

**A REVIEW OF FISHES AND FISHERIES OF THE FAMILIES COIIDAE, DINOPERCIDAE, LETHRINIDAE, LOBOTIDAE, NEMIPTERIDAE, AND PENTACEROTIDAE FROM PAKISTAN****Muhammad Moazzam<sup>1\*</sup> and Hamid Badar Osmany<sup>2</sup>**<sup>1</sup>WWF-Pakistan, Plot No. 11, Block 7/8, KMCHS, Karachi 75400, Pakistan<sup>2</sup>Marine Fisheries Department, Government of Pakistan, Fish Harbour, West Wharf, Karachi 74000, Pakistan

\*Corresponding author: mmoazzamkhan@gmail.com

Received: November 11, 2025; Accepted: December 29, 2025

**ABSTRACT**

Perciforms or perch-like bony fishes belonging to the families Coiidae (tigerfishes), Dinopercidae (cavebasses), Lethrinidae (emperors), Lobotidae (tripletails), Nemipteridae (threadfin breams), and Pentacerotidae (armorheads) were reported from Pakistan. Spangled emperor, belonging to the Family Lethrinidae, Atlantic tripletail, belonging to Lobotidae, Japanese threadfin bream, and Randall's threadfin bream, belonging to Family Nemipteridae, are considered to be of commercial importance, which are not only locally consumed but also exported. Sindh is one of the type localities of the lampfish (*Dinoperca petersii*), which was reported to be of common occurrence about 150 years ago and is now found to be almost extinct in Pakistan. On the contrary, Atlantic tripletail was a rare occurrence about 15 years ago; however, it is now landed in appreciable commercial quantities and exported. The Families Lethrinidae, Nemipteridae, Lobotidae, Dinopercidae, Coiidae, and Pentacerotidae are represented by 34 species in Pakistan

**Keywords:** Emperors, threadfin breams, tripletails, cavebasses, tigerfishes, armorheads, *Lethrinus nebulosus*, *Nemipterus japonicus*, *N. randalli*, *Dinoperca petersii*, *Lobotes surinamensis*.

**INTRODUCTION**

Perciforms are perch-like bony fishes that generally include many commercially important fishes that inhabit coastal and offshore waters. This group includes some important families of marine fish that support some fisheries around the world. Some families of order Perciformes covered in this paper are Coiidae, Dinopercidae, Lethrinidae, Lobotidae, Nemipteridae, and Pentacerotidae. Most members of Families Lethrinidae (emperors), Nemipteridae (threadfin breams), and Lobotidae (tripletail) are considered to be commercially important and are harvested in substantial quantities in Pakistan. Family Lethrinidae includes commercially important emperors that support a substantial fishery, gillnet, and line fisheries in Pakistan. Additionally, emperors are considered important sport fish that are mainly harvested from rocky and reef areas.

Members of the family Nemipteridae (threadfin breams) are oceanic (mainly on the continental shelf), whereas some species are found in rocky and reef habitats. Family Lobotidae includes tripletail, which used to be a rare occurrence in the past, but in the past 10 years, its commercial landings have increased substantially, and now exported in appreciable quantities. Members of families Dinopercidae (cave bass), Coiidae (tigerfish), and Pentacerotidae (armorhead) are extremely rare in Pakistan, and thus are of little or no commercial importance. There are species such as lampfish (*Dinoperca petersii*), which used to be of common occurrence in Pakistan but for the last 30 years, this species has been seldom reported, whereas Atlantic tripletail (*Lobotes surinamensis*), which used to be a rare occurrence previously, is not caught in appreciable quantities.

Information about the families Coiidae, Dinopercidae, Lethrinidae, Lobotidae, Nemipteridae, and Pentacerotidae from Pakistan is limited, and usually, these fishes are included in the list of described species occurring in Pakistan (Ahmad, 1988; Ahmad *et al.*, 1973; Anonymous, 1955; Bianchi, 1985; Hoda, 1985, 1988; Hussain, 2003; Jalil and Khaliluddin, 1972, 1981; Majid *et al.*, 1992; and Psomadakis *et al.*, 2015).

Various aspects of biology and population dynamics of some dominantly occurring members of the Family Nemipteridae were studied by Hoda (1976, 1981), Iqbal (1991a, 1991b, 1992), Khalil and Hussain (2013), Kalhor *et al.* (2014a, 2014b, 2017), and Raza *et al.* (2022). In addition, the population dynamics of the spangled emperor from the Balochistan coast were studied by Baloch *et al.* (2025). In the present paper, a review of perciform fish species belonging to families Coiidae, Dinopercidae, Lethrinidae, Lobotidae, Nemipteridae, and Pentacerotidae reported from Pakistan is presented.

## MATERIAL AND METHODS

A survey of the previous scientific publications was carried out for the authentic reports of the emperors, cave basses, threadfin breams, tigerfish, armourhead, and tripletail from the Pakistan coast. To supplement the records of their occurrence, specimens of Families Lethrinidae, Dinopercidae, Nemipteridae, Coiidae, Pentacerotidae, and Lobotidae collected between 2003 and 2025 from Karachi Fish Harbour were photographed, and salient features/measurements were recorded and preserved in 5 % neutralized formalin. Within each family, the species are alphabetically arranged in this paper. Data for commercial landings of Japanese threadfin breams and emperors used in this paper were obtained from Anonymous (2012) and subsequently updated. Data for Balochistan was obtained from the Department of Coastal Development and Fisheries, Government of Balochistan.

## RESULTS AND DISCUSSION

Members of the families Lethrinidae, Dinopercidae, Nemipteridae, Coiidae, Pentacerotidae, and Lobotidae are mainly found in shallow coastal waters or on the continental shelf areas, whereas some species of Lethrinidae, Dinopercidae, and Nemipteridae are found abundantly in areas with rocky and reef bottoms. In all, 34 species belonging to these 6 families are reported from Pakistan.

Family Dinopercidae (Lampfishes or Cavebasses)  
Genus *Dinoperca* Boulenger, 1895  
*Dinoperca petersii* (Day, 1875)  
(Fig. 1)

This species is known as lampfish. There is no specific name for this species in Pakistan, but according to Day (1875), it was called “gisser” and “Dah-ri” in Gwadar. It was reported from Sindh by Anonymous (1955), Day (1875, 1889), and Whitehead and Talwar (1976), from Karachi by Anonymous (1955), from Karachi Fish Harbour by GBIF (2025), from Balochistan by Zugmayer (1913), from Gwader by Day (1875, 1889), and from Makran by Anonymous (1955) and Day (1875, 1889). Frickle *et al.* (2025), Froese and Pauly (2025), Heemstra (1986, 2022a), Heemstra and Hecht (1986), Hoda (1988), Menon and Yazdani (1968), Psomadakis *et al.* (2015), Randall (1995), and Qureshi (1952) reported this species from Pakistan but did not mention any specific locality. It was originally described as *Haplogenyis petersi* from the Sindh and Makran coast of Iran by Day (1875). Anonymous (1955), Day (1875, 1889), Menon and Yazdani (1968), Qureshi (1952), and Zugmayer (1913) reported this species as *Haplogenyis petersi*.



Fig. 1. *Dinoperca petersii*.

Its head, body, and fins are covered with small ctenoid scales. Its lateral line extends to the end of the caudal fin. Its pectoral fins are usually larger than pelvic fins, and the caudal fin is truncated. Its body, head, and fins are dark bronze-brown and have numerous white specks, which fade in large specimens. Its cheek has 2 slightly oblique paler brown bands, from under the eye to the margin of the opercle, and a darker brown band in between. Juveniles (not observed) have a silvery body and dark markings.

Heemstra and Hecht (1986) examined two specimens of *D. petersi* from the coast of Pakistan and observed only a slight difference from South African specimens in the number of lower-limb gill-rakers. The two Pakistani fish have 23 and 25 rakers, versus 26 to 28 rakers for the specimens from South Africa. They concluded that there is a great similarity between the specimens from Pakistan and South Africa in colour pattern and various meristic and morphometric data.

It is known from Pakistan, Oman, Kenya, Mozambique, and South Africa, and other parts of the Western Indian Ocean (Frickle *et al.*, 2025; Heemstra, 2022a). This species is solitary, territorial, and capable of making a loud drumming noise. According to Day (1875), this species was found in both Sindh and Balochistan, where it is not uncommon, but the specimens were too large to be retained; therefore, he had no option but to retain the skin of the smallest (46 cm or 18 inches). Heemstra and Hecht (1986) and GBIF (2025) reported several specimens from Karachi Fish Harbour in 1979 and now housed in the Los Angeles County Museum, California, USA. A system of monitoring of the landings, daily, from different fish harbours and jetties along the Sindh and Balochistan coast since 1985; however, no specimen of this species was ever observed, except a 53 cm specimen which was collected from Karachi Fish Harbour on February 12, 2009. It seems that this species is now almost extinct along the Pakistan coast; however, it is still reported from Western Indian Ocean countries, mainly from South Africa (Fennessy and Mann, 2013; Mann *et al.*, 2020). Its status is “not evaluated” for the IUCN Red List of Threatened Species, CITES, and CMS, however, considering its disappearance from the coastal waters of Pakistan, there is an immediate need for undertaking a study to determine its status in Pakistan and other areas of the world.

Material Examined

- 1 specimen collected from Karachi Fish Harbour on 12 February 2009 (53 cm TL).

Family Lobotidae – Tripletails  
Genus *Datnioides* Bleeker, 1853  
*Datnioides polota* (Hamilton, 1822)

This species is commonly known as the four-banded tigerfish. No local name being used in Pakistan could be traced. It was reported from Sindh (Pakistan) by Murray (1880) and from Karachi by Punwani (1934). Hamilton (1822) described this species as *Coius polota* from the Ganges River estuaries, India; however, its types are not known. Punwani (1934) reported this species as *Datnioides quadrifasciata* (Sevastianov, 1809), which is considered to be a synonym of *D. polota* (Roberts, 1989). The genus *Coius* is considered a synonym of the genus *Anabas* (Kottelat, 2000).

This species has a strongly concave predorsal profile. The colour and pattern are variable, and may have up to seven broad dark vertical bars on the body, and up to 4 thin, incomplete bars between broad bars. *D. polota* is distinguished from all congeners by colour pattern, which is highly variable, including up to 7 dark body bars, and up to four smaller bars. Its predorsal profile, which is distinctly concave, has 9 branched anal-fin rays and has body scales large with 40-60 in the lateral series.

This species is known from Asia and Oceania, including eastern India, Bangladesh, through Indochina (Sundaland, Myanmar, Thailand, western Malaysia, Singapore, Viet Nam, Borneo), Indonesia to New Guinea (Frickle *et al.*, 2025). This fish inhabits brackish habitats such as estuaries, mangroves, coastal lagoons, irrigation canals, and the lower reaches of rivers, but has occasionally been recorded above the tidal limit. Although reported by Murray (1880) and Punwani (1934), no recent record of this species is available from Pakistan. Coastal communities living in the Indus Delta and lower reaches of the River Indus have been approached to verify the presence of this species in the area, but no confirmation could be obtained. No specimen of this species was examined during the present study.

Material Examined

- None

Genus *Lobotes* Cuvier 1829  
*Lobotes surinamensis* (Bloch, 1790)  
(Fig. 2)

Body oval to rhomboid, robust and compressed, with a slightly concave forehead and an upper jaw that may be protruded. Its caudal fin is rounded. Its upper jaw is somewhat protrusile and lacks a supramaxilla. Its body is dark brown or greenish yellow dorsally, and silvery grey below.

This species is known as the Atlantic tripletail. In the Province of Sindh, this species is called “Dai”, or “Dhai”, whereas it is called “Gazi-gwa-zi” in Balochistan Province. This species is reported from Sindh by Murray (1880), Bianchi (1985), GBIF (2025), Froese and Pauly (2025), Hoda (1985, 1988), Heemstra (1984; 2022b), Hussain (2003), Jalil and Khalil (1972, 1981), Misra (1962), Psomadakis *et al.* (2015), and Qureshi (1964) reported this species from Pakistan but did not mention any specific locality. It was originally described as *Holocentrus surinamensis* by Bloch (1790) from Suriname. Murray (1880) reported this species as *Lobotes auctorum*.



Fig. 2. *Lobotes surinamensis*.

This species has a circumglobal distribution in tropical to warm-temperate seas, including the Mediterranean Sea, except the eastern Pacific (Froese and Pauly, 2025; Heemstra, 2022b). This species is found in bays, estuaries, and offshore among floating objects and lower reaches of large rivers.

#### Material Examined

- 1 specimen collected from offshore waters of Ormara on 22 March 2013 (32 cm TL)
- 1 specimen collected from offshore waters of Malan on 13 April 2013 (27 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 3 October 2013 (19 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 31 October 2013 (19 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 10 August 2023 (22 cm TL)

Family Lethrinidae (Emperors, emperor snappers, and large-eye breams)

Genus *Lethrinus* Cuvier, 1829

*Lethrinus borbonicus* Valenciennes, 1830

This species was commonly known as the snubnose emperor. It is locally known as “Mullah” in the Province of Sindh, whereas in the Province of Balochistan it is called “Gadeer”. It was reported from the Balochistan coast by Carpenter and Allen (1989), whereas Psomadakis *et al.* (2015) reported it from the Pakistani coast without specifying a particular location. It was originally described from Saint-Denis, Réunion Island, by Valenciennes (1830).

