

## A REVIEW OF FISHES AND FISHERIES OF THE ORDER PLEURONECTIFORMES (FLATFISHES) FROM PAKISTAN

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### ABSTRACT

The flatfishes belonging to the order Pleuronectiformes include commercially important species, some of which are not relished locally, whereas others are exported. Most of these fish are found on the soft bottom (muddy or sandy areas) in shallow coastal waters, continental shelves, and the estuarine regions along the coast of Pakistan. Being demersal, these species are commercially harvested with trawling and bottom-set gillnets. Annual landings of flatfish in Pakistan were observed to fluctuate; however, in 2024, it was reported to be 5,440 m. tons. Indian spiny turbot (*Psettodes erumei*), oriental sole (*Brachirus orientalis*), largemouth flounder (*Pseudorhombus arsius*), deep flounder (*Pseudorhombus elevatus*), and Javan flounder (*Pseudorhombus javanicus*) are locally consumed, whereas tonguesoles (*Cynoglossus* spp.) are locally consumed as well as exported mainly to European countries. The present paper reports a total of 67 species that belong to 26 genera and 6 families of the order Pleuronectiformes (including Psettodidae, Paralichthyidae, Bothidae, Samaridae, Soleidae, and Cynoglossidae) from Pakistan. Arabian flounder (*Arnoglossus arabicus*), transparent flounder (*Bothus pellucida*), convict sole (*Zebrias captivus*), Gunther's flounder (*Laeops guentheri*) are reported for the first time from Pakistan.

**Keywords:** Flatfishes, Order Pleuronectiformes, *Arnoglossus arabicus*, *Bothus pellucida*, *Laeops guentheri*, *Zebrias captivus*,

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### INTRODUCTION

The Order Pleuronectiformes includes flatfish with highly compressed bodies that are bottom-dwelling and are mainly found on the soft bottom (muddy or sandy areas) in shallow coastal waters, on the continental shelves, and in estuarine areas along the Pakistan coast. These fish are commercially important and support a substantial fishery in Pakistan; however, flatfish are caught on a commercial scale using trawl nets and bottom-set gillnets. Their annual landings in Pakistan were observed to fluctuate substantially; however, in 2024, it was reported to be 5,440 m. tons. Some flatfish species are locally relished, whereas other species, including tonguesole, are exported mainly to European Union countries and serve as a source of much-needed foreign exchange. The Order Pleuronectiformes is a large group of fishes comprising 16 families, and about 123 genera and a minimum of 750 species (Chapleau and Keast, 1998). Most flatfish inhabit marine environments; however, some species also occur in brackish and freshwater environments.

Information about the flatfish from Pakistan is limited and usually, these fishes are included in the list of fish species occurring in Pakistan (Ahmad, 1988; Ahmad *et al.*, 1973; Anonymous, 1955; Bianchi, 1985; Hoda, 1985, 1988; Hussain, 2003; Jaleel and Khaliluddin, 1972, 1981; Majid, *et al.*, 1992, and Psomadakis *et al.*, 2015). In addition, the taxonomy and the biology of the flatfish from Pakistan were studied by Ali *et al.* (2021, 2025), Ali-Khan and Hussain (1980), Attiqullah (2005), Hoda (1996a, 1996b), Hoda and Khalid (1995), Hoda and Khan (1991), Hoda and Shaukat (1997), Hussain (1990), Hussain and Ali-Khan (1981a, 1981b), Jalali (1969, 1970), Khan (2001), Mujib and Jalali (1969), and Qureshi (1960). Ali *et al.* (2025) and Muhamad *et al.* (2024) have studied the diversity and status of the fisheries of flatfishes in Balochistan. This present paper provides a review of the flatfish species reported from Pakistan and an account of their fisheries in the country.

### MATERIAL AND METHODS

The records of occurrence of flatfish from the Pakistan coast were obtained from published scientific literature. In addition, specimens of the members of the order Pleuronectiformis collected between 2003 and May 2025 from Karachi Fish Harbour were photographed, and salient features/measurements were recorded and preserved in 5 %

neutralized formalin. Data for commercial landings of flatfish were obtained from Anonymous (2012) and archives of the Marine Fisheries Department, Government of Pakistan, and the Department of Coastal Development and Fisheries, Government of Balochistan.

## RESULTS AND DISCUSSION

Flatfish belonging to six families of the order Pleuronectiformes, including Psettodidae, Paralichthyidae, Bothidae, Samaridae, Soleidae, and Cynoglossidae, which are already known from Pakistan, and those flatfish collected by the authors are reported in the present paper. The species in this paper are arranged alphabetically within each family group.

### ORDER PLEURONECTIFORMES (Flatfishes)

#### Family Psettodidae (Psettodids)

The family Psettodidae includes flatfishes that have a dorsal fin origin well behind the eyes. Their eyes are on either the left or the right side of their head. Their bodies are compressed and fairly thick. The preopercle margin is easily visible and not obscured by skin and scales. Their mouth are large, extending well beyond the rear margin of the lower eye. This family is represented by only one species in Pakistan. Locally, this species is called 'Hajjam' or 'Kangar' in Sindh and 'Dantani Swaso', or 'Kochuk' in Balochistan.

Genus *Psettodes* Bennett, 1831

*Psettodes erumei* (Bloch and Schneider 1801)

(Fig. 1)

This species is commonly known as the Indian spiny turbot. This species is reported from Sindh by Anonymous (1955), Misra (1962), Nielsen (1984) and Sorley (1932), from Indus Delta by Mahmood *et al.* (1999), from Karachi by Anonymous (1955) GBIF (2025), Ali-Khan and Hussain (1980), Misra (1962) and Niazi (2001), from Korangi by Ali-Khan and Hussain (1980), from Cape Monz (GBIF, 2025), from Balochistan by Nielsen (1984), from Makran by Anonymous (1955), Misra (1962) and Qursehi (1952) from Sonmiani by GBIF, (2025) and Ali-Khan and Hussain (1980) and from Pasni, Gwader and Ormara by Ali-Khan and Hussain (1980). It was reported from Pakistan without mentioning any specific location by Ahmad and Niazi (1988), Ali (2002), Anonymous (1999), Bianchi (1985), Froese and Pauly (2025), GBIF (2025), Hoda (1985, 1988), Hussain (1990, 2003), Iqbal *et al.* (1999), Jalil and Khaliluddin (1972, 1981), Kesteven (1950), Majid *et al.* (1992), Mujib (1985), Nielsen (1984), Psomadakis *et al.* (2015), Qureshi (1960) and Siddiqi (1956). This species was originally described as *Pleuronectes erumei* from Tranquebar, India, by Bloch and Schneider (1801). Its holotype (ZMB 7403) is housed in Zoologisches Museum, Humboldt Universität, Berlin, Germany (Frickle *et al.*, 2025).

The body of this species is oval, flat, and thick. Its mouth is large and has strong teeth. Its maxillary extends well beyond the hind edge of the lower eye. Both eyes in this species are located on the left or right side. The upper eye lies immediately below the dorsal edge. Its scales are small and weakly ctenoid on both sides of the body. Its colour is usually brown or grey, and it may have 4 broad, dark crossbars.

It is an Indo-Pacific species which is found in the Persian Gulf, Gulf of Oman, Arabian Sea, and Red Sea, to South Africa, Madagascar, Mauritius, India, and Sri Lanka, and the Bay of Bengal, extending to the Philippines, Taiwan, South China Sea, Japan, and Australia (Froese and Pauly, 2025; Hensley and Amaoka, 2022c). This species usually inhabits muddy and sandy bottoms from the shore to a major part of the continental shelf. It usually remains deeply buried during the day and feeds at night. It is predominantly a piscivorous fish that feeds on benthic as well as pelagic species (Ramanathan and Natarajan, 1980). It is considered to be a tasty fish that is mainly consumed locally.

#### Materials Examined

- 1 specimen collected from Karachi Fish Harbour on 24 June 2001 (27 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 24 June 2010 (25 cm TL)
- 1 specimen collected from offshore waters of Sindh (36 m depth) on 25 October 2013 (24 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 18 August 2014 (26 cm TL)

- 1 specimen collected from offshore waters of Sindh (73 m depth) on 4 November 2016 (28 cm TL)



Fig. 1. *Psettodes erumei*. (a) The ocular side; (b) The blind side.

Family Bothidae (Lefteye flounders)

Both eyes of the members of the family Bothidae are located on the left side of the head. The body shape of the fishes of this family is deep to elongate and is laterally compressed. The preopercle margin is not hidden by skin or scales. Their dorsal fin origin is above or anterior to the upper eye and their dorsal and anal fins are separate from the caudal fin. This family is represented by 6 genera and 12 species from Pakistan. These fish are locally known as 'Khaitar' or 'Phani' in Sindh and 'Boti' in Balochistan.

Genus *Arnoglossus* Bleeker, 1862  
*Arnoglossus arabicus* Norman 1939  
(Fig. 2)

This species is commonly known as Arabian flounder, and it is reported for the first time from the Pakistan coast. It was initially described from the South coast of Arabia, at a depth of 83-100 meters by Norman (1939). Its holotype (BMNH 1909.5.24.1721-1722) is housed in the British Museum of Natural History, London, U.K. (Frickle *et al.*, 2025).

Its eyes are close together, separated by a narrow bony ridge, the lower a little in advance of the upper. The origin of the dorsal fin is well anterior to the upper eye. Its colour is yellowish brown, without definite markings, whereas the fins are greyish. According to Norman (1939), this species is related to *A. elongatus* Weber 1913, from the Madura Sea; however, it differs in having a deeper body, smaller mouth, and shorter anterior rays of the dorsal fin.

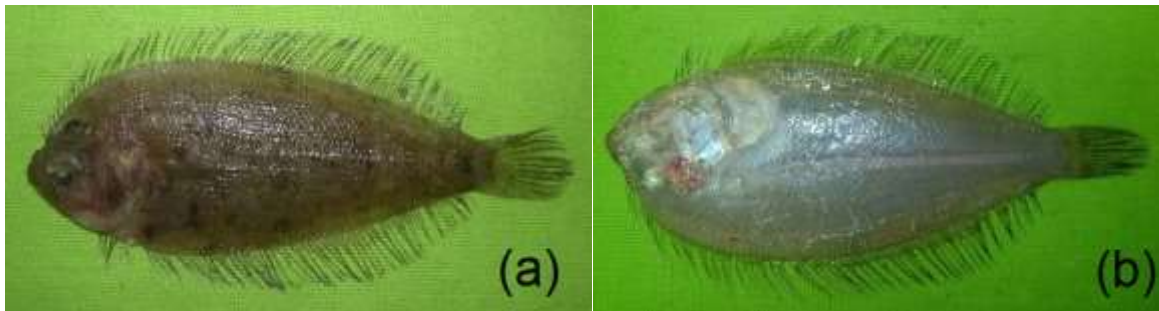


Fig. 2. *Arnoglossus arabicus*. (a) The ocular side; (b) The blind side.

This species is known from the Western Indian Ocean, including the Gulf of Aden to southern Oman (Froese and Pauly, 2025; Randall, 1995b) and now from Pakistan.

#### Material Examined

- 1 specimen collected from the cruises of Dr. Fridtjof Nansen (2010) on 11 November 2011 (4.74 cm TL)

#### *Arnoglossus aspilos* (Bleeker, 1851a)

This species is commonly known as the spotless lefteye flounder. It was reported from Karachi to Gwadar by Ali-Khan and Hussain (1980). It was reported from the Pakistan coast without mentioning any specific location by Anonymous (1999), Froese and Pauly (2025), GBIF (2025), and Hoda (1985, 1988). It was originally described as *Rhombus aspilos* from Jakarta, Java, Indonesia by Bleeker (1851a). Its holotype is not known; however, syntypes are housed in the British Museum of Natural History, London, U.K., and Rijksmuseum van Natuurlijke Historie, Leiden, Netherlands (Frickle *et al.*, 2025).

This species characteristically has an interorbital region that is ridge-like, and there is a notch in the dorsal profile of the head before the eyes. The eyes are separated by a space less than half the eye diameter. The lower eye a little in advance of the upper. Its ocular side is uniformly brownish, finally mottled brown with small blackish spots on rays of median fins, the largest one on each outer branched ray of the caudal fin.

This species is reported from the Indo-Pacific area, including the Persian Gulf, Gulf of Oman, and Red Sea to South Africa, India, extending to Taiwan, South China Sea, Indonesia, to Australia (Froese and Pauly, 2025; Hensley and Amaoka, 2022a). Specimens of this species reported from northern and Western Australia are often treated as distinct subspecies. No specimen of this species was examined during the present study.

#### Material Examined

- None

#### *Arnoglossus macrolophus* Alcock, 1889

This species is commonly known as large crested left-eye flounder. It was reported from the Pakistan coast without mentioning any specific location by Hussain (2003), Jalil and Khaliluddin (1972, 1981). It was initially described from the Bay of Bengal, 5 miles south of Ganjam, Investigator Station 43 by Alcock (1889a4). Its holotype (ZSI F12441) is housed in the Zoological Survey of India, Kolkata, India (Frickle *et al.*, 2025).

Its ocular side is pale brownish, with an indistinct dark blotch at the junction of straight and curved sections of the lateral line. It has 2 small blotches in the middle of the straight section of the lateral line, whereas there are a series of distinct spots on the dorsal and anal fins and a large, distinct dark spot posteriorly on the bases of those fins. Its distal margins of the ocular side pectoral fin and pelvic fins on both sides are darkly pigmented.

This species is reported from the Indo-Pacific area, including the Red Sea, Gulf of Aden (Saudi Arabia) and Persian Gulf, the northern Indian Ocean to Bay of Bengal, South China Sea, Taiwan, southern Japan, northern Australia and New Caledonia (Froese and Pauly, 2025, Hensley and Amaoka, 2022a). This species is incorrectly synonymized with *A. tapeinosoma* (Bleeker 1865b), which is known only from Sumatra (Indonesia) to Taiwan (Arai and Amaoka 1996). No specimen of this species was examined during the present study.

#### Material Examined

- None

Genus *Bothus* Rafinesque 1810  
*Bothus myriaster* (Temminck and Schlegel, 1846)  
(Fig. 3)

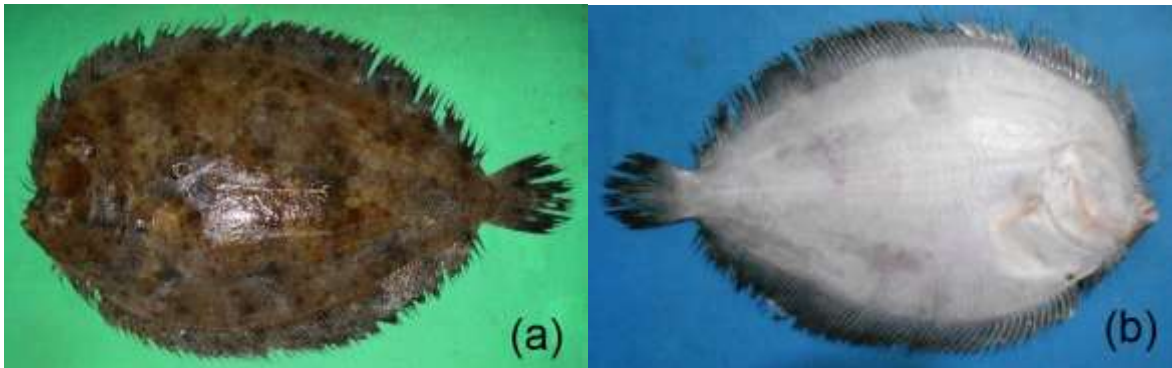


Fig. 3. *Bothus myriaster*. (a) The ocular side; (b) The blind side.

This species is commonly known as the Indo-Pacific oval flounder. It was reported from Pakistan without identifying any specific location by Hoda (1985, 1988), Nielsen (1984), and Psomadakis *et al.* (2015). It was originally described as *Rhombus myriaster* from Japan by Temminck and Schlegel (1846). Its holotype (RMNH 3523) is housed in Rijksmuseum van Natuurlijke Historie, Leiden, Netherlands (Frickle *et al.*, 2025). Hoda (1985, 1988) reported this species as *Bothus ovalis*.

The body of this species is almost circular in the young, becoming ovate with growth. Its males have elongate ocular side pectoral fins, wider interorbital region, spines on snout, eyes, and at the symphysis of the lower jaw; and flap-like appendages on the eyes. Its ocular side is brown, with many dark brown spots, whereas there is a dark brown blotch above the junction of the straight and curved sections of the lateral line, and another on the middle of the straight section of the lateral line. Its pectoral fin with faint crossbars, and the caudal-fin margin is blackish. The blind side in males is yellowish white on the anterior half, darker posteriorly, and may have several transverse bars.

This species is reported from Indo-Pacific area including Persian Gulf, Arabian Sea, Somalia, Mozambique, South Africa, Madagascar, Seychelles, Rodrigues and west coast of India extending to east coast of India, Java, Sumatra, Viet Nam, the Philippines, Taiwan, Korea, Japan and Lord Howe Islands (Froese and Pauly, 2025, Hensley and Amaoka, 2022a).

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 24 June 2010 (11 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 14 April 2022 (10 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 7 October 2024 (12 cm TL)

***Bothus pantherinus*** (Ruppell, 1830)

This species is commonly known as the leopard flounder. It was reported from Bhambhore by Ahmed and Abbas (1999a, 2000), from Karachi by Anonymous (1999) and Norman (1927), from Miani Hor by Ahmed and Abbas (1999b, 2000). It was reported from Pakistan coast without mentioning any specific location by Ahmad (1988), Bianchi (1985), Froese and Pauly (2025), GBIF (2025), Hoda (1985, 1988), Hussain (2003), Jalil and Khaliluddin (1972, 1981), Nielsen (1984) and Qureshi (1960). It was originally described as *Rhombus pantherinus* from Mohila, Red Sea by Ruppell (1830). Its holotype is not known; however, its lectotype (SMF 7550) is housed in Forschungs Institut und Natur Museum Senckenberg, Frankfurt, Germany (Frickle *et al.*, 2025). Anonymous (1999) and GBIF (2025) reported this species as *Rhomboidichthys pantherinus*.

The ocular side of this species has numerous dark spots, blotches, and rings on the body and median fins; one distinct large dark blotch on the middle of the straight section of the lateral line. The pectoral-fin membrane on its ocular side usually has thin dark crossbars.

This species was reported from the Indo-Pacific area (possibly widespread) including the Persian Gulf, the Red Sea, Gulf of Aden, Kenya to South Africa, Madagascar, Seychelles, Mascarenes, Chagos, Maldives and India extending to the southern Japan, New Caledonia, Lord Howe Islands, Society Islands, Marquesas Islands and Hawaii (Froese and Pauly, 2025, Hensley and Amaoka, 2022a). No specimen of this species was examined during the present study.

Material Examined

- None.

***Bothus pellucida*** Alcock 1890

(Fig. 4)



Fig. 4. *Bothus pellucida* (the ocular side).

This species is commonly known as the transparent flounder. It is reported for the first time from the Pakistan coast. It was originally described by Alcock (1890) as *Psettyllis pellucida* from off Ganjam coast, R/V Investigator (depth 9-13 fathoms) and off Vizagapatam coast, R/V Investigator (depth 7-8 fathoms). Its Syntypes (ZSI F12940) collected from off the Ganjam coast are housed in the Zoological Survey of India, Kolkata, India (Menon and Yazdani 1968). Menon and Rama-Rao (1975) mention its holotype based on the type specimens of fishes described in the biological collections of R.I.M.S. "Investigator" during 1884-1926. Whereas Amaoka (1969), Lindberg and Fedorov (1993), and Li and Wang (1995) included this species in the genus *Psettylis*. According to Frickle *et al.* (2025) status of this species is uncertain and generally included as a species of genus *Bothus* (Rafinesque 1810) as already mentioned by Norman (1934). According to Norman (1927), this species is a synonym of *Bothus ovalis* Regan (1908), whereas Barman *et al.* (2007), Hensley (1986) consider *Psettyllis pellucida* as a synonym of *Bothus myriaster* (Temminck and Schlegel 1846).

