be a delicacy and fetches high prices.

Keywords: Family Polynemidae, threadfins, tesselfishes, *Eleutheronema tetradactylum*, *Leptomelanosoma indicum*, *Polydactylus*, *Filimanus*, *Polynemus*

INTRODUCTION

Threadfin belongs to the fish family Polynemidae, which includes benthic fishes that are variable in size and considered to be tasty fish relished in many countries. Typically, these species are found in marine coastal waters, estuaries, and freshwater river mouths in areas with muddy, sandy, or silty bottoms. These fishes have eyes covered by adipose tissue, an inferior mouth, and a set of filaments protruding from the pectoral fin area, which serve as tactile structures, helping to find prey within the sediments. Threadfins feed on benthic invertebrates of sandy to muddy bottoms. These fish have protandrous sequential hermaphroditism (they reproduce as a pure male first, and then as a pure female at later stages). The species of the family Polynemidae commonly known as threadfins or tesselfishes and locally as “Sear”, “Rawans”, “Seeri”, “Photani”, “Siari” or “Rishi” in Sindhi and “Gwanz”, “Talsa” or “Lukwa” in Balochi.

Information about family Polynemidae from Pakistan is limited and usually these fishes area included in the list of described species occurring in Pakistan (Ahmad, 1988; Ahmad *et al.*, 1973; Anonymous, 1955; Bianchi, 1985; Hoda, 1985, 1988; Hussain, 2003; Jalil and Khaliluddin, 1972, 1981; Majid, *et al.*, 1992 and Psomadakis *et al.*, 2015. The present paper reviews the species belonging to the Family Polynemidae occurring in Pakistan.

MATERIAL AND METHODS

Published scientific literature was examined for the records of threadfins from the Pakistan coast. In addition, specimens of the Family Polynemidae were collected between 2003 and 2024 from Karachi Fish Harbour. Samples collected from the harbour were photographed and salient features and measurements were recorded, before their preservation in 5 % neutralized formalin. Historical data on landings of fishes of the Family Polynemidae were obtained from the Handbook of Fisheries Statistics (Anon., 1978-2011; updated).

RESULT

A total of 10 species belonging to 5 genera are reported during the present study. These species were either recorded in the historical scientific literature or collected from Karachi Fish Harbour between 2003 and 2024. Of the known species, fourfinger threadfin (*Eleutheronema tetradactylum*) and Indian threadfin (*Leptomelanosoma indicum*) are considered to be of commercial importance and fetch high prices in the local market, whereas Indian threadfin is also exported to Taiwan.

Systematic and Distributional Information

Genus *Eleutheronema* Bleeker 1862
Eleutheronema tetradactylum (Shaw, 1804)
 (Fig.1)

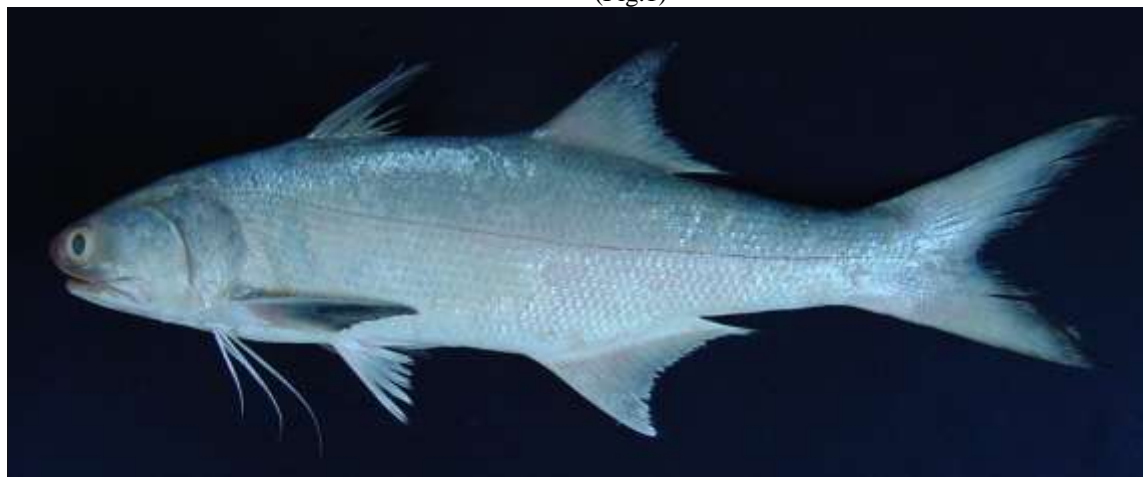


Fig. 1. *Eleutheronema tetradactylum*. Specimen collected from Karachi Fish Harbour.

This species is commonly known as fourfinger threadfin. It was reported from Sindh by Aitken (1907), Anonymous (1955), Menon and Babun Rao (1984), Misra (1962), Murray (1880), Sorley (1932), from Indus Delta by Khan (1960) and Mahmood *et al.* (1999) from Karachi by Anonymous (1955, 1999), Jenkins (1910), Misra (1962), Motomura (2004b) and Motomura *et al.* (2002) from Sandspit and Kharo Chan by Ahmed *et al.* (1999) from Tidal Link Canal, Badin District by Jafri (2004) and Jafri *et al.* (2000), from Balochistan by Anonymous (1953), Menon and Babun Rao (1984) and Motomura (2004b) from Makran by Anonymous (1955), Misra (1962) and Qureshi (1952). It was reported from Pakistan with mentioning any specific location by Ahmad (1988), Ahmad and Niazi (1988), Ali (2002), Bianchi (1985), Froese and Pauly (2024), GBIF (2024), Hoda (1985, 1988), Hussain (2003), Jalil and Khaliluddin (1972, 1981), Motomura (2004b, 2022), Motomura *et al.* (2002), Psomadakis *et al.* (2015), Qureshi (1959, 1960c, 1966), Talwar and Jhingran (1991). Aitken (1907), Anonymous (1999), Jenkins (1910), Khan (1960), Murray (1880), and Sorley (1932) reported this species as *Polynemus tetradactylus*.