Its body is moderately deep, with a nearly straight or slightly convex profile near the eyes. The colour of its body is dark grey or yellow-brown, with an irregular pattern of broken dusky bars. Its pectoral and pelvic fins are white or pinkish, whereas dorsal and anal fins are mottled white or yellowish and have reddish edges, and the caudal fin has indistinct reddish bands.

Geographically, this species is known from the Western Indian Ocean, including East Africa to South Africa, Madagascar, the Seychelles, and the Mascarenes, the Persian Gulf, the Gulf of Oman, and the Red Sea (Carpenter, 2022; Froese and Pauly, 2025). It is usually found on sandy bottom near reefs, in shallow areas. No specimen of this species was examined during the present study.

#### Material Examined

- None.

#### *Lethrinus harak* (Forsskål, 1775)

This species is commonly known as the thumbprint emperor. It is locally known as “Mullah” in the Province of Sindh, whereas in the Province of Balochistan it is called “Gadeer”. It was reported from the Pakistani coast without specifying any particular location by Bianchi (1985), Hoda (1985, 1988), Hussain (2003), Psomadakis *et al.* (2015), and Sato and Walker (1984). It was originally described as *Sciaena harak* from the Red Sea by Forsskål (1775).

Its body is moderately deep, with a dorsal profile near the eye that is distinctly or slightly convex. Its colour is olive or grey above, shading to silvery white below. There is a large, elliptical black spot present, which is often broadly edged in yellow. There are light blue dots bordering the lower rim of the eyes and around the nostrils.

This species is known from East Africa, to South Africa, Madagascar, Seychelles, Mascarenes, the Red Sea, Maldives, and Sri Lanka, extending to the Andaman Islands, southern Japan, Caroline Islands, Marshall Islands, northern Australia, New Caledonia, Fiji, and Samoa (Carpenter, 2022; Froese and Pauly, 2025). No specimen of this species was examined during the present study.

#### Material Examined

- None

#### *Lethrinus lentjan* (Lacepède 1802)

This species is commonly known as the pink ear emperor. It is locally known as “Mullah” in the Province of Sindh, whereas in the Province of Balochistan it is called “Gadeer”. It was reported from Karachi by Nielsen (1960). It was reported from the Pakistani coast without specifying any particular location by Carpenter and Allen (1989) and Psomadakis *et al.* (2015). It was originally described as *Bodianus lentjan* from possibly Java, Indonesia, by Lacepède (1802). Nielsen (1960) reported this species as *Lethrinus mahsenoides*.

Its body is moderately deep, with a dorsal profile near the eye nearly straight. The colour of its body is greenish or grey, shading to white below. The posterior margin of its opercle and sometimes the base of the pectoral fin are red. The pectoral fin is white, yellow, or pinkish, whereas pelvic and anal fins are white to orange. The dorsal fin is white and orange mottled with a reddish margin, and the caudal fin is mottled orange or reddish.

This species is known from the Persian Gulf, the Red Sea, along the East Africa to South Africa, Madagascar, Seychelles, Mascarenes, Maldives and Sri Lanka, extending to the Andaman Islands, Indonesia, Japan, Marshall Islands, Australia, New Caledonia, Lord Howe Island, and Tonga (Carpenter, 2022; Froese and Pauly, 2025). No specimen of this species was examined during the present study.

#### Material Examined

- None

#### *Lethrinus microdon* Valenciennes, 1830 (Fig. 3)

This species is commonly known as the smalltooth emperor. It is locally known as “Mullah” in the Province of Sindh, whereas in the Province of Balochistan it is called “Gadeer”. It was reported from the Pakistani coast without specifying any particular location by Bianchi (1985), Carpenter and Allen (1989), Hoda (1985, 1988), Hussain (2003), Majid *et al* (1992), Psomadakis *et al.* (2015), and Sato and Walker (1984). It was originally described from Buru Island, Indonesia, by Valenciennes (1830). Hoda (1985, 1988), Hussain (2003), Majid *et al* (1992), and Sato and Walker (1984) reported this species as *Lethrinus elongates*.

The body of this species is relatively elongated. Its colour is bluish grey or brown, often with scattered, irregular dark blotches on the sides. Three dark streaks sometimes radiate forward from the eye. The fins are pale or orangish.



Fig. 3. *Lethrinus microdon*.

Geographically, this species is known from the Persian Gulf, the Gulf of Oman, the Red Sea, East Africa, Madagascar, Seychelles, Reunion, Chagos, the Maldives, and Sri Lanka, extending to Indonesia, Japan, New Guinea, Australia, and Palau (Carpenter, 2022; Froese and Pauly, 2025). This species is found on the sandy bottom near coral areas, to a maximum depth of 80 m.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 16 April 2014 (54 cm TL).
- 1 specimen collected from Karachi Fish Harbour on 21 October 2017 (51 cm TL).
- 

#### *Lethrinus miniatus* Forster, 1801

This species is commonly known as the trumpet emperor. It is locally known as “Mullah” in the Province of Sindh, whereas in the Province of Balochistan it is called “Gadeer”. It was reported from Balochistan by Zugmayer (1913). Hoda (1985, 1988), Hussain (2003), and Jalil and Khalil (1972, 1981) reported this species from Pakistan but did not mention any specific locality. It was originally described as *Sparus miniatus* from the Tonga Islands and New Caledonia by Forster (1801). Hoda (1985, 1988), Hussain (2003), and Zugmayer (1913) reported this species as *Lethrinus miniatus*, and by Jalil and Khalil (1972, 1981) as *Lethrinella miniata*.

The colour of its body is silvery, tan or yellowish, whereas the base of scales is often black, often with a series of eight or nine dark bars. The base of the pectoral fin is red; sometimes a red streak originates on the upper operculum, passing beneath the eye, and on to the snout. There are two red spots often present on the upper rim of the eye. Its lips are reddish, and fins are pale or reddish, sometimes with brilliant red on membranes near the base of the pelvic fin, and between spinous rays of the dorsal and anal fin.

This species is known the Philippines, north to the Ryukyu Islands, south to Timor, northern Australia, Norfolk Island (Australia), and New Caledonia (Carpenter and Allen, 1989; Frickle *et al.*, 2025; Froese and Pauly, 2025). No specimen of this species was examined during the present study.

#### Material Examined

- None

#### *Lethrinus nebulosus* (Forsskål, 1775) (Fig. 4)

The common name of this species is spangled emperor. It is locally known as “Mullah” in the Province of Sindh, whereas in the Province of Balochistan it is called “Gadeer”. It was reported from Sindh by Day (1875), and from Miani Hor by Ahmed and Abbas (1999, 2000). It was reported from the Pakistani coast without specifying any particular location by Bianchi (1985), Carpenter and Allen (1989), Froese and Pauly (2025), GBIF (2025), Hoda (1985, 1988), Hussain (2003), Jalil and Khalil (1972, 1981), Majid *et al* (1992), Misra (1962), Psomadakis *et al.* (2015) and Sato and Walker (1984). It was originally described as *Sciaena nebulosa* from the Red Sea by Forsskål (1775).

The body of this species is moderately deep. The colour of its body is yellowish or bronze, lighter below. The centers of many scales have a white or light blue spot, sometimes irregular dark, indistinct bars on the sides, and a square black blotch above the pectoral fin, bordering below the lateral line. There are three blue streaks or series of blue spots radiating forward and ventrally from its eye. The fins are whitish or yellowish, and the pelvic fin is dusky; the edge of the dorsal fin is reddish.



Fig. 4. *Lethrinus nebulosus*.

This species is known from the Red Sea, Persian Gulf, Socotra (Yemen), South Africa, East Africa, Seychelles, Madagascar, Mascarenes (La Réunion, Mauritius, Rodrigues), India, Pakistan, Sri Lanka, extending east to Samoa and Tonga, north to Japan, south to Australia and New Caledonia (Frickle *et al.*, 2025). It occurs in nearshore and offshore coral areas and adjacent habitats to a depth of 75 m. Healey *et al.* (2018a-b) have determined that the specimens from the Western Indian Ocean are two distinct species. The species found along the coast of South Africa overlaps with *L. nebulosus* in southern Mozambique, and has been identified as *L. scoparius* Gilchrist and Thompson 1908.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 23 July 2013 (22 cm TL).
- 1 specimen collected from Karachi Fish Harbour on 9 September 2017 (48 cm TL).

#### *Lethrinus obsoletus* (Forsskål, 1775)

(Fig. 5)

This species is commonly known as the orange-striped emperor. It is locally known as “Mullah” in the Province of Sindh, whereas in the Province of Balochistan it is called “Gadeer”. It was reported from the Pakistani coast without specifying any particular location by Bianchi (1985), Hoda (1985, 1988), Hussain (2003), Psomadakis *et al.* (2015), and Sato and Walker (1984). It was originally described as *Sciaena obsoleta* from the Red Sea by Forsskål (1775). Bianchi (1985), Hoda (1985, 1988), Hussain (2003), and Sato and Walker (1984) reported this species as *Lethrinus ramak*.

The body of this species is moderately deep. The colour of its body is light tan or olive to brown, lighter below. The centers of scales are often lighter than the background colour. There is an orange-yellow stripe present on the lower side at the level of the pectoral fin base. There are two additional faint orange-yellow stripes present above and one below this stripe. The head is often with several broad, indistinct vertical and diagonal light and dark bands.

There are white spots present below the eye. The posterior edge of the operculum is dark brown. The fins are whitish or tan, sometimes mottled.



Fig. 5. *Lethrinus obsoletus*. Specimen caught by handline by an amateur sport fisherman at Churna Island.

This species is known from the Red Sea, East Africa to South Africa, Madagascar, Seychelles, Maldives, Sri Lanka, Andaman Islands, Japan, Marshall Islands, Wake Atoll, Australia, New Caledonia, Tonga, and Samoa (Carpenter, 2022; Froese and Pauly, 2025). This species inhabits sand and rubble areas to a depth of 30 m.

#### Material Examined

- 1 specimen caught by handline by an amateur sport fisherman at Churna Island on 23 July 2013 (22 cm TL).

#### *Lethrinus olivaceus* Valenciennes, 1830

This species is commonly known as the longface emperor. It is locally known as “Mullah” in the Province of Sindh, whereas in the Province of Balochistan it is called “Gadeer”. It was reported from the Pakistani coast without specifying any particular location by Carpenter and Allen (1989) and Psomadakis *et al.* (2015). It was originally described from the Sunda Strait, near Antjer, Java, Indonesia, by Valenciennes (1830).

The body of this species is moderately elongate. The colour of its body is grey, lighter ventrally, often with scattered irregular dark blotches. The snout has wavy dark streaks. Its upper jaw, especially near the corner of the mouth, is sometimes edged behind with red.

This species is known from the Red Sea, Persian Gulf, Socotra (Yemen), East Africa, Madagascar, Seychelles, Reunion, Maldives, Sri Lanka, Andaman Islands, Indonesia, Marshall Islands, New Caledonia, Samoa, Kiribati, and Pitcairn Group, Japan, Australia (Carpenter, 2022; Froese and Pauly, 2025). No specimen of this species was examined during the present study.

## Material Examined

- None
- 

***Lethrinus ornatus*** Valenciennes, 1830  
(Fig. 6)



Fig. 6. *Lethrinus ornatus*.

This species is commonly known as the ornate emperor. It is locally known as “Mullah” in the Province of Sindh, whereas in the Province of Balochistan it is called “Gadeer”. It was reported from the Pakistani coast without specifying any particular location by Psomadakis *et al.* (2015). It was originally described as Java, Indonesia by Valenciennes (1830).

Its body is relatively deep, whereas its dorsal profile near the eye is convex, and the snout angle relative to the upper jaw is between 65 and 75 degrees. The colour of its body is dusky whitish, lighter below, with four or six orange stripes. The posterior edge of its operculum and preoperculum is bright red. Its head is brown or tan; sometimes there is a red spot on the front edge of the eye. Its pectoral fin is orangish, whereas pelvic, anal, and most of the dorsal fin are whitish, and the edge of the dorsal fin and caudal fin are reddish.

It is known from the Maldives and Sri Lanka; elsewhere, to Indonesia, Japan, Papua New Guinea, and northeast Australia (Frickle *et al.*, 2025; Froese and Pauly, 2025).

## Material Examined

- 1 specimen collected from Karachi Fish Harbour on 3 October 2010 (38 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 14 November 2018 (42 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 26 March 2022 (22 cm TL).

***Monotaxis grandoculis*** (Forsskål, 1775)  
(Fig. 7)

This species is commonly known as humpnose big-eye bream. It is locally known as “Mullah” in the Province of Sindh, whereas in the Province of Balochistan it is called “Gadeer”. It was reported from the Pakistani coast without specifying any particular location by Bianchi (1985), Hoda (1985, 1988), and Hussain (2003). Psomadakis *et al.* (2015), and Sato and Walker (1984). It was originally described as *Sciaena grandoculis* from Jeddah, Saudi Arabia, by Forsskål (1775). No type of this species is known (Frickle *et al.*, 2025).

