

A REVIEW OF FAMILIES LUTJANIDAE (SNAPPERS) AND CAESIONIDAE (FUSILIERS) (ORDER: PERCIFORMIS) FROM PAKISTAN

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ABSTRACT

Fishes of families Lutjanidae (snappers) and Caesionidae (fusiliers) are considered important food fishes in Pakistan. Snappers are known to inhabit shallow waters along the coast, estuaries, mangroves areas, and on the continental shelf. Fusiliers are mainly associated with coral habitats, rocky outcrops and shipwrecks along the Pakistan coast. Members of two families are caught mainly by handlines, longlines, gillnets, and trawlnets along the coast of Pakistan. Annual snapper landings in Pakistan during last decade is reported to be around 1,400 m. tons. It is mainly consumed locally whereas frozen snappers (whole) and fillets are exported to Persian Gulf countries in small quantities. In Pakistan, Family Lutjanidae is represented by 10 genera and 41 species whereas family Caesionidae has 2 genera and 5 species. Indian snapper (*Lutjanus madras*), yellowfin snapper (*L. xanthopinnis*) and slender pinjalo (*Pinjalo lewisi*) are recorded for the first time from the Pakistan.

Keywords: Snappers, fusiliers, Lutjanidae, Caesionidae, *Lutjanus madras*, *L. xanthopinnis*, *Pinjalo lewisi*

INTRODUCTION

Family Lutjanidae (snappers) and Caesionidae (fusiliers) includes commercially important perciform fishes that support a substantially large fishery in Pakistan. Family Lutjanidae, which provides for snappers and jobfishes, are mainly marine, but some members inhabit estuaries and lower reaches of some rivers for feeding. Members of family Caesionidae are oceanic and found in rocky and reef habitats. Members of two families are caught mainly by handlines, longlines, gillnets, and trawlnets along the coast of Pakistan from shallow coastal waters, estuaries, mangroves areas, and from the continental shelf. This fishes is also associated with coral habitats, rocky outcrops, and shipwrecks along the Pakistan coast. Most species are demersal in shallow waters but some of the species can be found up to a depth of 100 to 500 m.

Species of families Lutjanidae and Caesionidae are active predators and feed mostly at night. The fusiliers are schooling fishes that consume zooplankton. These species also play an important ecological role in coastal and offshore habitats, as these are usually top predators in the demersal ecosystem. Some of the fishes of the family Lutjanidae are important food fish. Snappers and fusiliers are found in tropical and subtropical areas of all oceans.

Information about the families Lutjanidae and Caesionidae 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, Masood and Farooq (2010a, 2010b), Masood and Yasmeen (2011a, 2011b) and Psomadakis *et al.*, 2015). Members of the family Lutjanidae are locally known as “Hira” in Sindh and “Kun-la” or “Kanalcha” in Balochistan. There is no specific local name for the members of the family Caesionidae. In the present paper, a review of species of families Lutjanidae and Caesionidae from Pakistan is presented.

MATERIAL AND METHODS

Published scientific literature was examined for records of snappers, fusiliers and allied species from the Pakistan coast. In addition, specimens of Families Lutjanidae and Caesionidae collected between 2003 and 2024 from Karachi Fish Harbour, were photographed, and salient features/measurements were recorded and preserved in 5 % neutralized formalin.

RESULTS AND DISCUSSION

Snappers are included in the family Lutjanidae, whereas fusiliers, which are a close relative of snappers, are included in the family Caesionidae. Members of two families are separately described and arranged alphabetically.

Family Lutjanidae (Snappers, Jobfishes)
 Genus *Aphareus* Cuvier, 1830
Aphareus furca (Lacepede, 1801)

This species is commonly known as small-toothed jobfish. It is reported from Pakistan by Allen (1984, 1985), Bianchi (1985), Hoda (1985, 1988), Froese and Pauly (2025), Hussain (2003), Jalil and Khaliluddin (1972, 1981) and Psomadakis *et al.* (2015). Lacepede (1801) originally described this species as *Labrus furca* from Mauritius. Its holotype (MNHN A-5703) is housed in Museum National d'Historie Naturelle, Paris, France (Frickle *et al.*, 2025). Allen (1984, 1985), Bianchi (1985), Hoda (1985, 1988), Hussain (2003), and Jalil and Khaliluddin (1972, 1981) reported it as *Aphareus furcatus*.

This species has distinct colouration; its head and body are grey-blue dorsally, whereas the lower half is silvery. Its head bones have black margins, whereas the median fins are dusky yellow to orangish. Its pectoral fins are hyaline and basally yellow, whereas its pelvic fins are yellowish (*Aphareus rutilans*, which is also known from Pakistan, has a dorsally red or pink body, and the upper lobe of its caudal fin is larger than the lower lobe).

It is an Indo-Pacific species known from the Red Sea, Kenya to South Africa, Madagascar, Comoros, Seychelles, Reunion, Mauritius, Chagos, Maldives and Sri Lanka as well as to the Cocos (Keeling) Islands, Japan, Australia and Hawaii (Heemstra and Heemstra, 2022; Froese and Pauly, 2025). No specimen of this species was examined during the present study.

Material Examined:

- None

Aphareus rutilans Cuvier, 1830

This species is commonly known as rusty jobfish and was reported from Pakistan by Allen (1985), Froese and Pauly (2025), and Psomadakis *et al.* (2015). Cuvier (1830) initially described it from the Red Sea. Its holotype is not known, however, syntypes are housed in the Muséum National d'Historie Naturelle, Paris, France (Frickle *et al.*, 2025).

Its head and body are silvery red or pink, with bluish reflections overall. It has tiny blue spots dorsally, on the lower lip, on the edge of the preorbital bone, on the maxillary groove, and the maxilla margin is black. Its median fins are edged with red, whereas the dorsal fin is greenish-yellow and pectoral fins are reddish. The inside of its mouth, gill chamber, and gills are silvery (in comparison head and body of *Aphareus furca* are grey-blue, whereas its caudal-fin lobes are subequal).

It is an Indo-Pacific species known from the Red Sea, Oman to South Africa, Madagascar, Comoros, Mascarenes, Chagos, Maldives and Sri Lanka, extended to Indonesia, Japan, Gilbert Islands, Australia and Hawaii (Heemstra and Heemstra, 2022; Froese and Pauly, 2025). No specimen of this species was examined during the present study.

Material Examined:

- None

Genus *Aprion* Valenciennes, 1830
Aprion virescens Valenciennes, 1830
 (Fig. 1)

This species is commonly known as green jobfish. It was reported from Pakistan by Allen (1984, 1985), Bianchi (1985), Froese and Pauly (2025), Heemstra and Heemstra (2022), Hoda (1985, 1988), Hussain (2003) and Psomadakis *et al.* (2015). It was initially described from Seychelles by Valenciennes (1830). Its holotype is not known, however, syntypes are housed in Museum National d'Historie Naturelle, Paris, France (Frickle *et al.*, 2025).



Fig. 1. *Aprion virescens*(a) specimen collected from Karachi Fish Harbour; (b) Top of head showing flattened interorbital region; (c) Head showing teeth in both jaws.

Teeth in bands are present in this species in both jaws, including strong canines present anteriorly. The teeth on the roof of the mouth are present in chevron- or crescent-shaped patches on the vomer and in elongated bands on each palatine. The colour of its head and body is dark blue-green dorsally and iridescent bluish-purple or rarely silvery sides. Its scales are pale margins whereas its rear interspinous dorsal-fin membranes are dark basally.

It is an Indo-Pacific species known from the Gulf of Aden to South Africa, Madagascar, Seychelles, Mascarenes, Chagos, Maldives, Oman, Pakistan and Sri Lanka extended to Indonesia, Philippines, southern Japan, Australia, Marquesas Islands and Hawaii (Heemstra and Heemstra, 2022).

Material Examined:

- 1 specimen collected from Karachi Fish Harbour on 25 February 2010 (53 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 13 September 2018 (62 cm TL)
- 1 specimen collected from Gwader Fish Harbour on 11 March 2020 (71 cm TL).

Genus *Apsilus* Valenciennes, 1830

Apsilus fuscus Valenciennes, 1830

This species is commonly known as African fork-tail snapper. Allen (1984, 1985) and Hoda (1985, 1988) reported it from Pakistan. It was initially described from Porto Praya, Cape Verde Island by Valenciennes (1830). Its holotype is not known, however, the lectotype (MNHN 2978) is housed in the Muséum National d'Historie Naturelle, Paris, France (Frickle *et al.*, 2025).

This species is known from the Eastern Atlantic, however, it was also recorded from the Indian Ocean, including Pakistani waters by Allen (1984) and Hoda (1988) but according to Allen (1985) and Froese and Pauly (2025), the records from the Indian Ocean are probably based on misidentification. It is possibly a misidentification of *Etelis*. No specimen of this species was examined during the present study.

Material Examined:

- None

Genus *Etelis* Cuvier, 1828
Etelis carbunculus Cuvier, 1828

This species is commonly known as the ruby snapper or deep-water red snapper. It is reported from Pakistan by Allen (1984, 1985), Bianchi (1985), Froese and Pauly (2025), Hoda (1985, 1988), Hussain (2003), and Psomadakis *et al.* (2015). Cuvier (1828) initially described it from Mahe, Seychelles. Its holotype (MNHN 6603) is housed in Museum National d'Historie Naturelle, Paris, France (Frickle *et al.*, 2025). Allen (1984) and Hoda (1985, 1988) reported this species as *Etelis marshi* Jenkins 1903, which is considered to be a synonym of this species.