Shaw (1804) originally described this species as *Polynemus tetradactylus* from Vizagapatnam, India; however, no type is known (Frickle *et al.*, 2024). This species is known from the Indo-Pacific area (Western Indian Ocean), including the Persian Gulf, Pakistan, India, Sri Lanka, northern Australia, and New Guinea; however, it is not known from the Red Sea and East Africa (Froese and Pauly, 2024; Motomura, 2022).

This species has a well-developed adipose eyelid and four pectoral filaments that do not extend beyond pelvic fin tips whereas caudal-fin lobes are not filamentous. Colour of the upper sides of the head and trunk has a slight darkish silver tinge, becoming lighter on the lower sides. The anterior margins of its first and second dorsal fins are blackish, whereas the remaining parts are translucent and slightly blackish, respectively. Its pectoral fin membranes are vivid yellow, and pectoral filaments are white. The anterior margin of its pelvic fin are yellow and other parts are white, whereas the base of the caudal fin is yellowish and other parts blackish.

Large specimens and subadults of *Eleutheronema tetradactylum* are found in shallow muddy substrates in coastal waters, including shelf areas, and it may enter rivers. The juveniles are usually found in estuarine areas of the River Indus. This species is known to feed on shrimp and small fish as well as on demersal invertebrates such as polychaetes and crabs. Like most polynemids, this species is a protandrous hermaphrodite. This species is considered to be one of the most popular fish in Pakistan, Kuwait, India, and Iran.

Material Examined

- 1 specimen collected from R/V Fridtjof Nansen 2010 on 18 October 2010 (26.0 cm)

- 1 specimen collected from Karachi Fish Harbour on 12 April 2013 (25.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 27 May 2013 (86.0 cm)
- 1 specimen collected from R/V Firdous Cruise 2015 on 19 November 2015 (131.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 12 November 2016 (94.0 cm)

Genus *Filimanus* Myers, 1936

Filimanus heptadactylus (Cuvier, 1829)

This species is commonly known as sevenfinger threadfin. It was reported from Sindh by Menon and Babun Rao (1984), Murray (1880) and Sorley (1932), from Karachi by Anonymous (1999), Gunther (1860) and Niazi (2001), from Balochistan by Zugmayer (1913) from Miani Hor by Ajazuddin and Ahmed (2002) and Sonmiani Bay by Menon and Babun Rao (1984). It was reported from Pakistan with mentioning any specific location by Ahmad (1988), Froese and Pauly (2024), Hoda (1985, 1988), Qureshi (1960, 1966) and Talwar and Jhingran (1991). It was originally described as *Polynemus heptadactylus* from Jakarta, Java, Indonesia by Cuvier (1829). Its holotype is not known, however, non-types are housed in Forshungs Institut und Natur Museum Senckenberg, Frankfurt, Germany (Frickle *et al.*, 2024). Ajazuddin and Ahmed (2002), Anonymous (1999), Cuvier (1829), Gunther (1860), Hoda (1985, 1988), Menon and Babun Rao (1984), Murray (1880), Niazi (2001), Qureshi (1960, 1966), Sorley (1932) and Zugmayer (1913) reported this species as *Polynemus heptadactylus* whereas Talwar and Jhingran (1991) referred it as *Polydactylus heptadactylus*.

This species is known from Western Pacific (from Thailand to Papua New Guinea (Froese and Pauly, 2024; Motomura, 2004a, 2004b). Records from Indian Ocean (including Pakistan) seems to be a misidentification of *F. similis* *Polydactylus mullani*, *P. sextarius* which also have 7 pectoral filaments.

This species is known to have 7 pectoral filaments, third or fourth filament is the longest, not reaching the midpoint of anal fin. Its body is brown above and golden below whereas fins are yellow with black at least at margins; pectorals are often mostly black. During the present study, no specimen of this species was examined.

Material Examined

- No material of this species was examined

Filimanus similis Feltes, 1991
(Fig. 2)



Fig. 2. *Filimanus similis*. Specimen collected from Karachi Fish Harbour.

This species is commonly known as the Sindh or Indian sevenfinger threadfin. It was reported from Sindh by Feltes (1991), Froese and Pauly (2024) and Motomura (2004b), from Sonmiani Bay up to Ormara, Balochistan by Motomura, (2004b). It was reported from Pakistan by Motomura (2022) and Psomadakis *et al.* (2015), without mentioning any specific location. This species was described from Beruwala, Sri Lanka by Feltes (1991). Its holotype (USNM 304495) is housed in the National Museum of Natural History, Washington D.C., U.S.A. (Frickle *et al.*, 2024).

This species is known from the Indo-West Pacific area (Western Indian Ocean) including Pakistan, southern coasts of India, including the Laccadive Archipelago, and Sri Lanka to the Andaman Sea and the west coast of the Malay Peninsula (Motomura, 2022; Froese and Pauly, 2024). It is not known from the Persian Gulf, the Red Sea or East Africa.