The present paper considers this species to be a valid species belonging to the genus *Bothus*. The description is based on Alcock (1890). Its body is naked and subcircular, and the profile of the snout almost merges with the anterior profile of the body. Its eyes are small and situated on the left side of the head close to its anterior profile. The lower eye is slightly in advance of the upper. The interorbital space is concave. Its mouth is minute and symmetrical. Its lateral line has a slight open curve above the pectoral. The caudal fin is as long as the head. Its body is quite transparent, and its iris is black.

The specimen of this species was collected from the Pakistan coast from the Cruises of Dr. Fridtjof Nansen in 2010 from the offshore waters of Pakistan. This species is known from the Bay of Bengal and now from the Arabian Sea (Pakistan).

#### Material Examined:

- 1 specimen collected from the cruises of Dr. Fridtjof Nansen (2010) on 11 November 2011 (4.74 cm TL)

Genus *Chascanopsetta* Alcock, 1894  
*Chascanopsetta lugubris* Alcock, 1894

This species is commonly known as the pelican flounder. It was reported from Karachi by Niazi (2001). This species was initially described from the Bay of Bengal, 13°51'12"N, 80°28'12"E, R/V "Investigator" station 162 by Alcock (1894). Its holotype is not known; however, the syntype is housed in the Zoological Survey of India, Kolkata (Frickle *et al.*, 2025).

The body of this species is long, low, and tapering, and the dorsal profile is considerably more convex than the ventral. Its eyes are large, close-set, and nearly equal in front. Its lateral line on both sides has a strong sinuous curve above the pectoral fin, and the fin-rays are weak and filiform. The colour of its ocular side is brown, sometimes with numerous small dark spots, whereas the abdomen is pale blue to black with several tan stripes slanting anteroventrally. Its median fins are dusky, and its paired fins are pale.

This species is known from the Atlantic Ocean and Indo-Pacific areas, including Somalia to South Africa, the west coast of India to Sri Lanka. Two subspecies are often recognised: *Chascanopsetta lugubris lugubris* from the Indo-Pacific and *Chascanopsetta lugubris danae* from both sides of the Atlantic (Froese and Pauly, 2025; Hensley and Amaoka, 2022a). No specimen of this species was examined during the present study.

#### Material Examined

- None.

Genus *Crossorhombus* Regan 1920  
*Crossorhombus azureus* (Alcock, 1889)  
(Fig. 5)

This species is known as the blue flounder. It was reported from the Pakistan coast without mentioning any specific location by Hussain (2003), Jalil and Khaliluddin (1972, 1981), Hensley and Amaoka (2022a), and Psomadakis *et al.* (2015). It was originally described as *Rhomboidichthys azureus* from eight to 20 miles southwest

of Puri, Bay of Bengal, by Alcock (1889). Its holotype is not known; however, the paratype is housed in the British Museum of Natural History, London, U.K. (Frickle *et al.*, 2025).

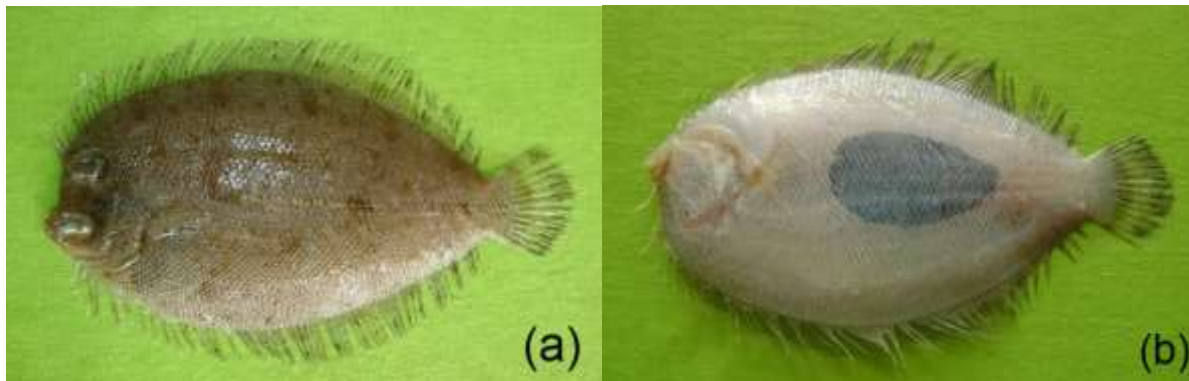


Fig. 5. *Crossorhombus azureus*. (a) The ocular side; (b) The blind side.

The body of this species is ovoid and has small heads and a snout that is shorter than the eye. Males of this species have a rostral spine and 1 to 3 low bony bumps around the orbits. The front margin of its upper eye is slightly behind the front margin of the lower eye. Its mouth is small, reaching to or slightly beyond the anterior margin of the lower eye. The scales on its ocular side have long ctenii. Its ocular side is brownish grey, with darker spots and blotches. Its caudal fin has 2 distinct dark bands. Males of this species have small dark spots in the anterior part of the interorbital region. The blind side of its females is whitish. Its males have a distinct bluish black pyriform colour pattern on the blind side.

This species is known from the Indo-West Pacific area, including Pakistan, Sri Lanka, the Bay of Bengal, Vietnam, Indonesia, the South China Sea, Taiwan, Japan, and Australia (Froese and Pauly, 2025; Hensley and Amaoka, 2022a).

#### Material Examined:

- 1 specimen collected from Karachi Fish Harbour on 4 June 2010 (10 cm TL).
- 1 specimen collected from Karachi Fish Harbour on 11 April 2016 (12 cm TL)

#### Genus *Engyprosopon* Günther 1862

#### *Engyprosopon grandisquama* (Temminck and Schlegel, 1846)

This species is commonly known as a large-scale flounder. This species is reported from the Makran coast by Norman (1927). It was reported from the Pakistan coast without mentioning any specific location by Hoda (1985, 1988), Nielsen (1984), Norman (1939), and Psomadakis *et al.* (2015). It was originally described as *Rhombus grandisquama* from Japan by Temminck and Schlegel (1846). Its holotype is unknown; however, lectotype (RMNH 3533a) is housed in Rijksmuseum van Natuurlijke Historie, Leiden, Netherlands (Frickle *et al.*, 2025).

The body of this species is deeply ovoid, whereas the ocular-side pectoral fin is not elongated. There are no sexual differences in its length. The teeth in the upper jaw are biserial. Males of this species have a wider interorbital area than females. Its ocular side is pale brown and has scattered dark spots and rings. Its dorsal and anal fins have a series of dark spots whereas its caudal fin has a pair of distinct dark blotches between 2<sup>nd</sup>–5<sup>th</sup> rays on dorsal and ventral margins. The blind side of its males is pale brown, except the head, which is pale yellowish white, whereas the blind side of its females is uniformly pale yellowish.

This species is known from the Indo-Pacific area including the Persian Arabian Gulf, the Gulf of Oman, Red Sea, East Africa to South Africa, Madagascar, Maldives and Sri Lanka, Andaman Sea, Indonesia, the Philippines, southern Japan, Australia and New Caledonia (Froese and Pauly, 2025; Hensley and Amaoka, 2022a).

## Material Examined:

- Nil

Genus *Laeops* Günther, 1880  
*Laeops guentheri* Alcock, 1890  
 (Fig. 6)

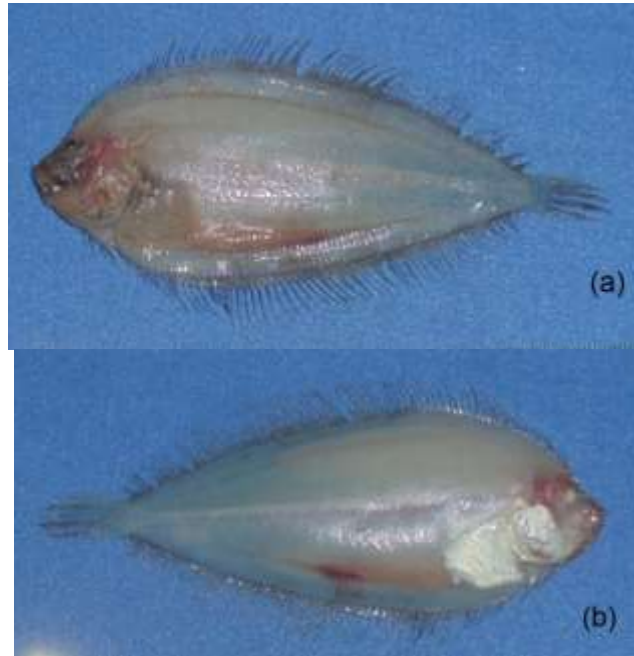


Fig. 6. *Laeops guentheri*. (a) The ocular side; (b) The blind side

This species is known from the Indo-Pacific area including Mozambique, the Persian Gulf, Oman, the Arabian Sea, to India and Sri Lanka, extending to the east coast of India, the Bay of Bengal, Myanmar, the Andaman Sea, the Gulf of Thailand and Indonesia (Froese and Pauly, 2025; Hensley and Amaoka, 2022a; Voronina *et al.*, 2020). This is the first record of its occurrence along the Pakistan coast.

## Material Examined:

- 3 specimens collected from the cruises of Dr. Fridtjof Nansen (2010) on 11 November 2010 (7.0, 8.1, 6.5 cm TL)
- 1 specimen collected from the cruises of R/V Firdous (Station 43) on 11 February 2015 (13 cm TL)

*Laeops macrophthalmus* (Alcock 1889)  
 (Fig. 7)

This species is commonly known as the largeeye flounder. This species is reported for the first time from Pakistan. It was originally described as *Scianectes macrophthalmus* from 40 miles southwest of Akyab, Myanmar (Investigator station 3, depth 200 m) by Alcock (1889). Its holotype (ZSI F11721) is the Zoological Survey of India, Kolkata, India (Frickle *et al.*, 2025).

The body of this species is elliptical with a very narrow peduncle. The upper profile of the body is without a notch anterodorsal to the eyes. Its snout is protruding and pointed. The length of its pectoral fin on the ocular side is 4.8-5.2 in standard length and shorter than head length. Its upper jaw is as long as the lower eye diameter. Its ocular side is brownish, whereas the dorsal and anal fins are darker distally. The middle rays of the caudal fin and the distal area of the ocular side pectoral fin are brown or blackish.

This species is known from the Indian Ocean, including the Gulf of Oman. The Arabian Sea to the Bay of Bengal (India and Myanmar) and usually caught on hard bottom (Froese and Pauly, 2025; Hensley and Amaoka, 2022a; Voronina *et al.*, 2020)

Material Examined:

- 1 specimen collected from the cruises of R/V Firdous (Station 84) on 17 February 2015 (11 cm TL)

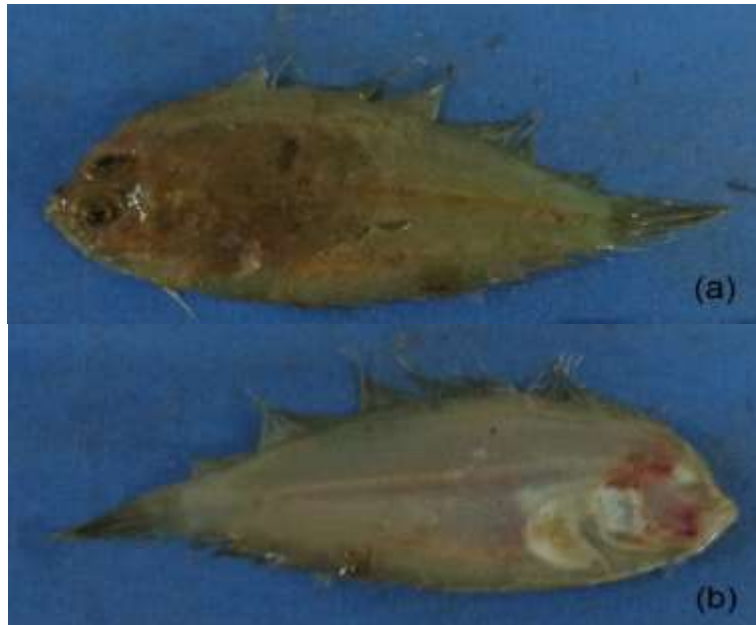


Fig. 7. *Laeops macrophthalmus*. (a) The ocular side; (b) The blind side.

*Laeops nigrescens* Lloyd, 1907  
(Fig. 8)

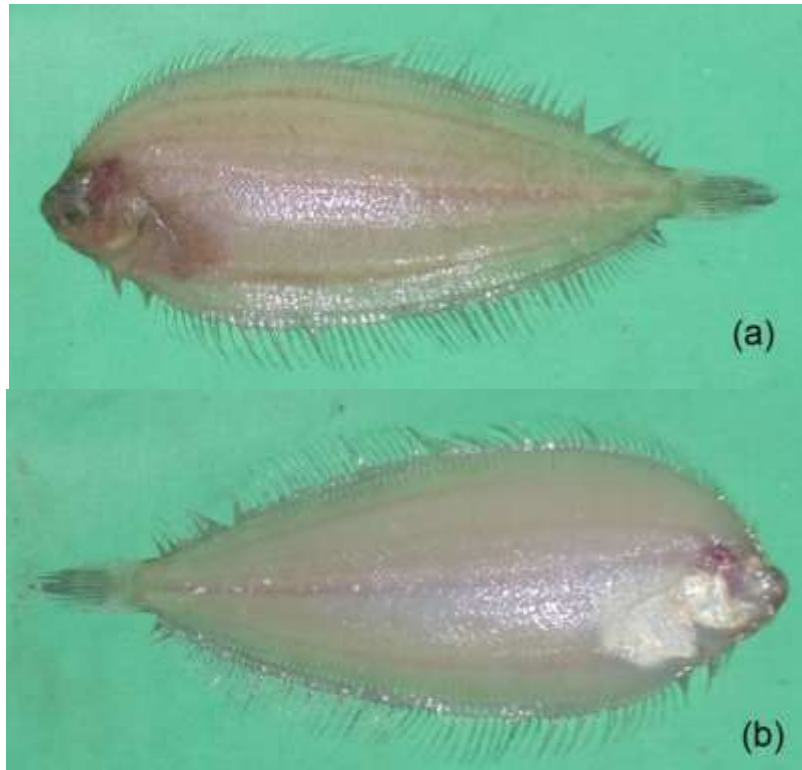


Fig. 8. *Laeops nigrescens*. (a) The ocular side; (b) The blind side

This species is commonly known as blackening flounder. It was reported from the Pakistan coast without mentioning any specific location by Psomadakis *et al.* (2015). It was initially described from the Arabian Sea, Gulf of Aden (13°36'N, 47°32'E, Investigator station 360, depth 130 fathoms) by Lloyd (1907). Its holotype is not known; however, its syntypes (BMNH 1927.1.6.56-57) and (ZSI F1291/1-1293/1 and 1296/1) are housed in the British Museum of Natural History, London, U.K., and the Zoological Survey of India, Kolkata, India (Frickle *et al.*, 2025).

The body of this species is elongated ovoid, and its upper profile does not have a notch antero-dorsal to the eyes. Its dorsal fin begins above the posterior nostril of the blind side, whereas the first two rays of the dorsal fin are detached from the other rays. The colour of its ocular side is brownish, with irregular darker patches. The dorsal and anal fins are darker distally.

This species is known from the Western Indian Ocean, including the Gulf of Aden, east coast of India (Froese and Pauly, 2025; Hensley and Amaoka, 2022a; Ramanathan and Natarajan, 1980; Voronina *et al.*, 2020).

#### Material Examined:

- 1 specimen collected from the cruises of Dr. Fridtjof Nansen (2010) on 10 November 2010 (9.0 cm TL)

#### Family Paralichthyidae (Large-tooth flounders)

Family Paralichthyidae include flatfishes that have eyes usually on the left side of the head and their bodies are ovate and preopercle margins are free and fin is not attached to the dorsal fin and anal fin. Previously, this family was considered a subfamily of the family Bothidae; however, studies carried out by Amaoka (1969), Hensley and Ahlstrom (1984), Chapleau and Keast (1988), and Chapleau 1993 have shown that Paralichthyidae should be considered a separate family. Bothids have the ocular side pelvic fin anterior to the blind-side pelvic fin, whereas paralichthyids have the pelvic fin origins symmetrically placed on the midline. From Pakistan, 4 genera belonging to 12 species of this family are recorded. The members of this family are called 'Khaitar' in Sindh and 'Boti' in Balochistan.

Genus *Cephalopsetta* Dutt and Rao 1965  
*Cephalopsetta ventrocellatus* Dutt and Rao, 1965  
 (Fig. 9)



Fig. 9. *Cephalopsetta ventrocellatus*. (a) The ocular side; (b) The blind side; (c) The left pelvic fin; (d) The ocular side showing dark bars.

This species is commonly known as the ocellated tooth flounder. It was reported from the Pakistan coast without mentioning any specific location, Froese and Pauly (2025), Hensley and Amaoka (1989), and Psomadakis *et al.* (2015). This species is initially described from Visakhapatnam, Bay of Bengal, India by Dutt and Rao (1965).. Its holotype (MDZAU) is housed in the Museum of the Department of Zoology, Andhra University, India (Frickle *et al.*, 2025).

The body of this species is ovoid. The supratemporal branch of the lateral line does not reach the dorsal-fin base. The scales on the ocular side are weakly ctenoid and covered by skin except for the rear edges. The scales on the blind side are cycloid. Its body on the ocular side is brownish or greyish, with dark spots in 5 longitudinal rows, and several faint, broad, dark transverse bars in some of the specimens. There is a conspicuous spot near the bases of the dorsal fin and anal fin, and in 3 rows on the lateral line. Left pelvic fin (on ocular side) has a distinct ocellus near the edge between rays.

This species is known from the Northern Indian Ocean, including the Gulf of Oman, Arabian Sea, to the Andaman Sea (Froese and Pauly, 2025; Hensley and Amaoka, c).

Material Examined:

- 1 specimen collected from Karachi Fish Harbour on 18 February 2014 (18 cm TL).
- 1 specimen collected from Karachi Fish Harbour on 8 October 2015 (18 cm TL).
- 1 specimen collected from offshore waters, 134 km SW Karachi (24°45.100 N; 66°19.00) on 12 November 2015 (17 cm TL)

Genus *Citharichthys* Bleeker 1862  
*Citharichthys macrops* Dresel 1885

This species is commonly known as the spotted whiff. It was reported by Anonymous (1999) and GBIF (2025) from Pakistan. It was initially described from Pensacola, Florida, U.S.A. by Dresel (1885). Its holotype (USNM 21500) is housed in the National Museum of Natural History, Washington, D.C., U.S.A. (Frickle *et al.*, 2025).

Its body is relatively deep and oval. Its eyes are located on the left side, close-set, separated by a long, narrow, concave ridge. The edge of its operculum is on the blind side with many leaf-like cirri. Its pectoral fins are on both sides of the body, with branched rays. Its caudal fin is bluntly pointed.

This species is known from North Carolina and the northern Gulf of Mexico in the USA to Honduras (Froese and Pauly, 2025). Its specimens were deposited by S. M. Hussain in the British Museum of Natural History, London, U.K. However, it seems that the specimen reported by Anonymous (1999) was wrongly identified as this species. The report of the occurrence of this species from Pakistan may, therefore, be considered erroneous. No specimen of this species was examined during the present study.

#### Material Examined

- None.

Genus *Hippoglossina* Steindachner 1876  
*Hippoglossina bollmani* Gilbert, 1890

This species is commonly known as Bollman's spotted flounder. It was reported by Anonymous (1999) and GBIF (2025) from Pakistan. It was initially described from off Colombia (07°56'N, 79°41'30"W), Albatross station 2805 by Gilbert (1890). Its holotype is not known; however, the lectotype (USNM 41143) is housed in the National Museum of Natural History, Washington, D.C., U.S.A. (Frickle *et al.*, 2025).

This species is known from the Gulf of California, Mexico, to Peru. (Froese and Pauly, 2025). Its specimens were deposited by S. M. Hussain in the British Museum of Natural History, London, U.K., and were listed by Anonymous (1999). However, it seems that the specimens were wrongly identified as this species. The report of the occurrence of this species from Pakistan may, therefore, be considered erroneous. No specimen of this species was examined during the present study.

#### Material Examined

- None.