Its body is oblong, and its head profile is strongly convex in the front of the eye, and the snout slopes steeply. Its ground colour is generally bluish-grey, grading to whitish on the ventral parts. Its lips are yellow to pinkish, and the area around the eye is often yellow or orange. Its fins are generally without distinctive markings, and the

membranes are clear or dusky, but, at times, reddish to yellow-orange. The base of the upper pectoral fin rays and the inner base of the pectoral axil are black. Its caudal fin frequently has blackish rays contrasted against the paler membranous part of the fin.

Geographically it is known from the Red Sea, Kenya to South Africa, Mozambique Channel, northern Madagascar, Seychelles, Mascarenes, and Chagos; elsewhere to southern Japan, Australia, New Caledonia, Tonga, the Line Islands (Kiribati), Pitcairn Islands, and Hawaii (Carpenter, 2022; Froese and Pauly, 2025). This species is generally found on or near coral areas, over sand and rubble, to a depth between 3 and 150 m.



Fig. 7. *Monotaxis grandoculis*.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 1 September 2009 (42 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 25 September 2013 (34 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 11 January 2021 (41 cm TL).

Family Nemipteridae (Threadfin breams, monocle breams and dwarf monocle breams)

Genus *Nemipterus* Swainson, 1839

*Nemipterus bipunctatus* (Valenciennes, 1830)

(Fig.8)

This species is commonly known as Delagoa threadfin bream. It is locally known as “Lal-pari”, “Chakori”, or “Korora” in the Province of Sindh, whereas in the Province of Balochistan it is called “Kolonto”. This species was reported from Karachi by Niazi (2001). It was reported from the Pakistani coast without specifying any particular location by Bianchi (1985), Froese and Pauly (2025), Hoda (1985, 1988), Hussain (2003), Misra (1962), Psomadakis *et al.* (2015), Qureshi (1964), Russell (1986), and Russell and Allen (1984). It was originally described as *Dentex bipunctatus* from Jeddah, Saudi Arabia, Red Sea by Valenciennes (1830); however, information about types is not known (Frickle *et al.*, 2025). Russell and Allen (1984) reported *Nemipterus bleekeri*, which is a junior synonym of this species, from Pakistani waters. Hoda (1985, 1988), Hussain (2003), Misra (1962), Niazi (2001), Qureshi (1964), and Russell (1986) reported this species as *Nemipterus bleekeri*.

It has an elongate to moderately deep and compressed body. Its caudal fin is forked, its upper and lower lobes subequal in length. Its body is pinkish dorsally, shading to silvery ventrally, with 5–7 greenish-yellow upward-curved stripes on the body below the lateral line. Its snout has 2 indistinct bluish or mauve stripes, whereas the dorsal fin is pale pink, and has a reddish margin and a yellow submarginal stripe. Its anal fin is pale bluish white and has 2–4 irregular longitudinal yellow stripes, whereas the caudal fin is yellowish pink and the paired fins are translucent.



Fig. 8. *Nemipterus bipunctatus*.

This species is known from the Persian Gulf, the Red Sea, the Arabian Sea, to Mozambique, Madagascar, Mauritius, and Sri Lanka; elsewhere it is known from the Bay of Bengal, Andaman Sea, and the Strait of Malacca (Froese and Pauly, 2025; Russell, 2022).

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 18 January 2022 (31 cm TL).
- 1 specimen collected from Karachi Fish Harbour on 25 March 2022 (31 cm TL).

#### *Nemipterus hexodon* (Quoy and Gaimard, 1824)

This species is commonly known as the ornate threadfin bream. It is locally known as “Lal-pari”, “Chakori”, or “Korora” in the Province of Sindh, whereas in the Province of Balochistan it is called “Kolonto”. This species is reported from Sindh by Murray (1880) as *Synagris notata*. It was originally described as *Dentex hexodon* from Timor Island, southern Malayan Archipelago by Quoy and Gaimard (1824). Murray (1880) reported this species as *Synagris notata*.

It has an elongate to moderately deep and compressed body. The upper lobe of its caudal fin is slightly longer than the lower, tipped with yellow. The colour of its upper body is pinkish, whereas it is silvery white below.

This species is known from the Western Pacific, including the Andaman Sea, to the Solomon Islands, but this species is not known from the Arabian Sea (Froese and Pauly, 2025; Russell, 1990). Its presence in Pakistan is, therefore, questionable. During the present study, no specimen of this species was examined.

#### Material Examined

- None

#### *Nemipterus isacanthus* (Bleeker, 1873)

This species is commonly known as the teardrop threadfin bream. It is locally known as “Lal-pari”, “Chakori”, or “Korora” in the Province of Sindh, whereas in the Province of Balochistan it is called “Kolonto”. It was reported from Karachi by Anonymous (1999). It was originally described as *Dentex isacanthus* from Jakarta (Java) and Padang (Sumatra), Indonesia by Bleeker (1873). Anonymous (1999) reported this species as *Synagris isacanthus*.

It has an elongate to moderately deep and compressed body. The upper lobe of its caudal fin is falcate, tipped with bright yellow. Axillary scale present. Its upper body is pinkish mauve, and silvery white below. There is a yellow teardrop-shaped bar beneath the eye, extending obliquely halfway to the suborbital.

This species is known from the Philippines, the Gulf of Thailand, the Strait of Malacca, Indonesia, and northern Australia. Its presence in the western Indian Ocean, including the Arabian Sea. Its presence in Pakistan is, therefore, questionable. During the present study, no specimen of this species was examined.

#### Material Examined

– None

*Nemipterus japonicus* (Bloch, 1791)  
(Fig. 9)



Fig. 9. *Nemipterus japonicus*.

The common name of this species is Japanese threadfin bream. It is locally known as “Lal-pari”, “Chakori”, or “Korora” in the Province of Sindh, whereas in the Province of Balochistan it is called “Kolonto”. It was reported from Sindh by Ahmad *et al.* (1973), Anonymous (1955), Brandhorst (1994), and Misra (1962), from Indus Delta by Mahmood *et al.* (1999), from Karachi by Abildgaard *et al.* (1994), Ahmad *et al.* (1973), Anonymous (1955), Misra (1962), and Niazi (2001), from South Cape Monz by GBIF (2025), from Khori Bank by Brandhorst (1994), Makran by Ahmad *et al.* (1973), Anonymous (1955), Misra (1962) and Qureshi (1952), and Sonmiani bay by Brandhorst (1994) and GBIF (2025). It was reported from the Pakistani coast without specifying any particular location by Bianchi (1985), Froese and Pauly (2025), Hoda (1976, 1981, 1985, 1988), Hussain (2003), Hussain and Kidwai (1994), Iqbal *et al.* (1999), Jalil and Khalil (1972, 1981), Majid *et al.* (1992), Psomadakis *et al.* (2015), Qureshi (1964), Russell (1990), and Russell and Allen (1984). It was originally described as *Sparus japonicus* from Japan by Bloch (1791).

It has an elongate to moderately deep and compressed body. Its caudal fin is moderately forked, with the upper lobe slightly longer than the lower lobe and produced into a short or moderately long filament. The colour of its body is pinkish dorsally, and silvery below, whereas the top of the head behind the eyes has a golden sheen. There are 11 or 12 pale golden yellow stripes along the body, from behind the head to the caudal-fin base. There is a prominent red-suffused yellow blotch below the origin of the lateral line. Its dorsal fin is whitish with a yellow margin and edged with red. There is a pale-yellow stripe near the dorsal-fin base, a stripe which is narrow anteriorly and widens on the rear part of the fin. Its anal fin is whitish, with pale yellow broken lines or scribbling over most of the fin. Its pectoral fins are translucent pinkish, whereas pelvic fins are whitish, with yellow axillary scales, and the caudal fin is pink, with the upper tip and filament yellow.

This species is known from the Red Sea to Madagascar and southwestern India; elsewhere, it extends to the east coast of India, the Philippines, southern Japan, and northern Australia (Froese and Pauly, 2025; Russell, 2022). It is common in coastal and upper continental shelf waters, on muddy or sandy bottoms, usually in schools.

Material Examined

- 1 specimen collected from Karachi Fish Harbour on 29 October 2010 (19 cm TL).
- 1 specimen collected on board R/V Fridtjof Nansen Cruises on 9 November 2010 (26 cm TL).
- 1 specimen collected from Karachi Fish Harbour on 29 August 2014 (17 cm TL).
- 1 specimen collected from Karachi Fish Harbour on 10 October 2014 (17 cm TL).

*Nemipterus peronii* (Valenciennes, 1830)  
(Fig.10)

This species is commonly known as notchedfin threadfin bream. It is locally known as “Lal-pari”, “Chakori”, or “Korora” in the Province of Sindh, whereas in the Province of Balochistan it is called “Kolonto”. It was reported

from Sindh and Karachi by Anonymous (1955), and Misra (1962), from off Karachi by Hussain and Kidwai (1994), from Balochistan by Zugmayer (1913), and from Makran by Anonymous (1955), Misra (1962), and Qureshi (1952). It was reported from the Pakistani coast without specifying any particular location by Bianchi (1985), Hoda (1985, 1988), Hussain (2003), Jalil and Khalil (1972, 1981), Psomadakis *et al.* (2015), Qureshi (1952b, 1964), and Russell and Allen (1984). This species was originally described as *Dentex peronii* by Valenciennes (1830). Anonymous (1955), Hussain (2003), Jalil and Khalil (1972, 1981), Misra (1962), and Qureshi (1952, 1964) reported this species as *Nemipterus tolu*, whereas Zugmayer (1913) listed it as *Synagris tolu*.

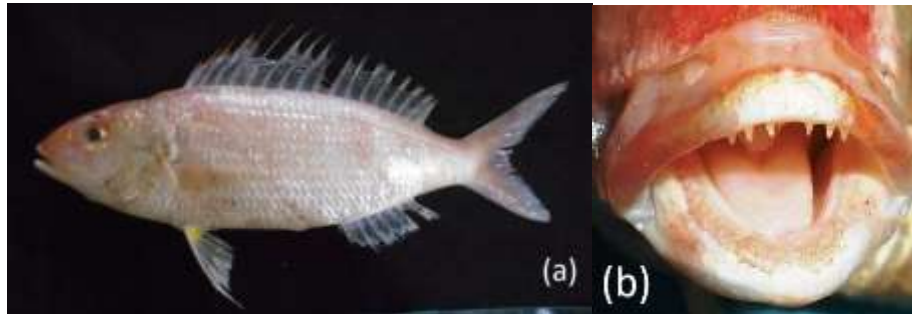


Fig. 10. *Nemipterus peronii*. (a) Specimen collected from Karachi Fish Harbour, (b) Mouth showing teeth.

It has an elongate to moderately deep and compressed body. Its upper body is pinkish, with 7 or 8 indistinct darker pink saddles extending to or just below the lateral line, where its lower body is silvery, with faint golden lines following each scale row. There are diffuse pale reddish spots below and just behind the origin of the lateral line, and a golden yellow stripe on the snout in front of the eyes passing through the nostrils. Its upper lip is yellow, whereas the suborbital region is silvery mauve. There are golden reflections on the preopercle and opercle. Its dorsal fin is whitish pink, with a pale-yellow line or series of spots just above the fin-base, and the tips of the spinous part are reddish yellow, whereas the anal fin is whitish pink, suffused with pale yellowish in the middle. Its pectoral fins are translucent, and pelvic fins are whitish, whereas the axillary scale is yellow. Its caudal fin is pinkish.

This species is known from the Red Sea and the Persian Gulf, to Sri Lanka, southwards to the Cape of Good Hope, and its distribution is extended to the east coast of India, the Andaman Sea, the Philippines, Taiwan, New Guinea, and Australia (Froese and Pauly, 2025; Russell, 2022). It is a comparatively rare species of rare occurrence along the Pakistan coast.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 17 March 2025 (29 cm TL).

#### *Nemipterus randalli* (Russel, 1986) (Fig. 11)

This species is commonly known as Randall's threadfin bream. It is locally known as "Lal-pari", "Chakori", or "Korora" in the Province of Sindh, whereas in the Province of Balochistan it is called "Kolonto". It was reported from Sonimiani by Anonymous (2001) and GBIF (2025). It was reported from the Pakistani coast without specifying any particular location by Anonymous (2001), Froese and Pauly (2025), GBIF (2025), Majid *et al* (1992), Psomadakis *et al.* (2015), and Russell (1986; 1990; 2022). This species was originally described from the Bahrain fish market, Persian Gulf, by Russell (1986).

It has an elongate to moderately deep and compressed body. The pectoral fins and pelvic fins are very long, extending to or just beyond the level of anal-fin origin. Its caudal fin is forked, and the upper rays are produced into a long trailing filament. The colour of its body is silvery pink, with 3 or 4 faint yellow stripes on the sides below the lateral line. Its ventral midline with a broad yellow stripe on either side. There is a pinkish blotch present below the origin of the lateral line. Its dorsal fin is pale bluish, with closely packed yellow markings on the lower three-fourths, and the margin is red. Its anal fin is pale bluish, with a narrow yellow medial stripe, whereas the pectoral fins are transparent, and the pelvic fins are whitish. Its caudal fin is pink, and the filament is pale reddish. Its eyes and peritoneum are salmon-pink.