This species has unbranched pectoral-fin rays. The tip of the pectoral fin rays is just short of the pelvic fin tip, whereas the 3rd and 4th pectoral filaments are usually the longest, reaching to or slightly beyond anal-fin origin. Its body is silvery or golden and lacks stripes or spots.

Material Examined

- 1 specimen collected from Clifton Beach on 09 May 2003 (11.6 cm)
- 1 specimen collected from Korangi Fish Harbour on 01 October 2009 (15.0 cm)
- 1 specimen collected from Korangi Fish Harbour on 23 April 2013 (14.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 02 December 2016 (15.0 cm)
- specimen collected from Karachi Fish Harbour on 17 November 2021 (6.0 cm)

Filimanus xanthonema (Valenciennes, 1831)

This species is commonly known as yellowthread threadfin. It was reported from Pakistan as *Polynemus xanthonemus* by Punwani (1935) and Qureshi (1960, 1966). It was originally described as *Polynemus xanthonemus* from Pondicherry, India by Valenciennes (1831). Its holotype is not known, however, lectotype (MNHN A-3033) is housed in Museum National d'Historie Naturelle, Paris, France (Frickle *et al.*, 2024). This species is known from Indo-West Pacific area including east coast of India to Lombok, Indonesia (Froese and Pauly, 2024). There is no recent record of its collection from Pakistan. Since this species is known from Bay of Bengal to Indonesia, therefore, its previous records from Pakistan may be based on misidentification.

This species has six (occasionally five or seven) pectoral filaments which do not reach the midpoint of the anal fin. The depth of the posterior margin of its maxilla is less than the eye diameter, whereas its snout is pointed. This species is usually dusky yellow or green above and silvery below. During the present study, no specimen of this species was examined.

Material Examined

- No material of this species was examined

Gneus *Leptomelanosoma* Motomura and Iwatsuki 2001

Leptomelanosoma indicum (Shaw, 1804)

(Fig. 3)

This species is commonly known as Indian threadfin. In the River Indus Delta area, it is also called Omoro (meaning burnt wood because of unusual blackish tinge). This species is reported from Sindh by Anonymous (1955), Froese and Pauly (2024), Menon and Babun Rao (1984), Misra (1962), Motomura (2004b), Murray (1880), Sorley (1932), from Indus Delta (Mahmood *et al.*, 1999), from Karachi by Anonymous (1955), Misra (1962) and Niazi (2001), off Indus Swatch area by Anonymous (2001), Motomura and Iwatsuki (2001), from Balochistan by Menon and Babun Rao (1984) from Makran by Anonymous (1955), Misra (1962) and Qureshi (1952b) and from Sonmiani Bay by Motomura (2004b). It was reported from Pakistan without mentioning any specific location by Ahmad (1988), Ali (2002), Anonymous (2001), Feltes (1997), Froese and Pauly (2024), Ahmad and Niazi (1988),

Bianchi (1985), Hoda (1985, 1988), Hussain (2003), Jalil and Khaliluddin (1972, 1981), Motomura (2004a, 2004b, 2022), Qureshi (1959, 1960, 1966) and Siddiqi (1956). It was originally described as *Polynemus indicus* from Vishakhapatnam, India by Shaw (1804), however, no type is known (Frickle *et al.*, 2024). Ahmad (1988), Anonymous (1955, 2001), Feltes (1997), Froese and Pauly (2002), Misra (1962) and Qureshi (1952) reported this species as *Polydactylus indicus* whereas Ahmad and Niazi (1988), Ali (2002), Bianchi (1985), Hoda (1985, 1988), Hussain (2003), Jalil and Khaliluddin (1972, 1981), Mahmood *et al* (1999), Menon and Babun Rao (1984), Murray (1880), Niazi (2001), Psoadakakis *et al.* (2015), Qureshi (1959, 1960, 1966), Siddiqi (1956) and Sorley (1932) referred it as *Polynemus indicus*.

This species is known from the Indo-Pacific area (Western Indian Ocean) including Pakistan, India, Sri Lanka, Bay of Bengal Myanmar, Indonesia, and New Guinea (Froese and Pauly, 2024; Motomura, 2022). This species is not known from the Persian Gulf and the Red Sea. It is found over shallow muddy and sandy substrates on the continental shelf, and estuaries and also enters rivers. In the Indus Delta, this species is also known to occur in areas with extremely low salinities and even in brackish water lakes. It mainly feeds on small shrimps, crabs, polychaetes, and small fishes. It is relished in India, Pakistan, Bangladesh and other countries of its distribution.



Fig. 3. *Leptomelanosoma indicum*. (a) Specimens collected from Karachi Fish Harbour; (b) Specimen collected from Clifton Beach.

The pectoral fins in this species do not reach the pelvic fin tips. The 5th pectoral filament is the longest and extends well beyond the pelvic fin tip. Its most striking characteristic is the presence of long and filamentous tips of the caudal fins. Its body is greyish black, dark brownish, and golden olive dorsally and paler silvery below, with faint dusky longitudinal stripes. Its fins are yellowish.