*Pseudorhombus annulatus* Norman, 1927  
(Fig. 10)

This species is commonly known as the annulated or ringed flounder. It was reported from Karachi by Anonymous (2000, 2001), Ali-Khan and Hussain (1980), Jalali (1969, 1970), from Korangi by Ali-Khan and Hussain (1980), and from Pasni by Ali-Khan and Hussain (1980). It was reported from the Pakistan coast without mentioning any specific location by Anonymous (1999), Froese and Pauly (2025), GBIF (2025), and Hoda (1985, 1988). It was initially described from Muscat, Oman, by Norman (1927). Its holotype is unknown; however, its syntypes are housed in the British Museum of Natural History, London, U.K. (Frickle *et al.*, 2025).

This species has an oval body, and its first dorsal-fin ray is over or slightly before the anterior nostril of the blind side. The caudal fin is rhomboid. The scales on both sides of the body are ctenoid. The lateral line is highly arched over the pectoral fin with a branch on the head passing below the lower eye. The colour of the body is pale brown with numerous dark rings (about the size of pupils or larger). The median fins have brown blotches and spots.

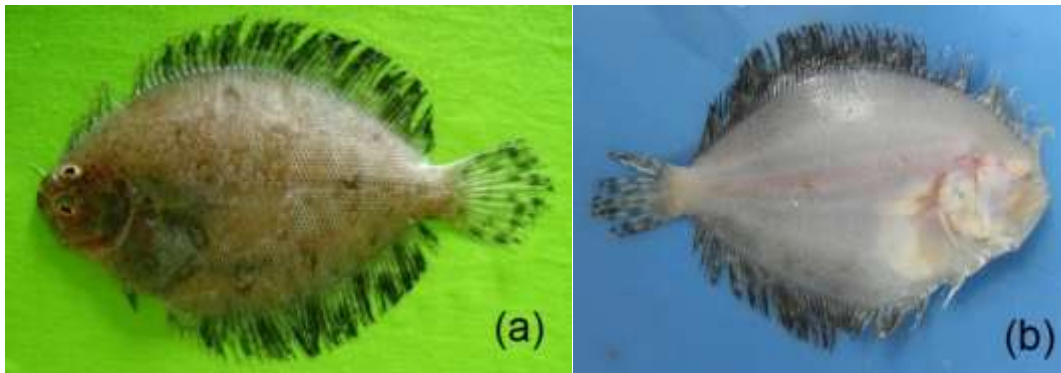


Fig. 10. *Pseudorhombus annulatus*. (a) The ocular side; (b) The blind side

This species can be distinguished from most of its congeners in having the anterior dorsal-fin rays neither elongated nor free from membrane and having only 8–17 gill rakers (anterior dorsal-fin rays elongated and free from fin membrane; gill rakers 23–25). It can be separated from *Pseudorhombus triocellatus* in having ctenoid scales on both sides, and the body having dark rings but no conspicuous ocelli (scales on the blind side are cycloid, except on the anterior part and edges of the body and having 3 conspicuous ocelli on the body).

This species is known from the Western Indian Ocean, including off Muscat, Oman (Froese and Pauly, 2025; Hensley and Amaoka, 2022b). It is also known from Pakistan.

Material Examined:

- 1 specimen collected from Karachi Fish Harbour on 11 August 2014 (26 cm TL).
- 1 specimen collected from Karachi Fish Harbour on 19 September 2017 (28 cm TL).

***Pseudorhombus arsius*** (Hamilton, 1822)  
(Fig. 11)

This species is known as theargetooth flounder. It was reported from Sindh by Ahmad *et al.* (1973), Day (1877), Hoda and Shaukat (1997), Misra (1962), Norman (1927), Sorley (1932), from Hajamoro Creek by Mirza and Baquer (1994), from Cape Monz (GBIF, 2025), from Karachi by Ahmad *et al.* (1973), Anonymous (1993, 2001), Froese and Pauly (2025), Hureau (1991), Jalali (1970), Jenkins (1910a), Khan (1924), Mujib and Jalali (1969), Niazi (2001) and Norman (1927), from Tidal Link Canal, Badin District by Jafri (2004) and Jafri *et al.* (2000), from Balochistan by Muhammad *et al.* (2024), Zugmayer (1913), from Makran (Ahmad *et al.*, 1973) and Sonmiani Bay (GBIF, 2025). It was reported from the Pakistan coast without mentioning any specific location by Ahmad (1988), Ahmad and Niazi (1988), Ali (2002), Anonymous (1999), Bianchi (1985), Froese and Pauly (2025), GBIF (2025), Hoda (1985, 1988), Hussain (1990, 2003), Ali-Khan and Hussain (1980), Jalil and Khaliluddin (1972, 1981), Majid *et al.* (1992), Mujib and Jalali (1969), Nielsen (1984), Norman (1934), and Psomadakis *et al.* (2015). It was originally described as *Pleuronectes arsius* from the estuary below Calcutta, India, by Hamilton (1822). Its types are not known (Frickle *et al.*, 2025).

This species has an ovoid body. Its jaws have large canines anteriorly, its teeth in the upper jaw are widely spaced and enlarged anteriorly, small and closely spaced posteriorly, where teeth in the lower jaw are large and widely spaced. Scales ctenoid on its ocular side, cycloid on blind side (except for those on dorsal- and anal-fin rays). Its body on the ocular side is greenish or pale brownish, with various dark spots and rings; usually a large dark spot at the origin of the straight section of the lateral line, and 2 smaller spots on the lateral line at the rear third of the body and near the peduncle. Its median fins have scattered dark spots, often arranged in longitudinal rows on the dorsal fin and anal fin.

This species is known from the Indo-West Pacific, including the Red Sea, the Persian Gulf, and the east coast of Africa, to the Bay of Bengal extending to Fiji, north to southern Japan, and south to the northern coast of Australia

(Froese and Pauly, 2025; Hensley and Amaoka, 2022b). It is considered to be a commercially important species that is locally consumed.

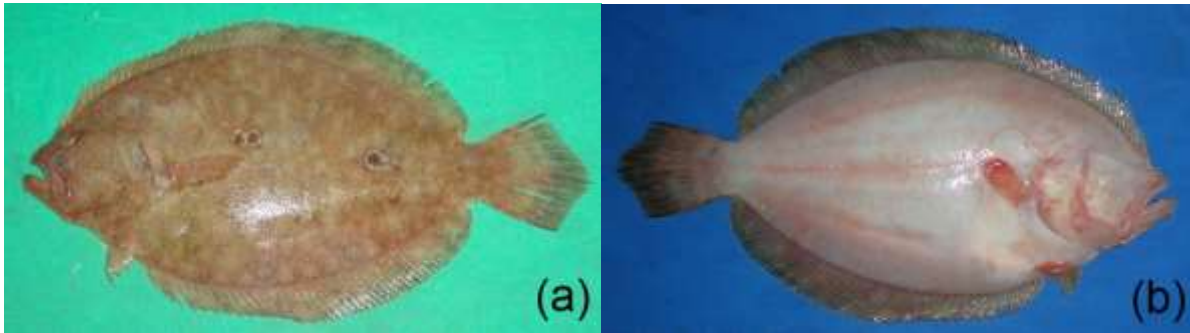


Fig. 11. *Pseudorhombus arsius*. (a) The ocular side; (b) The blind side (c) The Jaws.

Material Examined:

- 1 specimen collected from Karachi Fish Harbour on 24 June 2010 (28 cm TL).
- 1 specimen collected from Karachi Fish Harbour on 7 May 2014 (20 cm TL).
- 1 specimen collected from the Research Cruise of R/V Firdous from offshore waters of Pakistan on 16 February 2015 (31.8 cm TL)

*Pseudorhombus diplospilus* (Norman, 1926)

This species is commonly known as the four-twin-spot flounder. It was reported from Pasni, Balochistan by Ali-Khan and Hussain (1980). It was reported from the Pakistan coast without mentioning any specific location by Hoda (1985, 1988). It was initially described from northwest of Hervey Bay, Queensland, Australia by Norman (1926). Its holotype (AMS E. 6678) is housed in the Australian Museum, Sydney, N. S. W., Australia (Frickle *et al.*, 2025).

Its body is elliptical, with the upper profile of the head notched in front of the upper eye. Ctenoid scales are present on the ocular side, and cycloid scales are present on the blind side. Its overall body colour is brownish. There are four double-nucleated ocelli located on the ocular side, each above and below the lateral line. Each ocellus is a hollow circle with two black spots placed close to each other and bordered with chrome-yellow colour. All fin rays have diminished black hollow circles and spots.

This species was known from the Western Pacific, including the South China Sea, to the Indo-Australian Archipelago (Froese and Pauly, 2025). It was reported from the Exclusive Economic Zone of India by Kodeeswaran *et al.* (2020) and Ummath *et al.* (2024b). Considering its distribution in the area east of India extending to the South China Sea and the Indo-Australian Archipelago, therefore, its presence in Pakistan may be doubtful. No specimen of this species was examined during the present study.

Material Examined

- None

*Pseudorhombus elevatus* Ogilby, 1912  
(Fig. 12)

This species is commonly known as the deep flounder. This species is reported from Karachi by Niazi (2001), from Balochistan by Muhammad *et al.* (2024), from Miani Hor by Ajazuddin and Ahmed (2002), and from Pasni by Hussain and Khan (1981b). It was reported from the Pakistan coast without mentioning any specific location by Bianchi (1985), Froese and Pauly (2025), GBIF (2025), Hoda (1985, 1988), Hussain (2003), Majid *et al.* (1992), Nielsen (1984), and Psomadakis *et al.* (2015). It was initially described from Buliver, Moreton Bay, Queensland, Australia by Ogilby (1912). Its holotype (QM I.1569) is housed in the Queensland Museum, Queensland, Australia (Frickle *et al.*, 2025).

Its body is oval with a dorsal profile of the head with a distinct notch in front of the upper eye. The scales are ctenoid on the ocular side and cycloid on the blind side. The colour of the body on the ocular side is brownish and has dark rings in 5 longitudinal rows. There is usually a large dark blotch at the origin of the straight section of the lateral line, and 2 smaller dark spots on the lateral line at the rear third of the body and near the peduncle. The median fins have small dark spots and elongated markings.

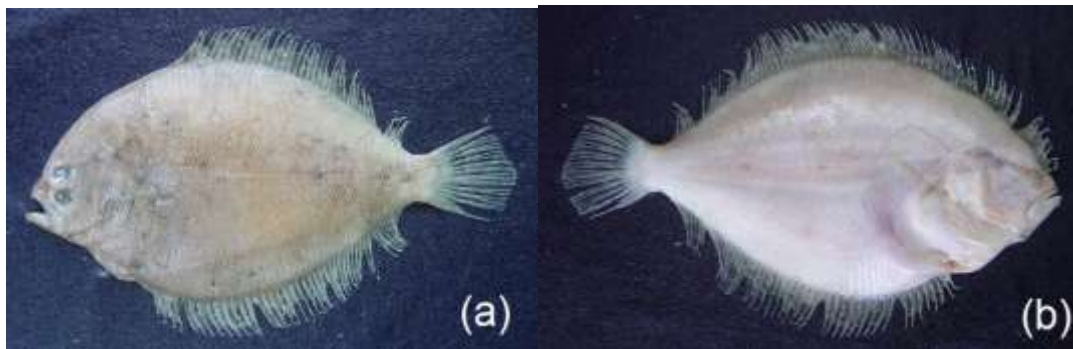


Fig. 12. *Pseudorhombus elevatus*. (a) The ocular side; (b) The blind side.

This species is known from the Indo-Pacific area, including the Persian Gulf, the Red Sea, to South Africa, extending to Indonesia, the Philippines, Taiwan, China, New Guinea, and northern Australia (Froese and Pauly, 2025; Hensley and Amaoka, 2022b).

Material Examined:

- 1 specimen collected from Karachi Fish Harbour on 12 October 2009 (11 cm TL).
- 1 specimen collected from Karachi Fish Harbour on 21 September 2013 (10 cm TL).

***Pseudorhombus javanicus*** (Bleeker, 1853)  
(Fig. 13)

This species is commonly known as the Javan flounder. It was reported from Sindh by Ahmad *et al.* (1973), Anonymous (1955), Misra (1962) and Sorley (1932), from Karachi by Ahmad *et al.* (1973), Anonymous (1955), Ali-Khan and Hussain (1980), Misra (1962) and Niazi (2001), from Korangi Fish Harbour and Keti Bundar Fish Harbour (Ali *et al.*, 2021), from Balochistan by Ali *et al.* (2025) and Muhammad *et al.* (2024), from Makran by Ahmad *et al.*, (1973), Anonymous (1955), Ali-Khan and Hussain (1980) and Misra (1962) and from Lasbela, Gwadar, Jiwani, Ganz, Sur Bandar, Pasni and Ormara by Ali *et al.* (2021). It was reported from the Pakistan coast without mentioning any specific location by Ahmad (1988), Ahmad and Niazi (1988), Bianchi (1985), Hoda (1985, 1988), Hussain (2003), Ali-Khan and Hussain (1980), Jalil and Khaliluddin (1972, 1981), Kesteven (1950), Psomadakis *et al.* (2015), and Qureshi (1960). It was originally described as *Rhombus javanicus* from Jakarta, Java, Indonesia by Bleeker (1853). Its holotype is not known; however, syntypes are housed in the British Museum of Natural History, London, U.K. (Frickle *et al.*, 2025).

This species has an ovoid body with the upper profile of the head without a notch in front of the eye. Scales on the ocular side are ctenoid on the anterior part, dorsal and ventral margins of the body on the ocular side, cycloid on the remaining areas. Its body on the ocular side is brownish or greyish, and has a distinct large dark blotch at the origin of the straight section of the lateral line, and a smaller dark blotch on the middle section of the lateral line; spots and rings are scattered on the body. Its median fins have small dark spots.

This species is known from the Indo-Pacific area, including the Persian Gulf and India to Sri Lanka, extending to Indonesia, southern China, western New Guinea, and Australia (Froese and Pauly, 2025; Hensley and Amaoka, 2022b).

## Material Examined:

- 1 specimen collected from the cruises of Dr. Fridtjof Nansen (2010) on 11 November 2011 (19 cm TL)
- 1 specimen collected from the Research Cruise of R/V Firdous from offshore waters of Pakistan on 14 February 2015 (20 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 12 January 2017 (21 cm TL).
- 1 specimen collected from Karachi Fish Harbour on 17 October 2021 (20 cm TL).

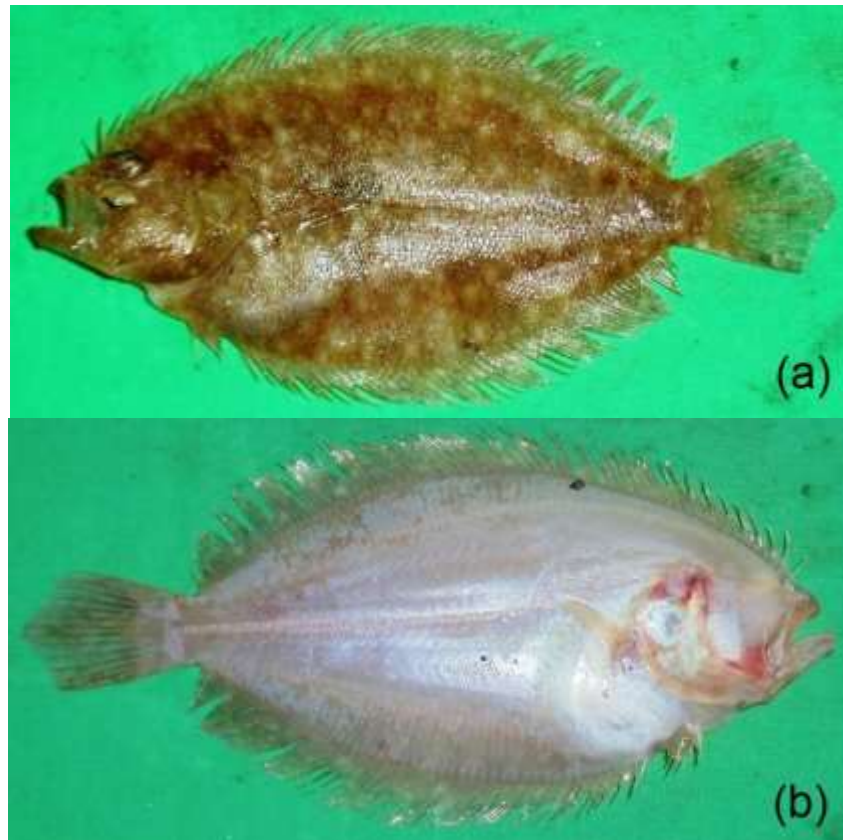


Fig. 13. *Pseudorhombus javanicus*. (a) The ocular side; (b) The blind side.

*Pseudorhombus malayanus* Bleeker, 1865b  
(Fig. 14)

This species is commonly known as the Malayan flounder. It is reported from Karachi by Hureau (1991). It was initially described from Jakarta, Java; Telokbetong, Benkulen, Sumatra; Singapore; Pamangkat, Borneo; Makasar, Sulawesi; Ambon Island, Moluccas Islands by Bleeker (1865b). Its holotype is not known; however, syntypes are housed in the British Museum of Natural History, London, U.K. (Frickle *et al.*, 2025).

Its body is deep ovoid, and its maxilla extends to below the posterior margin of the lower eye. Scales on both sides of the body are ctenoid. Its body on the ocular side is brownish, with a small dark blotch at the junction of straight and curved parts of the lateral line, whereas its median fins have indistinct dark spots and rings. There are small pale spots often present on its head, body, and fins.

This species is known from the Indo-Pacific, including the Gulf of Oman to India, extending to Indonesia, the Malay Peninsula, the South China Sea, the Philippines, and Australia (Froese and Pauly, 2025; Hensley and Amaoka, 2022b).

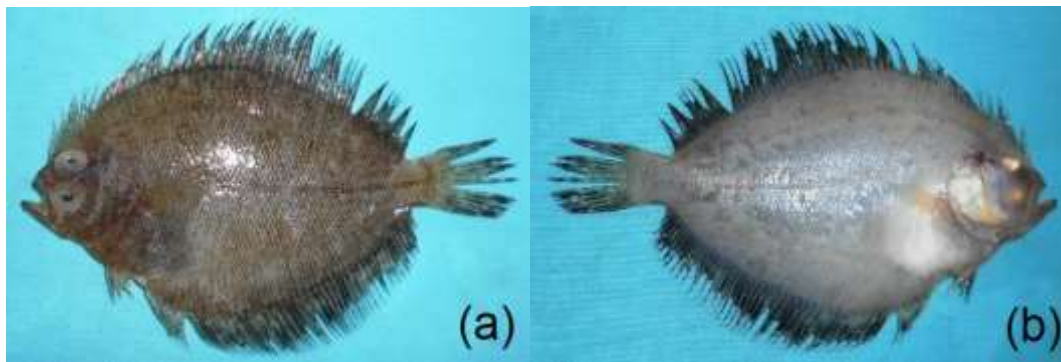


Fig. 14. *Pseudorhombus malayanus*. (a) The ocular side; (b) The blind side.

Material Examined:

- 1 specimen collected from Karachi Fish Harbour on 3 October 2014 (19 cm TL).
- 1 specimen collected from Karachi Fish Harbour on 21 April 2025 (11 cm TL)

***Pseudorhombus pentophthalmus* Günther, 1862**

This species is commonly known as the five-spot flounder. It was reported from Karachi by Ali-Khan and Hussain (1980). It was reported from the Pakistan coast without mentioning any specific location by Hoda (1985, 1988). It was initially described from the China Sea by Günther (1862). Its holotype (BMNH 1848.3.16.207) is housed in the British Museum of Natural History, London, U.K. (Frickle *et al.*, 2025).

Its body is deep ovoid, and its teeth in the upper jaw are small and close-set. The colour of its body is pale brownish, with 2 ocelli above and below the lateral line and 1 ocellus on the posterior third of the straight section of the lateral line. Its body has many ocelli.

This species is known from the Western Pacific, including Japan, Korea, and Indo-China (Frickle *et al.*, 2025; Froese and Pauly, 2025). Although this species was reported by Hoda (1985, 1988) and Ali-Khan and Hussain (1980) from Pakistan, according to Froese and Pauly (2025), it is known from the Western Pacific area; therefore, its records from Pakistan may be based on misidentification. No specimen of this species was examined during the present study.