Fig. 11. *Nemipterus randalli*.

This species is known from the Red Sea, the Gulf of Aqaba, the Gulf of Aden, Oman, the Persian Gulf, Pakistan, and India to the Andaman Sea (Froese and Pauly, 2025; Russell, 2022). It is a Lessepsian migrant in the Mediterranean Sea (Froese and Pauly, 2025; Lelli *et al.*, 2008). It is found in the continental shelf with a sand and mud bottom.

#### Material Examined

- 1 specimen collected on board R/V Fridtjof Nansen Cruises on 18 October 2010 (12 cm TL).

#### *Nemipterus virgatus* (Houttuyn, 1782)

This species is commonly known as golden threadfin bream. It is locally known as “Lal-pari”, “Chakori”, or “Korora” in the Province of Sindh, whereas in the Province of Balochistan it is called “Kolonto”. It was reported from the Pakistani coast, without specifying a particular location, by Jalil and Khalil (1972, 1981). It was originally described as *Sparus virgatus* from Japan by Houttuyn (1782). Its type is not known (Frickle *et al.*, 2025).

It has an elongate to moderately deep and compressed body. The upper lobe of its caudal fin is produced to form a trailing filament. The colour of its body is pink, which is paler below. Its head is pink and has a yellow stripe from the upper lip extending to the antero-ventral margin of the eye. There are two faint yellow bars across the cheek, sometimes present. Its pelvic fins have yellow stripes.

This species is known from southern Japan, the China Sea, Vietnam, to the Formosa Strait, northwestern Australia, and the Arafura Sea (Russell, 1990). Its occurrence in Pakistan is doubtful. No species of this species was examined during the present study.

#### Material Examined

- None

#### *Nemipterus zysron* (Bleeker, 1856)

This species is commonly known as slender threadfin bream. It is locally called “Lal-pari”, “Chakori”, or “Korora” in Sindh Province, while in Balochistan Province, it is referred to as “Kolonto”. It was reported from the Pakistani coast without specifying any particular location by Bianchi (1985), Hoda (1985, 1988), Hussain (2003), Iqbal (1991a, 1991b, 1992), Iqbal *et al.* (1999), Psomadakis *et al.* (2015), Russell (1990), and Russell and Allen (1984). It was originally described as *Dentex zysron* from Nias Island, Indonesia, by Bleeker (1856). Bianchi (1985), Hoda (1985, 1988), Hussain (2003), Iqbal (1991a, 1991b, 1992), Iqbal *et al.* (1999), Niazi (2001), and Russell and Allen (1984) reported this species as *Nemipterus metopias*.

It has an elongate to moderately deep and compressed body. Its caudal fin is forked, and the upper lobe is produced into a short filament. Its body is reddish dorsally, silvery below; sides below the lateral line with indistinct yellow stripes along the middle of each scale row. There are yellow stripes in front of the eyes through the nostrils, and from the upper lip to beneath the eyes, and a less distinct golden stripe from behind the eye to the origin of the lateral line, and across the upper part of the opercle to the pectoral-fin origin. Its dorsal fin is pale yellow, with a bright yellow margin and a pale mauve submarginal stripe and a pale mauve stripe near the dorsal-fin base. Its anal fin is pale lilac, with a series of elongate yellow spots or a yellow stripe submedially, whereas its pectoral fins are pale yellow, and pelvic fins are translucent whitish, fin base and axillary scale pale yellow. Its caudal fin is pinkish, with upper and lower lobes pale yellowish, whereas the filament is yellow.

This species is known from the Red Sea, Arabian Sea, Tanzania (Zanzibar), Mozambique, Madagascar, Seychelles, and Sri Lanka to the Bay of Bengal, Indonesia, Andaman Sea, Malaysia, Taiwan, Japan, Marshall Islands, Australia, New Caledonia, and Fiji (Froese and Pauly, 2025; Russell, 2022). This species is found over sand bottom near rocks or reefs. No specimen of this species was examined during the present study.

#### Material Examined

- None

Genus *Parascolopsis* Boulenger, 1901  
*Parascolopsis akatamae* Miyamoto, McMahan and Kaneko, 2020  
(Fig. 12)

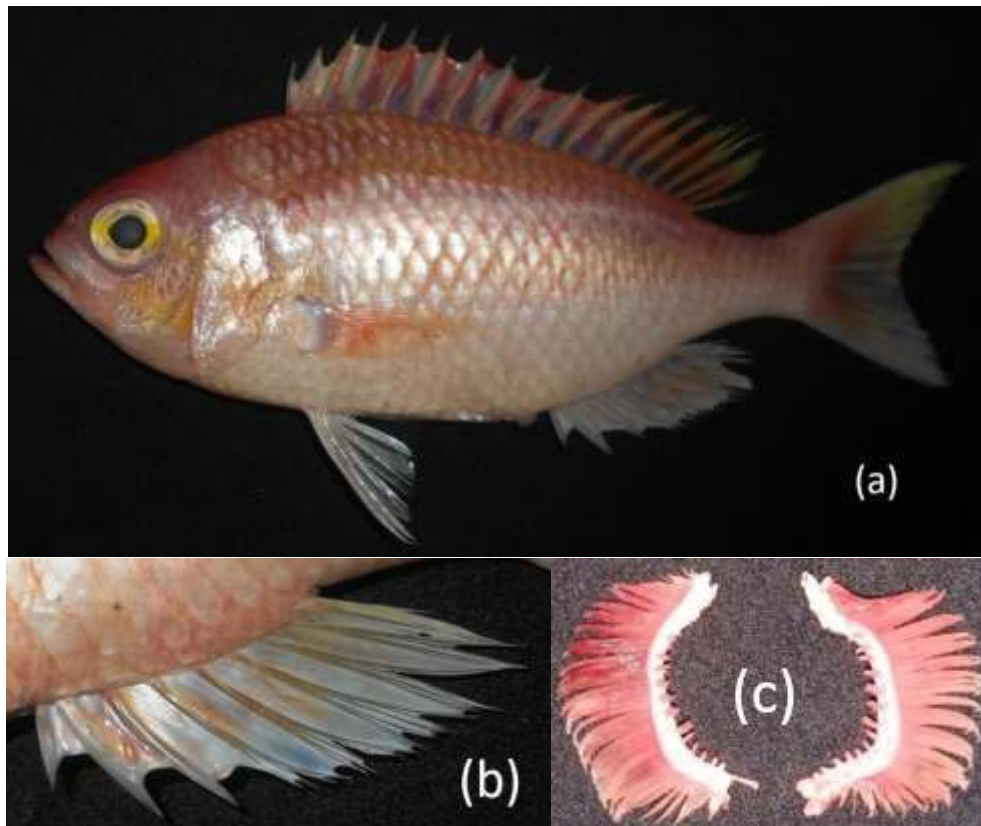


Fig. 12. *Parascolopsis akatamae*. (a) Specimen collected from Karachi Fish Harbour; (b) Anal fin; (c) Gill rakers

This species is commonly known as the rosy dwarf monocle bream. It is locally called “Lal-pari”, “Chakori”, or “Korora” in Sindh Province, while in Balochistan Province, it is referred to as “Kolonto” and “Sore-Mahi. It was reported for the first time from the Pakistan coast. It was originally described by Miyamoto *et al.* (2020) from off

Motobu, Okinawa-jima Island, southern Japan (26°38'27"N, 127°45'39"E, depth 200 meters Bianchi (1985), Hoda (1985, 1988), Hussain (2003), Psomadakis *et al.* (2015), Russell (1990), Russell and Allen (1984), Russel and Golani (1993) reported *Parascolopsis eriomma* Jordan and Richardson, 1909 from Pakistan coast is based on misidentification, as this species (*P. eriomma*) is known from the Western Pacific area including southern Japan, Taiwan, the Philippines and Indonesia. The specimens from the Arabian Sea and Persian Gulf recorded as *P. eriomma* are now considered as *Parascolopsis akatamae* (Bangchongmanee *et al.* 2023; Mahadevan *et al.*, 2022; Miyamoto *et al.*, 2020).

The body of this species is moderately deep. Its head is moderate, whereas its snout is short. Its eyes are large, round, and located in the upper portion of the anteroposterior axis. Its pectoral fins are moderately long, with the tips of the fins just reaching the level of the anus or slightly short. The origin of pelvic fins is about level with the 3<sup>rd</sup> dorsal-fin spine, the tip of the fins is just reaching the anus or slightly short, whereas the caudal fin is lightly forked. The colour of its body is generally darker dorsally and paler ventrally. Its iris is red or orange and has three pale yellow stripes on the head. There is a pale-yellow stripe on the mid-lateral line of the trunk and tail. A dark red saddle larger than the eye is present on the dorsal-fin origin (which may be absent in large specimens). There is a small black spot on the upper portion of the pectoral-fin base. The dorsal fin is mainly yellow or red. Its pectoral, pelvic, and anal fins are pale yellow, whereas the caudal fin is mainly yellow, with unclear red vermiculate patterns present on the forked part.

This species is known from the Persian Gulf, Gulf of Oman, Red Sea, Arabian Sea, East Africa to South Africa, to the Bay of Bengal, Sri Lanka, Andaman Sea, Thailand, and West Pacific, including Indonesia, the Philippines, southern Japan, Taiwan, South China Sea (Bangchongmanee *et al.* 2023; Mahadevan *et al.*, 2022; Miyamoto *et al.*, 2020).

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 4 April 2024 (35 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 9 October 2025 (30 cm TL).

#### *Parascolopsis aspinosa* (Rao and Rao, 1981) (Fig. 13)

The common name of this species is smooth dwarf monocle bream. It is locally called “Lal-pari”, “Chakori”, or “Korora” in Sindh Province, while in Balochistan Province, it is referred to as “Kolonto” and “Sore-Mahi. It was reported from the off Indus Delta by Anonymous (2001). It was reported from the Pakistani coast without specifying any particular location by Bianchi (1985), Froese and Pauly (2025), GBIF (2025), Hoda (1985, 1988), Hussain (2003), Psomadakis *et al.* (2015), Russell (1990), Russell and Allen (1984), and Russell and Golani (1993). It was originally described as *Scolopsis aspinosa* from off Waltair (17°42'N, 83°20'E), eastern coast of India, by Rao and Rao (1981).



Fig. 13. *Parascolopsis aspinosa*.

It has an elongate to deeper, and compressed body. Its head scales reach between the level of the front margin of the eyes and the posterior nostrils. Its pectoral fin is unbranched, whereas the pectoral and pelvic fins are long, extending to or beyond the level of the vent. The colour of its body is rosy orange, with 4 pale reddish saddles on the back and 2 on the peduncle. The suborbital and edge of the preopercle are silvery yellow. There is a black blotch at the dorsal-fin base between the 8<sup>th</sup> spine and the 1<sup>st</sup> ray. The fin margins are orange in this species, whereas the anal fin is pale rosy, and the pectoral fins are yellowish.

This species is known from the Red Sea, Gulf of Aden, Gulf of Oman, Persian Gulf, Arabian Sea, and India to the Bay of Bengal and Andaman Sea (Froese and Pauly, 2025; Russell, 2022). It is mainly found in offshore waters, on sand and mud bottom.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 2 October 2009 (13 cm TL).
- 1 specimen collected on board R/V Fridtjof Nansen Cruises on 18 October 2010 (14 cm TL).
- 1 specimen collected from Karachi Fish Harbour on 16 October 2014 (20 cm TL).

#### *Parascolopsis boesemani* (Rao and Rao, 1981)

(Fig. 14)



Fig. 14. *Parascolopsis boesemani*.

The common name of this species is redfin dwarf monocle bream. It is locally called “Lal-pari”, “Chakori”, or “Korora” in Sindh Province, while in Balochistan Province, it is referred to as “Kolonto” and “Sore-Mahi”. It was reported from the Pakistani coast, without specifying a particular location, by Bianchi (1985), Hussain (2003), and Psomadakis *et al.* (2015). It was originally described as *Scolopsis boesemani* from Waltair (17°42'N, 83°20'E), east coast of India, by Rao and Rao (1981).

It has an elongated, deeper, and compressed body. Its snout length is shorter than its eye diameter. Its pectoral and pelvic fins are long, extending beyond the level of the vent. The color of its body is rosy yellow, with three pale rosy saddles on the body and one on the peduncle. Two pale green stripes with a slight orange tinge run below the lateral line. The dorsal fin is silvery yellow, featuring a deep red blotch between spines 7–10. Its caudal fin is silvery yellow, with a rosy-colored forked margin.

This species is known from Pakistan and India (Frickle *et al.*, 2025).

#### Material Examined

- 1 specimen collected on board R/V Fridous Cruise-1 on 13 November 2009 (14 cm TL).
- 1 specimen collected from offshore waters of Balochistan on 11 October 2013 (13 cm TL)

- 1 specimen collected from offshore waters of Balochistan on 29 October 2014 (12 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 29 October 2014 (13 cm TL).

***Parascolopsis inermis*** (Temminck and Schlegel, 1843)

This species is commonly known as the unarmed dwarf monocle bream. It is locally called “Lal-pari”, “Chakori”, or “Korora” in Sindh Province, while in Balochistan Province, it is referred to as “Kolonto” and “Sore-Mahi”. It was reported from the Balochistan coast by Zugmayer (1913) as *Scolopsis inermis*. It was originally described as *Scolopside inermis* from Japan by Temminck and Schlegel (1843).