Its body is relatively elongated and laterally compressed, and its nostrils are close together on each side of the snout. Its dorsal fin is continuous, but the spinous portion of the fin is deeply incised at its junction with the soft portion. Its head and body are pink to red dorsally, whereas below is white. Its dorsal fin, pectoral fins, and caudal fin are pink to red.

It is an Indo-Pacific species known from the Red Sea, Kenya to South Africa, Comoros, Seychelles, Mascarenes, Saint Brandon Shoals, Chagos, Maldives, and Sri Lanka extending to Indonesia, Japan, Australia, New Zealand, Tahiti, and Hawaii (Froese and Pauly, 2025; Heemstra and Heemstra, 2022). No specimen of this species was examined during the present study.

Material Examined:

- None

Etelis coruscans Valenciennes, 1862

This species is commonly known as the flame snapper or deepwater longtail red snapper. It is reported from Pakistan by Allen (1985), Froese and Pauly (2025), and Psomadakis *et al.* (2015). It was originally described from Reunion Island by Valenciennes (1862). Its holotype (MNHN 6991) is housed in Museum National d'Historie Naturelle, Paris, France (Frickle *et al.*, 2025). Its body is reddish dorsally and silvery ventrally, whereas its fins are pink to red.

It is an Indo-Pacific species known from Kenya to South Africa, Comoros, Seychelles, Mascarenes, Nazareth Bank, Chagos, Maldives, and Sri Lanka, extended to Indonesia, Mariana Islands, Japan, Australia and Hawaii (Froese and Pauly, 2025; Heemstra and Heemstra, 2022). No specimen of this species was examined during the present study.

Material Examined:

- None

Genus *Lipocheilus* Anderson, Talwar and Johnson 1977
Lipocheilus carnolabrum (Chan, 1970)
(Fig. 2)

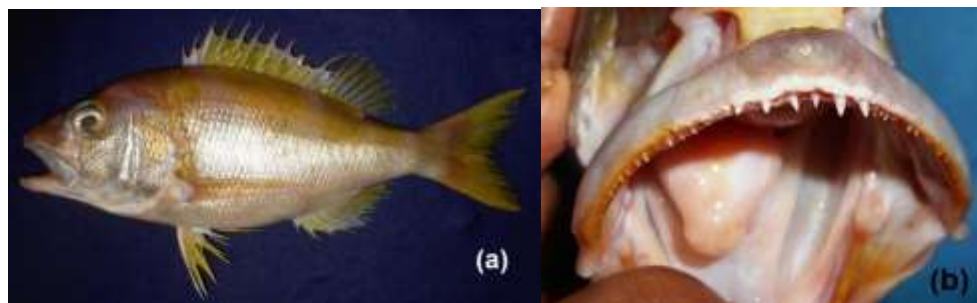


Fig. 2. *Lipocheilus carnolabrum*. (a) specimen collected from Karachi Fish Harbour; (b) thick, fleshy protrusion at anterior end of upper lip.

This species is commonly known as tang's snapper. It was reported from Pakistan by Allen (1984, 1985), Bianchi (1985), Froese and Pauly (2025), Hoda (1985, 1988), Hussain (2003) and Psomadakis *et al.* (2015). It was originally described as *Tangia carnolabrum* from South China Sea, 145 km southeast of Hong Kong by Chan (1970). Its holotype (BMNH 1969.3.24.76) is housed in British Museum of Natural History, London, U. K. (Frickle *et al.*, 2025).

This species has a large mouth and its adults have a thick, fleshy protrusion at anterior end of upper lip. The colour of its head and body is brown dorsally and yellow to pinkish below whereas it is silvery on the ventral side. Its fins are brownish yellow.

It is an Indo-Pacific species which is known from the Gulf of Aden, Pakistan, India and Sri Lanka extending into to Indonesia, the Philippines, Japan, Vanuatu and south to northern Australia (Froese and Pauly, 2025; Heemstra and Heemstra, 2022).

Material Examined:

- 1 specimen collected from Karachi Fish Harbour on 08 April 2024 (40 cm TL)

Genus *Lutjanus* Bloch, 1790
Lutjanus argentimaculatus (Forsskal, 1775)
(Fig. 3)



Fig. 3. *Lutjanus argentimaculatus*. (a) Adult 71 cm TL (b) Juvenile 25 cm TL.

It is commonly known as mangrove red snapper. It was reported from Sindh by Allen (1984, 1985), Jafri (2004), Misra (1962), Murray (1880), Sorley (1932), from Indus Delta by Mahmood *et al.* (1999), from Keti Bundar by Ahmed *et al.* (1999) from Karachi by Nielsen (1960), from Korangi Creek by Ahmed and Abbas (1999c, 2000), from Leth Nullah by Ahmad *et al.* (1985) and Niazi and Moazzam (1999) from Sandspit backwaters by Abbas (1999, 2001, 2002) and Abbas and Ahmed (1999), and from Balochistan by Allen (1984, 1985). It was reported from Pakistan coast without mentioning any location by Ahmad (1988), Ahmad and Niazi (1988), Ali (2002), Bianchi (1985), Froese and Pauly (2025), Hoda (1985, 1987, 1988), Hussain (2003), Iqbal *et al.* (1999), Jalil and Khaliluddin (1972, 1981), Majid *et al.* (1992), Psomadakis *et al.* (2015) and Qureshi (1964). It was originally described as *Sciaena argentimaculata* from Arabia, Red Sea by Forsskal (1775), however, its types are not known (Frickle *et al.*, 2025).

Its body is slightly compressed, which has a continuous dorsal fin. Its body is generally green-brown, slightly darker dorsally grading to reddish, and has a silvery or whitish belly. Specimens from estuarine areas may be coppery red on sides, fins, whereas those from offshore waters are silvery and have dark-centered scales and white margins. Juveniles with a series of about eight white and two blue streaks across the cheeks (Fig. 3b).

It is an Indo-Pacific species which is known from the Persian Gulf, Oman, Red Sea, Somalia, South Africa, Madagascar, Aldabra, Seychelles, Mascarenes, Maldives, Pakistan, India and Sri Lanka extending to Indonesia, the Philippines, southern Japan and Australia (Froese and Pauly, 2025; Heemstra and Heemstra, 2022). It is a Lessepsian migrant to the eastern Mediterranean Sea (off Lebanon) but not well established there (Froese and Pauly, 2025).

This species is primarily distributed in the coastal areas, whereas its juveniles are commonly found in the estuaries and mangrove areas, whereas adults are generally found around rocky and coral reef areas as well as in the continental shelf areas. It is considered one of the favorite fish in Pakistan. It is one of the commonly caught by anglers.

Material Examined:

- 1 specimen collected from Karachi Fish Harbour on 26 November 2009 (25 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 22 September 2013 (51 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 13 January 2014 (41 cm TL)
- 1 specimen collected from Gwader Fish Harbour on 3 April 2014 (92 cm TL).
- 1 specimen collected on board R/V Firdous Cruise on 18 February 2015 (80 cm).

Lutjanus bengalensis (Bloch, 1790)

It is commonly known as Bengal snapper. It was reported from Sindh by Allen (1984, 1985) and Murray (1880), from Karachi by Anonymous (1999), and from Balochistan by Allen (1984, 1985). It was reported from the Pakistan coast without mentioning any location by Bianchi (1985), Froese and Pauly (2025), Hoda (1985, 1988), Hussain (2003), and Psomadakis *et al.* (2015). Bloch (1790) originally described it as *Holocentrus bengalensis* from the Indian Ocean. Its holotype is not known, however, the lectotype (ZMB 303) is housed in Zoologisches Museum, Humboldt Universität, Berlin (Frickle *et al.*, 2025). Anonymous (1999) and Murray (1880) reported this species as *Genyoroge bengalensis*.

Its body is oblong and its caudal fin shallowly forked to slightly emarginate. Its preopercle notch is distinct. Its head, eyes, upper half of its body and fins are yellow, whereas the ventral half of its head and body are white. The sides of its head and body have 4 dark-edged blue horizontal stripes (except the 3rd stripe, which originates behind the preopercle and the 4th stripe extends forward as a blue band below the eye). Its iris is golden.

It is an Indo-Pacific species which is known from Kenya to South Africa, Madagascar, Comoros, Seychelles, Saya de Malha Bank, India, and Sri Lanka, extending to the east coast of India, Indonesia, Taiwan, and Japan (Froese and Pauly, 2025; Heemstra and Heemstra, 2022). According to Iwatsuki *et al.* (2016), this species has become more common in the Pacific over the last 30 years. No specimen of this species was examined during the present study.

Material Examined:

- None

Lutjanus biguttatus (Valenciennes, 1830)

This species is known as two-spot banded snapper. Murray (1880) reported it from Sindh as *Serranus biguttatus*. It was originally described as *Serranus biguttatus* from Trincomalee, Sri Lanka and Ambon Island, Moluccas Islands, Indonesia by Valenciennes (1830). Its holotype is not known, however, syntypes are housed in Museum National d'Historie Naturelle, Paris, France, and Zoologisches Museum, Humboldt Universitat, Berlin (Frickle *et al.*, 2025).