Material Examined

- 1 specimen collected from Clifton Beach on 03 March 2002 (75.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 07 June 2006 (76.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 11 November 2009 (97.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 21 April 2011 (39.0 cm)

Genus *Polydactylus* Lacepède 1803

Polydactylus mullani (Hora, 1926)

(Fig. 4)

This species is commonly known as Arabian blackspot threadfin. It was reported from Pakistan by Froese and Pauly (2024), GBIF (2024), Motomura (2004a, 2004b, 2022), Motomura and Iwatsuki (2001b) and Psomadakis *et al.* (2015). Hora originally described it as *Polynemus sextarius mullani* from Mumbai, India (1926). Its holotype (ZSI F10747) is housed in the Zoological Survey of India, Kolkata, India (Frickle *et al.*, 2024; Motomura and Iwatsuki, 2001). This species is known from the Indo-Pacific (Western Indian Ocean) including Oman, Pakistan to India (Froese and Pauly, 2024; Motomura, 2022). It is found over shallow, muddy, sandy substrates on the coastal and continental shelf. It mainly feeds on small shrimps, crabs, other invertebrates, and small fishes.



Fig. 4. *Polydactylus mullani*. Specimens collected from Karachi Fish Harbour.

Its pectoral-fin rays are unbranched, except upper 1 or 2, and fin tip not reach the pelvic-fin tip. Its 7th pectoral filament is the longest, extending well past the pectoral-fin tip, and reaching anal-fin origin. Its head and upper body are dark silvery, paler silvery below; and a large black spot anteriorly on the lateral line. There is a large black spot present anteriorly on the lateral line.

Material Examined

- 1 specimen collected from Korangi Fish Harbour on 22 April 2003 (12.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 09 July 2009 (17.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 15 December 2011 (11.6 cm)
- 1 specimen collected from Karachi Fish Harbour on 05 December 2018 (17.0 cm)

Polydactylus plebeius (Broussonet, 1782)

(Fig. 5)

This species is known as striped threadfin. It is reported from Sindh by Ahmad *et al* (1973), Aitken (1907), Anonymous (1955), Day (1876), Menon and Babun Rao (1984) and Motomura (2004b), from Indus Delta by Khan, (1960) and Mahmood *et al.* (1999) from Karachi by Ahmad *et al.* (1973), Anonymous (1955, 1999) and Niazi (2001), from Balochistan by Menon and Babun Rao (1984) and Zugmayer (1913) from Makran by Ahmad *et al.* (1973), Anonymous (1955) and Qureshi (1952) from Sonmiani Bay by Motomura (2004b). It was reported from Pakistan without mentioning any specific location by Ahmad (1988), Ahmad and Niazi (1988), Anonymous (1999), Bainchi (1985), Froese and Pauly (2024), GBIF (2024), Hoda (1985, 1988), Hussain (2003), Jalil and Khaliluddin (1972, 1981), Majid *et al* (1992), Motomura (2004b), Motomura *et al.* (2001), Psomadakis *et al.* (2015), Qureshi (1959, 1960), and Siddiqui (1956). Ahmad (1988), Ahmad and Niazi (1988), Ahmad *et al* (1973), Aitken (1907), Anonymous (1955, 1999), Bainchi (1985), Day (1876), Hoda (1985, 1988), Hussain (2003), Jalil and Khaliluddin (1972, 1981), Khan (1960), Mahmood *et al* (1999), Majid *et al* (1992), Menon and Babun Rao (1984), Niazi (2001), Qureshi (1952, 1959, 1960), Siddiqui (1956), and Zugmayer (1913) reported this species as *Polynemus plebeius*. It was originally described as *Polynemus plebeius* from Tahiti, Society Islands; or near Tana Island, Vanuatu by Broussonet (1782). Holotype used to be housed in Mus. Banks but apparently lost (Frickle *et al.*, 2024).

This species was reported from the Indo-Pacific area including Kenya to South Africa, East Africa, Madagascar and Mascarenes to the Philippines, southern Japan, Australia, New Caledonia, and French Polynesia (Froese and Pauly, 2024; Motomura, 2022). It is not known from the Red Sea or the Persian Gulf. This species is found on the soft bottom along the coastal area, estuarine area, and continental shelf area.



Fig. 5. *Polydactylus plebeius*. Specimens collected from Karachi Fish Harbour.

The body of this species has 7 or 8 prominent dark stripes along the longitudinal scale rows above the lateral line and 7-9 faint stripes below. There are 7 pectoral fin rays, which are unbranched. Of these 4th or 5th pectoral filament longest. The maxilla's posterior margin reaches (or slightly extends beyond) the level of the posterior margin of the adipose eyelid. This species is golden, dusky or olive-brown above whereas scale rows each are with a dark line and fins dusky.

Material Examined

- 1 specimen collected from Karachi Fish Harbour on 13 September 2009 (17.0 cm)
- 1 specimen collected from R/V Firdous Cruise 2009 on 15 November 2009 (24.0 cm)
- 1 specimen collected from R/V Fridtjof Nansen 2010 on 16 November 2010 (21.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 09 December 2010 (22.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 27 May 2013 (14.0 cm)

Polydactylus sexfilis (Valenciennes, 1831)

This species is known as sixfinger threadfin. It was reported from Sindh by Anonymous, (1955), from Bhatta Village, Karachi by Ahmed *et al.* (1999), from Makran by Anonymous (1955) and Qureshi (1952), from Miani Hor by Ahmed and Abbas (1999, 2000). It was reported from Pakistan without mentioning any specific location by Ahmad (1988), Hoda (1985, 1988), Qureshi (1960c, 1966) and Siddiqi (1956). Ahmed and Abbas (1999, 2000), Ahmed *et al.* (1999), Hoda (1985, 1988) and Qureshi (1952, 1960, 1966) reported this species as *Polynemus sexfilis*. This species was originally described as *Polynemus sexfilis* from Mauritius by Cuvier (1831). Its holotype is not known, however, lectotype (MNHN 9731) is housed in Museum National d'Historie Naturelle, Paris, France (Frickle *et al.*, 2024).