It has an elongate, deeper, and compressed body. Its pectoral fins are long, extending to or beyond the level of the vent, the pelvic fins are long, extending to or almost to the level of the vent. The colour of its body is pale yellowish and silvery ventrally. It has 4 broad, dark reddish-brown bars on the back. There are paler, indistinct bars in the interspaces between darker bars. Its dorsal fin is yellowish, with numerous red spots.

This species is known from the Lakshadweep Islands, Sri Lanka, the Bay of Bengal, the Andaman Sea, Indonesia, and southern Japan. No specimen of this species was examined during the present study.  
Material Examined

- None

***Parascolopsis townsendi*** Boulenger, 1901

This species is commonly known as scaly dwarf monocle bream. It is locally called “Lal-pari”, “Chakori”, or “Korora” in Sindh Province, while in Balochistan Province, it is referred to as “Kolonto” and “Sore-Mahi”. It was reported from off the Indus Delta by Anonymous (2001) and off Malan over Murray Ridge by the same author (Anonymous, 2001). It was reported from the Pakistani coast without specifying any particular location by Bianchi (1985), GBIF (2025), Froese and Pauly (2025), Hoda (1985, 1988), Hussain (2003), Norman (1939), Psomadakis *et al.* (2015), Russell (1990), Russell and Allen (1984) and Russell and Golani (1993). It was originally described from the Sea of Oman by Boulenger (1901).

It has an elongate to deeper, and compressed body. The suborbital is scaly, and the rear margin is finely serrate, whereas there is no spine at the upper corner. Its pectoral fins are long, extending to above the anal-fin origin. The colour of the body is uniformly reddish and has a silvery lateral stripe.

This species is known from the Red Sea, the Gulf of Oman, the Arabian Sea, and the Gulf of Aden (Froese and Pauly, 2025; Russell, 2022). No specimen of this species was examined during the present study.

Material Examined

- None.

Genus ***Scolopsis*** Cuvier, 1814  
***Scolopsis bimaculatus*** Ruppell, 1828  
(Fig. 15)



Fig. 15. *Scolopsis bimaculatus*.

This species is commonly known as the thumbprint monocle bream. It is locally called “Lal-pari”, “Chakori”, or “Korora” in Sindh Province, while in Balochistan Province, it is referred to as “Kolonto”, “Sahar-bano”, and “Sore-Mahi”. It was reported from the Pakistani coast without specifying any particular location by Bianchi (1985), Froese and Pauly (2025), Hoda (1985, 1988), Hussain (2003), Psomadakis *et al.* (2015), Russell (1990, 2022), and Russell and Allen (1984). It was originally described from Massawa, Eritrea, Red Sea by Ruppell (1828).

It has an elongate to deeper, and compressed body. Its snout length is subequal to eye diameter. Its pelvic fins are long, extending to between the level of the vent and the anal-fin origin. The caudal fin is forked. The colour of its body is pale grey, which is whitish ventrally. There is an elongate brownish blotch (or pair of blotches) present on the upper part of the sides, beginning beneath the 7<sup>th</sup> or 8<sup>th</sup> dorsal-fin spine and intersected by the lateral line. There is a turquoise stripe present from the upper lip to the lower edge of the eyes.

This species is known from the Persian Gulf, Oman, the Red Sea, to Mozambique, Madagascar, Pakistan, India, and Sri Lanka, as well as the Bay of Bengal (Froese and Pauly, 2025; Russell, 2022).

Material Examined

- 1 specimen collected from Karachi Fish Harbour on 14 October 2013 (28 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 28 February 2017 (20 cm TL).

#### *Scolopsis frenatus* (Cuvier, 1830)

This species is commonly known as the bridled monocle bream. It is locally called “Lal-pari”, “Chakori”, or “Korora” in Sindh Province, while in Balochistan Province, it is referred to as “Kolonto”, “Sahar-bano”, and “Sore-Mahi”. It was reported from Sindh by Anonymous (1955), Day (1875), and Murray (1880), from Balochistan by Zugmayer (1913), and from Makran by Anonymous (1955). It was reported from the Pakistani coast without specifying any particular location by Hoda (1988). It was originally described as *Scolopsides fraenatus* from Seychelles and Mauritius by Cuvier (1830). It was reported by Anonymous (1955), Day (1875), and also by Murray (1880) as *Scolopsis phaeops*.

It has an elongate to deeper, and compressed body. The colour of its body is blue or olive-green on the dorsum, and white below. Its snout is dusky. There is a narrow blue stripe present from snout tip to anteroventral edge of the eye, and a yellow stripe from the top of the snout, through the upper part of the eyes, arching on back to upper part of the peduncle, stripe edged dark green above from behind eyes to beneath 3<sup>rd</sup> or 4<sup>th</sup> dorsal fin spine. There is a narrow yellow stripe present from the top of the head to along the dorsal fin base. Its juveniles are blue on the upper half of the body, white below. There is a narrow yellow stripe on either side of the dorsal midline, and a broader yellow stripe from the top of the snout to the upper half of the peduncle.

This species is known from the Seychelles, Chagos Archipelago, Mauritius, Réunion, and Madagascar (Russell, 1990; 2022, Russell and Allen, 1984). There seems to be no record of this species in the Northern Indian Ocean; therefore, its presence in Pakistan is doubtful. No specimen of this species was examined during the present study.

Material Examined

- None.

#### *Scolopsis ghanam* (Fabricius, 1775)

This species is known as the Arabian monocle bream. It is locally called “Lal-pari”, “Chakori”, or “Korora” in Sindh Province, while in Balochistan Province, it is referred to as “Kolonto”, “Sahar-bano”, and “Sore-Mahi”. It was reported from the Pakistani coast without specifying any particular location by Bianchi (1985), Hoda (1985, 1988), Hussain (2003), Lieske and Myers (1996), Psomadakis *et al.* (2015), Russell (1990, 2022), and Russell and Allen (1984). It was originally described as *Sciaena ghanam* from Jeddah, Saudi Arabia, Red Sea by Fabricius (1775).

It has an elongate to deeper, and compressed body. The colour of its body is silvery grey, which has numerous black and dark brown spots on the sides. The spots above the lateral line are forming 2 or 3 narrow brown or black stripes with white interspaces. There is a pearly white stripe from below the eyes to the upper edge of the pectoral-fin bases.

This species is known from Pakistan, the Persian Gulf, Oman, the Red Sea to Mozambique, Madagascar, and Seychelles, extending to the Andaman Islands (Froese and Pauly, 2025; Russell, 2022). This species is found in the inshore water, over sandy bottoms, close to coral areas. No specimen of this species was examined during the present study.

#### Material Examined

- None.

#### *Scolopsis curite* Cuvier 1815 (Fig.16)

This species is commonly known as yellowfin monocle bream. It is locally called “Lal-pari”, “Chakori”, or “Korora” in Sindh Province, while in Balochistan Province, it is referred to as “Kolonto”, “Sahar-bano”, and “Sore-Mahi”. This species is reported from Karachi by Russell *et al.* (2022). It was reported from the Pakistani coast, without specifying a particular location, by Psomadakis *et al.* (2015). It was originally described Vizagapatam, Andhra Pradesh, India by Cuvier (1815). Psomadakis *et al.* (2015) reported this species as *Scolopsis torquatus* (Cuvier, 1830).

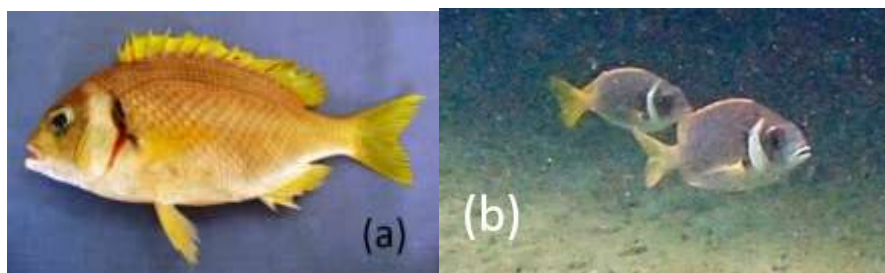


Fig. 16. *Scolopsis curite*. (a) Specimen collected from Karachi Fish Harbour. (b) Underwater photo by SCUBA Diver Mr. Khizar Sharif at Churna Island.

The body is moderately deep and laterally compressed. The colour of its body is purplish to reddish brown, with a dark spot with greenish yellow tinge basally on each scale except for the breast and caudal peduncle, shading to yellowish on the caudal peduncle and whitish ventrally on the abdomen. Its lateral line is brown, whereas the head is brown with a curving white bar from dorsally on the postorbital head, broadening as it passes ventrally onto the operculum. The posterior edge of opercle above opercular spine is black or dark brown, opercular membrane below opercular spine is dull red. The posterior edge of the preopercle is often yellowish, and the suborbital is broadly whitish. Its fins are golden yellow, whereas the spinous portion of the dorsal fin is purple distally, and the leading edge of the pelvic fins is pale blue. There is a small wedge-shaped black spot present dorsally at the base of the pectoral fins.

This species is known from the Arabian Sea, Persian Gulf, Oman, Red Sea, Kenya to Mozambique, extending to the Bay of Bengal and the Andaman Sea (Frickle *et al.*, 2025; Russell *et al.*, 2022).

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 13 September 2004 (17 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 8 January 2005 (15 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 10 January 2005 (16 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 12 October 2013 (16 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 21 November 2017 (18 cm TL).

#### *Scolopsis margaritifera* (Cuvier, 1830)

This species is commonly known as the pearly monocle bream. It is locally called “Lal-pari”, “Chakori”, or “Korora” in Sindh Province, while in Balochistan Province, it is referred to as “Kolonto”, “Sahar-bano”, and “Sore-Mahi”. This species is reported from Sindh by Murray (1880). This species was originally described as *Scolopsides margaritifera* from Waigeo, Indonesia, by Cuvier (1830). Murray (1880) reported this species as *Scolopsis leucotaenia*.

It has an elongate and compressed body. The colour of its upper body is olive, and white below. There are 2 pearly white stripes on the snout in front of the eyes. The lower lobe of the caudal fin is reddish.

This species is known from Myanmar, the Andaman Sea, and Indonesia, the Philippines, New Ireland (Papua New Guinea), and Vanuatu, north to Taiwan, south to northern Australia (Frickle *et al.*, 2025; Froese and Pauly, 2025). Considering its distribution range in the eastern Indian Ocean and the Western Pacific, its reports from Pakistan are based on misidentification. No specimen of this species was examined during the present study.

#### Material Examined

- None.

#### *Scolopsis taeniatus* (Cuvier, 1830)

(Fig. 18)



Fig. 18. *Scolopsis taeniatus*.

The common name for this species is black-streaked monocle bream. It is locally called “Lal-pari”, “Chakori”, or “Korora” in Sindh Province, while in Balochistan Province, it is referred to as “Kolonto”, “Sahar-bano”, and “Sore-Mahi”. It was reported from the Pakistani coast without specifying any particular location by Bianchi (1985), Hoda (1988), Hussain (2003), Psomadakis *et al.* (2015), Russell (1990), and Russell and Allen (1984). This species was originally described as *Scolopsodes taeniatus* from Massawa, Eritrea, Red Sea by Cuvier (1830).

It has an elongate and compressed body. The colour of its body is greenish olive dorsally, and whitish below. There is a narrow whitish stripe along the dorsal-fin base; beneath this, a prominent dark brown or black streak above the lateral line beginning below the 3<sup>rd</sup> or 4<sup>th</sup> dorsal-fin spine and ending on the peduncle. There is a bright blue stripe from the eyes to the upper jaw and from the rear edge of the eyes to the pectoral fin bases, ending as a blue spot. The dorsal fin is orange anteriorly and reddish posteriorly, with a vivid red margin. All other fins are yellowish or reddish.

This species is known from the Red Sea, Gulf of Aden, Oman, Persian Gulf, to India, Sri Lanka, and the Gulf of Mannar (Froese and Pauly, 2025; Russell, 2022).

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 9 May 2013 (27 cm TL)

- 1 specimen collected from Karachi Fish Harbour on 14 May 2013 (26 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 6 June 2013 (27 cm TL).

***Scolopsis vosmeri*** (Bloch, 1792)  
(Fig. 19)

This species is commonly known as the white-cheek monocle bream. It is locally called “Lal-pari”, “Chakori”, or “Korora” in Sindh Province, while in Balochistan Province, it is referred to as “Kolonto”, “Sahar-bano”, and “Sore-Mahi”. This species is reported from Sindh by Anonymous (1955), from Karachi by Anonymous (1955) and Niazi (2001), from Makran by Anonymous (1955) and Qureshi (1952). It was reported from the Pakistani coast without specifying any particular location by Bianchi (1985), Froese and Pauly (2025), Hoda (1985, 1988), Hussain (2003), Psomadakis *et al.* (2015), Russell (1990; 2022), Russell and Allen (1984), and Siddiqi (1956). It was originally described as *Anthias vosmeri* from the Japan Sea by Bloch (1792). Anonymous (1955), Hoda (1988), Qureshi (1952b), and Siddiqi (1956) reported this species as *Scolopsis vosmaeri*.