Its body is slender and the profile of its snout is low, sloping very gently. Its caudal fin is truncate to slightly emarginated whereas its preopercle notch is indistinct. The colour of this species is generally dark brown on the upper part of the head and body and a broad white horizontal band immediately below. The lower part of the head and body is dusky brown with a suffusion or yellow. There are a pair of white spots on the back just below the dorsal fin base.

It is an Indo-Pacific species which is known from the Maldives, southern India and Sri Lanka, extending to Indo-Australian Archipelago, Indonesia, Philippines, Palau, the Solomon Islands to Sumatra, and from off Cape York Peninsula, Australia and New Guinea (Froese and Pauly, 2025; Heemstra and Heemstra, 2022). According to Allen (1984, 1985), this species is reported from mainly the Indo-Australian Archipelago to Australia, South India, and the Maldives Islands. There are no records from the Arabian Sea or the Persian Gulf. The record from Pakistan is probably based on misidentification. No specimen of this species was examined during the present study.

Material Examined:

- None

Lutjanus bohar (Forsskal, 1775)
(Fig. 4)

Fig. 4. *Lutjanus bohar* photographed by sport anglers Zakaria A. Razzak.

This species is commonly known as the two-spot red snapper. It was reported from the Pakistan coast without mentioning any specific location by Ahmad and Niazi (1988), Allen (1984), Bianchi (1985), Hoda (1985, 1988),

Hussain (2003), Misra (1962), and Psomadakis *et al.* (2015). Forsskal (1775) originally described this species as *Sciaena bohar* from Arabia, the Red Sea. Its holotype (ZMUC P4779) is housed in the Zoological Museum, University of Copenhagen, Denmark (Frickle *et al.*, 2025).

This species has a moderately deep body with a distinct groove or pit from the nostrils to the front of the eye. The colour of its body is dark reddish-brown with faint dark stripes (young and some adults have two silvery-white spots on the back). Its pectoral fins are white, its uppermost rays are dark brown, and the upper part of the fin axil is blackish whereas pelvic fins are blackish, with a white leading edge. Its juveniles sometimes have white caudal end of the body and the tail.

It is an Indo-Pacific species known from the Red Sea, Oman, Kenya to South Africa, Madagascar, Comoros, Aldabra, Seychelles, Mauritius, Rodrigues, Chagos, Maldives, and Sri Lanka extending to eastern India, Indonesia, Japan, and Australia (Froese and Pauly, 2025; Heemstra and Heemstra, 2022).

Material Examined:

- 1 specimen Photographed by Zakaria A. Razzak near Karachi on 26 April, 2023 (\approx 49 cm TL)

Lutjanus coeruleolineatus (Rüppell, 1838)
(Fig.5)

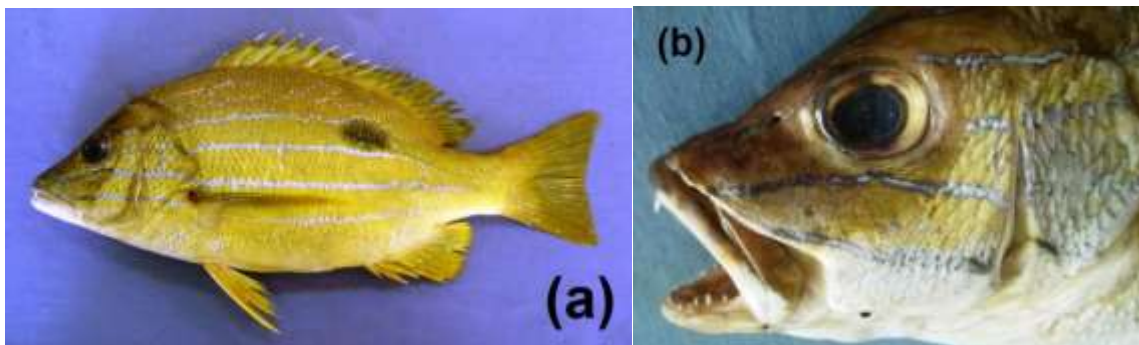


Fig. 5. *Lutjanus coeruleolineatus* (a) 32 cm (b) Head

This species is commonly known as blueline snapper. Niazi (2001) reported it from Karachi. It was reported from the Pakistan coast without mentioning any specific location by Allen (1984), Bianchi (1985), GBIF (2025), Heemstra and Heemstra (2022), Hoda (1985, 1988), Hussain (2003), and Psomadakis *et al.* (2015). Rüppell (1838) originally described it as *Diacope coeruleolineata* from Massawa, Eritrea, and Jeddah, Saudi Arabia, Red Sea. Its holotype (SMF 1712 or 1772) is housed in Forschungs Institut und Natur Museum Senckenberg, Frankfurt, Germany (Frickle *et al.*, 2025).

Its body is deep and its caudal fin is truncated to slightly emarginated and preopercle notch indistinct. Its snout is somewhat pointed, and the dorsal profile of its head is moderately sloped. It is generally yellow, whereas it is darker on the back, grading to whitish ventrally. It has a series of seven or eight narrow, blue, and longitudinal stripes on the sides. There is a large blackish spot present on the lateral line below the anterior portion of the soft dorsal rays. There may also be blue spots and broken lines present on the head

It was reported from the Western Indian Ocean, including the southern Red Sea, Gulf of Aden, and Somalia to the Gulf of Oman and Pakistan. It is not known from the northern Red Sea and the Persian Gulf (Froese and Pauly, 2025; Heemstra and Heemstra, 2022).

Material Examined:

- 1 specimen collected from Karachi Fish Harbour on 8 March 2013 (32 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 24 February 2014 (32 cm TL)

- 1 specimen collected from Karachi Fish Harbour on 11 October 2017 (27 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 23 April 2022 (41 cm TL)

Lutjanus ehrenbergii (Peters, 1869)
(Fig. 6)

It is commonly known as black-spot snapper. It was reported from Pakistan without mentioning any specific location by Allen (1984, 1985), Bianchi (1985), Froese and Pauly (2025), Hoda (1985, 1988), Hussain (2003), and Psomadakis *et al.* (2015). Peters (1869) originally described it as *Mesoprion ehrenbergii* from Massawa, Eritrea, Red Sea. Its holotype is not known, however, syntypes are housed in Naturhistorisches Museum, Wien (Vienna), Austria, and Zoologisches Museum, Humboldt Universität, Berlin, Germany (Frickle *et al.*, 2025).

Its body is moderately deep and preopercular notch and knob poorly developed. Its caudal fin is truncate to emarginated, whereas its preopercle notch is shallow. Its head and body are silvery white, whereas dorsally it is dusky. It is white or silvery ventrally. There is a yellow stripe along each scale row above the lateral line. Usually, there are 4 or 5 bright yellow horizontal stripes present below the lateral line whereas occasionally there is a brown stripe present on the snout which passes through the eyes, to the middle of the sides. There is also a large blackish spot (subequal to or larger than eye) present on the body below rear dorsal-fin spines which is bisected by lateral line. Its pectoral fins are hyaline and its pelvic fins are white. The median fins are yellow distally and whitish proximally.



Fig. 6. *Lutjanus ehrenbergii*

It is an Indo-Pacific species which is known from the Red Sea, Oman, and Persian Gulf to South Africa, Madagascar, Aldabra, Seychelles, Maldives, India, and Sri Lanka extending to Indonesia, the Philippines, Japan, Caroline Islands, Solomon Islands, Mariana Islands .and Australia (Froese and Pauly, 2025; Heemstra and Heemstra, 2022).

Material Examined:

- 1 specimen collected from Karachi Fish Harbour on 13 December 2016 (42 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 21 October 2023 (46 cm TL)

Lutjanus erythropterus Bloch, 1790
(Fig. 7)

This species is commonly known as the crimson snapper. It was reported from Sindh by Murray (1880) and was reported from Pakistan without mentioning any specific location by Allen (1984, 1985), Ahmad and Niazi (1988),

Bianchi (1985), Froese and Pauly (2025), Heemstra and Heemstra (2022), Hoda (1985, 1988), Hussain (2003), and Psomadakis *et al.* (2015). Bloch (1790) initially described it. Its type locality is not known, however, lectotype (ZMB 8197) is housed in Zoologisches Museum, Humboldt Universitat, Berlin, Germany (Frickle *et al.*, 2025). Murray (1880) reported this species as *Mesoprion annularis*.