This species is known from Indo-Wets Pacific (Western Indian Ocean) including Kenya, Seychelles, Mauritius and Maldives; elsewhere widespread to Indonesia, Japan, New Caledonia, Society Islands, Pitcairn Islands, French Polynesia and Hawaii (Froese and Pauly, 2024; Motomura, 2022). It is not known from the Red Sea, the Persian Gulf, the northern Arabian Sea, Thailand, and Australia. There is no recent authentic record of its occurrence in Pakistan, therefore, it is safe to believe that this species may not occur in Pakistan.

Pectoral filaments 6 with the tip of the uppermost filament reaching to or slightly beyond the level of the posterior tip of the upper part of the pectoral fin whereas 6th pectoral filament longest, but not reaching the pelvic-fin tip. Its body is uniformly golden silver; occasionally with several faint dark stripes along longitudinal scale rows above and below the lateral line. During the present study, no specimen of this species was examined.

Material Examined

- No material of this species was examined

Polydactylus sextarius (Bloch and Schneider, 1801)

This species is commonly known as blackspot threadfin. It was reported from Sindh by Aitken (1907), Menon and Babun Rao (1984), Misra (1962), Murray (1880), Sorley (1932), from Karachi by Ahmed *et al.* (1999) and Niazi (2001) from Khobar Creek, Sisa Creek, Dabbo Creek, Khai Creek by Mirza and Baquer (1994), from off Indus Swatch area by Anonymous (2001); from Balochistan by Menon and Babun Rao (1984) and Zugmayer (1913). It was reported from Pakistan without mentioning any specific location by Ahmad (1988), Bianchi (1985), Froese and Pauly (2024), Hoda (1985, 1988), Hussain (2003), Jalil and Khaliluddin (1972, 1981), Majid *et al.* (1992) and Qureshi (1960, 1966). Ahmed *et al.* (1999), Aitken (1907), Bianchi (1985), Bloch and Schneider (1801), GBIF (2024), Hoda (1985, 1988), Jalil and Khaliluddin (1972, 1981), Majid *et al.* (1992), Menon and Babun Rao (1984), Murray (1880), Niazi (2001), Qureshi (1960, 1966), Sorley (1932) and Zugmayer (1913) reported this species as *Polynemus sextarius*. It is originally described as *Polynemus sextarius* from Tranquebar, India by Bloch and Schneider (1801). Its holotype (ZMB 565) is housed in Zoologisches Museum, Humboldt Universitat, Berlin (Frickle *et al.*, 2024).

This species is reported from the Eastern Indian Ocean and Western Pacific including southwestern India to Papua New Guinea, and north to Japan. May rarely occur in the Philippines, eastern Indonesia, and Papua New Guinea (Froese and Pauly, 2024; Motomura (2022).

This species has unbranched pectoral-fin rays, except the upper 1 or 2 rays, and the fin tip does not reach the pelvic-fin tip. Its 6th pectoral filament longest, but not reaching the pectoral-fin tip. Its body is silvery, with a large black spot anteriorly on the lateral line. During the present study, no specimen of this species was examined.

Material Examined

- No material of this species was examined

Genus *Polynemus* Linnaeus, 1758
Polynemus paradiseus Linnaeus, 1758
(Fig. 6)



Fig. 6. *Polynemus paradiseus*. Specimens collected from Karachi Fish Harbour (Preserved in Museum of Marine Fisheries Department, Karachi).

This species is commonly known as the paradise threadfin. It is reported from Sindh by Anonymous (1955), Menon and Babun Rao (1984), Misra (1962), and Sorley (1932). It was reported from Pakistan with mentioning any specific location by Ahmad (1988), Bianchi (1985), Froese and Pauly (2024), Hoda (1985, 1988), Hussain (2003), Jalil and Khaliluddin (1972, 1981), Psomadakis *et al.* (2015), Qureshi (1960, 1966) and Talwar and Jhingran (1991). It was originally described from India by Linnaeus (1758), however, its types are not known (Frickle *et al.*, 2024).

This species is reported from the Indo-West Pacific Area (Western Indian Ocean) including the west coast of India; elsewhere to the north-east coast of India and Thailand (Froese and Pauly, 2024; Motomura, 2022). This species is known from estuarine and coastal waters, as well as often enters freshwater for breeding.

There are 7 pectoral filaments and 5th–7th pectoral filaments longer than total length (TL), the 6th filament longest. Its pectoral-fin rays are unbranched, and fin tips reach to or just short of anal-fin origin. Its body is golden, dusky dorsally, without stripes or spots.

Material Examined

- 1 specimen housed in the Fish Museum of Marine Fisheries Department photographed on 12 May, 2014 (16.0 cm)

CONCLUSION

Threadfins are considered commercially important species that are found in coastal waters as well as on the continental shelf, estuaries, and freshwater. The members of the family Polynemidae are found commonly in areas with muddy, sandy, or silty bottoms. Indian threadfin (*Leptomelanosoma indicum*) is known to ascend the River Indus, as this species can be found in areas with low salinities, including brackish water lakes such as Jubho and Nurri lagoons in the Indus Delta. They feed primarily on polychaetes, crustaceans, and smaller fish, which is searched from soft bottoms using their pectoral rays, which are thought to serve as tactile structures, helping to find prey within the sediments.