Fig. 19. *Scolopsis vosmeri*.

The body of this species is moderately deep and laterally compressed, with a dorsal profile of the head more convex than the ventral contour. The colour of its body is reddish brown, shading to white on the caudal peduncle; a blackish spot basally on each scale, except for the breast and caudal peduncle. The background colour is reddish brown with a whitish caudal peduncle; the scales on the flanks have dark spots. There is a wide white, vertical bar running from the crown onto the operculum. The dorsal, pectoral and pelvic fins are dark reddish and there is no black spot on the upper base of the base of the pectoral fin. There is normally a white longitudinal band running below the lateral line, starting on the upper operculum to underneath the soft-rayed part of the dorsal fin.

This species is reported from the Arabian Sea, Pakistan, western India, and Sri Lanka (not recorded from Red Sea and Persian Gulf) extended to the Bay of Bengal, the Andaman Sea, Malaysia, Indonesia, Brunei, the Philippines, Hong Kong, Taiwan and southern Japan (Frickle *et al.*, 2025; Russell *et al.*, 2022).

Material Examined

- 1 specimen collected from Karachi Fish Harbour on 10 October 2005 (21 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 6 January 2009 (19 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 1 April 2013 (17 cm TL).

Family Pentacerotidae (armourhead)  
Genus ***Histioporus*** Temminck and Schlegel, 1844  
***Histioporus typus*** Temminck and Schlegel, 1844  
(Fig. 21)

The common name of this species is the sailfin armourhead. There is no local name that is used in Pakistan. This species was reported from the offshore waters of Balochistan by Hussain and Kidwai (1994). It was also reported from the Pakistani coast, with no specific location mentioned by Psomadakis *et al.* (2015). It was originally described from Nagasaki, Nagasaki Prefecture, Kyūshū, Japan by Temminck and Schlegel (1844). Its holotype was not designated; however, the lectotype (RMNH 422) is housed in Rijksmuseum van Natuurlijke Historie, Leiden, the Netherlands (Hardy, 1983; Frickle *et al.*, 2025).

Body oblong-oval and strongly laterally compressed; dorsal profile shallowly rounded under dorsal spines and anterior dorsal rays, dropping to caudal peduncle; ventral profile slightly posteroventrally inclined from snout to pelvic fin base, shallowly rounded at anal fin base to caudal peduncle; belly broadly keeled. Snout profile concave; eye well above the horizontal line through upper jaw symphysis. Colour of its body is pale, with dark brown bars: first from dorsal-fin origin through pectoral-fin base to pelvic-fin base, second bar from anterior dorsal-fin rays to belly, and third from base of fifth to seventh dorsal-fin rays to base of anal-fin spines.



Fig. 21. *Histiopertus typus*.

This species is known from the Red Sea, Gulf of Oman, Persian Gulf, Pakistan to India, East Africa, Gulf of Aden, Socotra (Yemen), Mozambique to South Africa, Madagascar, Comoro Islands, and Reunion; elsewhere to Indonesia, the Philippines, Taiwan, Korea southern Japan, Australia and Hawaii (Froese and Pauly, 2025; Hardy, 1983; Frickle *et al.*, 2025). This species is usually found inshore on reefs or on the rough bottom of the outer continental shelf and upper slope at deep rocky reefs between 40 and 400 m (Hardy, 1983; Heemstra, 2022c).

#### Material Examined

- One specimen collected from Karachi Fish Harbour on 27 October 2004 (26 cm TL)
- One specimen collected from Karachi Fish Harbour on 30 August 2018 (26 cm TL)

#### CONCLUSIONS

Most perciform fish species are considered important food fish globally. Families Lethrinidae, Dinopercidae, Nemipteridae, Coiidae, Pentacerotidae, and Lobotidae include some important fishes that are commercially exploited in Pakistan. Emperors of the family Lethrinidae are considered important food fish in Pakistan, which fetch high prices in the local market. It is represented by two genera *Lethrinus* and *Monotaxis*, of which the former is represented by 9 species, whereas the latter is monotypic, represented by *Monotaxis grandoculis*. Family Nemipteridae includes commercially important threadfin breams and is represented by three genera and 21 species. 8 species represent genus *Nemipterus*, 6 species represent genus *Parascolopsis*, and genus *Scolopsis* is represented by 7 species. Family Lobotidae and Coiidae (tripletail and tigerfish) is represented by two genera, *Datnioides* and *Lobotes*, each represented by one species. Families Pentacerotidae (armourhead) and Dinopercidae (lampfishes or cavebasses) are represented by one genus each, *Histiopertus* and *Dinoperca*.

Commercially important species of the Family Nemipteridae are mainly caught by bottom trawling on the continental shelf and rarely by gillnetting. Bottom trawling in Pakistan is generally considered multispecies; however, members of the genus *Nemipterus* are observed to be the most dominant fish species, especially during February and April. Threadfin breams (*Nemipterus*) are consumed locally; however, it is mainly used as raw material for surimi and exported to far-east Asian countries. Other members of the Family Nemipteridae are usually caught by handline and consumed locally. Family Lethrinidae includes emperors, which are considered important food fishes in Pakistan. These species are mainly caught by handlines, bottom set-longlines and gillnets. Small quantities of emperors are also exported to the Persian Gulf countries. Family Lobotidae is represented by two species, of which the three-spot tigerfish (*Datnioides polota*) has no commercial importance, whereas the Atlantic tripletail (*Lobotes surinamensis*) used to be a rare occurrence about 10 years back; however, a major surge in its commercial catches was observed in the recent past. Now, tripletail is caught by gillnetting on the continental shelf areas (Fig. 22). Atlantic tripletail is considered an important food fish, which is not only relished locally but also exported mainly to the USA. Species of family Dinopercidae (lampfishes or cavebasses) and the Family Pentacerotidae (armourhead) are seldom caught and thus, of no commercial value.

In the last 10 years unusual increase in the catches of several species, such as triggerfishes belonging to the Family (Balistidae), including *Canthidermis maculata*, *Odonus niger*, and *Sufflamen fraenatum* was observed in Pakistan (Moazzam and Osmany, 2022). In addition, a similar increase in the catches was recorded for the unicorn leather jacket (*Aluterus monoceros*), belonging to the family Monacanthidae, was noticed in Pakistan (Moazzam and Osmany, 2016). In India, a similar increase in the commercial catches of *Aluterus monoceros* and *Odonus niger* has occurred since 2004 (Chavan *et al.*, 2004; CMFRI, 2020; Ghosh *et al.*, 2011; Kanthan *et al.*, 2011; Saleela *et al.*, 2011; Varghese *et al.*, 2011). Increase in landings of *Canthidermis maculata*, *Odonus niger*, *Sufflamen fraenatum*, and *Aluterus monoceros*, and now in the case of *Lobotes surinamensis* in Pakistan, is not fully understood and may be attributed to climate change.



Fig. 22. Commercial landings of Atlantic tripletail (*Lobotes surinamensis*) at Karachi Fish Harbour.

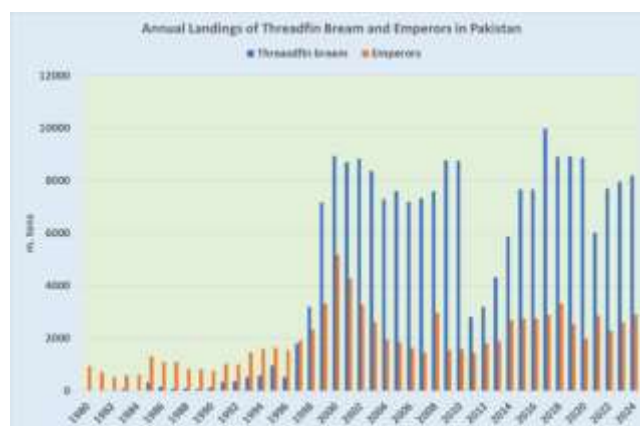


Fig. 23. Annual landings of the threadfin breams and emperors from Pakistan (data obtained from archives of the Marine Fisheries Department).

Annual landings of emperors from Pakistan are presented in Fig. 23, which indicates that annual landings fluctuated between 522 m. tons in 1982 and 8,940 m. tons during 2000 (Anonymous, 2012, updated). Data on landings of various species of emperors is not separately available; however, the spangled emperor (*Lethrinus nebulosus*) was observed to most dominant in the commercial landings both in Sindh and Balochistan. There were two peaks of landings of this species; the first in 2000 (8,940 m. tons), and the second in 2018 (3,316 m. tons). The annual fluctuation in the landings is attributed to the change in fishing efforts in different years.

Data on annual landings of emperor from various fishing centres along the Balochistan coast are presented in Table I; however, such data for the coast of Sindh are not separately recorded. The data indicate that during 2024, Damb was observed to be the main landing centre of Balochistan (1,052 m. tons), followed by Pushukan (882 m. tons). The analysis of the data for the last seven years indicates that Pushukan, Damb, and Gwadar are the main landing centres, whereas minimum landings were observed in Gaddani and Surbandar, where fisheries are of a small-scale nature, which do not operate in deeper waters along the coastline. Annual landings of the data of emperors recorded during the last seven years (2018-2024) are presented in Fig. 24, which indicates that the highest annual landings of emperors were observed in 2018, when it was at the level of 2,927 m. tons, whereas the lowest annual landings of 1,671 m. tons were recorded in 2000.

Fig.23 also presents the data on the annual landings of threadfin breams from the Sindh coast. Members of the family Nemipteridae are not caught on a commercial scale in Balochistan, as there is a ban on the use of trawling, which is the main fishing gear that targets threadfin breams. Although commercial landings of threadfin bream started in 1984, however, it was not before 1997 that demand for members of Family Nemipteridae increased due to its export mainly to the South Korean surimi market. The landings of threadfin breams remain between 7,000 and 10,000 m. tons during the past 25 years, except for a major decrease during 2011 and 2014, which is attributed to the diversion of the trawling fleet to catching squids in comparatively deeper waters on the continental shelf. For the last 20 years, the export of threadfin bream has decreased as major producers of surimi products have established industries for initial processing and extraction of meat from threadfin bream in Karachi. Two species of the genus *Nemipterus*, including *N. japonicus* and *N. randalli* are dominate in the commercial catches, whereas other species of the genus *Nemipterus* are seldom caught (Fig. 24) Other nemipterids which are found in commercial quantities are *Parascolopsis aspinosa*, *Scolopsis curite* (Fig. 25), and *S. vosmeri* (Fig. 26).

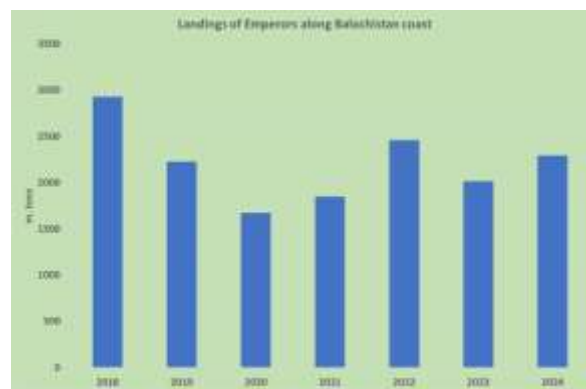


Fig. 24. Annual landings of emperors from Balochistan (data obtained from the Department of Fisheries, Government of Balochistan)

Table I. Annual Landings Data of the Emperors from Various Landing Centers of Balochistan

YEAR	PASNI	PISHUKAN	DAMB	GWADAR	SURBANDER	ORMARA	JIWANI	GADDANI
2018	303	803	255	905	115	193	292	61
2019	151	665	212	1032	95	18	0	51
2020	115	364	84	981	62	17	34	14
2021	114	621	80	890	33	43	51	15
2022	40	974	150	952	37	236	51	18
2023	41	800	171	900	43	8	51	0
2024	43	882	1,052	58	60	17	6	172

Source: The Department of Fisheries, Government of Balochistan.



Fig. 24. Commercial landings of Japanese threadfin bream (*Nemipterus japonicus*) at Karachi Fish Harbour.



Fig. 22. Commercial landings of yellowfin monocle bream (*Scolopsis curite*) at Karachi Fish Harbour.



Fig. 22. Commercial landings of white-cheek monocle bream (*Scolopsis vosmeri*) at Karachi Fish Harbour.