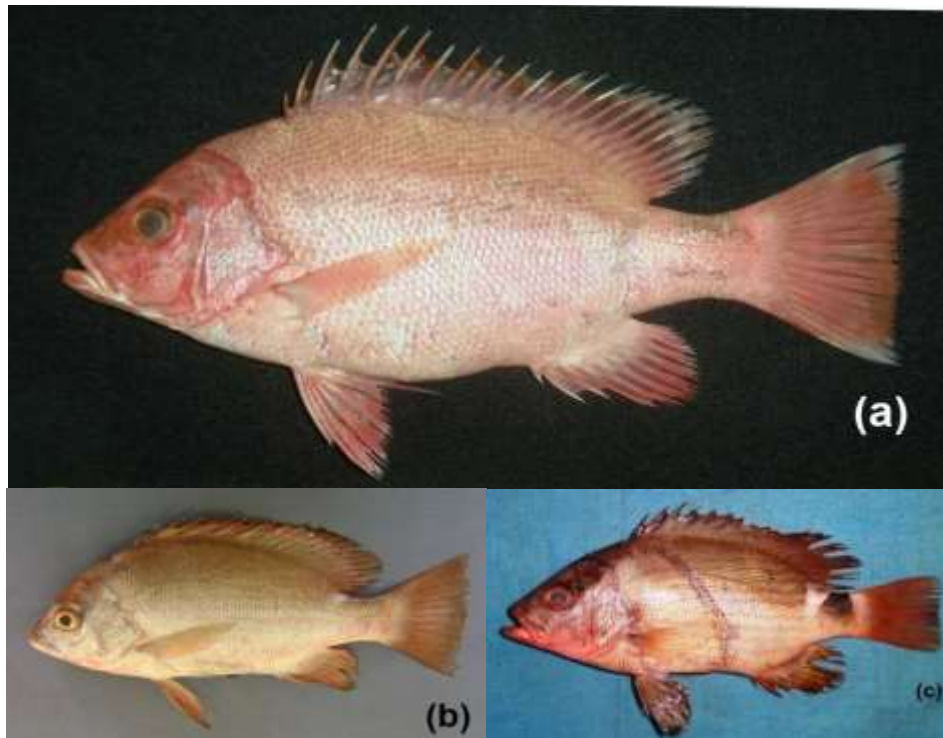


Fig. 7. *Lutjanus erythropterus*. (a) Specimen 39 cm TL; (b) Light colour specimen 24 cm TL; (c) Juvenile 15 cm TL

It is a deep-bodied species with a sloped dorsal profile of the head. The scale rows on its back are rising obliquely above the lateral line. Its juveniles have an oblique band extending from the mouth to the beginning of the dorsal fin and a black saddle blotch at the caudal peduncle (Fig. 6b, 6c).

It is an Indo-Pacific species known from Oman, Pakistan, the Chagos Archipelago, India, and Sri Lanka, extending to Indonesia, Korea, Japan, New Caledonia, and Australia (Froese and Pauly, 2025; Heemstra and Heemstra, 2022).

Material Examined:

- 1 specimen collected from Karachi Fish Harbour on 2 January 2009 (24 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 23 October 2009 (31 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 16 October 2014 (34 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 5 December 2016 (15 cm TL)

Lutjanus fulviflamma (Forsskal, 1775) (Fig. 8)

This species is commonly known as the dory snapper. It was reported from Karachi by Anonymous (1999) and Niazi (2001), and from Leth Nullah by Ahmad *et al.* (1985) and Niazi, and Moazzam (1999). It was reported from Pakistan without mentioning any specific location by Allen (1984, 1985), Ahmad (1988), Ahmad and Niazi (1988), Bianchi (1985), Froese and Pauly (2025), Hoda (1985, 1988), Hussain (2003), Jalil and Khaliluddin (1972, 1981),

and Psomadakis *et al.* (2015). Forsskal (1775) originally described it as *Sciaena fulviflamma* from the Red Sea. Its holotype is not known; however, its lectotype (ZMUC P4775) is housed in the Zoological Museum, University of Copenhagen, Denmark (Frickle *et al.*, 2025). Anonymous (1999) reported this species as *Mesoprion fulviflamma*.



Fig. 8. *Lutjanus fulviflamma*

Its body is moderately deep and its preopercular notch and knob are shallow and poorly developed. Its caudal fin is truncate to slightly emarginated, whereas its scale rows on the back are rising obliquely above the lateral line. The colour of its back and upper sides is brown, whereas its lower sides are whitish or light brown, and its belly is whitish to yellow. It usually has a series of 6-7 yellow stripes on the sides and a prominent black spot at the level of the lateral line, below the base of the anterior part of the soft portion of the dorsal fin.

It is an Indo-Pacific species known from the Persian Gulf, the Red Sea, Oman, Somalia to South Africa, Madagascar, Comoros, Aldabra, Seychelles, Mascarenes, and Sri Lanka extending to Indonesia, the Philippines, Taiwan, Japan, Samoa, Australia and Samoa (Froese and Pauly, 2025; Heemstra and Heemstra, 2022).

Material Examined:

- 1 specimen collected from Karachi Fish Harbour on 22 July 2014 (32 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 21 December 2016 (30 cm TL)

Lutjanus fulvus (Schneider, 1801) (Fig. 9)

This species is commonly known as blacktail snapper. It was reported from Sindh by Allen (1984), Anonymous (1955), Misra (1962), from Bhanbore by Ahmed and Abbas (1999a, 2000), from Karachi by Anonymous (1955), from Karachi Fish Harbour by Masood and Farooq (2010a) and Masood and Yasmeen (2011b), from Makran by Anonymous (1953, 1955) and Qureshi (1952), from Miani Hor by Ahmed and Abbas (1999b, 2000). It was reported from Pakistan without mentioning any specific location by Bianchi (1985), Hoda (1985, 1988), Hussain (2003), Psomadakis *et al.* (2015), and Qureshi (1960, 1964). It was originally described as *Holocentrus fulvus* from Tahiti, Society Islands by Forster (1801). Information about its possible holotype (31450) is lacking (Frickle *et al.*, 2025). Misra (1962) and Qureshi (1952, 1960, 1964) reported this species as *Lutjanus vaigiensis* whereas Ahmed and Abbas (1999a, 1999b, 2000) and Hoda (1985, 1988) referred it as *Lutjanus marginatus*.

This species has well developed preopercular notch and knob. Its caudal fin is slightly emarginated whereas scale rows on its back are rising obliquely above the lateral line. Its back and sides are tan, grey to brownish, whereas sides usually have a series of narrow yellow or golden-brown stripes along each scale row below the lateral

line. Its caudal fin is blackish whereas its dorsal and caudal fins are a narrow white border. Its pectoral, pelvic, and anal fins are yellowish, and a broad yellow rim around the posterior eye.



Fig. 9. *Lutjanus fulvus*

It is an Indo-Pacific species known from the Red Sea, Oman, Somalia to South Africa, Madagascar, Aldabra, Seychelles, Mauritius, Rodrigues, Chagos, Maldives and Sri Lanka, extending to Australia, Japan, Marquesas Islands, and Hawaii (Froese and Pauly, 2025; Heemstra and Heemstra, 2022).

Material Examined:

- 1 specimen collected from Karachi Fish Harbour on 11 April 2004 (37 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 22 October 2018 (32 cm TL)

Lutjanus gibbus (Forsskal, 1775)

This species is known as humpback red snapper and is reported from Bhatta Village, Sandspit, Karachi by Ahmed *et al.* (1999). It was reported from Pakistan without mentioning any specific location by Allen (1984, 1985), Bianchi (1985), Froese and Pauly (2025), Hoda (1985, 1988), Hussain (2003), Hussain and Kidwai (1994), Psomadakis *et al.* (2015), and Qureshi (1964). Forsskal (1775) originally described it as *Sciaena gibba* from Red Sea, however, its types are not known (Frickle *et al.*, 2025). Ahmed *et al.* (1999), Allen (1984), Hoda (1985, 1988) and Hussain and Kidwai (1994) reported this species as *Lutjanus coccineus*.

This species has a moderately deep body. Its head profile (mainly in adults) is distinctly concave, giving a humpback appearance. Its preopercular notch and knob are well developed. Its caudal fin is distinctly forked with rounded lobes. Its colour of its body is red to greyish, with an orange hue on the lower part of the opercle and in the pectoral fin axil. Its fins are red (mainly pectoral fins) or usually dark brown to blackish. The soft part of its dorsal, anal, and caudal fins has a narrow white margin. Its juveniles have a large, round black spot at the base of the caudal fin.

It is an Indo-Pacific species known from the the Red Sea Oman, Kenya to South Africa, Madagascar, Comoros, Aldabra, Seychelles, Chagos, Maldives, India and Sri Lanka extending to Indonesia, the Philippines, Tuamotu Islands, the Line and Society islands, southern Japan, Australia and Hawaii (Froese and Pauly, 2025; Heemstra and Heemstra, 2022). No specimen of this species was examined during the present study.

Material Examined:

- None

Lutjanus indicus Allen, White and Erdmann, 2013
(Fig. 10)

This species is known as the Arabian Sea snapper. This species is reported from Pakistan by Heemstra and Heemstra (2022), and Psomadakis *et al.* (2015). It was initially reported from Lively Rocks, Trincomalee, Sri Lanka by Allen *et al.* (2013). Its holotype (BPBM 18803) is housed in the Bernice P. Bishop Museum, Honolulu, Hawaii, U.S.A. (Frickle *et al.*, 2025).



Fig. 10. *Lutjanus indicus*

Lutjanus russellii was reported from Karachi Fish Harbour by Masood and Farooq (2010a; 2010b) and Masood and Yasmeen (2011b), from Keti Bunder by Ahmed *et al.* (1999) as well as it was reported from Pakistan without mentioning any specific location by Allen (1984, 1985), Bianchi (1985), Froese and Pauly (2025, Hoda (1985, 1988) and Hussain (2003). The report of *Lutjanus russellii* from the western Indian Ocean, including the Arabian Sea (Pakistan), is considered a misidentification of *L. indicus*. Therefore, all records of *L. russellii* from Pakistan are treated as *L. indicus* in this paper.