Material Examined

- None

***Pseudorhombus russellii* (Gray, 1834)**

This species is commonly known as the Russell's flounder. It was reported from Sindh by Anonymous (1999), and GBIF (2025), and from Balochistan by Zugmayer (1913). Gray (1834) originally described it as *Platessa russellii*. Its type locality or holotype is not known; however, a possible type is housed in the British Museum of Natural History, London, U.K. (Frickle *et al.*, 2025).

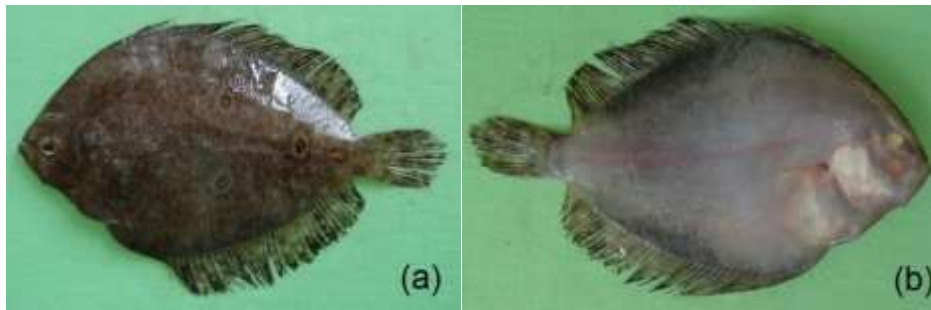
This species is known from the Western Central Pacific, including China, the Philippines. According to Frickle *et al.* (2025), this species may be a synonym of *Pseudorhombus arsius* (Hamilton 1822), and opined that even if it is a valid species, it has a restricted distribution in the Western Pacific only. The identification of the specimens from Pakistan may be based on misidentification. No specimen of this species was examined during the present study.

Material Examined

- None

***Pseudorhombus triocellatus* (Bloch and Schneider, 1801)**

(Fig. 15)

Fig. 15. *Pseudorhombus triocellatus*. (a) The ocular side; (b) The blind side

This species is commonly known as the three-spotted flounder. It was reported from Sindh by Anonymous (1955), and Misra (1962), Karachi by Anonymous (1955), Misra (1962), Ali-Khan and Hussain (1980), and Niazi (2001), from Korangi by Ali-Khan and Hussain (1980), from Makran by Anonymous (1955), Misra (1962), and Qureshi (1952), and from Pasni, Gwader, and near the Iranian Border by Ali-Khan and Hussain (1980). It was reported from the Pakistan coast without mentioning any specific location by Ahmad (1988), Bianchi (1985), Hoda (1985, 1988), Hussain (2003), Jalil and Khaliluddin (1972, 1981), Kesteven (1950), Psomadakis *et al.* (2015), and Siddiqi (1956). It was originally described as *Pleuronectes triocellatus* from Tranquebar, India, by Bloch and Schneider (1801). Its holotype is not known; however, syntypes are housed in Zoologisches Museum, Humboldt Universität, Berlin, Germany (Frickle *et al.*, 2025).

The body of this species is deeply ovoid, with a head profile without a distinct notch in front of the upper eye. Its scales are ctenoid on the ocular side and mostly cycloid on the blind side, but ctenoid on the anterior part and near the bases of dorsal and anal fins. Its body on the ocular side is brownish and has 3 ocelli (1 above and 1 below the lateral line, and 1 on the rear third of the straight section of the lateral line) and has many white blotches and spots on the body and the median fins.

This species is known from the Indo-Pacific area, including the Gulf of Oman, India, Sri Lanka, the Bay of Bengal, Thailand, Sumatra, and southern Indonesia, and northwestern Australia (Froese and Pauly, 2025; Hensley and Amaoka, 2022b).

#### Material Examined:

- 1 specimen collected from Karachi Fish Harbour on 7 July 2008 (12 cm TL).
- 1 specimen collected from Karachi Fish Harbour on 11 October 2011 (10 cm TL).

#### Family Samaridae (Righteye or Dwarf Flounders)

The members of the Family Samaridae include flatfishes that have extremely compressed bodies and have eyes on the right side of the head. The edge of their preopercle is free, not hidden by skin or scales. There are no pectoral fins on the blind side, whereas pelvic fins are elongated. This family is represented by 2 genera and 2 species from Pakistan. The members of this family are called ‘Khaitar’ in Sindh and ‘Boti’ in Balochistan.

Genus *Samaris* Gray, 1831  
*Samaris cristatus* Gray, 1831  
 (Fig. 16)

This species is commonly known as the cackatoo righteye flounder. It was reported from the Pakistan coast without mentioning any specific location by Hoda (1985, 1988), Hussain (2003), Jalil and Khaliluddin (1972, 1981), and Psomadakis *et al.* (2015). It was initially described from China by Gray (1831). Its holotype (BMNH 1977.4.22.8) is housed in the British Museum of Natural History, London, U.K. (Frickle *et al.*, 2025).



Fig. 16. *Samariscus cristatus*, the ocular side.

The body of this species is ovate, has a short and blunt snout, and has a prominent indentation in front of the upper eye. Its dorsal-fin rays are greatly elongated. The colour of the body on the ocular side is brownish with darker spots and blotches, and has a series of blotches along the dorsal and ventral body margins. The elongated anterior dorsal-fin rays are white, whereas the remainder of the dorsal fin, anal fin, and caudal fin are brown, and the pectoral fin is dark. The blind side of its body is whitish. It flicks the long dorsal-fin rays when alarmed.

This species is known from the Indo-Pacific area, including the Red Sea to South Africa, extending to Indonesia, the South China Sea, the Philippines, Taiwan, Japan, Australia, and New Caledonia (Froese and Pauly, 2025; Hensley and Amaoka, 2022d).

Material Examined:

- 1 specimen collected from Karachi Fish Harbour on 11 May 2005 (17 cm TL).
- 1 specimen collected from Karachi Fish Harbour on 23 January 2016 (14 cm TL).

Genus *Samariscus* Gilbert, 1905  
*Samariscus inornatus* (Lloyd, 1909)

This species is commonly known as the ornamental Flounder. It was reported from the offshore waters of the Pakistan coast (Arabian Sea) by Norman (1927). It was originally described as *Samariscus inornatus* from the Gulf of Aden, Arabian Sea (13°36'N, 47°32'E, “R/V Investigator Station 360”) by Lloyd (1909). Its holotype is not known; however, syntypes are housed in the British Museum of Natural History, London, U.K., and the Zoological Survey of India, Kolkata (Frickle *et al.*, 2025).

Its body is compressed and elliptical. The eyes are close together but not in contact; the right is very slightly in advance of the left. The scales are ctenoid on both sides. The teeth are villiform and are arranged in a compressed broad band, alike on both sides of the jaw (arranged in distinct rows in *S. cristatus*). The right pectoral fin contains five rays and is longer than the head. The ocular side is chestnut-brown with diffused blotches of sepia and dark grey, white belly. The fins are black.

This species is known from the Western Indian Ocean, including the Gulf of Aden, the Arabian Sea to the Gulf of Aqaba, Red Sea (Froese and Pauly, 2025). No specimen of this species was examined during the present study.

Material Examined

- None.

Family Soleidae (Soles)

Members of the Family Soleidae include flatfishes with eyes on the right side of the head, and have a strongly compressed, elongated, or oval body. Their preopercles are without free margin, covered by skin and scales, their mouth is small and asymmetrical, terminal or slightly inferior, and the teeth are small, villiform, and better developed on blind-side jaws. Locally, these are called ‘Khaitar’ or ‘Phani’ in Sindh and ‘Swasso’ in Balochistan. This family is represented by 10 genera and 21 species in Pakistan.

Genus *Aesopia* Kaup, 1858  
*Aesopia cornuta* Kaup, 1858  
 (Fig. 17)



Fig. 17. *Aesopia cornuta*. (a) The ocular side; (b) The blind side

This species is commonly known as the unicorn sole. It was reported from the Pakistan coast without mentioning any specific location by Ahmad (1988), Hoda (1985, 1988), Hussain (2003), Jalil and Khaliluddin (1972, 1981), and Psomadakis *et al.* (2015). It was initially described from the British Indies by Kaup (1858), however, no information about type specimens is available (Frickle *et al.*, 2025).

The species has an elongated-oval body. Its snout is slightly hooked, and the lips are fleshy with many longitudinal plicae on the inner surface. The eyes are contiguous, whereas the interorbital area is naked and slightly raised. On its side, the anterior nostril has a short, fleshy tube, whereas the posterior nostril has a short, wide, thin tube at the front edge of the lower eye. On its blind side, the anterior nostril has a short, thin transparent tube, not longer than that of the ocular side. In contrast, the posterior nostril has a short, thin transparent tube, hidden among villi and scales at the end of the trough extending dorsally from the rictus. The first dorsal-fin ray is thickened, elongated, and free distally, with dermal villi, whereas the dorsal fin and the anal fin are joined to the caudal fin. The scales are feebly ctenoid on the ocular side and cycloid on the blind side. The body colour on the ocular side has a greyish or pale brownish background, with 13–16 distinct dark brown and darker-edged bars extending onto the medial fins. The caudal fin is blackish-brown. The blind side is whitish, whereas the dorsal, anal and caudal fins are dark. The caudal fin has pale spots.

This species is known from the Indo-Pacific area, including the Red Sea, East Africa to South Africa, Madagascar, Seychelles, and India, extending to Indonesia, southern Japan, and northern Australia (Froese and Pauly, 2025; Desoutter-Meniger and Chapleau, 2022).

Material Examined:

- 1 specimen collected from Karachi Fish Harbour on 3 February 2017 (18 cm TL).
- 1 specimen collected from Karachi Fish Harbour on 7 March 2019 (17 cm TL).

Genus *Aseraggodes* Kaup 1858  
*Aseraggodes cyaneus* (Alcock, 1890)  
 (Fig. 18)

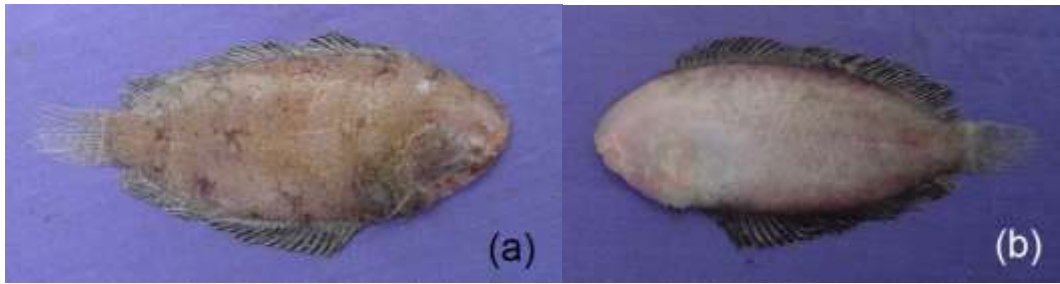


Fig. 18. *Aseraggodes cyaneus*. (a) The ocular side; (b) The blind side

This species is commonly known as the blue sole. It was reported from the Pakistan coast without mentioning any specific location by Norman (1927) and Weber and de Beaufort (1929). It was originally described as *Solea cyaneus* from the Off Ganjam coast (R/V Investigator station 79) and off the Vishakhapatnam coast by Alcock (1890). Its holotype is not known; however, syntypes are housed in the British Museum of Natural History, London, U.K., and the Zoological Survey of India, Kolkata (Frickle *et al.*, 2025). Weber and de Beaufort (1929) listed it as *Solea cyaneus*.

The species has an elongated-oval body. Its pelvic fins are joined together but separated from the urinary papillae. Its interorbital space is scaly and concave, and its width is less than the eye diameter. The colour of its body is brownish to dark, with darker large round to oval spots, arranged in 4 or 5 irregular transverse series, and 3 irregular longitudinal rows (1 row along the lateral line, the other 2 rows along the bases of dorsal and anal fins).

This species is known from the Indo-Pacific area, including the Gulf of Oman, Arabian Sea, and Mozambique, to the east coast of India, the Bay of Bengal, the Timor Sea, and the Philippines (Froese and Pauly, 2025; Desoutter-Meniger and Chapleau, 2022).

Material Examined:

- 1 specimen collected from Karachi Fish Harbour on 11 April 2021 (9 cm TL)

*Aseraggodes kobensis* (Steindachner 1896)  
(Fig. 19)

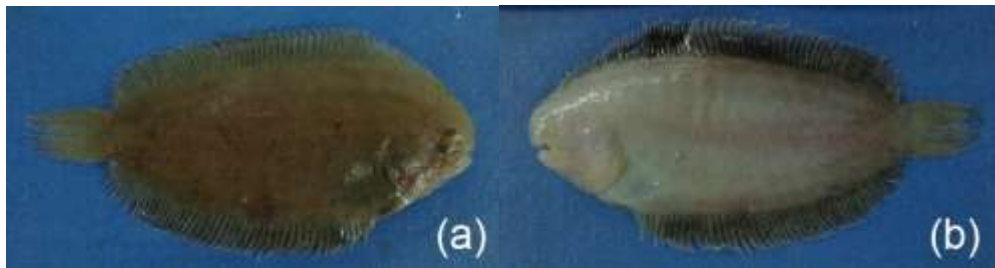


Fig. 19 *Aseraggodes kobensis*. (a) The ocular side; (b) The blind side

This species is commonly known as Kobe sole. It is a new record from Pakistan. It was originally described as *Solea (Achirus) kobensis*, from Kobe, Japan by Steindachner (1896). Its holotype (NMW 14318) in the National Museum of Nature and Science, Japan (Frickle *et al.*, 2025)

The body of this species is elliptical, with both eyes separated by a narrow interorbital area. Eyes are small, whereas the upper eye is positioned slightly advanced than the lower eye. It has 10-12 small and slender tendrils present along the ridges above the upper lip to the first dorsal ray base and at the anterior edges of the chin. A short caudal peduncle is present. Its lateral line is straight on both sides of the body, and with scales above the lateral lines are without cteni. Both sides of its body have small ctenoid scales except on the snout region, which has cycloid scales on the blind side. It has a pale brown color on the ocular side with scattered crepuscular dark freckles. The brown color gradually turned to a light white colour towards the snout region of the fish. The ridges of the dorsal and anal fins are quite dark compared to the ocular color profile. The blind side is dusky white but has dark shades towards the dorsal and anal fin bases.

This species is known from the Western Pacific including Chiba and Niigata Prefectures in Japan to the South China Sea and India (Froese and Pauly, 2025; Ummath *et al.*, 2024a).

Material Examined:

- 1 specimen collected from Karachi Fish Harbour on 25 May 2011 (10 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 9 April 2014 (10 cm TL)

*Aseraggodes umbratilis* (Alcock, 1894)  
(Fig.20)

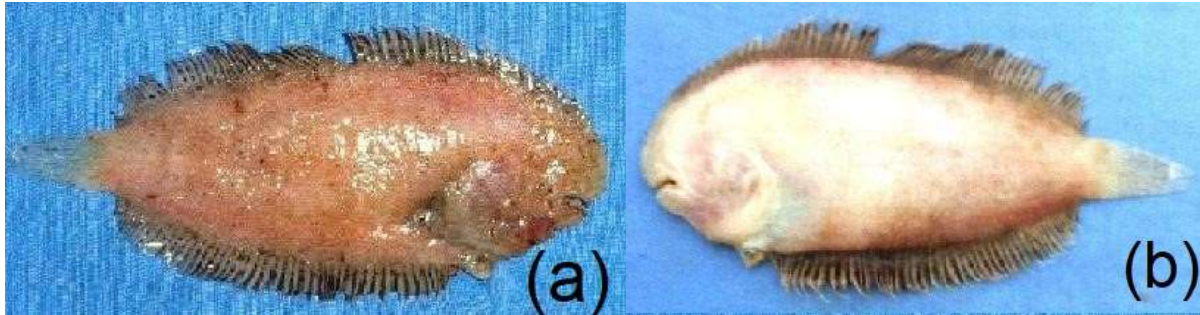


Fig. 20. *Aseraggodes umbratilis*. (a) The ocular side; (b) The blind side.

This species is commonly known as shady flounder. It was reported from the Pakistan coast without mentioning any specific location by Alcock (1894), GBIF (2025), Psomadakis *et al.* (2015), and Rahangdale *et al.* (2022). This species was originally described as *Solea umbratilis* from the Bay of Bengal (21°52'N, 68°06'E) by Alcock (1894). Its holotype is unknown; however, its lectotype (BMNH 1895) is housed in the British Museum of Natural History, London, U.K. (Frickle *et al.*, 2025).

The body of this species is oval and compressed, and has a large head, whereas its eyes are small and its interorbital space is very narrow. It has unbranched dorsal, anal, and pelvic rays. The lateral line on the ocular side of the body is projected well above the upper eye but curves downward on the head toward the upper eye. The upper end of the gill opens on a horizontal passing slightly below the lower eye. The caudal peduncle is extremely short. The colour of its ocular side is brown, and it has 3 rows of dark brown blotches (rows dorsal, ventral, and along the lateral line), whereas the fin rays are brown, and the membranes are dark brown.

This species is known from the Northern Indian Ocean, including the Arabian Sea and Bay of Bengal (Froese and Pauly, 2025; Desoutter-Meniger and Chapleau, 2022).

Material Examined:

- 1 specimen collected from Karachi Fish Harbour on 2 November 2016 (8.6 cm TL).
- 1 specimen collected from Karachi Fish Harbour on 17 April 2018 (9 cm TL).
- 1 specimen collected from Karachi Fish Harbour on 11 May 2021 (8 cm TL).

Genus *Brachirus* Swainson 1839  
*Brachirus macrolepis* Bleeker, 1858

This species is commonly known as the large-scale sole. It was reported from Karachi by Hussain and Khan (1981b), from Tidal Link Canal, Badin District by Jafri *et al.* (2000), from Gwader and Sonmiani by Hussain and Khan (1981b). It was reported from the Pakistan coast without mentioning any specific location by Hoda (1985, 1988). It was originally described from Singkawang, Borneo, Indonesia by Bleeker (1858). The whereabouts of its type is not known (Frickle *et al.*, 2025).

Lapierre (2007) included this species in the synonym of *Dexillus macrolepis* (Bleeker 1858) because *D. macrolepis* has contiguous eyes, which are included 10 to 12 times in head length. The eyes in *Brachirus* are usually separated by at least one eye diameter. *Dexillus* are *Brachirus*-like nominal species that have protruding, contiguous eyes covered by a translucent membrane. Froese and Pauly (2025) and Frickle *et al.* (2025) consider this species included in the genus *Brachirus*.

The body of this species is oblong. Its dextral eyes have a contiguous cuticle. Its snout is not ciliated, whereas the teeth are sinistral. Its lower lip is ciliated. Its dorsal, anal and caudal fins are united

This species is reported from the Indian Ocean and Western Pacific (Froese and Pauly, 2025). No specimen of this species was examined during the present study.

#### Material Examined

- None.

***Brachirus orientalis*** (Bloch and Schneider, 1801)  
(Fig. 21)

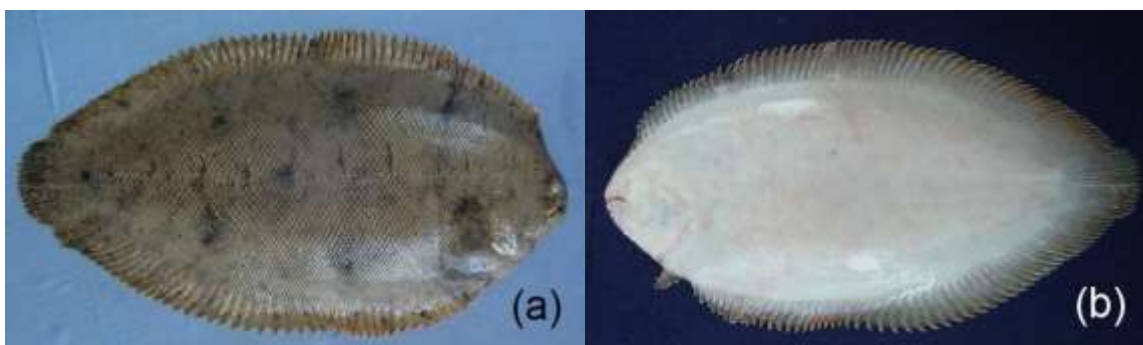


Fig. 21 *Brachirus orientalis*. (a) The ocular side; (b) The blind side.