## REFERENCES

- Abildgaard, N. L., W. Khan, and S. Qureshi (1994). Results of the sonar surveys carried out between January and April, 1986 of the small pelagic fish resources in Pakistani waters. In: (A. Majid, M. Y. Khan, M. Moazzam and J. Ahmed eds.) *Proceedings of National Seminar on Fisheries Policy and Planning*. Marine Fisheries Department, Government of Pakistan, Karachi. Pp. 24-40.
- Ahmad, M. F. (1988). Fish of Pakistan's mangrove areas. In: (M.-F. Thompson and N. M. Tirmizi eds.). *Marine Sciences of the Arabian Sea. Proceedings of an International Conference*. American Institute of Biological Sciences, Washington, D. C. Pp. 429-438.
- Ahmad, M. F., M. S. Niazi, S. F. A. Zaidi and A. Ahmad (1973). Marine fauna supplement, Pisces. *Records of Zoological Survey of Pakistan*, 4: 22-44.
- Ahmed, M. and G. Abbas (1999). Abundance of finfish and shellfish juveniles in the intertidal zone of Miani Hor Lagoon in Balochistan, Pakistan. *Pakistan Journal of Zoology*, 31: 187-195.
- Ahmed, M. and G. Abbas (2000). Growth parameters of the finfish and shellfish juveniles in the tidal waters of Bhanbhore, Korangi Creek and Miani Hor Lagoon. *Pakistan Journal of Zoology*, 32: 21-26.
- Anonymous (1955). *Marine Fishes of Karachi and the coast of Sind and Mekran*. Government of Pakistan, Ministry of Food and Agriculture (Central Fisheries Department), Karachi.
- Anonymous (1999). *Fish collection of the Natural History Museum, London (formerly British Museum of Natural History (BMNH))*. Natural History Museum, London (formerly British Museum of Natural History (BMNH)).
- Anonymous (2001). *Fish collection database of the National Museum of Natural History* (Smithsonian Institution). Smithsonian Institution - Division of Fishes
- Anonymous (2012). *Handbook of Fisheries Statistics of Pakistan*. Marine Fisheries Department, Government of Pakistan, Karachi.
- Baloch, A., L. Qun, M. A. Kalhor, A. M. Memon, S. Barua, X. Chen, H. Raza, and Y. Ma. (2025). Assessment of the fish stock status of the spangled emperor *Lethrinus nebulosus* along the coast of Balochistan, Pakistan. *Journal of Marine Science and Engineering*, 13: 481.
- Bangchongmanee, S., B. Russell, C. Aungtonya, T. Panbow and E. Radcharoen (2023). Revision of nemipterid fishes in the reference collection of Phuket Marine Biological Center. *Phuket Marine Biological Center Research Bulletin*, 60: 53-81.
- Bianchi, G. (1985). *FAO species identification sheets for fishery purposes. Field guide to the commercial marine and brackish-water species of Pakistan*. Prepared with the support of PAK/77/033/ and FAO (FIRM) Regular Programme. FAO, Rome.
- Bleeker, P. (1853). Nalezingen op de ichthyologische fauna van het eiland Banka. *Natuurkundig Tijdschrift voor Nederlandsch Indië*, 5:175-194.
- Bleeker, P. (1856). Bijdrage tot de kennis der ichthyologische fauna van het eiland Nias. *Natuurkundig Tijdschrift voor Nederlandsch Indië*, 12: 211-228.
- Bleeker, P. (1873). Mededeelingen omtrent eene herziening der Indisch-Archipelagische soorten van *Epinephelus*, *Lutjanus*, *Dentex* en verwante geslachten. *Verslagen en Mededeelingen der Koninklijke Akademie van Wetenschappen. Afdeeling Natuurkunde* (Serie 2), 7: 40-46.
- Bloch, M. E. (1790). *Naturgeschichte der ausländischen Fische*. Berlin. 4: 1-128.
- Bloch, M. E. (1791). *Naturgeschichte der ausländischen Fische*. Berlin. 5: 1-152.
- Bloch, M. E. (1792). *Naturgeschichte der ausländischen Fische*. Berlin. 6: 1-126.
- Bloch, M. E. and J. G. Schneider (1801). *M. E. Blochii, Systema Ichthyologiae Iconibus cx Illustratum. Post obitum auctoris opus inchoatum absolvit, correxit, interpolavit Jo. Gottlob Schneider, Saxo. Berolini. Sumtibus Auctoris Impressum et Bibliopolio Sanderiano Commissum*. 584p.
- Boulenger, G. A. (1895). *Catalogue of the fishes in the British Museum. Catalogue of the perciform fishes in the British Museum*. Second edition. Vol. I. p. 1-394.
- Boulenger, G. A. (1901). On some deep-sea fishes collected by Mr. F. W. Townsend in the sea of Oman. *Annals and Magazine of Natural History* (Series 7) 7: 261-263.
- Brandhorst, W. (1994). Demersal fish resources available for the expansion and development of marine fishery of Pakistan. In: (A. Majid, M. Y. Khan, M. Moazzam and J. Ahmed eds.) *Proceedings of National Seminar on Fisheries Policy and Planning*. Marine Fisheries Department, Government of Pakistan, Karachi. Pp. 1-23.
- Carpenter, K. E. (2022). Family Lethrinidae-Emperors, emperor snappers and large-eye breams. In: (E. Heemstra, D.A. Ebert, W. Holleman and J.E. Randall eds.). *Coastal Fishes of the Western Indian Ocean*. South African

- Institute for Aquatic Biodiversity, a National Research Facility of the National Research Foundation (NRF-SAIAB) 3: 316-327.
- Carpenter, K. E. and G. R. Allen (1989). FAO species catalogue. Vol. 9. Emperor fishes and large-eye breams of the world (family Lethrinidae). An annotated and illustrated catalogue of lethrinid species known to date. *FAO (Food and Agriculture Organization of the United Nations) Fisheries Synopsis* No. 125, 9: 1-118.
- Chavan, B. B., U. H. Rane and K. K. Baikar (2004). Occurrence of unicorn leather jacket, *Alutera monoceros* (Linnaeus) in dol net at (Bassein Koliwada Maharashtra). *Marine Fisheries Information Service*. T&E Ser., 179: 22.
- CMFRI (2020). *Marine Fish Landings in India 2019*. Central Marine Fisheries Research Institute, Kochi, Kerala, India
- Cuvier, G. (1814). Observations et recherches critiques sur différents poissons de la Méditerranée et, à leur occasion, sur des poissons des autres mers plus ou moins liés avec eux. *Bulletin des Sciences, par la Société Philomathique de Paris Sér. 3*, 1: 80-92.
- Cuvier, G. (1815). Observations et recherches critiques sur différents poissons de la Méditerranée, et à leur occasion sur des poissons d'autres mers, plus ou moins liés avec eux. *Mémoires du Muséum d'Histoire Naturelle*, Paris (N. S.) 1: 353-363.
- Cuvier, G. (1829). *Le Règne Animal, distribué d'après son organisation, pour servir de base à l'histoire naturelle des animaux et d'introduction à l'anatomie comparée*. Edition 2. 2:1-406.
- Cuvier, G. (1830) in Cuvier, G. and Valenciennes, A. (1830a). Histoire naturelle des poissons. Tome cinquième. Livre cinquième. Des Sciénoïdes. *Hist. Nat. Poiss.* 5: 1-499.
- Day, F. (1875). *The fishes of India; being a natural history of the fishes known to inhabit the seas and fresh waters of India, Burma, and Ceylon*. London. Part 1: 1-168.
- Day, F. (1889). *The Fauna of British India, including Ceylon and Burma*. Fishes 1, London, Taylor and Francis. 548p.
- Fabricius, J. C. (1775). Descriptiones animalium avium, amphibiorum, piscium, insectorum, vermium; quae in itinere orientali observavit Petrus Forskål. Post mortem auctoris edidit Carsten Niebuhr. *Haunia*. 1-20: 1-164.
- Fennessy, S. T. and B. Q. Mann (2013). Cavebass (*Dinoperca petersi*). In: *Southern African marine linefish species profiles*. (In: B. Q. Mann ed). *Special Publication, Oceanographic Research Institute, Durban* 9: 65-66
- Forskål, P. S. (1775). Niebuhr, C. Descriptiones animalium avium, amphibiorum, piscium, insectorum, vermium; quae in itinere orientali observavit Petrus Forskål. Post mortem auctoris edidit Carsten Niebuhr. *Haunia*. 1-20: 1-164.
- Forster, J. R. (1801) (Bloch, M. E. and J. G. Schneider). *M. E. Blochii, Systema Ichthyologiae Iconibus ex Illustratum. Post obitum auctoris opus inchoatum absolvit, correxit, interpolavit Jo. Gottlob Schneider, Saxo. Berolini*. Sumptibus Auctoris Impressum et Bibliopolio Sanderiano Commissum. 1-584.
- Fricke, R., W. N. Eschmeyer and R. Van der Laan (eds). (2025). *ECof. Eschmeyer's Catalog of Fishes: Genera, Species, References*. California Academy of Sciences. San Francisco. Electronic version accessed 29 August 2023.
- Froese, R. and D. Pauly. Editors (2025). *FishBase. World Wide Web electronic publication*. www.fishbase.org, version (8/2023)
- GBIF (2025). The Global Biodiversity Information Facility. *GBIF Home Page*. (<https://www.gbif.org>)
- Ghosh, S., R. Thangavelu, G. Mohammed, H. K., Dhokia, M. S. Zala, Y. D. Savaria, J. P. Polara and A. A. Ladani (2011). Sudden emergence of fishery and some aspects of biology and population dynamics of *Alutera monoceros* (Linnaeus, 1758) at Veraval. *Indian Journal of Fisheries*, 58: 31-34.
- Gilchrist, J. D. F. and W. W. Thompson (1908). Descriptions of fishes from the coast of Natal. *Annals of the South African Museum*. 6: 45-206.
- Hamilton, F. (1822). *An account of the fishes found in the river Ganges and its branches*. Edinburgh & London. 405p.
- Hardy, G. S. (1983). A revision of the fishes of the family Pentacerotidae. *New Zealand Journal of Zoology* 10: 177-220.
- Healey, A. J. E., G. Gouws, S. T. Fennessy, B. Kuguru, W. H. H. Sauer, P. W. Shaw and N. J. McKeown (2018a). Genetic analysis reveals harvested *Lethrinus nebulosus* in the Southwest Indian Ocean comprise two cryptic species. *ICES Journal of Marine Science* (2018): 1-8.
- Healey, A. J. E., N. J. McKeown, A. L. Taylor, J. Provan, W. Sauer, G. Gouws, and P. W. Shaw (2018b). Cryptic species and parallel genetic structuring in Lethrinid fish: Implications for conservation and management in the southwest Indian Ocean. *Ecology and Evolution*. 2018: 1-14.

- Heemstra, P.C. (1984). Lobotidae. In: (W. Fischer and G. Bianchi eds.). *FAO species identification sheets for fishery purposes. Western Indian Ocean fishing area 51*. Vol. 1. FAO, Rome. pag. var.
- Heemstra, P.C. (1986). Dinopercidae. In: (M.M. Smith and P.C. Heemstra eds.). *Smiths' Sea Fishes*. Springer-Verlag, Berlin, Germany. Pp. 571-572.
- Heemstra, P. C. (2022a). Family Dinopercidae- Cavebasses. In: (E. Heemstra, D.A. Ebert, W. Holleman and J.E. Randall eds.). *Coastal Fishes of the Western Indian Ocean*. South African Institute for Aquatic Biodiversity, a National Research Facility of the National Research Foundation (NRF-SAIAB) 3: 283.
- Heemstra, P. C. (2022b). Family Lobotidae - Tripletails. In: (E. Heemstra, D.A. Ebert, W. Holleman and J.E. Randall eds.). *Coastal Fishes of the Western Indian Ocean*. South African Institute for Aquatic Biodiversity, a National Research Facility of the National Research Foundation (NRF-SAIAB) 3: 428-429.
- Heemstra, P. C. (2022c). Family Pentacerotidae-Armourheads. In: (E. Heemstra, D.A. Ebert, W. Holleman and J.E. Randall eds.). *Coastal Fishes of the Western Indian Ocean*. South African Institute for Aquatic Biodiversity, a National Research Facility of the National Research Foundation (NRF-SAIAB) 3: 429-430.
- Heemstra, P. C. and T. Hecht (1986). Dinopercidae, a new family for the percoid marine fish genera *Dinoperca* Boulenger and *Centrarchops* Fowler (Pisces: Perciformes). *Ichthyological Bulletin of the J. L. B. Smith Institute of Ichthyology* 51: 1-20.
- Hoda, S. S. (1976). Length-weight and volume relationship in the thread-fin bream, *Nemipterus japonicus* from the Pakistan coast. *Journal of Marine Biological Association of India*, 18: 421-430.
- Hoda, S. M. S. (1981) A statistical study of length, weight and volume of *Nemipterus japonicus* from the Pakistan coast. *Karachi University Journal of Science*, 9: 113-118.
- Hoda, S. M. S. (1985). Identification of coastal fish varieties of Pakistan. *Pakistan Agriculture*, 7: 38-44.
- Hoda, S. M. S. (1988). Fishes from the coast of Pakistan. *Biologia (Lahore)*, 34: 1-38.
- Houttuyn, M. (1782). Beschryving van eenige Japanese visschen, en andere zee-schepzelen. *Verhandelingen der Hollandsche Maatschappij der Wetenschappen, Haarlem*, 20: 311-350.
- Hussain, S. M. (2003). *Brief Report on Biodiversity in the Coastal Areas of Pakistan*. Regional Technical Assistance. (RETA) ADB/IUCN.113p (Draft).
- Hussain, S. M., and S. Kidwai (1994). Midwater fishes collected from the Arabian Sea. *Marine Research*, 3: 57-81.
- Iqbal, M. (1991a). Population dynamics of *Nemipterus japonicus* from the Northern Arabian Sea. *Pakistan. Fish byte*, 9: 16-22.
- Iqbal, M. (1991b). Studies on the distribution and abundance of *Nemipterus metopias* (Nemipteridae) in Pakistani waters, Northern Arabian sea. *Pakistan Journal of Zoology*, 23: 225-228.
- Iqbal, M. (1992). A note on the population dynamics of the slender threadfin bream *Nemipterus metopias* (Nemipteridae) from Pakistan coastal waters. *Pakistan Journal of Zoology*, 24: 357-359.
- Iqbal, M., S. S, Shaukat and M. A, Kazmi (1999). Diversity of fish communities in Pakistan's coastal waters, northern Arabian Sea. In: (Q. B. Kazmi and M. A. Kazmi eds.). *Proceedings of Seminar on Aquatic Biodiversity of Pakistan*. Marine Reference Collection and Resource Center and Department of Zoology, University of Karachi. Pp. 55-62.
- Jalil, S. A., and M. Khaliluddin (1972). *A Checklist of Marine Fishes of Pakistan*. Government of Pakistan: 1-16.
- Jalil, S. A., and M. Khaliluddin (1981). *A Checklist of Marine Fishes of Pakistan*. Government of Pakistan: 1-18.
- Jordan, D. S. and R. E. Richardson (1909). A catalog of the fishes of the island of Formosa, or Taiwan, based on the collections of Dr. Hans Sauter. *Memoirs of the Carnegie Museum*, 4: 159-204.
- Kalhor, M.A., N. A. Qureshi, N.U. Saher (2014a). Population dynamics of Japanese threadfin bream *Nemipterus japonicus* from Pakistani waters. *Acta Oceanologia Sinica* 33: 1-9.
- Kalhor, M. A., L. Qun., K. H. Memon, M. S. Chang and K. Zhang (2014b). Population dynamics of Japanese threadfin bream *Nemipterus japonicus* from Pakistani waters. *Acta Oceanologia Sinica*, 33: 49-57.
- Kalhor, M.A., T. DanLing, Y. HaiJun, M Evgeny, L. Qun, K. H. Memon and M. T. Kalhor (2017). Population dynamics of Randall's threadfin bream *Nemipterus randalli* from Pakistani waters, Northern Arabian Sea. *Indian Journal of Geo Marine Science* 46: 551-561.
- Kanthan, K. P. and P. U. Zacharia (2011). Heavy landing of unicorn leatherjacket *Aluterus monoceros* by trawlers at Tuticorin Fishing Harbour of the Gulf of Mannar. *Marine Fisheries Information Service*. T&E Ser., 209: 5-6.
- Khalil, B. and H. Hussain (2013). Gonodo-somatic index (GSI) in thread bream *Nemipterus japonicus* (Bloch, 1791) from Karachi coast Pakistan. *RADS Journal of Biological Research & Applied Sciences*, 4: 01-04.
- Kottelat, M. (2000). The type species of the genus-group names *Coius* Hamilton, 1822 and *Datnia* Cuvier, 1829 and type-genus of the family-group name Datnioididae Bleeker, 1858. *Journal of South Asian Natural History*, 5: 91-94.
- Lacepède, B. G. E. (1801). *Histoire naturelle des poissons*. 3: 1-558.