Karachi Fish Harbour is the main landing centre for the landings of threadfins (Fig. 7) whereas Ibrahim Hayderi (along Sindh coast) and Damb (along Balochistan coast) are also important landing sites for the members of family Polynemidae. Threadfins are mainly caught by bottom-set gillnets, pelagic gillnets, estuarine set bag net (Bhulla), trawl-net and also by handlines. Annual landings of Pakistan are presented in Fig. 8 which indicates that its landings between 1971 and 2013 fluctuated between 500 and 1,000 m. tons. The landings started to increase in 2014 when it reached a level of 1,600 m. tons and steady increased to about 2,500 m. tons between 2015 and 2019. The increase in landings of threadfins since last decade is attributed to increase in gillnet fisheries in coastal waters, after the subsidence of Somali Piracy. Before this period, fishermen confined to operation in coastal waters but started to operate in comparatively deep waters on the continental shelf which resulted in major increase in the landings of fourfinger threadfin (*E. tetradactylum*). Annual landings reached a maximum in 2021 when it reached a level of 3,150 m. tons. The landings of threadfins decreased to about 3,000 in 2022 and further to 2,500 during 2023.



Fig. 7. Commercial landings of fourfinger threadfin (*Eleutheronema tetradactylum*)

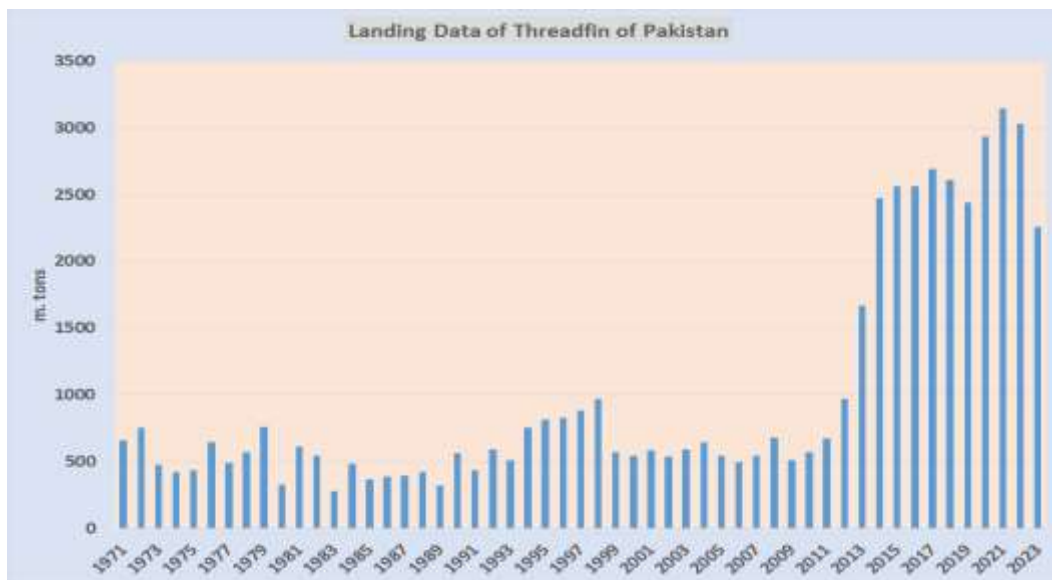


Fig. 8. Commercial landings of threadfins along the Pakistan coast (based on data obtained from archives of the Marine Fisheries Department).

Fourfinger threadfin (*E. tetradactylum*) and Indian threadfin (*L. indicum*) are considered to be of commercial importance and fetch high prices in the local market. Members of the genera *Polydactylus* and *Filimanus* are of

small sizes and mainly used in the production of fishmeal whereas *Polynemus paradiseus* is of extremely rare occurrence. *Polydactylus persica* Motomura and Iwatsuki 2001, which is reported from Kuwait and endemic to the Persian Gulf. Its occurrence in Pakistan cannot be ruled out.