This species is commonly known as the oriental sole. It was reported from Sindh by Aitken (1907), Anonymous (1955, 1999), Day (1877), Husaain and Khan (1981b), Lapierre (2007), Misra (1962), Murray (1880) and Norman (1927), from Bhanbhore, Korangi Creek by Ahmed and Abbas (1999a, 1999c, 2000), from Karachi by Anonymous (1955, 1999), Attiqullah (2005), Hoda (1996a, 1996b), Hoda and Khan (1991), Jenkins (1910a), Khan (2001), Khan and Hoda (1992), Lapierre (2007), Misra (1962), Niazi (2001) and Norman (1927), from Leth Nullah by Ahmad *et al.* (1984), Ali *et al.* (2021; 2025), and Niazi and Moazzam (1999), from Korangi Fish Harbour and Keti Bundar Fish Harbour (Ali *et al.*, 2021), from Balochistan by Ali *et al.* (2025), Muhammad *et al.* (2024) and Zugmayer (1913), from Makran by Anonymous (1955), Hussain and Khan (1981b), Misra (1962) and Qureshi (1952, 1960), from Lasbela, Gwadar, Jiwani, Ganz, Sur Bandar, Pasni and Ormara by Ali *et al.* (2021) from Miani Hor by Ahmed and Abbas, 1999a, 1999c, 2000). It was reported from the Pakistan coast without mentioning any specific location by Ahmad (1988), Anonymous (1999), Bianchi (1985), GBIF (2025), Hoda (1985, 1988), Hussain (2003), Jalil and Khaliluddin (1972, 1981), Kesteven (1950), Psomadakis *et al.* (2015), Qureshi (1960), Siddiqi (1956), and Talwar and Jhingran (1991). It was originally described as *Pleuronectes orientalis* from Tranquebar, India, by Bloch and Schneider (1801). Its holotype is not known; however, syntypes are housed in Zoologisches Museum, Humboldt Universität, Berlin, Germany (Frickle *et al.*, 2025). Ahmad (1988), Ahmad *et al.* (1984), Ali *et al.* (2021; 2025), Anonymous (1999), Attiqullah (2005), Bianchi (1985), Hoda (1985, 1988, 1996a, 1996b), Hoda and Khan (1991), Hussain (2003), Khan (2001), Khan and Hoda (1992), Niazi (2001), Niazi and Moazzam (1999) and Talwar and Jhingran (1991) reported this species as *Euryglossa orientalis* whereas Aitken (1907), Anonymous (1999), Day (1877), Jenkins (1910a), Kesteven (1950) and Zugmayer (1913) listed this species as *Synaptura orientalis*. Murray (1880) referred to this species as *Synatura foliacea*.

The body of this species is deep, oval, and has a terminal and slightly curved mouth. Blind-side jaws have tiny teeth. Its lateral line has with slightly curved supratemporal branch, ending just in front of the upper eye. Its scales

are strongly ctenoid on the ocular side, weakly ctenoid or cycloid on the blind side, whereas some head scales on the blind side are modified into cutaneous sensory processes. The colour of its body is grey or brown, with darker blotches or irregular spots. There are short, dark, narrow vertical bars that cross lateral lines. The median-fin margins are yellow, whereas the ocular side pectoral fin is dark.

This species is known as the Indo-West Pacific area including the Red Sea, Persian Gulf, Arabian Sea to Mozambique, Madagascar, Seychelles, Mauritius, India, Sri Lanka, Bay of Bengal, the Malay Peninsula, the Philippines, China, Japan and northern Australia (Froese and Pauly, 2025; Desoutter-Meniger and Chapleau, 2022; Lapierre (2007).

Material Examined:

- 1 specimen collected from Karachi Fish Harbour on 11 November 2008 (25 cm TL).
- 1 specimen collected from Karachi Fish Harbour on 9 October 2010 (16 cm TL).
- 1 specimen collected from Karachi Fish Harbour on 14 September 2022 (18.5 cm TL).

Genus *Dagetichthys* Stauch and Blanc 1964

*Dagetichthys albomaculatus* (Kaup 1858)

(Fig. 22)



Fig. 22. *Dagetichthys albomaculatus*. (a) The ocular side; (b) The blind side.

This species is commonly known as Kaup's sole. It was reported from Sindh by Anonymous (1955), from Karachi by Anonymous (1955), Punwani (1934), Qureshi (1960), and Vachon *et al.* (2008), and from Makran by Anonymous (1955) and Qureshi (1952). It was reported from the Pakistan coast without mentioning any specific location by Kesteven (1950), Punwani (1934), Qureshi (1960b), and Siddiqi (1956). It was initially described from the Coromandel Coast, India, by Kaup (1858). Its types are not known (Frickle *et al.*, 2025). Anonymous (1955), Kesteven (1950), Punwani (1934), Qureshi (1952, 1960), and Siddiqi (1956) reported this species as *Brachirus albomaculata*. Froese and Pauly (2025), Kaup (1858), and WoRMS (2025) reported this species as *Synaptura albomaculata*, whereas Frickle *et al.* (2025) consider this species as *Dagetichthys albomaculatus*.

The body of this species is oval, and its mouth is small, whereas the lower lip is fringed. The scales on its head and body are equally sized, whereas the scales on the head on the blind side are modified into cutaneous sensory processes. Its body is brownish and has 2–5 rows of widely separated white spots. The median fins are blackish distally on both sides and have a narrow white margin. The pectoral fin on the ocular side is blackish, whereas the rear margin is pale.

This species is known as the Indo-Pacific area, including the Gulf of Oman to India, Bangladesh, and Myanmar, the Andaman Sea, Indonesia, and Malaysia (Froese and Pauly, 2025; Desoutter-Meniger and Chapleau, 2022).

Material Examined:

- 1 specimen collected from Karachi Fish Harbour on 14 September 2011 (16 cm TL).

*Dagetichthys commersonii* (Lacepède, 1802)  
(Fig. 23)



Fig. 23. *Dagetichthys commersonii*. (a) The ocular side; (b) The blind side.

This species is commonly known as Commerson's sole. This species is reported from Sindh by Hussain and Khan (1981b), from Karachi by Anonymous (1999), Niazi (2001) and Norman (1927), from Sisa Creek by Mirza and Baquer (1994), from Balochistan by Muhammad *et al.* (2024), from Makran by Hussain and Khan (1981b). It was reported from the Pakistan coast without mentioning any specific location by Ahmad (1988), Anonymous (1999), Bianchi (1985), GBIF (2025), Hoda (1985, 1988), Hussain (2003), Jalil and Khaliluddin (1972, 1981), Munroe (1997), Psomadakis *et al.* (2015), Qureshi (1960), and Vachon *et al.* (2008). It was originally described as *Pleuronectes commersonii* from Mauritius by Lacepede (1802). Its types are known (Frickle *et al.*, 2025). Hussain and Khan (1981b) and Norman (1927) reported this species as *Brachirus commersoni*. Ahmad (1988) and Hoda (1985) listed it as *Brachirus commersoniana*. Anonymous (1999), Niazi (2001), Mirza and Baquer (1994), Anonymous (1999), Bianchi (1985), Hoda (1988), Hussain (2003), Jalil and Khaliluddin (1972, 1981), Khan *et al.* (2005), Munroe (1997), and Qureshi (1960) reported this species as *Synptura commersonii*.

The body of this species is oblong and flattened. The scales on the head of the ocular side are larger than those on the body, and those on the blind side are modified into cutaneous sensory blind-side processes. The colour of its ocular side is reddish brown, whereas the blind side is paler. The median fins have a pale edge and a sub-marginal dark band. The pectoral fin from the ocular side is dark.

This species is known from the Indian Ocean, including the Red Sea to the Persian Gulf, Seychelles, Mauritius, India, Sri Lanka, to the east coast of India, Indonesia, the Malay Archipelago, Taiwan, and northern Australia (Froese and Pauly, 2025; Desoutter-Meniger and Chapleau, 2022).

Material Examined:

- 1 specimen collected from Karachi Fish Harbour on 26 November 2009 (17 cm TL).
- 1 specimen collected from Karachi Fish Harbour on 18 September 2011 (18 cm TL).

Genus *Heteromycteris* Kaup 1858  
*Heteromycteris oculus* (Alcock, 1889)

This species is commonly known as eyed sole. It was reported from the Mekran coast by Norman (1927) and GBIF (2025). It was originally described as *Solea oculus* by Alcock (1889) from about 32 miles southwest of Puri, Orissa coast, Bay of Bengal, “R/V Investigator”. Its holotype is unknown; however, presumed syntypes are housed in the British Museum of Natural History, London, U.K., and the Zoological Survey of India, Kolkata, India (Frickle *et al.*, 2025).

The colour of its body is brown, with numerous pale lines surrounding irregular darker spots or rings; five complex ocelli are present along the dorsal fin and anal fin, whereas one is present on the lateral line at the caudal-fin base. Its median fins with blackish spots and stripes.

It was reported from the Indo-Pacific area, including India, Sri Lanka, extending to the South China Sea (Froese and Pauly, 2025; Desoutter-Meniger and Chapleau, 2022). No specimen of this species was examined during the present study.

Material Examined

– None

Genus *Pardachirus* Günther 1862  
*Pardachirus marmoratus* (Lacepede, 1802)

It is commonly known as the finless sole. It was reported from the Pakistan coast without mentioning any specific location by Desoutter-Meniger and Chapleau (2022), Heemstra and Gon (1986), and Hoda (1985, 1988). It was originally described as *Achirus marmoratus* from Mauritius by Lacepede (1802). Its types are known (Frickle *et al.*, 2025).

This species has an oval body. Its interorbital width is slightly less than the eye diameter. The colour of the body is pale brown to olive-grey, which is covered with minute brown spots and slightly larger irregular brown rings, on the head, body, and fins. There are 2–5 dark brown spots on the body, which also contain yellow flecks and irregular lines.

This species is known from the Western Indian Ocean, including Pakistan, the Persian Gulf, the Red Sea, Somalia to South Africa, Madagascar, Comoros, Seychelles, Mauritius, southwestern India, and Sri Lanka (Froese and Pauly, 2025; Desoutter-Meniger and Chapleau, 2022). No specimen of this species was examined during the present study.

Material Examined:

– None

Genus *Pseudaesopia* Chabanaud, 1934  
*Pseudaesopia cochinensis* (Rama-Rao 1967)  
(Fig. 24)

This species is commonly known as Cochin sole. This species is reported from Pakistan by Desoutter-Meniger and Chapleau (2022), GBIF (2025), and Stephens (2010). It was originally described as *Zebrias cochinensis* from off Vypeen Island, Cochin, India by Rama-Rao (1967). The whereabouts of its holotype is not known (Frickle *et al.*, 2025). GBIF (2025) reported this species as *Zebrias keralensis*.

Its body is oblong. Its head is slightly wider than long, and its eyes are contiguous or nearly so, usually with a few interorbital scales. Its caudal fin is distinct and somewhat rectangular. The colour of its body is pale brown, with 12 or 13 singular darkly demarcated deep brown bands extending onto the dorsal fin and anal fin; dark bands crossing the opercle usually join ventrally. The bands become narrower toward the anterior end. Its blind side is generally pale and whitish. Its caudal fin is dark, with pale spots and a paler thin stripe distally.

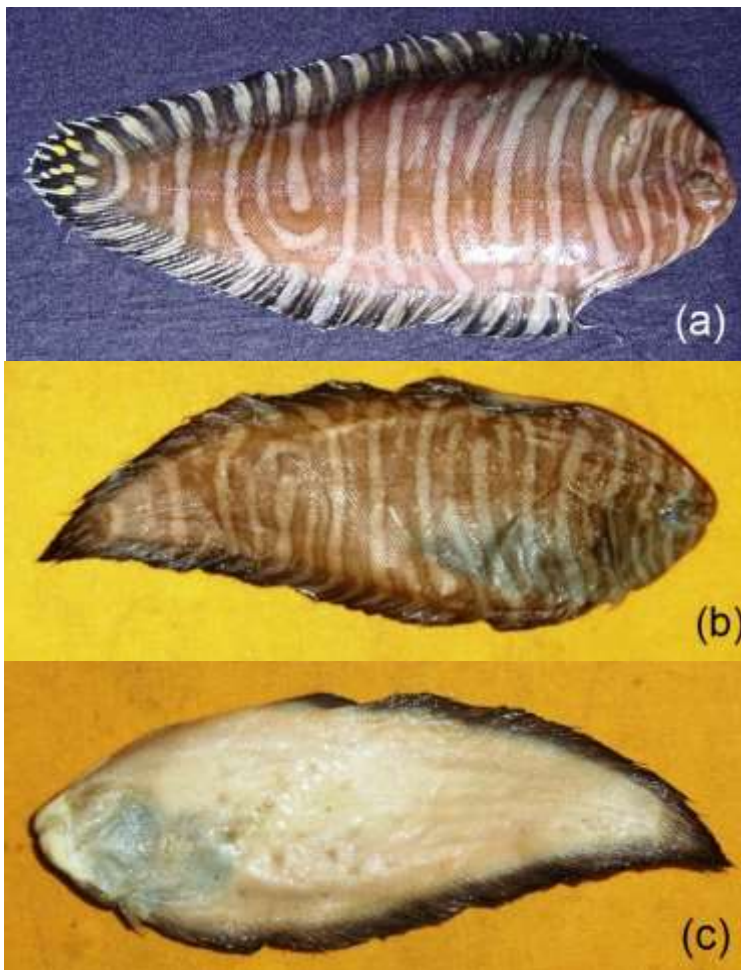


Fig. 24. *Pseudaesopia cochinensis*. (a) The ocular side; (b) The ocular side of specimen from estuarine area; (c) The blind side of specimen from estuarine area.

This species is known from the Western Indian Ocean, including the Arabian Sea, Pakistan, to southwestern India (Desoutter-Meniger and Chapleau, 2022; Manilo and Bogorodsky, 2003). Talwar and Kacker (1984) considered *Zebrias keralensis* described from the Kerala Coast by Joglekar (1976), much more closely resemble those reported for *P. cochinensis*. Stephens (2010) also considered *Zebrias (Nematozebias) keralensis* as a synonym of this species.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 15 October 2004 (13 cm TL).
- 1 specimen collected from Karachi Fish Harbour on 19 July 2012 (15 cm TL).
- 1 specimen collected from Pitiani Creek on 16 October 2014 (13 cm TL).

#### *Pseudaesopia synapturoides* (Jenkins, 1910b) (Fig. 25)

This species is commonly known as the Indian zebra sole. It was reported from Karachi and Korangi by Hussain and Khan (1981b) and from Gwader by Hussain and Khan (1981b). It was reported from Pakistan without mentioning any specific location by Hoda (1985, 1988), and Psomadakis *et al.* (2015). It was originally described as

*Solea synapturoides* from the Off Ganjam coast, India, by Jenkins (1910b). Its holotype (ZSI F3420/1) is housed in the Zoological Survey of India, Kolkata, India (Frickle *et al.*, 2025).



Fig. 25. *Zebrias synapturoides*, the ocular side;

Its body is elongate and flat. Its eyes are dextral, contiguous, and without tentacles. The colour of its body is whitish, and there are 3 dark brown bands on the head and another 9–12 bands from the opercle margin to the caudal fin. These bands extend onto dorsal fin and anal fin, and may be singular, paired or a combination of both. The caudal fin with yellow spots in the centre and dark distally. Its blind side is pale-yellowish whereas dorsal and anal fins darker posteriorly.

This species is known from the Western Indian Ocean, including the Persian Gulf, India, Sri Lanka, Myanmar, and the Andaman Sea (Froese and Pauly, 2025; Desoutter-Meniger and Chapleau, 2022).

#### Material Examined

- 1 specimen collected onboard “R/V Firdous 2009 Cruises” on 14 September 2009 (16 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 26 April 2014 (17 cm TL)
- 1 specimen collected onboard “R/V Firdous 2015 Cruises” on 11 February 2015 (15 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 5 March 2022 (15 cm TL)

Genus *Pegusa* Günther 1862  
*Pegusa nasuta* (Pallas 1814)

This species is commonly known as blackhand sole. It was reported from Karachi by Anonymous (2001) and GBIF (2025) as *Solea bleekeri* Boulenger, 1898 (which is a synonym of this species). It was originally described as *Pleuronectes nasutus* from Crimea, Ukraine, Black Sea by Pallas (1814). Its types are not known (Frickle *et al.*, 2025). *Solea bleekeri* Boulenger, 1898 was considered to be a junior synonym of *P. nasuta* (Vachon *et al.*, 2005).

This species is known from the Northern Mediterranean Sea, the Sea of Marmara, the Black Sea, the Sea of Azov, and the northeastern Atlantic, including from adjacent Portugal (Froese and Pauly, 2025; Frickle *et al.*, 2025). *Solea bleekeri* was described from the Cape of Good Hope, South Africa by Boulenger (1898). Its holotype is housed in Rijksmuseum van Natuurlijke Historie, Leiden, Netherlands (Frickle *et al.*, 2025).

This species is known to be distributed in the Eastern Atlantic, the Mediterranean Sea, and its contiguous seas; therefore, the report of the occurrence of this species by Anonymous (2001) as *S. bleekeri* seems to be based on misidentification. No specimen of this species was examined during the present study.

#### Material Examined

- None

Genus *Solea* Quensel 1806  
*Solea elongata* Day, 1877

(Fig. 26)

This species is commonly known as the elongate sole. It was reported from Karachi by Ali-Khan *et al.* (2001), Anonymous (1999), GBIF (2025), Hureau (1991), Hussain and Khan (1981b), Niazi (2001), Norman (1927) and Vachon *et al.* (2008), from Korangi creek by Ahmed and Abbas (2000), from Leth Nullah by Ahmad *et al.* (1984) and Niazi and Moazzam (1999), from Miani Hor Ahmed and Abbas (1999b, 2000) and Ajazuddin and Ahmed (2002), from Pasni and Gwader by Hussain and Khan (1981b) and from Sonmiani Bay by GBIF (2025). It was reported from Pakistan without mentioning about any specific location by Ahmad (1988), Anonymous (1999), Bianchi (1985), Froese and Pauly (2025), GBIF (2025), Hoda (1985, 1988), Hussain (2003), Jalil and Khaliluddin (1972, 1981), Majid *et al.* (1992), and Psomadakis *et al.* 2015. It was initially described from Madras, India by Day (1877). Its holotype is unknown; however, syntypes or Day's specimens are housed in the Australian Museum, Sydney, N. S. W., Australia, and Zoological Survey of India, Kolkata, India (Frickle *et al.*, 2025).

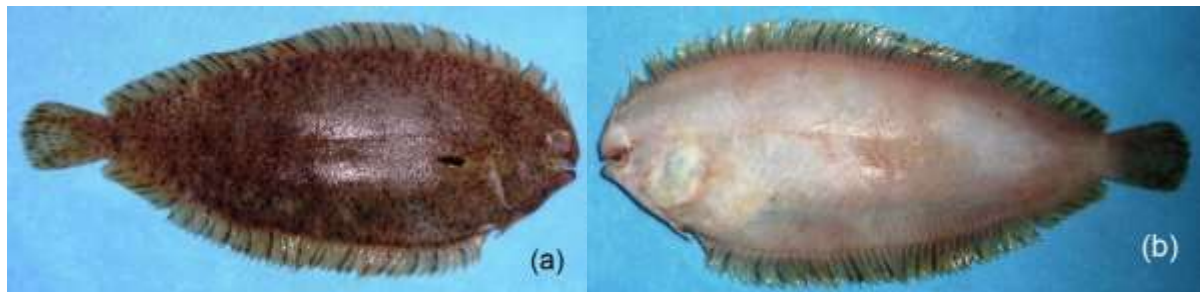


Fig. 26. *Solea elongata*. (a) The ocular side; (b) The blind side.

Its body is oblong, and its snout is sharply rounded. The numbers of dorsal fin rays are 61-79 and 65-90 and anal fin rays are 51-63 and 53-74 in this species. The colour of its body is brownish or greyish, which has irregular spots and irregular vertical bands. There is a black blotch on pectoral fin distally whereas dorsal fin and anal fin pale with some dusky spots.