- Lacepède, B. G. E. (1802). Histoire naturelle des poissons. *Hist. Nat. Poiss.*, 4: 1-728.
- Lelli, S., F. Colloca, P. Carpenter and B. C. Russell (2008). The threadfin bream *Nemipterus randalli* (Perciformes: Nemipteridae) in the eastern Mediterranean Sea. *Journal of Fish Biology*, 73: 740-745.
- Lieske, E. and R. F. Myers (1996). *Coral reef fishes. Caribbean, Indian Ocean, and Pacific Ocean, including the Red Sea*. Princeton University Press, Princeton, New Jersey. 1-400
- Mahadevan, G., P. Murugesan, G. B. Sreekanth, K. Miyamoto and C. D. McMahan (2022). First distributional record of *Parascolopsis akatamae* Miyamoto, McMahan, & Kaneko, 2020, a dwarf monacle bream (Perciformes, Nemipteridae), from Indian waters. *Check List*, 18: 973-977.
- Mahmood, N., Q. M. Ali and N. Vistro (1999). *Economically Important Fishery resources of the Indus delta mangrove ecosystem*. Coastal Forest Division, Sindh Forest Department & The World Bank. 67 p.
- Majid, A., M. W. Khan and M. Khaliluddin (1992). *Commercially Important Marine Fishes of Pakistan*. Department of Composition, Compilation and Translation, Federal Government Urdu Science College, Karachi 263p.
- Mann, B. Q., G. L. Jordaan and R. Daly (2020). Movement patterns and growth rate of cavebass *Dinoperca petersi* (Pisces: Dinopercidae) in the iSimangaliso Marine Protected Area, South Africa. *Western Indian Ocean Journal of Marine Science* 19: 45-59.
- Menon, A. G. K. and G. M. Yazdani (1968). Catalogue of type-specimens in the Zoological Survey of India. Part 2. - Fishes. *Records of the Zoological Survey of India*, 61: 91-190.
- Misra, K. S. (1962). An aid to the identification of the common commercial fishes of India and Pakistan. *Records of Indian Museum*, 57: 1-320.
- Miyamoto, K., C. D. McMahan and A. Kaneko (2020). *Parascolopsis akatamae*, a new species of dwarf monacle bream (Perciformes: Nemipteridae) from the Indo-West Pacific, with redescription of closely related species *P. eriomma*. *Zootaxa*, 4881: 91-103.
- Moazzam, M. and H. B. Osmany (2022). Report on triggerfishes (Family Balistidae) from Pakistan. *International of Biology and Biotechnology*, 19: 329-339.
- Moazzam, M. and H. B. Osmany (2016). Fishes of Family Monacanthidae (Pisces) from Pakistan with comments on fishery of *Alutrea monoceros* (Linnaeus, 1758). *Records Zoological Survey of Pakistan*, 22: 1-6.
- Murray, J. A. (1880). *A Hand-book to the Geology, Botany and Zoology of Sind*. Beacon Press, Kurruchee.
- Niazi, R. M. (2001). A trawl study of benthic marine macro-organisms found in the near shore waters of Karachi, Pakistan. *Pakistan Journal of Fisheries*, 2: 13-23.
- Nielsen, J. G. (1960). On some fishes from Karachi and Bombay with description of a new genus and species of the Haliophidae. *Videnskabelige Meddelelser fra Dansk naturhistorisk Forening i Kjøbenhavn*, 123: 249-256.
- Norman, J. R. (1939). Fishes. In: (Anonymous ed.). *John Murray Expedition Scientific Reports*. Vol. 7. British Museum of Natural History, London. Pp. 1-116.
- Psomadakis, P. N., H. B. Osmany, and M. Moazzam (2015). *Field identification guide to the living marine resources of Pakistan*. FAO species identification guide for fishery purposes. Food and Agriculture Organization of the United Nations, Rome. 386p.
- Punwani, M. G. (1934). Karachi Fish. *Journal Sindh Natural History Society*, 2: 44-47.
- Quoy, J. R. C. and J. P. Gaimard (1824). *Description des Poissons. Chapter IX. In: Freycinet, L. de, Voyage autour du Monde...exécuté sur les corvettes de L. M. "L'Uranie" et "La Physicienne," pendant les années 1817, 1818, 1819 et 1820*. Paris. 1-328.
- Qureshi, M. R. (1952). Fishes of Makran coast. *Agriculture Pakistan*, 3: 237-256.
- Qureshi, M. R. (1964). A field key to the identification of fishes. Order Perciformes, Part. 1. Sub-order Percoidei (Families Lutjanidae and Lobotidae). *The Scientist*, 7: 20-36.
- Randall, J. E. (1995). *Coastal fishes of Oman*. Crawford House Publishing Pty Ltd, Bathurst, Australia. 1-439.
- Rao, D. M. and K. S. Rao (1981). A revision of the genus *Scolopsis* Cuvier (Pisces: Nemipteridae) with descriptions of two new species from Indian waters. *Proceedings of the Koninklijke Nederlandse Akademie van Wetenschappen* (Series C, Biological and Medical Sciences) 84: 131-141.
- Raza, H., Q. Liu, M. S. Alam, and Y. Han. (2022). Length based stock assessment of five fish species from the marine water of Pakistan. *Sustainability*, 14: 1587.
- Roberts, T. R. (1989). The freshwater fishes of western Borneo (Kalimantan Barat, Indonesia). *Memoirs of the California Academy of Sciences*, 14: 1-210.
- Rüppell, W. P. E. S. (1828). Atlas zu der Reise im nördlichen Afrika. *Fische des Rothen Meers. Frankfurt am Main (Heinrich Ludwig Brönnner)*. 1-141.
- Russell, B. C. (1986). Review of the western Indian Ocean species of *Nemipterus* Swainson 1839, with description of a new species. *Senckenbergiana Biologica*, 67:19-35.

- Russell, B.C. (1990). Nemipterid fishes of the world. (Threadfin breams, whiptail breams, monocle breams, dwarf monocle breams, and coral breams). Nemipteridae. An annotated and illustrated catalogue of nemipterid species known to date. *FAO Fishery Synopsis*, 12:1-149.
- Russell, B. C. (2022). Family Nemipteridae Threadfin breams, monocle breams and dwarf monocle breams. In: (E. Heemstra, D.A. Ebert, W. Holleman and J.E. Randall eds.). *Coastal Fishes of the Western Indian Ocean*. South African Institute for Aquatic Biodiversity, a National Research Facility of the National Research Foundation (NRF-SAIAB) 3: 328-340.
- Russell, B. C. and G. R. Allen (1984). Nemipteridae. In ( W. Fischer and G. Bianchi eds.). *FAO species identification sheets for fishery purposes. Western Indian Ocean fishing area 51*. Vol. 3. FAO, Rome. pag. var.
- Russell, B. C., S. V. Bogorodsky, A. O. Mal, K.K. Bineesh and T. J. Alpermann (2022). The taxonomic identity of the monocle bream *Scolopsis vosmeri* species complex (Perciformes: Nemipteridae), with comments on molecular phylogenetic relationships within the genus *Scolopsis*. *Zootaxa*, 5105: 501–538.
- Russell, B. C. and D. Golani (1993). A review of the fish genus *Parascolopsis* (Nemipteridae) of the western Indian Ocean, with description of a new species from the northern Red Sea. *Israel Journal of Zoology*, 39: 337-347.
- Saleela, K. N., M. K. Anil, S. Jasmine and B. Raju (2011). Unusual landings of *Aluterus monoceros* (Linnaeus, 1758) along Vizhinjam coast. *Marine Fisheries Information Service*. T&E Ser., 207: 30-31.
- Sato, T. and M. Walker (1984). Lethrinidae. In: (W. Fischer and G. Bianchi eds.) *FAO species identification sheets for fishery purposes. Western Indian Ocean fishing area 51*. Vol. 2. FAO, Rome. pag. var.
- Sevastianoff, A. (1809). Description de quelques nouvelles espèces d'animaux, du musée académique. *Mémoires de l'Académie Impériale des Sciences de St. Pétersbourg* (5. Série) 1 (1803-1806): 443-449.
- Siddiqi, M. I. (1956). The fishermen's settlements on the coast of West Pakistan. *Selbstverlag des geographischen Instituts der Universität Kiel*, 14: 1-92.
- Sorley, H. T. (1932). *Marine Fisheries of the Bombay Presidency*. Govt. Press, Bombay.
- Swainson, W. (1839). *On the natural history and classification of fishes, amphibians, & reptiles, or monocardian animals*. Spottiswoode & Co., London. 2: 1-452.
- Temminck, C. J. and H. Schlegel (1843). Pisces. In: (Siebold, P. F. de ed.): *Fauna Japonica, sive descriptio animalium, quae in itinere per Japoniam suscepto annis 1823-1830 collegit, notis, observationibus et adumbrationibus illustravit Ph. Fr. de Siebold*. Lugduni Batavorum, Leiden. Parts 2-4: pp. 21-72.
- Temminck, C. J. and H. Schlegel (1844). Pisces. *Fauna Japonica, sive descriptio animalium, quae in itinere per Japoniam suscepto annis 1823-1830 collegit, notis, observationibus et adumbrationibus illustravit Ph. Fr. de Siebold* (In: P. E. Siebold ed.): Lugduni Batavorum Leiden. Parts 5-6: pp. 73-112.
- Valenciennes, A. (1830) in Cuvier, G. et A. Valenciennes (1830). *Histoire naturelle des poissons*. Tome Sixième. Livre sixième. Partie I. Des Sparoïdes; Partie II. Des Ménides. 6: 1-559.
- Varghese, M., V. J. Thomas, A. Gandhi and K. M. Sreekumar (2011). Heavy landings of the filefish *Aluterus monoceros* from the Gulf of Mannar. *Marine Fisheries Information Service*. T&E Ser., 209: 18-19.
- Whitehead, P. J. P. and P. K. Talwar (1976). Francis Day (1829-1889) and his collections of Indian fishes. *Bulletin of the British Museum (Natural History) Historical Series*, 5: 1-189
- Zugmayer, E. (1913). Die Fische von Balutschistan. *Abhandlungen der königlich Bayerischen Akademie der Wissenschaften (mathematisch-physikalische Klasse)* 26: 1-35.