A moderately deep-bodied species that has scale rows above the lateral line that rise obliquely toward the dorsal profile. Its predorsal scales extend forward nearly to the level of the rear part of the orbit. It has a shallow and weakly developed preopercular notch and interopercular knob. The colour of its body is overall pale grey, grading to silvery white on the cheek, opercle, and lower side of the body. It has a series of seven dark brown to yellow stripes on the posterior head and side and has a prominent black spot on its posterior back, below the base of the first 6-7 soft dorsal rays. The lowermost part of this spot occupies about one scale row below the lateral line

This species is known from the Indian Ocean, including the Gulf of Oman, the Persian Gulf, Pakistan, India, and Sri Lanka, the Andaman Islands, Thailand, and Myanmar Hawaii (Froese and Pauly, 2025; Heemstra and Heemstra, 2022).

Material Examined:

- 1 specimen collected from Karachi Fish Harbour on 26 November 2008 (29 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 16 October 2014 (24 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 24 May 2016 (26 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 25 November 2016 (32 cm TL)

Lutjanus johnii (Bloch, 1792)
(Fig. 11)

This is one of the most commonly occurring snapper that is commonly known as John's snapper. It was reported from Sindh by Ahmad *et al* (1973), Allen (1985), Anonymous (1955, 1999), Misra (1962), Murray (1880), Sorley (1932), from Bhambore by Ahmed and Abbas (1999a, 2000), from Karachi by Anonymous (1955, 1993, 1999), Ahmad *et al.* (1973), Jenkins (1910), Misra (1962), Niazi (2001) and Nielsen (1960), from Karachi Fish Harbour by Masood and Farooq (2010a) and Masood and Yasmeen (2011a, 2011b), from Korangi Creek by Ahmed and Abbas (1999c, 2000) and RETA (2003), from Leth Nullah by Ahmad *et al.* (1985) and Niazi and Moazzam (1999), from Pasha Bunder by Hussain and Khatoon (2000b), from Balochistan by Allen (1985), from Makran by Anonymous (1955), Ahmad *et al.* (1973), Misra (1962) and Qureshi (1952), and from Miani Hor by Ahmed and Abbas (1999b, 2000). It was reported from Pakistan without mentioning any specific location by Ahmad (1988), Ahmad and Niazi (1988), Bianchi (1985), Froese and Pauly (2025), Heemstra and Heemstra, (2022), Hoda (1985, 1988), Hussain (2003), Jalil and Khaliluddin (1972, 1981), Majid *et al* (1992), Psomadakis *et al.* (2015) and Qureshi (1960,1965). Bloch originally described it as *Anthias johnii* from Surat, India (1792). Its holotype is not known, however, syntypes are housed in Zoologisches Museum, Humboldt Universitat, Berlin, Germany (Frickle *et al.*, 2025). Sorley (1932) reported this species as *Lutianus yapilli* whereas Anonymous (1999) listed it as *Mesoprion johnii*, and Murray (1880) called it *Serranus pavoninus* that are considered its synonym.

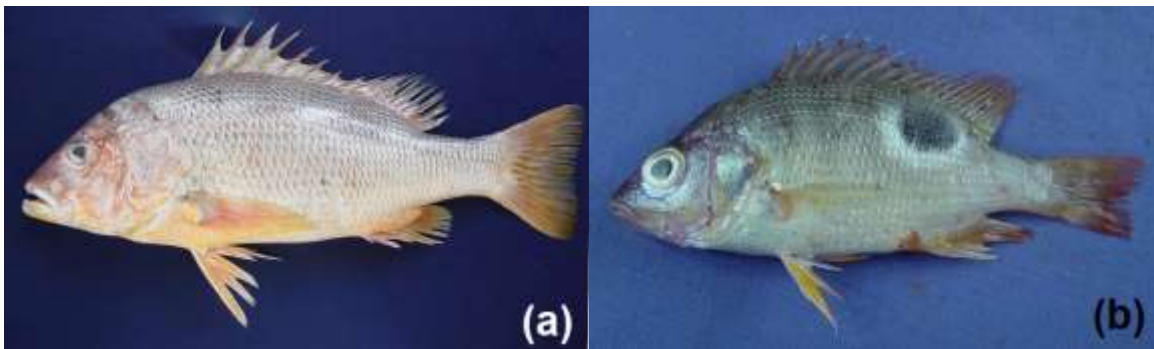


Fig. 11. *Lutjanus johnii*. (a) Adult 32 cm TL; (b) Juvenile 16 cm TL.

A moderately deep species that has a dorsal profile of the head that is steeply sloped. Its preopercular notch and knob are indistinct and poorly developed and scale rows on the back are parallel to the lateral line. The colour of its body is generally yellow with a bronze to silvery sheen, shading to silvery white on the belly and underside of the head. The center of each scale often has a reddish-brown spot, giving an overall appearance of a series of horizontal lines on the side of the body. There is a large black blotch present mainly above the lateral line below the anterior dorsal-fin rays. Its juveniles have a white ring around the black spot (Fig. 11b).

It is an Indo-Pacific species known from Kenya, Aldabra, the Gulf of Aden, Yemen, Oman, Pakistan, India, Sri Lanka, extending to Indonesia, the Philippines, Taiwan, Japan, Australia, and Fiji (Froese and Pauly, 2025; Heemstra and Heemstra, 2022).

Material Examined:

- 1 specimen collected from Karachi Fish Harbour on 26 November 2008 (31 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 2 January 2009 (28 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 30 October 2014 (19 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 19 November 2015 (32 cm TL)

Lutjanus kasmira (Forsskal, 1775)

This species is known as the common bluestripe snapper. It was reported from Pakistan without mentioning any specific location by Allen (1984), Bianchi (1985), Hoda (1985, 1988), Hussain (2003), and Psomadakis *et al.* (2015). It was originally described as *Sciaena kasmira* from the Red Sea by Forsskal (1775). Its holotype is not

known, however, lectotype (ZMUC P 4777) is housed in Zoological Museum, University of Copenhagen, Denmark (Frickle *et al.*, 2025).

A moderately deep species has a slightly emarginated caudal fin. Its preopercle notch is distinct. The colour of its head and body is yellow. There are four dark-edged blue horizontal stripes present on the sides of its head and body (3rd stripe from preopercle; 4th blue stripe runs below eye, often with another faint blue stripe below it). Its lower third of the body is abruptly white, with narrow pale yellow stripe on each body scale row, whereas its snout is dusky.

It is an Indo-Pacific species known from the Red Sea, Oman, Kenya to South Africa, Madagascar, Comoros, Aldabra, Seychelles, Mascarenes, Chagos, Maldives and Sri Lanka, extending to Indonesia, Japan, Australia, Marquesas Islands and Hawaii (Froese and Pauly, 2025; Heemstra and Heemstra, 2022). No specimen of this species was examined during the present study.

Material Examined:

- None

Lutjanus lemniscatus (Valenciennes, 1828)
(Fig. 12)



Fig. 12. *Lutjanus lemniscatus*

This species is commonly known as yellowstreaked snapper. It was reported from Pakistan without mentioning any specific location by Allen (1984), Bianchi (1985), Heemstra and Heemstra (2022), Hussain (2003), and Psomadakis *et al.* (2015). It was originally described as *Serranus lemniscatus* from Sri Lanka by Valenciennes (1828). Its holotype (MNHN 7146) is housed in Museum National d'Historie Naturelle, Paris, France (Frickle *et al.*, 2025).

Its body is oblong and has a steeply sloped dorsal profile of the head, whereas the snout profile is slightly concave. Its preorbital bone is usually much greater than the eye diameter whereas preopercular notch and knob are shallow and poorly developed. The scale rows on the back are rising obliquely above the lateral line. The colour of its body is gray-brown or olive on the upper portion of the back and head, grading to whitish ventrally. Its dorsal and caudal fins are dusky brown or black, frequently with a narrow white posterior margin whereas its anal, pelvic, and pectoral fins are whitish with some dusky brown. Its juveniles are silvery grey or yellowish dorsally and whitish ventrally, separated by a wide midlateral black band from the snout tip, through the eye, to the caudal-fin base.

It is an Indo-Pacific species known from the Mozambique, Pakistan, India, Sri Lanka, Thailand, Indonesia, the Philippines, New Guinea, Taiwan, and Australia (Froese and Pauly, 2025; Heemstra and Heemstra, 2022).

Material Examined:

- 1 specimen collected from Karachi Fish Harbour on 6 May 2013 (40 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 28 September 2013 (38 cm TL)

Lutjanus lunulatus (Park, 1797)
(Fig. 13)

This species is commonly known as the lunartail snapper. It is reported from Sindh by Anonymous (1955), Day (1875, 1889), Murray (1880), and Weber and deBeaufort (1936), from Karachi by Anonymous (1955) and Nielsen (1960), from Balochistan by Zugmayer (1913), and from Makran by Anonymous (1955). It was reported from Pakistan without mentioning any specific location by Ahmad and Niazi (1988), Allen (1985), Bianchi (1985), Froese and Pauly (2025), Heemstra and Heemstra (2022), Hoda (1985, 1988), Hussain (2003), Jalil and Khaliluddin (1972, 1981), Psomadakis *et al.* (2015), and Qureshi (1964). Park (1797) originally described it as *Perca lunulata* from Sumatra, Indonesia. Its holotype (BMNH 1863.11.12.16) is housed in the British Museum of Natural History, London, U.K. (Frickle *et al.*, 2025).