This species is reported from the Western Indian Ocean, including the Red Sea to the Persian Gulf, India, and Sri Lanka (Froese and Pauly, 2025; Desoutter-Meniger and Chapleau, 2022; Vachon *et al.*, 2008)

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 11 July 2005 (11 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 26 June 2013 (11 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 2 March 2017 (13 cm TL)

#### *Solea heinii* Steindachner, 1903

(Fig. 27)

This species is commonly known as Hein's sole. It was reported from Karachi by Hureau (1991) and Norman (1927), from the Makran coast by Norman (1927), and Pasni, Gwader, and Ormara by Hussain and Khan (1981b). It was reported from Pakistan without mentioning any specific location by GBIF (2025), Hoda (1985, 1988), Kapoor *et al.* (2002), Norman (1927), and Murria (2022). It was initially described from Qishn, Arabian coast by Steindachner (1903). Its holotype is unknown; however, syntypes are housed in Naturhistorisches Museum, Wien (Vienna), Austria (Frickle *et al.*, 2025).

This species has a small and elongated body. The anterior nostril is a thin tube just or almost reaching the anterior edge of the ventral eye. The numbers of rays in the dorsal are 62-67 and 65-90 and anal are 50-54 and 53-74 fins in this species. The scales are ctenoid on both surfaces and have very large ctenii. The scutes are almost square, their width reaching almost their length. The colour of its body is brownish, which has more or less densely scattered dark spots, dark streaks on median fins, and a black spot on the distal part of the pectoral fin.

It was reported from the Indian Ocean, including the Arabian Sea and Bay of Bengal (Froese and Pauly, 2025; Desoutter-Meniger and Chapleau, 2022; Vachon *et al.*, 2008).

#### Material Examined

- 1 specimen collected from Pitiani Creek on 16 October 2014 (11 cm TL).
- 1 specimen collected from Karachi Fish Harbour on 11 January 2016 (12 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 23 March 2021 (11 cm TL)



Fig. 27. *Solea heinii*, the ocular side; (a) Specimen from Karachi Fish Harbour; (b) Specimen from Pitiani Creek

#### *Solea ovata* Richardson, 1846 (Fig. 28)

This species is commonly known as the oval sole. It was reported from Sindh by Misra (1962), from Karachi by Hussain and Khan (1981b) and Jalali (1970), from Balochistan by Muhammad *et al.* (2024), from Pasni, and Gwader by Hussain and Khan (1981b). It was reported from Pakistan without mentioning any specific location by Ahmad (1988), Anonymous (1999), Frickle *et al.* (2025), Froese and Pauly (2025), GBIF (2025), Hussain (2003), Munroe (1997), and Norman (1927). It was initially described from Canton, China, and the China Seas by Richardson (1846). Its holotype is not known; however, syntypes are housed in the British Museum of Natural History, London, U.K. (Frickle *et al.*, 2025).

The body of this species is ovate and regular with an obtuse snout. Its caudal fin is round and is well separated from the dorsal and anal fins. The number of dorsal fin rays is 51-67 and 65-90, and anal fin rays is 39-52 and 53-74. A band of cuticular filaments commences on the under lip and extends backwards to the lower edge of the gill cover. The colour of its body is greyish-brown with minute mottling and some scattered black specks. The blind side is lead gray and without any spots. Its pectoral fins are blackish, and its caudal fin is spotted.

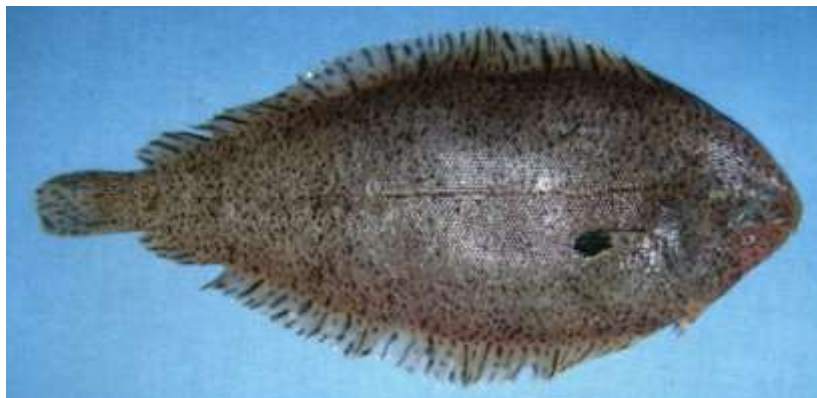


Fig. 28. *Solea ovata*, the ocular side.

This species is known from the Indo-Pacific area, including the northern China Sea, Gulf of Thailand, the Philippines, and southward to Indonesia, westward to Pakistan (Desoutter-Meniger and Chapleau, 2022; Frickle *et al.*, 2025; Froese and Pualy, 2025; Vachon *et al.*, 2008).

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 1 March 2017 (11 cm TL)

#### *Solea sindensis* Jenkins, 1910a

This species is commonly known as Sindh sole. It was reported from Karachi by Jenkins (1910a) and Frickle *et al.* (2025). It was initially described from Karachi market, Pakistan by Jenkins (1910a); however, no information about the types is available (Frickle *et al.*, 2025).

Its body is ovate, and the nasal opening on the ocular side is located immediately in front of the lower eye, not situated on a papilla. Scales on both sides are ctenoid. Pectoral fin on the ocular side with a black blotch on its outer third. The colour of its body is dark-brown with dark spots scattered over the head, body, and fins.

According to Norman (1927), this species is a synonym of *Solea jheinii*, whereas Jenkins (2010a) himself pointed out that this species is close to *Solea ovata*. According to Frickle *et al.* (2025), the status of this species is uncertain.

This species is known from Karachi, Pakistan only (Frickle *et al.*, 2025; Jenkins, 1910a). No specimen of this species was examined during the present study.

#### Material Examined

- None

#### *Solea stanalandi* Randall and McCarthy 1989 (Fig. 29)

This species is commonly known as pepper sole. This species is reported for the first time from Pakistan. It was initially described from off UPM Beach, Half Moon Bay near Dhahran, Saudi Arabia, Persian Gulf by Randall and McCarthy (1989). Its holotype (BPBM 32806) is housed in the Bernice P. Bishop Museum, Honolulu, Hawaii, USA (Frickle *et al.*, 2025).

The body of this species is oval. Its scales are small, ctenoid, except anterior head scales on the blind side modified to form fleshy cirri. The number of dorsal fin rays is 57-60 and 61-90, and anal fin rays is 46 and 46-74. Its caudal fin is rounded. The colour of its body on the eye side is pale brown, finely mottled and blotched. The pigment concentrated to form large blackish blotches, especially on the lateral line and along the upper and lower edges of

the body. A white edged black spot covering the outer half of its pectoral fin on the eyed side and a narrower dark spot on the blind side of the pectoral fin. Its median fins have blackish spots and streaks paralleling rays.



Fig. 29. *Solea stanalandi*, the ocular side.

This species was previously known from Saudi Arabia, Half Moon Bay (near Dhahran) in the Persian Gulf, and Gujarat, India (Desoutter-Meniger and Chapleau, 2022; Randall, 1995; Randall and McCarthy 1989; Sen *et al.*, 2018; Vachon *et al.*, 2008). The present paper extends its distribution to the Northern Arabian Sea along the Pakistan coast.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 11 May 2005 (11 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 8 July 2009 (9 cm TL)

Genus *Zebrias* Jordan and Snyder 1900

*Zebrias captivus* Randall 1995a

(Fig. 30)

This species is commonly known as the convict sole. It is a new record from Pakistan. It was initially described from the Persian Gulf off Bahrain by Randall (1995b). Its holotype (BPBM 29478) is housed in the Bernice P. Bishop Museum, Honolulu, Hawaii, U.S.A. (Frickle *et al.*, 2025).

The body of this species is elongated and oval. Its eyes are nearly contiguous; the upper eye is anterior to the lower, a small tentacle on the upper part of both eyes. The scales on both ocular and blind sides are moderately ctenoid. The colour on its ocular side is light tan with 9 dark-edged brown bars on the body and extending onto the dorsal fin and anal fin (last bar widest), and pale interspaces all of similar width; 3 dark and narrow bars on the head, the first two as double bars. The caudal fin is dark, with an irregular, narrow, vertical white band at the base, and small yellow spots distally; pelvic fins are white. Its blind side is white.

This species was previously considered to be endemic to Bahrain (Persian Gulf) (Froese and Pauly, 2025; Desoutter-Meniger and Chapleau, 2022; Randall, 1995a, 1995b). The present paper extends its distribution to the northern Arabian Sea (Pakistan coast).

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 11 January 2011 (10 cm TL).
- 1 specimen collected from Karachi Fish Harbour on 17 September 2017 (8 cm TL).

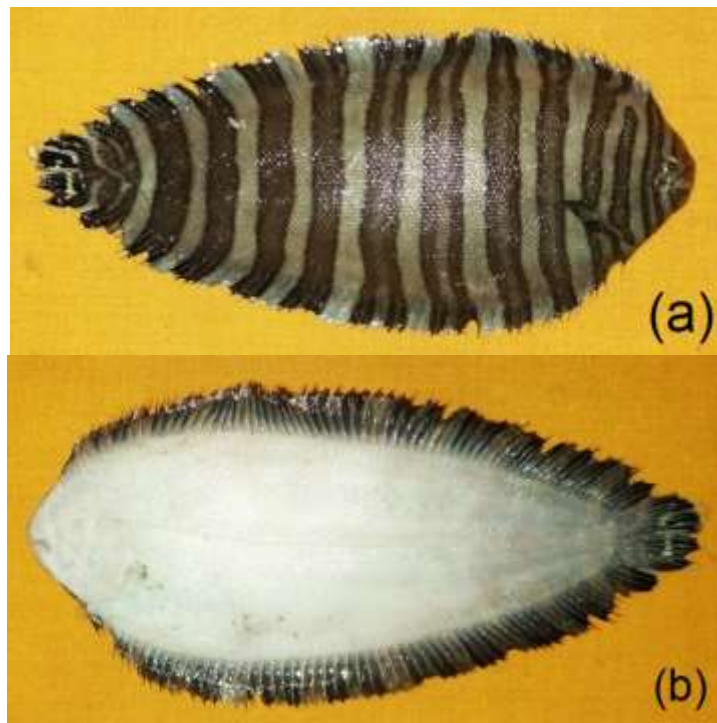


Fig. 30. *Zebrias captivus*. (a) The ocular side; (b) The blind side.

***Zebrias quagga*** (Kaup, 1858)  
(Fig. 31)

This species is commonly known as the fringefin zebra sole. It was reported from Sindh by Ahmad *et al.* (1973), from Karachi by Ahmad *et al.* (1973), Hureau (1991), Hussain and Khan (1981b), and Niazi (2001), from Gwader by Hussain and Khan (1981b), from Makran by Ahmad *et al.* (1973). It was reported from Pakistan without mentioning any specific location by Anonymous (1999), Bianchi (1985), GBIF (2025), Hoda (1985, 1988), Hussain (2003), Jalil and Khaliluddin (1972, 1981), and Menon (1984b). This species was originally described as *Aesopia quagga* from Bombay, India, by Kaup (1858); however, no type is known (Frickle *et al.*, 2025).

The body of this species is elongated, and the eyes are almost contiguous, each equipped with a small tentacle. The colour of its body is light brown with 10 or 11 darker simple or double crossbars that are wider than the pale interspaces. These markings continue in an oblique slant on the dorsal and anal fins. The caudal fin is dark brown, featuring a narrow U-shaped whitish band at its base.

This species is known from the Indo-West Pacific area, including the Red Sea, Gulf of Aden, Somalia, Persian Gulf and Madagascar, extending to the Philippines, Papua New Guinea, northern Vietnam, Hainan Island, China and Taiwan and Australia (Froese and Pauly, 2025; Desoutter-Meniger and Chapleau, 2022).

**Material Examined**

- 1 specimen collected from Karachi Fish Harbour on 11 May 2025 (14 cm TL).



Fig. 31. *Zebrias quagga*. (a) The ocular side; (b) The blind side.

*Zebrias zebra* (Bloch, 1787)

This species is commonly known as the zebra sole. It was reported from Sindh by Sorley (1932). It was reported from Pakistan without mentioning any specific location by Ahmad (1988), Ahmed (1996), Anonymous (1999), GBIF (2025), and Hussain (2003). This species was originally described as *Pleuronectes zebra* from the East Indies by Bloch (1787). Its holotype is not known; however, the lectotype (ZMB 2423) is housed in Zoologisches Museum, Humboldt Universität, Berlin, Germany (Frickle *et al.*, 2025). Sorley (1932) reported this species as *Synatura zebra*, whereas Ahmed (1996) listed it as *Brachirus zebra*.

This species is known from the Western Pacific, including the Gulf of Thailand, Borneo and Indonesia, the Philippines, to southern Japan. Considering its distribution in the Western Pacific, it seems that records from Pakistan may be based on misidentification. Froese and Pauly, 2025; Desoutter-Meniger and Chapleau, 2022). No specimen of this species was examined during the present study.

Material Examined

– None

Family Cynoglossidae (Toungesoies)

Family Cynoglossidae includes a diverse group of lance- or tongue-shaped flatfishes with eyes on the left side of the head. Their body is highly compressed and tapering to a point posteriorly. Their dorsal fin and anal fin are confluent with the caudal fin. Their scales are generally ctenoid on the ocular side of the body, and ctenoid or cycloid on the blind side of the body. The members of this family are generally circumglobal in shallow, warm-temperate, subtropical to tropical marine and estuarine waters, with a smaller number of species occurring in deep waters on the outer continental shelf and upper slope, and a few species occurring in freshwater. The members of this family are benthic and commonly found on mud or sand bottom and readily able to bury into the sediment. However, some species inhabit a wide variety of other substrates. Most large and medium-sized species are of commercial importance and harvested mainly by trawling and bottom set gillnetting. These are commonly known as ‘Chah-ail’, ‘Sheel’, ‘Sole’ or ‘Kukker jib’ in Sindh and ‘Mundsar swasso’, ‘Gok zaban’ or ‘Zahmay swasso’ in Balochistan. There are 2 genera and 19 species reported from Pakistan.

Genus *Cynoglossus* Hamilton 1822  
*Cynoglossus arel* (Bloch and Schneider, 1801)  
 (Fig. 32)

This species is commonly known as the large-scale tonguesole. It was reported from Sindh by Anonymous (1999), Misra (1962), Menon (1977), Sorley (1932), from Karachi by Hussain and Ali-Khan (1981a) and Niazi (2001), from Sisa Creek by Mirza and Baquer (1994), from Korangi Fish Harbour and Keti Bundar Fish Harbour (Ali et al., 2021), from Balochistan by Ali et al. (2025) and Muhammad et al. (2024), from Lasbela, Gwadar, Jiwani, Ganz, Sur Bandar, and Pasni by Ali et al. (2021), and from Ormara by Ali et al. (2021) and Anonymous (2001). It was reported from Pakistan without identifying any specific location by Ahmad (1988), Ahmad and Niazi (1988), Anonymous (1999, 2000), Bianchi (1985), Froese and Pauly (2025), GBIF (2025), Hoda (1985, 1988), Hussain (2003), Hussain and Ali-Khan (1981a), Jalil and Khaliluddin (1972, 1981), Menon (1984), and Psomadakis et al. (2015). This species was originally described as *Pleuronectes arel* from Tranquebar, India, by Bloch and Schneider (1801). Its holotype is not known; however, the lectotype (ZMB 2431) is housed in Zoologisches Museum, Humboldt Universität, Berlin, Germany (Frickle et al. 2025). Ahmad (1988), Anonymous (2000), GBIF (2025), Hussain (2003), Misra (1962), and Sorley (1932) reported this species as *Cynoglossus macrolepidotus*.



Fig. 32. *Cynoglossus arel*. (a) The ocular side; (b) The blind side.

Its body is elongate, and its snout is obtusely pointed. Its eyes have a small scaly interorbital space. The corner of its mouth reaches posteriorly to or beyond the lower of the eye and is about midway between the gill opening and the tip of the snout. Its scales are large, ctenoid on the ocular side of its body, whereas cycloid on the blind side. The colour of its body on the ocular side is uniform brown except for a dark blotch on the opercle, whereas both opercle linings are darkly pigmented. Its blind side is whitish.

This species is reported from the Indo-West Pacific area, including the Persian Gulf to Sri Lanka, the Bay of Bengal, the Andaman Sea, Indonesia, Taiwan, China, and southern Japan (Froese and Pauly, 2025; Murria, 2022).

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 19 June 2013 (20 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 9 December 2016 (20 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 15 January 2021 (18 cm TL)

*Cynoglossus carpenteri* Alcock, 1889  
(Fig. 33)

This species is commonly known as the hooked tonguesole. This species is reported from Karachi by Niazi (2001), from off the Indus mouth and Cape Monz (Anonymous, 2001), and from off Balochistan by Menon (1977). It was reported from Pakistan without identifying any specific location by Bianchi (1985), Frickle *et al.* (2023), Froese and Pauly (2025), GBIF (2025), Hoda (1985, 1988), Hussain (2003), Menon (1984), Norman (1927, 1939), and Psomadakis *et al.* (2015). It was initially described from 68 miles east of the mouth of the Devi River, Máhánaddi delta, Bay of Bengal by Alcock (1889). Its holotype is unknown; however, its lectotype (ZSI F12434) is housed in the Zoological Survey of India, Kolkata, Indian (Frickle *et al.*, 2025).



Fig. 33. *Cynoglossus carpenteri*. (a) The ocular side; (b) The blind side.

The body of this species is lanceolate because of a relatively long snout with rapid posterior taper. Its snout is obtusely pointed, and the rostral hook is short, ending well anterior to the vertical through the front margin of the anterior nostril. Its eyes are nearly contiguous with an interorbital space narrow. There are three ocular side lateral lines, whereas there is no lateral line on the blind side. The scales on the ocular side of its body are mostly cycloid, weakly ctenoid posteriorly, whereas the scales are cycloid on the blind side of the body. The colour of its body on the ocular side is uniformly brownish, whereas its peritoneum is black. Its opercular region is black on both sides of the body, its dorsal and anal fins are blackish, whereas its blind side is whitish.

This species is known from the Western Indian Ocean, including the Persian Gulf, Gulf of Oman, Arabian Sea, India, to the Bay of Bengal (Froese and Pauly, 2025; Murria, 2022).

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 31 October 2016 (25 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 17 January 2021 (24 cm TL)

*Cynoglossus cynoglossus* (Hamilton, 1822)

(Fig. 34)

This species is commonly known as the Bengal tonguesole. It was reported from Sindh by Sorley (1932) and from Karachi, Pasni, and Gwadar by Hussain and Ali-Khan (1981a). It was reported from Pakistan without identifying any specific location by Froese and Pauly (2025), Hussain (2003), Hussain and Ali-Khan (1981a), Jalil and Khaliluddin (1972, 1981), and Psomadakis *et al.* (2015). It was originally described as *Achirus cynoglossus* from Ganges River tidal mouths, India, by Hamilton (1822), however, no type is known (Frickle *et al.*, 2025). Sorley (1932) reported this species as *Cynoglossus bengalensis*.



Fig. 34. *Cynoglossus cynoglossus*. (a) The ocular side; (b) The blind side.

The body of this species is lanceolate. Its snout is obtusely pointed, and its rostral hook is rather short, extending to the front of the anterior nostril or reaching just short of perpendicular through the anterior border of the fixed eye. Its dorso-lateral line is usually undulating. The colour of its body on the ocular side is brownish. There are no dark blotches or irregular cross bands on the body.

This species is known from the Indo-West Pacific area, including the Malay Archipelago to the Philippines, and westward to Myanmar, Bangladesh, and India (West Bengal) to Pakistan (Froese and Pauly, 2025; Murria, 2022).