REFERENCES

- Ahmad, M. F. (1988). Fish of Pakistan's mangrove areas. In: (M. F. Thompson and N.M. Tirmizi eds.) *Marine Sciences of the Arabian Sea. Proceedings of International Conference*. American Institute of Biological Sciences, Washington, D. C. Pp. 429-438.
- Ahmad, M. F. and M.S. Niazi (1988). *Important Edible Fishes of Pakistan*. Zoological Survey Department, Government of Pakistan. 31 p.
- Ahmad, M. F., M. S. Naizi, S. F. A. Zaidi and A. Ahmad (1973). Marine fauna supplement, Pisces. *Records Zoological Survey of Pakistan*, 4: 22- 44.
- Ahmed, M., and G. Abbas (1999). Abundance of finfish and shellfish juveniles in the tidal backwaters of Bhanbhore, Sindh (Pakistan). *Pakistan Journal of Zoology*, 31: 129-140.
- Ahmed, M., and G. Abbas (2000). Growth parameters of the finfish and shellfish juveniles in the tidal waters of Bhanbhore, Korangi Creek and Miani Hor Lagoon. *Pakistan Journal of Zoology*, 32: 21-26.
- Ahmed, M., Z. Ayub and Zaib-un-Nisa (1999). Distribution and abundance of juvenile and subadult fishes in Sindh creeks and backwaters (Pakistan). *Pakistan Journal of Zoology*, 31:327-338.
- Ajazuddin, S. and M. Ahmed (2002). Some observations on occurrence and abundance of finfishes in the Miani Hor lagoon, Balochistan (Northern Arabian Sea, Pakistan). *Pakistan Journal of Zoology*, 34: 101-111.
- Aitkin, E. H. (1907). *Gazetteer of the Province of Sind*. Karachi 519p.
- Ali, Q. M. (2002). *Some Important Fishes of Pakistan*. <http://edu.iucnp.org/edu/table9.htm> 3p.
- Anonymous (1953). *Fisheries of the Makran coast (Investigation Report No. 4)*. Government of Pakistan Publication, 28p.
- Anonymous (1955). *Marine Fishes of Karachi and the Coast of Sind and Makran*. Government of Pakistan Ministry of Food and Agriculture (Central Fisheries Department), Karachi.
- Anonymous (1978-2011) (Vol.7-20). *Handbook of Fisheries Statistics of Pakistan*. Marine Fisheries Department, Government of Pakistan, Karachi (updated).
- Anonymous (1999). *Fish collection of the Natural History Museum, London (formerly British Museum of Natural History (BMNH))*. Natural History Museum, London.
- Anonymous (2001). Fish collection database of the National Museum of Natural History (Smithsonian Institution). Smithsonian Institution - Division of Fishes, Washington D. C., USA
- Bianchi, G. (1985). FAO species identification sheets for fishery purposes. Field guide to the Commercial Marine and Brackish-water species of Pakistan. PAK/77/033/ and FAO FIRM) Regular Program. FAO, Rome.
- Bleeker, P. (1862). Notices ichthyologiques (I-X). *Verslagen en Mededeelingen der Koninklijke Akademie van Wetenschappen. Afdeling Natuurkunde*. 14: 123-141.
- Bloch, M. E. and J. G. Schneider (1801). M. E. Blochii, Systema Ichthyologiae iconibus cx illustratum. Post obitum auctoris opus inchoatum absolvit, correxit, interpolavit Jo. Gottlob Schneider, Saxo. Berolini. Sumtibus Austoris Impressum et Bibliopolio Sanderiano Commissum. *Systema Ichthyol.* 1-584
- Broussonet, P. M. A. (1782). *Ichthyologia, sistens piscium descriptiones et icones. Decas I*. London. 49 unnum. pages
- Cuvier, G. (1829). *Le Règne Animal, distribué d'après son organisation, pour servir de base à l'histoire naturelle des animaux et d'introduction à l'anatomie comparée*. Edition 2. 2: 1-406.
- Day, F. (1876). *The fishes of India; being a natural history of the fishes known to inhabit the seas and fresh waters of India, Burma, and Ceylon*. Fishes India 169-368.
- Feltes, R. M. (1991). Revision of the polynemid fish genus *Filimanus*, with the description of two new species. *Copeia*, 1991: 302-322.
- Fricke, R., W. N. Eschmeyer and R. Van der Laan (eds). (2024). *ECof. Eschmeyer's Catalog of Fishes: Genera, Species, References*. California Academy of Sciences. San Francisco. Electronic version accessed 15 May 2024.
- Froese, R. and D. Pauly. Eds. (2024). *FishBase*. World Wide Web electronic publication. www.fishbase.org version (02/2024).
- GBIF (2024). The Global Biodiversity Information Facility. *GBIF Home Page*. (<https://www.gbif.org>)
- Günther, A. (1860). *Catalogue of the fishes in the British Museum. Catalogue of the acanthopterygian fishes ...in the British Museum. Squamipinnes, Cirrhitidae, Triglidae, Trachinidae, Sciaenidae, Polynemidae, Sphyraenidae, Trichiuridae, Scombridae, Carangidae, Xiphiidae*, 2: 1-548.