Fig. 13. *Lutjanus lunulatus*

This species has a slightly deep body that has a steeply sloped dorsal profile of the head. Its preopercular notch and knob are shallow poorly developed. The scale rows on its back are rising obliquely above the lateral line. The colour of its head and body is reddish pink dorsally, whereas its sides are silvery, and ventrally it is bright yellowish. Its dorsal fin is hyaline to reddish pink or maroon whereas pectoral, pelvic and anal fins are yellow and caudal fin is reddish to maroon, with broad black crescent nearly reaching lobe tips.

It is an Indo-Pacific species known from the Gulf of Oman, Pakistan, India and Sri Lanka extending to Indonesia, the Philippines, Taiwan, Vanuatu and New Guinea (Froese and Pauly, 2025; Heemstra and Heemstra, 2022).

Material Examined:

- 1 specimen collected from Karachi Fish Harbour on 12 September 2004 (41 cm TL)

Lutjanus lutjanus Bloch, 1790
(Fig. 14)

This species is known as bigeye snapper. It was reported from Sindh by Allen (1984, 1985), Anonymous (1955), Misra (1962) and Murray (1880), from Karachi by Anonymous (1955) and Nielsen (1960), from Karachi Fish Harbour by Masood and Farooq (2010a) and Masood and Yasmeen (2011b), from LBOD by Leghari *et al.*

(2003), from Tidal Link Canal, Badin District by Jafri (2004) and Jafri *et al.* (2000), from Balochistan by Zugmayer (1913) and from Makran by Anonymous (1955) and Qureshi (1952). It was reported from Pakistan without mentioning any specific location by Ahmad (1988), Ahmad and Niazi (1988), Bianchi (1985), Froese and Pauly (2025), Hoda (1985, 1988), Hussain (2003), Jalil and Khaliluddin (1972, 1981), Majid *et al.* (1992), Misra (1962), Psomadakis *et al.* (2015), Qureshi (1960, 1964) and Siddiqui (1956). Bloch (1790) initially described it from Japan. Its holotype (ZMB 8717) used to be housed at Zoologisches Museum, Humboldt Universitat, Berlin (Frickle *et al.*, 2025). Misra (1962) reported this species as *Lutianus lineolatus*, whereas Qureshi (1964) and Zugmayer (1913) referred it as *Lutjanus lineolatus* and Qureshi (1960) and Siddiqui (1956) called it *Lutianus lutianus*. Murray (1880) listed it as *Diacope lineolate*, which is considered a synonym of this species.



Fig. 14. *Lutjanus lutjanus*

Its body is slender with a gently sloped dorsal profile of the head. Its preorbital bone very narrow whereas preopercular notch and knob are indistinct and poorly developed. The scale rows on its back are rising obliquely above the lateral line. The colour of its head and body is golden brown dorsally, whereas its sides are silvery white and its belly is white. It has oblique brownish yellow lines along scale rows above the lateral line, and horizontal yellow-brown lines along scale rows below the lateral line. There is a broader midlateral golden yellow-brown is present from about the preopercle to the caudal-fin base. Sometimes with broad yellow swathes below pectoral fins, from chest to caudal fin. Its dorsal is hyaline greenish yellow, whereas other fins are yellowish, and eyes are yellow.

It is an Indo-Pacific species known from the Persian Gulf, Red Sea, Oman, Kenya to South Africa, Madagascar, Seychelles, and Sri Lanka to the east coast of India, the Philippines, Japan, Australia and Solomon Islands and Tonga (Froese and Pauly, 2025; Heemstra and Heemstra, 2022).

Material Examined:

- 1 specimen collected from Karachi Fish Harbour on 9 October 2009 (16 cm TL)
- 1 specimen collected from offshore waters along Balochistan coast (75m depth) on 7 March 2022 (19 cm TL)

Lutjanus madras (Valenciennes 1831) (Fig. 15)

This species is commonly known as the Indian snapper. This is reported for the first time from Pakistan. It was originally described as *Mesoprion madras* by Valenciennes (1831) from Mahé, Seychelles. Its holotype (MNHN 0000-8388) is housed in Museum National d'Historie Naturelle, Paris, France (Frickle *et al.*, 2025).

This species has a relatively shallow body, and its preopercle notch is shallow. There are no scales on the preopercular flange, whereas the scales on the cheek are in 7-8 rows. It has a rounded posterior nostril, and the caudal fin is truncated to slightly emarginate. Its body is pinkish to silvery grey dorsally and whitish ventrally. There are oblique yellow lines present above the lateral line and horizontal yellow lines present on scale rows below the lateral line. There is a broad golden-yellow mid-lateral stripe running from the eye to the upper part of the peduncle. Its fins are yellow, except the pelvic fins, which are white with a yellowish hue, whereas its caudal-fin base is slightly dusky.



Fig. 15. *Lutjanus madras*

This species is known from the Indian Ocean, including Zanzibar, Seychelles, Madrasah, southern Oman to Maldives, Lakshadweep, to Sri Lanka, and India (Froese and Pauly, 2025; Heemstra and Heemstra, 2022).

L. madras comes very close to *L. xanthopinnis* Iwatsuki, Tanaka and Allen 2015, which can be distinguished by the following four characteristics:

- *L. madras* has no scales on the preopercular flange (several embedded scales on the preopercular flange in *L. xanthopinnis*).
- *L. madras* has many more scales on the cheek: seven or eight rows (only four or five scale rows on the cheek of *L. xanthopinnis*).
- *L. madras* has a rounded posterior nostril and the predorsal scales extending to about the level of the posterior edge of the orbit (an elliptical posterior nostril and the predorsal scales extending forward to about the middle of the interorbital space in *L. xanthopinnis*).
- *L. madras* has a prominent mid-lateral yellow stripe; from 1.5 to 3 scale rows wide (have relative uniformity of the lateral yellow stripes below the lateral line and a midlateral stripe only slightly more prominent, and only a single scale row in width in *L. xanthopinnis*).

Material Examined:

- 1 specimen collected from Karachi Fish Harbour on 16 May 2017 (27 cm TL)

Lutjanus malabaricus (Bloch and Schneider, 1801)
(Fig. 16)

This species is commonly known as Malabar blood snapper. It was reported from Sindh by Allen (1984, 1985), Anonymous (1955), Day (1875, 1880) and Murray (1880), from Karachi by Anonymous(1955), from Karachi Fish Harbour by Masood and Farooq(2010a) and Masood and Yasmeen(2011a, 2011b), from Paradise Point, Karachi by Moazzam and Rizvi(1980) from Balochistan by Zugmayer (1913), from Makran by Anonymous, (1955) and Day(1875).). It was reported from Pakistan without mentioning any specific location by Ahmad (1988), Ahmad and Niazi (1988), Bianchi (1985), Froese and Pauly (2025), Hoda (1985, 1988), Hussain (2003), Jalil and Khaliluddin (1972, 1981), Psomadakis *et al.* (2015), and Qureshi (1964). It was originally described as *Sparus malabaricus* from the coast of Malabar, India by Bloch and Schneider (1801). Its holotype (ZMB 8161) is housed in Zoologisches Museum, Humboldt Universitat, Berlin, Germany (Frickle *et al.*, 2025). Murray (1880) reported this species as *Mesoprion malabaricus*.



Fig. 16. *Lutjanus malabaricus*

The body of this species is relatively deep. Its preopercular notch and knob are shallow and poorly developed. Its caudal fin is truncate. The colour of its back and sides is red or red-orange, whereas it is lighter on the lower parts. Its fins are reddish. The juveniles have a broad, oblique band of brown or black from the upper jaw to the beginning of the dorsal fin, and a prominent black band across the caudal peduncle with a pearly white anterior border.

It is an Indo-Pacific species known from the Persian Gulf, Oman, India, and Sri Lanka, extending to Indonesia, the Philippines, Taiwan, Japan, Palau, and Australia (Froese and Pauly, 2025; Heemstra and Heemstra, 2022).

Material Examined:

- 1 specimen collected from Karachi Fish Harbour on 11 October 2011 (42 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 9 November 2016 (36 cm TL).

Lutjanus monostigma (Cuvier, 1828)

This species is commonly known as one-spot snapper. Jenkins (1910) reported it from Karachi. Cuvier (1828) originally described it as *Mesoprion monostigma* from Seychelles. Its holotype (MNHN 8278) is housed in Museum National d'Historie Naturelle, Paris, France (Frickle *et al.* 2025).

Its body is moderately deep to somewhat slender. Its preopercular notch and knob indistinct and poorly developed. Its caudal fin is truncate to slightly emarginated whereas scale rows on its back rise obliquely above the lateral line. Its colour is generally whitish to pinkish with dusky scale margins. It is grey or brown on upper back and

dorsal portion of head. There is a black spot (sometimes faint or absent), on back below the anterior soft dorsal-fin rays. Its fins are yellow-to-yellow-orange.

It is an Indo-Pacific species known from the Red Sea, Gulf of Oman, Kenya to South Africa, Madagascar, Comoros, Aldabra, Seychelles, Mascarenes, Chagos, Maldives and SriLanka extending to Indonesia, the Philippines, Taiwan, Japan, Marshall Islands, Solomon Islands, Australia, Marquesas Islands and Hawaii (Froese and Pauly, 2025; Heemstra and Heemstra, 2022). No specimen of this species was examined during the present study.