## Material Examined

- 1 specimen collected from Karachi Fish Harbour on 24 October 2016 (17.5 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 11 May 2017 (19 cm TL)

*Cynoglossus dispar* Day, 1877

(Fig. 35)

This species is commonly known as the roundhead tonguesole. It was reported from Sindh by Day (1877) and Whitehead and Talwar (1976), from Karachi by Menon (1977) and Niazi (2001), from Astola Island by Anonymous

(2001) and Menon (1977), and from between Pasni and Gwadar by Hussain and Ali-Khan (1981a). It was reported from Pakistan without identifying any specific location by Ahmad and Niazi (1988), Anonymous (1999), Bianchi (1985), Frickle *et al.* (2023), Froese and Pauly (2025), GBIF (2025), Hoda (1985, 1988), Hussain (2003), Hussain and Ali-Khan (1981), Menon (1984), Murria (2022), and Psomadakis *et al.* (2015). It was initially described from Sindh, Pakistan, by Day (1877). Its holotype is not known; however, the lectotype (ZSI 2715) is housed in the Zoological Survey of India, Kolkata (Frickle *et al.*, 2025).

Its body is lanceolate with the greatest depth near midlength, which gradually tapers towards the posterior, whereas its snout is bluntly pointed. Its rostral hook is short, not reaching the vertical through the base of the anterior nostril. There are two lateral lines on the side and the blind side. The scales are ctenoid on the ocular side of the body, except lateral line scales, which are cycloid, whereas scales are cycloid on the blind side. The colour of the body on its ocular side is brownish, with somewhat darker irregular blotches. Its opercle linings are dark, and the fins are dusky, blackish, or with numerous black spots. Its blind side is whitish.



Fig. 35. *Cynoglossus dispar*. (a) The ocular side; (b) The blind side.

This species is known from the Western Indian Ocean, including Pakistan and India (Froese and Pauly, 2025; Murria, 2022).

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 11 April 2022 (12.5 cm TL)

#### *Cynoglossus dubius* Day, 1873 (Fig. 36)

It is commonly known as the carrot tonguesole. It was reported from Sindh by Anonymous (1955), Day (1873, 1877, 1889), Norman (1927), Pradhan (1964), and Whitehead and Talwar (1976), from Karachi by Anonymous, (1955, 1993), Hureau (1991), Hussain and Ali-Khan (1981a), Niazi (2001), and Norman (1927) from Paitiani Creek by Mirza and Baquer (1994), from Balochistan by Day (1873, 1877, 1889), Norman (1927), Pradhan (1964), Whitehead and Talwar (1976), and Zugmayer (1913), from Gwader by Day (1873, 1877, 1889), Menon (1977), and Whitehead and Talwar (1976) and from Makran by Anonymous (1955) and Qureshi (1952, 1960). It was reported from Pakistan without identifying any specific location by Ahmad (1988), Ahmad and Niazi (1988), Bianchi (1985), Frickle *et al.* (2023), Froese and Pauly (2025), GBIF (2025), Hoda (1985, 1988), Hussain (2003), Hussain and Ali-Khan (1981a), Kesteven (1950), Menon (1984), Mujib (1985), Murria (2022), Psomadakis *et al.* (2015), and Qureshi (1960). It was initially described from Gwader, Pakistan, by Day (1873). Its holotype used to be housed in

the Zoological Survey of India, Kolkata, but was lost in 1943; however, Day's specimens are housed in Naturhistorisches Museum, Wien (Vienna), Austria, and Zoological Survey of India, Kolkata, India (Frickle *et al.*, 2025).

Its body is lanceolate with the greatest depth near midlength, which gradually tapers towards the posterior. Its snout is obtusely pointed, whereas its rostral hook is short, extending to just beyond the mandibular symphysis. There are two lateral lines on the ocular side. The scales are cycloid on both sides of the body, except ctenoid on the ocular side near the bases of the dorsal and the anal fins. The colour of its body on the ocular side is uniformly brown, and the opercle lining is dark on the ocular side but spotted on the blind side. On its blind side, it is whitish.



Fig. 36. *Cynoglossus dubius*. (a) The ocular side; (b) The blind side.

This species is known from the Western Indian Ocean, including India and Pakistan (Froese and Pauly, 2025; Murria, 2022).

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 7 November 2016 (23 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 10 November 2016 (25 cm TL)

#### *Cynoglossus durbanensis* Regan, 1921

It is commonly known as the Durban tonguesole. It was reported by Karachi by Anonymous (2001) and GBIF (2025). It was initially described from Durban, Natal, South Africa by Regan (1921a). Its holotype is unknown; however, lectotype (BMNH 1920.7.23.37) is housed in the British Museum of Natural History, London, U.K. (Frickle *et al.*, 2025).

The body is lanceolate, which is widest at about midlength, with a gradual taper posteriorly. Its snout is rounded, and the rostral hook reaches back only to the vertical in front of the anterior nostril. There are 2 lateral

lines on the ocular side, but there is no lateral line on the blind side. The scales on both sides of the body are ctenoid, including those of the lateral line. Its ocular side is uniformly olive-green to medium brown, with a prominent blotch on the lower margin of the opercle. The fin rays are streaked with dark brown, whereas the fin membranes are paler but with scattered melanophores. The blind side is whitish.

This species is known from the Western Indian Ocean, including Zanzibar, Kenya, to South Africa and Madagascar (Froese and Pauly, 2025; Murria, 2022). Although this species was reported from Pakistan by Anonymous (2001), considering its restricted distribution to the western Indian Ocean (between Kenya, South Africa, and Madagascar), it seems that its record from Pakistan may be based on misidentification. No specimen of this species was examined during the present study.

#### Material Examined

– None

*Cynoglossus kopsii* (Bleeker, 1851b)  
(Fig. 37)



Fig. 37. *Cynoglossus kopsii*. (a) The ocular side; (b) The blind side.

This species is known as the shortheaded tonguesole. It was reported from the Makran coast by Norman (1927). It was reported from Pakistan without identifying any specific location by Menon (1977) and Norman (1927). It was originally described as *Plagusia kopsii* from Rio, Indonesia, by Bleeker (1851b). Its holotype is not known; however, the lectotype (RMNH 7680) is housed in Rijksmuseum van Natuurlijke Historie, Leiden, Netherlands (Frickle *et al.*, 2025). Norman (1927) reported this species as *Cynoglossus brachycephalus*.

Its body is lanceolate with the greatest depth in the anterior half, with a gradual taper posteriorly. Its snout is rounded, whereas its rostral hook is short, not reaching the vertical through the anterior nostril. Its maxilla extends to the point between verticals at the middle and rear of the lower eye. There are three lateral lines on the ocular side (dorsolateral lateral line undulating and variably incomplete), whereas there is no lateral line on the blind side. The

scales are ctenoid on both sides of the body, including those on the lateral line. The colour of the body on the e side is pale brownish, generally with irregular dark spots and blotches. The fins have several darkly streaked rays alternating with paler rays. The blind side is whitish.

This species is known from the Indo-Pacific area, including the Persian Gulf, Oman, Madagascar, and the Maldives; extending to the Bay of Bengal, Indonesia, Philippines, Taiwan, New Guinea, and northern Australia (Froese and Pauly, 2025; Murria, 2022).

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 11 May 2012 (17 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 21 August 2017 (15 cm TL)

#### *Cynoglossus lachneri* Menon, 1977 (Fig. 38)



Fig. 38. *Cynoglossus lachneri*. (a) The ocular side; (b) The blind side.

This species is commonly known as the Lachner's tonguesole. It was reported from Karachi by Niazi (2001). It was reported from Pakistan without identifying any specific location by Ahmad and Niazi (1988), Bianchi (1985), Froese and Pauly (2002), Hussain (2003), Menon (1984), and Psomadakis *et al.* (2015). It was initially described from the Mombasa fish market, Kenya, by Menon (1977). Holotype (USNM 201852) is housed in the National Museum of Natural History, Washington, D.C., U.S.A. (Frickle *et al.*, 2025).

The body of this species is lanceolate with the greatest depth in the anterior half of the body, which is gradually tapered posteriorly. Its snout is rounded, whereas the rostral hook is short, reaching to the vertical well anterior to the anterior nostril. There are two lateral lines on the ocular side, and there are 2 lateral lines on the blind side (dorsolateral lateral line sometimes extending only 75–80% body length). The scales are ctenoid on the ocular side of the body, except more weakly ctenoid posteriorly and cycloid on the lateral line. The scales are cycloid on the blind side of the body. The colour of the body on the ocular side is uniformly tan to dark brown, sometimes with darker irregular blotches. The opercular linings are whitish, and also the blind side is whitish.

This species is known from the Western Indian Ocean, including the Red Sea, Gulf of Oman, to Mozambique, Madagascar, Comoros, Seychelles, Réunion, and Mauritius (Froese and Pauly, 2025; Murria, 2022).

#### Material Examined

- 2 specimens collected from Karachi Fish Harbour on 18 July 2013 (13, 19.5 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 19 July 2013 (18.5 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 28 May 2017 (21 cm TL)

#### *Cynoglossus lida* (Bleeker, 1851)

This species is commonly known as the roughscale toungesole. It was reported from Karachi and Korangi by Hussain and Ali-Khan (1981a), from Khobar Creek by Mirza and Baquer (1994), and from Pasni and Gwadar by Hussain and Ali-Khan (1981a). It was reported from Pakistan without identifying any specific location by Anonymous (1999), GBIF (2025), Hoda (1985, 1988), Hussain and Ali-Khan (1981a), Menon (1977), and Murria (2022). It was described as *Plagusia lida* from Jakarta, Java, Indonesia by Bleeker (1851d). Its holotype is not known; however, the lectotype (RMNH 6791) is housed in Rijksmuseum van Natuurlijke Histoire, Leiden, Netherlands (Frickle *et al.*, 2025).

Its body is lanceolate and with greatest depth near midlength, which tapers gradually posteriorly. Its snout is rounded, whereas its rostral hook is comparatively long, reaching the vertical through the middle of the lower eye. There are two lateral lines on the ocular side, whereas there are no lateral lines on the blind side. The scales are small and ctenoid on both sides of the body, including on the lateral line. The colour of its body on the ocular side is uniformly olive-green to medium brown. There are irregular black specks on the ocular side. There is a dark blotch on the opercle. Its fin rays are of the same colour or darker than the body, whereas the membranes are dusky.

This species is known from the Indo-Pacific area, including Kenya to South Africa, northwestern Madagascar, and possibly the Red Sea, Pakistan, India, the Bay of Bengal, Malaysia, Indonesia, Taiwan, and the Philippines (Froese and Pauly, 2025; Murria, 2022). No specimen of this species was examined during the present study.

#### Material Examined

- None

#### *Cynoglossus lingua* Hamilton (1822) (Fig. 39)



Fig. 39. *Cynoglossus lingua*. The ocular view. (a) Specimen collected from Pitiani Creek; (b) Specimen collected from Ketu Bundar.

This species is the long tonguesole. It was reported from Pakistan without identifying any specific location by Ahmad (1988), Froese and Pauly (2025), GBIF (2025), Hoda (1988), Hussain (2003), Jalil and Khaliluddin (1972, 1981); Estuaries of Menon (1977) and Murria (2022). It was initially described from Calcutta and salt estuaries, India, by Hamilton (1822), however, no type is known (Frickle *et al.*, 2025).

The body of this species is elongate, its greatest depth is in the anterior third, which gradually tapers posteriorly. Its snout is pointed, whereas its rostral hook is short, extending vertically through the front of the lower eye. There are two lateral lines on the ocular side and none on the blind side. The scales are weakly ctenoid on the ocular side of the body, but cycloid on the head and lateral lines; scales are cycloid on the blind side of the body. The colour of the body on the ocular side is brown, with or without darker and reticulated blotches, and dorsal and anal fins are darker posteriorly. The opercular region on the ocular side is blackish, and the inner lining of both opercles are dark. Its blind side is whitish.

This species is known from the Indo-Pacific area, including the Gulf of Aden, the Persian Gulf, Pakistan, and India; extending to the Bay of Bengal, Malaysia, Thailand, Vietnam, the Philippines, and Indonesia, and the South China Sea (Froese and Pauly, 2025; Murria, 2022).

#### Material Examined

- 1 specimen collected from the Indus Delta and landed at Keti Bundar on 21 May 2015 (14 cm TL)
- 1 specimen collected from the Indus Delta and landed at Pitiani Creek on 11 October 2016 (11 cm TL)

#### *Cynoglossus macrostomus* Norman 1927

(Fig. 40)



Fig.40. *Cynoglossus macrostomus*. (a) The ocular side; (b) The blind side.

This species is commonly known as the Malabar tonguesole. It was reported from Pakistan by GBIF (2025). It was initially described from the Hooghly River estuary near Calcutta, India. By Norman (1927). Its holotype (ZSI 1460) is housed in the Zoological Survey of India, Kolkata, India (Frickle *et al.*, 2025).

The body of this species is lanceolate with the greatest depth in the anterior third, which tapers gradually posteriorly. Its snout is obtusely pointed, and the rostral hook is short, extending vertically through the front margin of the anterior nostril. There are two ocular side lateral lines, with 14–16 scale rows between them. The dorsolateral line curves onto the dorsal fin a short distance before the caudal fin. There are 80–92 scales in the midlateral line. There is no lateral line on the blind side. Its scales are ctenoid on both sides of the body, including those on the lateral line.

The colour of this species on the ocular side is pale brownish, with darker brown mottling sometimes forming irregular wavy bands. Dorsal and anal fins are generally darker than the body whereas the blind side is whitish.

This species is known from the Indian Ocean and the west and east coasts of India. The present paper extends its distribution further north in the Arabian Sea to the Pakistan coast. (Froese and Pauly, 2025; Murria, 2022).

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 12 May 2017 (14 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 3 April 2025 (12 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 13 May 2025 (11 cm TL)

#### *Cynoglossus monopus* (Bleeker 1849) (Fig. 41)



Fig. 41. *Cynoglossus monopus*. (a) The ocular side; (b) The blind side.

This species is commonly known as the Bengal tonguesole. It was reported from Pakistan by GBIF (2025). It was originally described as *Plagusia monopus* by Bleeker (1849) from Jakarta, Java (Boleling, northern Bali),

Indonesia. Its holotype is not known; however, its lectotype (RMNH 6799) is housed in Rijksmuseum van Natuurlijke Historie, Leiden, Netherlands (Frickle *et al.*, 2025)

The body of this species is lanceolate with the greatest depth in the anterior third, which tapers gradually posteriorly. Its eyes are small, close together, and pedunculate with an interorbital space almost absent. The scales are ctenoid on both sides, including those on the lateral lines. There are two lateral lines on the ocular side; the dorsolateral line is undulated. There is a lateral line on the blind side. Its ocular side is light brownish, whereas the blind side is whitish

This species is known from the Indo-West Pacific area, including the Arabian Sea, India, Sri Lanka, Bay of Bengal, the Malayan Archipelago, Indonesia, Thailand, Hong Kong, and the Philippines (Froese and Pauly, 2025; Menon, 1977).

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 3 October 2004 (14 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 12 June 2025 (15.5 cm TL)

#### *Cynoglossus puncticeps* (Richardson, 1846) (Fig. 42)

This species is commonly known as the speckled tonguesole. It was reported from Sindh Anonymous (1999), Day (1877, 1889), Menon (1977), Norman (1927), Pradhan (1964), from Karachi by Anonymous (1999), GBIF (2025), Jenkins (1910a), Menon (1977), Niazi (2001) and Norman (1927), from Korangi Fish Harbour and Keti Bundar Fish Harbour (Ali *et al.*, 2021), from Khobar Creek, Hajamro Creek, Sisa Creek and Dabbo Creek by Mirza and Baquer (1994), from Korangi by Hussain and Ali-Khan (1981a), from Leth Nullah by Ahmad *et al.* (1984) and Niazi and Moazzam (1999), from Balochistan by Ali *et al.* (2025), Muhammad *et al.* (2024), and Zugmayer (1913), from Miani Hor by Ajazuddin and Ahmed (2002) and from Pasni by Ali *et al.*, (2021), and Hussain and Ali-Khan (1981a) and from from Lasbela, Gwadar, Jiwani, Ganz, Sur Bandar, and Ormara by Ali *et al.* (2021). It was reported from Pakistan without identifying any specific location by Ahmad (1988), Anonymous (1999), Bianchi (1985), Froese and Pauly (2025), GBIF (2025), Hussain and Ali-Khan (1981a), Hoda (1985, 1988), Hussain (2003), Jalil and Khaliluddin (1972, 1981), Psomadakis *et al.* (2015), Qureshi (1960) and Talwar and Jhingran (1991). It was originally described as *Plagusia puncticeps* from China by Richardson (1846); however, its types are not known (Frickle *et al.*, 2025).



Fig. 42. *Cynoglossus puncticeps*. (a) The ocular side; (b) The blind side.

Its body is lanceolate with the greatest depth at about mid-length, which is gradually tapered posteriorly. Eyes are both on the left side of the body, and a narrow space separates them. Its mouth is asymmetrical. Its snout is relatively short, rounded to obtusely pointed. Eyes are relatively small, whereas the interorbital space is narrow. There is a single pelvic fin. There are two lateral lines on the ocular side, whereas there is no lateral line on the blind side. The scales on both sides of the body are ctenoid, including on the lateral lines, and the blind side of the dorsal fin and anal fin, with a row of small scales. The colour of its body on the ocular side is pale to dark brown, covered with irregular (usually incomplete) bands or blotches or small spots. The lateral line pores are darkly outlined. Its dorsal and anal fins have black streaks on rays and yellowish membranes. Its blind side is whitish.

It is known from the Indo-Pacific area, including Mozambique, the Persian Gulf, Oman, to India, extending to the Bay of Bengal, Malaysia, South China Sea, the Philippines, Indonesia, northern Australia, and New Guinea (Froese and Pauly, 2025; Murria, 2022).

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 22 June 2004 (21 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 17 May 2009 (17 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 9 October 2016 (11 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 11 April 2013 (27 cm TL)

*Cynoglossus quadrilineatus* Bleeker, 1851a  
(Fig. 43)



Fig. 43. *Cynoglossus quadrilineatus*. (a) The ocular side; (b) The blind side.

This species is commonly known as the four-lined tonguesole. This species is reported from Sindh by Anonymous (1955), Day (1877, 1889), Misra (1962), Murray (1880), Norman (1927) and Sorley (1932), from Bhambhore by Ahmed and Abbas (1999c, 2000), from Indus Delta by Mahmood *et al.* (1999), from Karachi by Anonymous (1955, 1999, 2001), Hoda and Khaliluddin (1995), Hussain and Ali-Khan (1981a), Menon (1977), Misra (1962), Niazi (2001) and Norman (1927), from Korangi Fish Harbour and Keti Bundar Fish Harbour (Ali *et al.*, 2021), from Korangi by Hussain and Ali-Khan (1981a), from Sandspit by Ahmed *et al.* (1999), from

Balochistan by Ali *et al.* (2025), Anonymous (1953) and Muhammad *et al.* (2024), from Astola Island by Anonymous (2001, GBIF (2025), Menon (1977), from Makran by Anonymous (1955), Misra (1962), and Qureshi (1952), from Miani Hor by Ahmed and Abbas (1999c, 2000), from Ajazuddin and Ahmed (2002), from Lasbela, Jiwani, Ganz and Sur Bandar by Ali *et al.* (2021) from Pasni, Gwadar and Ormara by Ali *et al.* (2021), and Hussain and Ali-Khan (1981a). It was reported from Pakistan without identifying any specific location by Ahmad (1988), Ahmad and Niazi (1988), Ali (2002), Anonymous (1999, 2001), Bianchi (1985), Frickle *et al.* (2023), Froese and Pauly (2025), GBIF (2025), Hoda (1985, 1988), Hussain (2003), Hussain and Ali-Khan (1981a), Jalil and Khaliluddin (1972, 1981), Kesteven (1950), Khan (1994), Majid *et al.* (1992), Menon (1984), Mujib (1985), and Qureshi (1960). It was originally described as *Plagusia quadrilineata* by Bleeker (1851a) from Batavia, Java, Western Sumatra; Muntok; Bangka, Indonesia. Its holotype is not known; however, syntypes are housed in Rijksmuseum van Natuurlijke Historie, Leiden, Netherlands (Frickle *et al.*, 2025). Ahmed and Abbas (1999c, 2000), Ahmad (1988), Ahmed and Abbas (1999c, 2000), Ahmad and Niazi (1988), Ahmed *et al.* (1999), Ajazuddin and Ahmed (2002), Ali (2002), Anonymous (1953, 1955, 1999, 2001), Bianchi (1985), GBIF (2025), Hoda (1985, 1988), Hoda and Khaliluddin (1995), Hussain (2003), Hussain and Ali-Khan (1981a), Jalil and Khaliluddin (1972, 1981), Khan (1994), Mahmood *et al.* (1999), Majid *et al.* (1992), Menon (1977), Misra (1962), Menon (1984), Murray (1880), Niazi (2001), Norman (1927) and Sorley (1932) reported this species as *Cynoglossus bilineatus* whereas Day (1877) and GBIF (2025) reported this species as *C. sindensis*.