- Hoda, S.M.S. (1985). Identification of coastal fish varieties of Pakistan. *Pakistan. Agriculture* 7: 38-44.
- Hoda, S.M.S. (1988). Fishes from the coast of Pakistan. *Biologia* (Lahore), 34: 1-38.
- Hora, S. L. (1926). Notes on fishes in the Indian Museum. IX-XIV. *Records of the Indian Museum (Calcutta)*, 27: 453-469
- Hussain, S. M. (2003). *Brief Report on Biodiversity in the Coastal Areas of Pakistan*. Reg. Tech. Assist. (RETA) ADB/IUCN.113p (Draft).
- Jafri, S. I. H. (2004). An overview of inland and brackish water fish of lower Sindh. In: (E. Ahmad, S. Omar and F. Rasool eds.). *Proceedings of Consultative Workshop on Indus Delta Eco-region (IDER)*. Dec. 16-19, 2002, Karachi. WWF-Pakistan. Pp. 69-86
- Jafri, S. I. H., S. S. Ali, M. A. Mahar, S. M. Hussain and Z. Khatoon (2000). Fisheries potential of Tidal Link Lakes (District Badin) of Sindh Coast (Northern Arabian Sea). *Pakistan Journal of Zoology*, 32: 301-306.
- Jalil, S.A., and M. Khaliluddin (1972). *A Checklist of Marine Fishes of Pakistan*. Marine Fisheries Department, Karachi.
- Jalil, S.A. and M. Khaliluddin, (1981). *A Checklist of Marine Fishes of Pakistan*. Marine Fisheries Department, Karachi.
- Jenkins, J. T. (1910). Notes on fish from India and Persia with description of new species. (IV. On a collection of fish from Karachi, with a description of two new pleuronectids). *Records of Indian Museum* 5: 123-140.
- Lacepède, B. G. E. (1803). Histoire naturelle des poissons. *Histoire naturelle des poissons*, 5: 1-803.
- Linnaeus, C. (1758). System Nature, Ed. X. (System naturae per regna tria naturae, secundum classes, species, cum characteribus, differentiis, synonymis, locis. Tomus I. Editio decimal, reformata.) *Holmiae*, 10: 1-824.
- Khan, I. U. (1960). Brackish water fishes. *Proc. 4th Pan Indian Ocean Congress (16-24 November, 1960) B: Biological Sciences*. 163-165.
- Mahmood, N., Q. M. Ali and N. Vistro (1999). *Economically Important Fishery resources of the Indus delta mangrove ecosystem*. Coastal Forest Division, Sindh Forest Department and the World Bank. 67 p.
- Majid, A., M. W. Khan, and M. Khaliluddin (1992). *Commercially Important Marine Fishes of Pakistan*. Federal Government Urdu Science College, Karachi.
- Menon, A.G.K. and M. Babun Rao (1984). Polynemidae. In: W. Fischer and G. Bianchi (eds.) *FAO species identification sheets for fishery purposes*. Western Indian Ocean (Fishing Area 51). Vol. 3. FAO, Rome. pag. var
- Mirza, F. B., and Baquer, J., 1994. Epibenthic fauna of Indus Delta region and adjoining areas. In: (Majid, A., Khan, M.Y., Moazzam, M., and Ahmed, J. eds). *Proceedings of National Seminar on Fisheries Policy and Planning*. Marine Fisheries Department, Government of Pakistan, Karachi. 264- 276.
- Misra, K. S., (1962). An aid to the identification of fishes of India, Burma and Ceylon. I. Elasmobranchii and Holocephali. *Records of Indian Museum*, 49: 89-137.
- Motomura, H. (2004a). Family Polynemidae Rafinesque 1815- the threadfins. *California Academy of Sciences. Annotated Checklists of Fishes* No. 32: 1-18.
- Motomura, H. (2004b). Threadfins of the world (Family Polynemidae). An annotated and illustrated catalogue of polynemid species known to date. *FAO Species Catalogue for Fishery Purposes* No. 3:1-117.
- Motomura, H. (2022). Family Polynemidae-Threadfins. In: (P. C. Heemstra, P. C., E. Heemstra, D. A. Ebert, W. Holleman and J. E. Randall eds.). *Coastal Fishes of the Western Indian Ocean*. South African Institute for Aquatic Biodiversity, Makhanda, South Africa 4: 86-92.
- Motomura, H. and Y. Iwatsuki (2001). A new genus, *Leptomelanosoma*, for the polynemid fish previously known as *Polydactylus indicus* (Shaw, 1804) and a redescription of the species. *Ichthyological Research*, 48: 13-21.
- Motomura, H., Y. Iwatsuki and T. Yoshino (2001). A new species, *Polydactylus siamensis*, from Thailand and redescription of *P. plebeius* (Broussonet, 1782) with designation of a neotype (Perciformes: Polynemidae). *Ichthyological Research*, 48 (2): 117-126.
- Motomura, H., Y. Iwatsuki, S. Kimura and T. Yoshino (2002). Revision of the Indo-West Pacific polynemid fish genus *Eleutheronema* (Teleostei: Perciformes). *Ichthyological Research*, 49: 47-61.
- Murray, J. A. (1880). *A Hand- book to the Geology, Botany and Zoology of Sind*. Beacon Press, Kurruchee.
- Myers, G. S. (1936). A new polynemid fish collected in the Sadong River, Sarawak, by D. William T. Hornaday, with notes on the genera of Polynemidae. *Journal of the Washington Academy of Sciences*, 26: 376-382.
- Niazi, R.M. (2001). A trawl study of benthic marine macro-organisms found in the nearshore waters of Karachi, Pakistan. *Pakistan Journal of Fisheries*, 2: 13-23.
- Psomadakis, P. N., H. B. Osmany and M. Moazzam (2015). *Field identification guide to the living marine resources of Pakistan*. FAO species identification guide for fishery purposes. Food and Agriculture Organization of the United Nations, Rome.

- Punwani, M. G. (1935). Fishes of Sind. *Journal of Sind Natural History Society*, 2: 19-22.
- Qureshi, M. R. (1952). Fishes of Makran coast. *Agriculture Pakistan*, 3: 237-256.
- Qureshi, M. R. (1959). Family Polynemidae and its importance. *Pakistan Journal of Scientific and Industrial Research*, 2:272-273.
- Qureshi, M. R. (1960). A field key to the identification of fishes. Order Polynemiformes, Family Polynemidae. *Agriculture Pakistan*, 11: 153-164.
- Qureshi, M. R. (1966). Morphology of the pyloric caeca in the family Polynemidae. *Pakistan Journal of Science*, 18: 217-219.
- Shaw, G. (1804). *General zoology or systematic natural history Pisces*. G. Kearsley, London, 1800-1826. 5 1-250.
- Siddiqui, M. I. (1956). The fishermen's settlements on the coast of West Pakistan. *Selbstverlag des Geographischen Instituts der Universität Kiel.*, 14: 1-92.
- Sorley, H. T. (1932). *Marine Fisheries of the Bombay Presidency*. Government Press, Bombay.
- Talwar, P.K. and A.G. Jhingran (1991). *Inland fishes of India and adjacent countries*. Volume 1-2. A.A. Balkema, Rotterdam. 1158 pp.
- Valenciennes, A. (Cuvier, G. and A. Valenciennes) (1831). Histoire naturelle des poissons. Tome septième. Livre septième. Des Squamipennes. *Livre huitième. Des poissons à pharyngiens labyrinthiformes*. F. G. Levrault, Paris. 7: 1-531.
- Zugmayer, E. (1913). Die Fische von Balutschistan. *Abhandlungen der Akademie der Wissenschaften zu München*, 26: 1-35.

(Accepted for publication February 2025)