Material Examined:

- None

Lutjanus notatus (Cuvier, 1828)

This species is commonly known as blue-striped snapper. Murray (1880) as *Diacope notata* reported it from Pakistan. Cuvier (1828) originally described this species as *Diacope notata* from the Indian Ocean. Its holotype is not known; however, the lectotype (MNHN 7982) is housed in the Muséum National d'Historie Naturelle, Paris, France (Frickle *et al.*, 2025).

This species has a steeply sloped dorsal profile of the head. Its preopercular notch and knob are deep and well developed. The scale rows on its back rise obliquely above the lateral line. The colour of its body is brownish dorsally, grading to yellowish-white ventrally, and it has a series of six narrow blue stripes. A blackish spot is usually present on the lateral line below the anterior portion of the soft dorsal fin rays. Its fins are yellow.

This species is known from the Western Indian Ocean, including Mozambique, South Africa, Madagascar, and Mascarenes and Reunion Island (Froese and Pauly, 2002). There are unconfirmed reports of its occurrence on the east coast of India. It seems that the report from Pakistan by Murray (1880) is based on misidentification. No specimen of this species was examined during the present study.

Material Examined:

- None

Lutjanus quinquelineatus (Bloch, 1790)
(Fig. 17)



Fig. 17. *Lutjanus quinquelineatus*

This species is commonly known as the five-lined snapper. It was reported from Karachi by Anonymous (1999). It was reported from Pakistan without mentioning any specific location by Allen (1985), Froese and Pauly (2025), and Psomadakis *et al.* (2015). Bloch (1790) originally described it as *Holocentrus quinquelineatus* from

Japan. Its holotype is not known, however, lectotype (ZMB 8842) is housed in Zoologisches Museum, Humboldt Universitat, Berlin (Frickle *et al.*, 2025). Anonymous (1999) reported this species as *Genyoroge quinquelineatus*.

This species has a deeply sloped dorsal profile of head. Its preopercular notch and knob deep and well developed. The scale rows on its back rise obliquely above the lateral line. The colour of its body is generally bright yellow, including its fins. There are a series of five or six dark-edged blue stripes on its side. There is a round black spot, about the size of the eye or larger, is present below the anterior most soft dorsal rays, touching the lateral line but mostly above it.

It is an Indo-Pacific species known from the Oman, Persian Gulf and Sri Lanka extending to Thailand, the Philippines, Japan, New Guinea, Australia, New Caledonia and Fiji Australia (Froese and Pauly, 2025; Heemstra and Heemstra, 2022).

Material Examined:

- 1 specimen collected from Karachi Fish Harbour on 7 April 2013 (31 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 27 December 2017 (33 cm TL)

Lutjanus rivulatus (Cuvier, 1828)
(Fig. 18)



Fig. 18. *Lutjanus rivulatus*

It is commonly known as blubberlip snapper. Despite being a snapper, it has different local names as Chah-ya in Sindh and Sore-duph in Balochistan. It was reported from Sindh by Allen (1984, 1985), Anonymous (1955, 1999), Misra (1962) and Murray (1880), from Bhambhore by Ahmed and Abbas (1999a, 2000), from Karachi by Anonymous (1955) and Misra (1962), from Balochistan by Allen (1984, 1985), Anonymous (1953) and Zugmayer (1913), from Makran by Anonymous (1955), Misra (1962) and Qureshi (1952). It was reported from Pakistan without mentioning any specific location by Ahmad and Niazi (1988), Bianchi (1985), Froese and Pauly (2025), GBIF (2025), Hoda (1985, 1988), Hussain (2003), Jalil and Khaliluddin (1972, 1981), Psomadakis *et al.* (2015), Qureshi (1960, 1964, 1965) and Siddiqi (1956).

Cuvier (1828) originally described it as *Diacope rivulata* from Coromandel Pondicherry and Malabar (India) and Java (Indonesia). Its holotype is not known, however, syntypes are housed in Museum National d'Historie Naturelle, Paris, France Rijksmuseum van Natuulijke Histoire, Leiden and Zoologisches Museum, Humboldt Universitat, Berlin (Frickle *et al.*, 2025). Murray (1880) reported this species as *Genyoroge caeroleopunctata*.

This species, which has a very deep body, has distinct and moderately developed preopercular notch and knob. Its soft-rayed dorsal and anal-fin margins are angular whereas caudal fin is truncate or slightly emarginate. The

colour of its body is generally brown with a reddish tinge. Its scales on each side have a pale brown border. There may be two to three small bluish white spots in central portion of the body. Its head has numerous undulating blue lines whereas lips are tan. Its fins are largely yellowish to dusky grey-brown.

It is an Indo-Pacific species known from the Red Sea, Oman, Persian Gulf, Mozambique to South Africa, Madagascar, Comoros, Seychelles, Mauritius, India and Sri Lanka extending to Indonesia, the Philippines, Japan, Australia and Tahiti (Froese and Pauly, 2025; Heemstra and Heemstra, 2022).

Material Examined:

- 1 specimen collected from Karachi Fish Harbour on 18 July 2013 (18 cm TL)
- 1 specimen collected from Khobbar Creek, Off River Indus Delta on 2 November 2013(56 cm TL)
- 1 specimen collected from off Churna Island on 28 July 2014 (63 cm TL).

Lutjanus russellii (Bleeker, 1849)

This species is commonly known as Russell's snapper. This species is known from the Western Pacific, including Indonesia and the Gulf of Thailand east to the Philippines, Samoa, and Tonga, north to the southern Sea of Japan, and south to Australia (Frickle *et al.*, 2025). The records of this species from Pakistan, therefore, should be considered as that of *L. indicus*. No specimen of this species was examined during the present study.

Material Examined:

- None

Lutjanus sanguineus (Cuvier, 1828)

This species is commonly known as humphead snapper. It was reported from Pakistan without mentioning any specific location by Allen (1985), Bianchi (1985), Froese and Pauly (2025), Hussain (2003), Psomadakis *et al.* (2015), and Qureshi (1964). Cuvier (1828) originally described this species as *Diacope sanguinea* from Massawa, Eritrea, Red Sea. Its holotype is not known; however, a possible syntype is housed in Zoologisches Museum, Humboldt Universitat, Berlin, Germany (Frickle *et al.*, 2025).

This species has an angular dorsal profile of its head, whereas the snout is steeply sloped. Its anterior and posterior nostrils are widely spaced. Its preopercular notch and knob are shallow and poorly developed. The scale rows on its back rise obliquely above the lateral line. The colour of its head and body is red (may be paler silvery laterally or ventrally), whereas the fins are red to pink and the lips and the roof of the mouth are orange-yellow. Its juveniles have a broad brown bar from the upper jaw to the beginning of the dorsal fin and a series of reddish horizontal lines on sides. Its median fins are red-brown, whereas pelvic fins are dusker. There is a large black saddle on the peduncle, preceded by a small whitish blotch.

This species is known from the Western Indian Ocean, including Red Sea, Persian Gulf, Oman, Somalia, east to the Arabian Sea and south to South Africa, Madagascar, Seychelles, India and Sri Lanka (Froese and Pauly, 2025; Heemstra and Heemstra, 2022). No specimen of this species was examined during the present study.

Material Examined:

- None

Lutjanus sebae (Cuvier, 1816)

This species is commonly known as emperor red snapper. It was reported from Sindh by Allen (1984, 1985), and Anonymous (1955), from Karachi by Anonymous (1955), from Leth Nullah by Ahmad *et al.* (1985) and Niazi and Moazzam (1999), from Makran by Anonymous (1955). It was reported from Pakistan without mentioning any specific location by Ahmad and Niazi (1988), Allen (1984, 1985), Bianchi (1985), Froese and Pauly (2025), Hoda (1985, 1988), Hussain (2003), Majid *et al.* (1992), Psomadakis, *et al.* (2015) and Qureshi (1960, 1964, and 1965).

Cuvier (1816) originally described it as *Diacope sebae*. No information about its type specimens and locality is available, however, Seba and Russell specimens (Non-types: MNHN A-7745) are housed in the Muséum National d'Histoire Naturelle, Paris, France, and the Rijksmuseum van Natuurlijke Historie, Leiden (Frickle *et al.* 2025).

This species has a steeply sloped dorsal profile of the head. Its preopercular notch and knob are small and moderately developed. The scale rows on its back rise obliquely above the lateral line. The colour of the body is generally red or pink with darker coloring on the back; fins are red except the pectorals, which are pink. Its juveniles and small adults have a dark red band from the first dorsal spine through the eye to the tip of the snout. There are a second band present from mid-dorsal fin to pelvic fin and a third from base of last dorsal spine to caudal peduncle. Large adults of this species are uniformly red.

It is an Indo-Pacific species known from the Red Sea, southern Oman, Somalia to South Africa, Madagascar, Comoros, Seychelles, Mascarenes, Chagos, Maldives, India, Sri Lanka extending to Indonesia, the Philippines, Japan, Australia and New Caledonia (Froese and Pauly, 2025; Heemstra and Heemstra, 2022). No specimen of this species was examined during the present study.