There is a confusion that persists, requiring the taxonomy of this species. Norman (1927) considered that *Plagusia quadrilineata* Bleeker 1851 has been erroneously considered a junior subjective synonym of *Achirus bilineatus* Lacepède 1802 by most authors. Both names have been applied to the same species (fourlined tonguesole) now assigned to the genus *Cynoglossus*. According to Murria (2022), the use of *Achirus bilineatus* Lacepède 1802 for a species of *Cynoglossus* is based on a misinterpretation by many authors of Lacepède's (1802) intention when constructing this name. According to Kottelat (2013), *A. bilineatus* Lacepède 1802 was not as a name for a new species of tonguesole (now placed in *Cynoglossus*), but rather was erected as a new combination for *Pleuronectes bilineatus* Bloch 1787, a fringe-lipped tonguesole now placed in the genus *Paraplagusia*. Therefore, *Achirus bilineatus* Lacepède 1802 properly belongs to the synonymy of *Paraplagusia bilineata* (Bloch 1787) as a replacement name for that nominal species, and not as a name available for a species in the genus *Cynoglossus*. Clarification of this nomenclatural confusion by Kottelat (2013) reveals that *Cynoglossus quadrilineatus* (Bleeker 1851) is the oldest available name for the species referred to here as the fourlined tonguesole. Froese and Pauly (2025) still retained *Cynoglossus bilineata* for fourlined tonguesole; however, there is adequate justification for retaining *Cynoglossus quadrilineatus* (Bleeker 1851a) for this species.

The body of this species is elongate, with the greatest depth at about the midpoint of the body, which tapers gradually posteriorly. Its eyes have a small but conspicuous scaly interorbital space. Its snout is broadly rounded, and the rostral hook is short. The scales are ctenoid on the ocular side of the body and cycloid on the blind side. There are two lateral lines on both the ocular and blind sides. The colour of its body on the ocular side is brownish with an irregular dark blotch on the gill cover. Its blind side is white.

This species is known from the Indo-Pacific area, including Oman, Persian Gulf, Seychelles, the Arabian Sea, Pakistan, India, Sri Lanka, extending to Indonesia, Taiwan, Japan, New Guinea, and Australia (Froese and Pauly, 2025; Murria, 2022).

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 21 May 2006 (23 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 11 September 2007 (19 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 29 July 2011 (22 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 6 March 2017 (20 cm TL)

#### *Cynoglossus semifasciatus* Day, 1887

(Fig. 44)

This species is commonly Bengal tonguesole. It was reported from Karachi by Hussain and Ali-Khan (1981a) and from Pasni and Gwadar by Hussain and Ali-Khan (1981a). It was reported from Pakistan without mentioning any specific location by Anonymous (1999), GBIF (2025), Hoda (1985, 1988), Hussain and Ali-Khan (1981a), and Psomadakis *et al.* (2015). It was initially described from Madras, India by Day (1877). Its holotype is unknown;

however, syntypes or Day's specimens are housed in the British Museum of Natural History, London, U.K., and Zoological Survey of India, Kolkata, India (Frickle *et al.*, 2025).



Fig. 44. *Cynoglossus semifasciatus*. (a) The ocular side; (b) The blind side.

The body of this fish is lanceolate with the greatest depth in the anterior half, and moderately tapers posteriorly. Its snout is rounded or obtusely pointed, and its rostral hook is short, extending vertically through the front margin of the anterior nostril. Its eyes are nearly contiguous, and the interorbital space is narrow. There are two lateral lines on the ocular side and the dorsal-most line ending a short distance before the caudal fin, whereas there is no lateral line on the blind side. Its scales are strongly ctenoid on both sides of the body, including on the lateral line. The colour of the body on the ocular side is pale brown, with numerous irregular vertical bands, and the fins are uniformly dark. Its blind side is whitish.

This species is known from the Indo-Pacific area, including India and Sri Lanka, the Bay of Bengal, and the Gulf of Thailand (Froese and Pauly, 2025; Murria, 2022).

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 6 May 2025 (13 cm TL)  
*Cynoglossus trulla* (Cantor, 1849)

This species is known as the Borneo or Macao tounge sole. It was reported from Karachi by Hussain and Ali-Khan (1981a), from Pasni by Hussain and Ali-Khan (1981a). It was reported from Pakistan without mentioning any specific location by Hoda (1985, 1988) and Hussain and Ali-Khan (1981a). It was originally described as *Plagusia trulla* by Cantor (1849) from the Sea of Pinang, Malaysia. Its holotype is unknown; however, presumed syntypes are housed in the British Museum of Natural History, London, U.K. (Frickle *et al.*, 2025). It was reported by Hoda (1985, 1988) and Hussain and Ali-Khan (1981a) as *Cynoglossus borneensis*; however, according to Froese and Pauly (2025), this species, which is mostly referred to as *Cynoglossus borensis*, is known from Indonesia, Malaysia, the Gulf of Thailand, and the South China Sea.

The body of this fish is lanceolate with the greatest depth in the middle, and moderately tapers posteriorly. The lower eye is placed a little further back, though considerably in front of the angle of the mouth. The lower eye is a little smaller than the upper eye. The interorbital area has well well-developed bony protuberance or spine. Its blind side has only a medial-lateral line. The colour of the body on the ocular side is pale, dark reddish brown. The

opercles are very dark. The scales have a dark longitudinal line. Fins are pale brownish and dotted with black. Its blind side is brownish white.

This species is known from the Western Central Pacific, including Indonesia, Malaysia, the Gulf of Thailand, and the South China Sea (Froese and Pauly, 2025; Murria, 2022). Although reported from Pakistan but its presence in Pakistan needs to be verified. No specimen of this species was examined during the present study.

#### Material Examined

– None

Genus *Paraplagusia* Bleeker, 1865a  
*Paraplagusia bilineata* (Bloch, 1787)  
 (Fig. 45)

This species is commonly known as the double-lined tonguesole. It was reported from Pakistan (reported also as part of *C. quadrilineatus* above) by Ahmed and Abbas (1999c, 2000), Ahmad (1988), Ahmed and Abbas (1999c, 2000), Ahmad and Niazi (1988), Ahmed *et al.* (1999), Ajazuddin and Ahmed (2002), Ali (2002), Anonymous (1953, 1955, 1999, 2001), Bianchi (1985), GBIF (2025), Hoda (1985, 1988), Hoda and Khaliluddin (1995), Hussain (2003), Hussain and Ali-Khan (1981a), Jalil and Khaliluddin (1972, 1981), Khan (1994), Mahmood *et al.* (1999), Majid *et al.* (1992), Menon (1977), Misra (1962), Menon (1984), Murray (1880), Niazi (2001), Norman (1927) and Sorley (1932).



Fig. 45. *Paraplagusia bilineata*. (a) The ocular side; (b) The blind side.

The body of this species is elongate with its greatest depth near midlength, and it is moderately tapered both anteriorly and posteriorly. Its snout is obtusely pointed, and the rostral hook reaches beyond vertical at the rear margin of the lower eye by less than the eye diameter. There are two lateral lines on the ocular side and no lateral line on the blind side. Its scales are ctenoid on both sides of the body, including those of the lateral line. The colour of its body on the ocular side is tannish to darker brown, marbled with dark-wavy anastomosing lines enclosing pale ocelli of various sizes. Opercular lining on the ocular side is dark brown whereas dorsal fin and anal fin on ocular side are pale brown, with paler marbled blotches. Its isthmus is spotted on both sides of the body. Its blind side is whitish or yellow.

This species is known from the Indo-Pacific area, including the Red Sea to South Africa, Madagascar, Seychelles, and the Mascarenes, extending to Indonesia, the Philippines, Taiwan, southern Japan, New Guinea, northern Australia, and the Solomon Islands (Froese and Pauly, 2025; Murria, 2022).

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 9 November 2016 (22 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 16 November 2016 (20 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 27 December 2017 (19 cm TL)

*Paraplagusia bleekeri* Kottelat 2013  
(Fig. 46)

This species is commonly known as the Bloch's tonguesole. It was reported from Karachi by Anonymous (1999, 2001), Husaain and Ali-Khan (1981a), and Norman (1927), from Astola Island by Anonymous (2001), GBIF (2025), and from Pasni by Hussain and Ali-Khan (1981a). It was reported from Pakistan without mentioning any specific location by Froese and Pauly (2025), GBIF (2025), Hoda (1985, 1988), Hussain and Ali-Khan (1981a), and Norman (1927). It was described by Kottelat (2013) from Java. Its holotype (RMNH 17879) is housed in Rijksmuseum van Natuurlijke Historie, Leiden, Netherlands (Frickle *et al.*, 2025).

According to Kottelat (2013), *Plagusia blochii* was proposed by Bleeker (1851a) as a new replacement name for *Pleuronectes bilineatus* Bloch 1787 and was not an original description of a species of cynoglossid flatfish. Norman (1927) misinterpreted Bleeker's proposed replacement name for *Pleuronectes bilineatus* Bloch; instead, they considered the replacement name to represent the name of a second, distinct species of *Paraplagusia*. Kottelat (2013) provided detailed information on why this interpretation is incorrect. He concluded that since Bleeker's *Plagusia blochii* is a new replacement name for *Pleuronectes bilineatus* Bloch 1787, it is an objective synonym of that species and cannot be used for any other species of *Paraplagusia*. This decision renders the second species without a name. Kottelat (2013) remedied this situation by naming this second species *Paraplagusia bleekeri*. Almost all previous references citing *Plagusia blochii* Bleeker 1851 likely refer to *Paraplagusia bleekeri* Kottelat. Kottelat (2013) suggests that several nominal species are likely confused under the name *Plagusia blochii* of previous authors. Murria (2022), while describing this, opined that the taxonomic status of these nominal species needs further study.



Fig. 46. *Paraplagusia bleekeri*. (a) The ocular side; (b) The blind side.

The body of this species is elongate, with the greatest depth located anterior to the body midpoint, which tapers moderately on both anterior and posterior sides. Its snout pointed, and its rostral hook reached beyond vertical through the rear margin of the lower eye by less than eye diameter. There are two lateral lines on the ocular side lateral lines and there is no lateral line on the blind side. The scales are ctenoid on both sides of the body, including

those of the lateral line. The colour of the body on the ocular side is uniformly pale to medium brown, whereas the head behind the eyes and the abdomen is darker. The centers of the scales are paler than the scale margins, but otherwise without distinct markings. The dorsal and anal fins on the ocular side are pale yellowish, fin rays are pale brown. The blind side is whitish or yellow.

This species is known from the Indo-Pacific area, including southern Oman to India, extending to the Malay Archipelago, Indonesia, the Philippines, Taiwan, Japan, and New Guinea (Froese and Pauly, 2025; Murria, 2022). No specimen of this species was examined during the present study.

#### Material Examined

- 1 specimen collected from the cruises of Dr. Fridtjof Nansen (2010) on 15 November 2010 (22 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 16 June 2025 (23 cm TL)

#### *Paraplagusia obscurus* (Jenkins, 1910a)

This species is commonly known as obscure tonguesole. It was reported from Karachi by Jenkins (1910a). It was Originally described as *Plagusia obscura* from Karachi, Pakistan, by Jenkins (1910a). Its holotype (ZSI F1845/1) is housed in the Zoological Survey of India, Kolkata, India (Frickle *et al.*, 2025).

The body of this species is lanceolate. Its lips are fringed, and the nostrils on the ocular side are small, and those on the blind side are tubular and well developed. There are two lateral lines on the eye side. The scales are ctenoid on both sides. The colour of the body on the ocular side is dark brown, whereas each scale is lightest in the centre.

This species is known from its type locality (Karachi).

No specimen of this species was examined during the present study.

#### Material Examined

- None

### CONCLUSION

Members of the Order Pleuronectiformes are considered an important fish group that is relished in Pakistan and exported in substantial quantities. This group is represented by 67 species, making it the most diversified group of marine fishes. The Order Pleuronectiformes is represented by six families, including Psettodidae (1 genus and 1 species), Bothidae (6 genera and 12 species), Paralichthyidae (4 genera and 12 species), Samaridae (2 genera and 2 species), Soleidae (10 genera and 21 species), and Cynoglossidae (2 genera and 19 species). Some genera, such as *Cynoglossus*, *Aseraggodes* and *Pseudorhombus* require further study to ascertain the presence of additional species. *Cynoglossus persicus* Kousha, Askarian, Ghate, Emadi, and Wosoughi 2008 occurrence in Pakistan cannot be ruled out.

There is no aimed fishery for flatfish, and it is mainly caught as bycatch of other fishing operations. Along the Sindh coast, it is mainly caught as bycatch of trawl fisheries, whereas bottom set gillnet is the main gear used along the Balochistan coast. Flatfish are landed at almost all major fish landing centres; however, Karachi Fish Harbour seems to be the major landing centre for these species (Fig. 47). Only a few species of this group are of commercial importance. Of these, Indian spiny turbot (*Psettodes erumei*), oriental sole (*Brachirus orientalis*), largetooth flounder (*Pseudorhombus arsius*), deep flounder (*Pseudorhombus elevatus*), and Javan flounder (*Pseudorhombus javanicus*) are locally consumed, whereas tonguesoles (*Cynoglossus* spp.) are locally consumed as well as exported in substantial mainly to European countries. A large number of flatfish are also caught mainly as bycatch of trawl fishing; however, because of their smaller size (less than 15 cm), these are used as raw material for fishmeal production.

Flatfish have been harvested for a long but it was mainly harvested for local consumption. However, with the establishment of the freezing and processing industry in Pakistan in 1969, a new avenue for the export of frozen fish was started in 1971 when small quantities of tongue sole were exported to the French market. Since the landings of flatfish started to increase (Fig. 48). A maximum of landings was achieved in 2018 when 5,798 m. tons of flatfish

were landed. The lowest landing of 655 m. tons was recorded in 1983. The landings started to swell to 1,933 m. tons from 2005 and started to increase to a level of more than 4,000 m. tons between 2011 and 2024 (Fig. 48).

Historically, flatfish were not commercially harvested in Balochistan before 1980. In this period, flatfishes, including Indian spiny turbot, tonguesoles, and flounders caught as bycatch of bottom-set gillnets and fixed next (“darband”), were either discarded or dried for using them as a raw material for fish meal production. In 1981, only a meagre quantity of flatfish were reported to have landed in Balochistan (Muhammad *et al.*, 2024). The landings of flatfish in Balochistan started to increase in the 1980’s which were transported to Karachi for processing and export. In the early 1990s, seafood processing was started in Balochistan, which led to the establishment of an aimed fishery for flatfish using bottom-set gillnets and their freezing in processing plants. Still bulk of the catch used to be transported to Karachi through land route as well as through carrier boats to Karachi. This mode of marketing of flatfish is continuing in Balochistan, which is supported by the construction of the Makran Coastal Highway, which has resulted in improved transportation of fish for processing in the plants based in Karachi.



Fig. 47. Landings of flatfish at Karachi Fish Harbour. (a) Heap of Indian spiny turbot; (b) heap of tonguesole; and (c) heap of oriental sole (*Brachirus orientalis*).

Table-I. Landings of flatfish at various landing centres along the Pakistan coast (2018-2024)

YEAR	2018	2019	2020	2021	2022	2023	2024
<b>PASNI</b>	1,492	849	945	917	384	581	590
<b>PISHUKAN</b>	88	198	104	130	175	90	726
<b>GWADAR</b>	815	512	541	456	551	641	1,010
<b>SUR</b>	2,228	1,496	580	150	310	947	185
<b>ORMARA</b>	401	80	317	108	471	48	78
<b>JIWANI</b>	145	161	177	171	171	171	219
<b>GADDANI</b>	830	7	135	95	99	81	133
<b>DAMB</b>	121	55	7	7	124	120	181
<b>KARACHI</b>	1,678	1,712	1,711	2,334	1,916	2,111	2,318
<b>TOTAL (PAKISTAN)</b>	7,798	5,070	4,517	4,368	4,201	4,790	5,440

Source: Marine Fisheries Department, Government of Pakistan, and Department of Fisheries, Government of Balochistan.

Muhammad *et al.* (2024) provided annual landings data of Balochistan from 1980 to 2019, including landings from 8 landings centres from the Balochistan coast for 2015 to 2019. They observed that the landing data of these landing centers indicates that Sur Bandar and Pasni are the main fishing landing centers for flatfish. The highest annual landings were reported at Sur Bandar in 2018, with 2,228 and 1,496 m. tons in 2019 (erroneously mentioned as 14,496 m. tons) and the lowest catch reported in Gaddani in 2019, with only 7 metric tons. Ali *et al.* (2025) have

provided accumulated landings data of Balochistan for the years 2009 to 2022. They reported that the landings of flatfish along the Balochistan coast in 2018 were 6,120 m. tons. In the present paper, data for various landing centres of the Pakistan coast, including both Sindh and Balochistan, for the period 2018 to 2024 are analysed. Table I presents landings of flatfish at 8 landing centres along the Balochistan coast and Karachi Fish Harbour along the Sindh Coast for the period 2018-2024, which reveals that Karachi Fish Harbour is the major landing Centre for flatfish in Pakistan, whereas in some years, insignificant landings were made in Gaddani and Damb.



Fig. 48. Landings of flatfishes in Pakistan (1971-2024). Source Anonymous (2012) updated.

Analysis of the data given in Table I, reveals that in 2018, the highest landings of 7,798 m. tons were recorded, which steadily decreased to a level of 4,201 m. tons in 2022, whereas an increasing trend was noticed thereafter, achieving a level of 5,440 m. tons in 2024. Fig. 49 presents average landings of flatfish made during the last 7 years (2018-2024) at various landing centres along the Pakistan coast, which verify that Karachi Fish Harbour (Sindh) is a major landing centre, followed by Sur, Pasni, and Gwadar, whereas the lowest average landings were recorded at Damb.

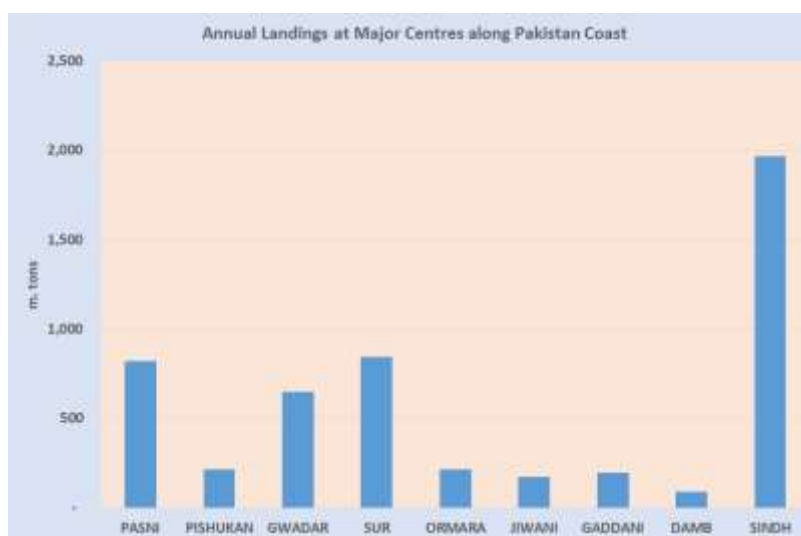


Fig. 49. Average landings (in m. tons) of flatfish (2018-2024) at various landing centres along the Pakistan coast

Considering the commercial importance of some of the species, the fishing pressure on their stock is ever-increasing in Pakistan, which is evident from the unstable landings of flatfish in Pakistan. Bycatch of trawl fisheries,

especially from coastal waters, is dominated by small species as well as by large quantities of juveniles of commercially important flatfish species. A major elimination of smaller-sized flatfish species because of their entanglement in trawl nets may lead to a decrease in their adult population, which may negatively affect the fisheries of flatfish. There is a need to implement recent fisheries legislation that bans bottom trawling in the waters of Sindh Province.

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