Material Examined:

- None

Lutjanus vitta (Quoy and Gaimard, 1824)
(Fig. 19)



Fig. 19. *Lutjanus vitta*. Juvenile 15.6 cm TL

This species is commonly known as brownstripe snapper. It was reported from Pakistan without mentioning any specific location by Allen (1984), Bianchi (1985), Hoda (1985, 1988), Hussain (2003), and Psomadakis, *et al.* (2015). This species is known as originally described as *Serranus vitta* from Waigeo, Indonesia by Quoy and Gaimard (1824). Its holotype (MNHN 8346) is housed in Museum National d'Histoire Naturelle, Paris, France (Frickle *et al.*, 2025).

This species has a moderately sloped dorsal profile of the head. Its preopercular notch and knob are shallow and poorly developed. The scale rows on its back rise obliquely above the lateral line. The colour of the body of this species is whitish or pink with a yellowish brown to black stripe on the middle of the side. Its juveniles and sub-adults have an intensely black mid-lateral stripe and an oval black spot (eye-sized or greater), lying in the middle of the stripe below the last dorsal spines. Its adults have yellow median fins.

It is an Indo-Pacific species known from the Seychelles, southern India, Sri Lanka, extending to Indonesia, Thailand, the Philippines, Taiwan, Japan, Gilbert Islands, Marshall Islands, Australia, and New Caledonia (Froese and Pauly, 2025; Heemstra and Heemstra, 2022).

Material Examined:

- 1 specimen collected from Karachi Fish Harbour on 14 April 2017 (21 cm TL).
- 1 specimen collected from Karachi Fish Harbour on 21 September 2022 (17 cm TL).
- 1 specimen collected from Karachi Fish Harbour on 7 November 2023 (22 cm TL).

Lutjanus xanthopinnis Iwatsuki, Tanaka and Allen 2015
(Fig. 20)



Fig. 20. *Lutjanus xanthopinnis*

This species is commonly known as the yellowfin snapper. It was reported from Pakistan for the first time. It was described by Iwatsuki *et al.* (2015) from Kishira, Kimotsuki, Uchinoura Bay, Kagoshima, Japan. Its holotype (MUFS 33019) is housed in the University of Miyazaki, Division of Fisheries Science, Miyazaki, Japan (Iwatsuki *et al.*, 2015).

The body of this species is relatively deep. The preopercular flange has several embedded scales, including a pair of small, rounded to elliptical nostrils on each side of the snout. There is no conspicuous flap on the outer edge of either nostril. There are predorsal scales extending forward to the middle of the interorbital. Below the lateral line of the body, it has thin yellow to brownish stripes. There is a more prominent but slightly wider stripe from behind the eye to the upper caudal peduncle, occupying a single scale row and well less than half pupil width. Its fins are mostly yellow.

It is an Indo-Pacific species known from the Andaman Sea, western Thailand, and Sri Lanka to Papua New Guinea and the East Indies; north to Japan; and south to Indonesia (Froese and Pauly, 2025). The present paper extends the distribution of this species further west to the Arabian Sea to the Pakistan.

Material Examined:

- 1 specimen collected from Karachi Fish Harbour on 11 June 2019 (25 cm TL)

Genus *Macolor* Bleeker, 1860
Macolor niger (Forsskal, 1775)

This species is commonly known as black and white snapper. It was reported from Pakistan without mentioning any specific location by Allen (1985), Bianchi (1985), Froese and Pauly (2025), Hoda (1985, 1988), Hussain (2003), and Psomadakis, *et al.* (2015). It was originally described as *Sciaena nigra* from Jeddah, Saudi Arabia, Red Sea by Forsskal (1775). Its holotype (ZMUC P4780) is housed in Zoological Museum, University of Copenhagen, Denmark (Frickle *et al.*, 2025).

The body of this species is relatively deep and laterally compressed. Its has a convex dorsal profile of the head adults whereas it has an oblique straight line in young. It has a continuous dorsal fin with a spinous portion distinctly notched in young whereas its dorsal and anal fins are distinctly pointed posteriorly. Its caudal fin is rounded with middle rays elongated in small juveniles whereas it is slightly notched at intermediate sizes and emarginate in adults. The colour of the body of the adults are silvery grey, strongly blotched with blackish patches. It has a duller iris. The juveniles have a black and white pattern but a broader white area encompassing the posterior head and adjacent body and with less than five white spots on the back.

It is an Indo-Pacific species known from the Red Sea to South Africa, Madagascar, Comoros, Seychelles, Reunion, Mauritius, Chagos, Maldives, southwestern India and Sri Lanka, extending to Indonesia, the Philippines, Japan, Marshall Islands, Australia (Froese and Pauly, 2025; Heemstra and Heemstra, 2022). No specimen of this species was examined during the present study.

Material Examined:

– None

Genus *Paracaesio* Bleeker, 1874
Paracaesio xanthurus (Bleeker, 1869)

This species is commonly known as yellow and blue snapper. It was reported from Pakistan without mentioning any specific location by Allen (1984, 1985), Bianchi (1985), Hoda (1985, 1988), Hussain (2003), and Psomadakis, *et al.* (2015). It was originally described as *Caesio xanthura* from Nosy Be, Madagascar by Bleeker (1869). Its holotype is not known, however, syntypes are housed in the Rijksmuseum van Natuurlijke Historie, Leiden (Frickle *et al.*, 2025).

The body of this species is relatively deep and laterally compressed. Its mouth is terminal and jaws are about equal, whereas the anterior end of the upper lip is without a thick fleshy protrusion. Its caudal fin is forked. The colour of its body is bright blue. It has a broad yellow band over most of the dorsal half of the body, including most of the caudal peduncle fin.

It is an Indo-Pacific species known from northern Mozambique to South Africa, Madagascar, Comoros, Seychelles, Walters Shoals, Reunion, Mauritius, Chagos, Maldives, and Sri Lanka; elsewhere to Japan, Marshall Islands, Australia, and Samoa (Froese and Pauly, 2025; Heemstra and Heemstra, 2022). No specimen of this species was examined during the present study.

Material Examined:

– None

Genus *Pinjalo* Bleeker 1873
Pinjalo lewisi Randall, Allen and Anderson, 1987
(Fig. 22)

This species is commonly known as red pinjalo or slender pinjalo. This species is reported for the first time from Pakistan. It was initially described from Dumaguete market, Negros, Philippines by Randall *et al* (1987). Its holotype (BPBM 28543) is housed in the Bernice P. Bishop Museum, Honolulu, Hawaii, U.S.A. (Frickle *et al.*, 2025).



Fig. 22. *Pinjalo lewisi*.

Its body is robust, and its head profile is distinctly convex. Its dorsal-fin margin is continuous whereas dorsal and anal fins are with scaly sheaths at the base and pectoral fins are long, reaching the anus. Its caudal fin is emarginate. Its body and head are pink to reddish dorsally and white to silvery ventrally. There may be a whitish-pink spot often on the peduncle above the lateral line. The fins are reddish; whereas dorsal and caudal fins often have dark margins, the scales on the nape and upper body have darker centers, forming oblique lines along scale rows. There are no pale spots on the peduncle in *P. pinjalo*)

This species is known from the Indo-Pacific areas, including the Maldives, Lakshadweep, and Sri Lanka, extending to Indonesia, the Philippines, Japan, New Guinea, and Fiji (Froese and Pauly, 2025; Heemstra and Heemstra, 2022). The present paper extends the distribution of this species further north to the Arabian Sea (Pakistan coast).

Material Examined:

- 1 specimen collected from Karachi Fish Harbour on 17 December 2014 (53 cm TL)

Pinjalo pinjalo (Bleeker, 1850)
(Fig. 23)



Fig. 23. *Pinjalo pinjalo*

This species is commonly known as pinjalo or slender pinjalo. It was reported from Pakistan without mentioning any specific location by Allen (1984, 1985), Bianchi (1985), Froese and Pauly (2025), Hoda (1985, 1988), Hussain (2003), Psomadakis *et al.* (2015), and Qureshi (1964). It was originally described as *Caesio pinjalo* from Jakarta, Java, Indonesia by Bleeker (1850). Its holotype is not known, however, syntypes are housed in the British Museum of Natural History, London, U.K. and Rijksmuseum van Natuurlijke Historie, Leiden (Frickle *et al.*, 2025). Qureshi (1964) reported this species as *Caesio pinjalo*.

This species has a robust body and distinctly convex profile. Its dorsal-fin margin is continuous whereas dorsal and anal fins are with scaly sheath at base. Its pectoral fins are long; reaching anus whereas caudal fin is emarginate. The colour of its head and body is largely pink to reddish and white to silvery ventrally. The anal, pectoral and pelvic fins are yellow or reddish whereas dorsal and caudal fins are dusky or reddish with dark margins (the nape and upper body are without lines formed by scale and there are pale spots on peduncles in *P. lewisi*)

It is an Indo-Pacific species known from the southern Red Sea, Oman, the Persian Gulf, Pakistan, and Sri Lanka, extending to Indonesia, the Philippines, Japan, and New Guinea (Froese and Pauly, 2025; Heemstra and Heemstra, 2022).

Material Examined:

- 1 specimen collected from Karachi Fish Harbour on 17 April 2013 (26 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 24 April 2016 (21.7 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 11 November 2021 (29 TL)
- 1 specimen collected from Karachi Fish Harbour on 14 August 2023 (24 cm TL)

Genus *Pristipomoides* Bleeker 1852
Pristipomoides filamentosus (Valenciennes, 1830)
 (Fig. 24)



Fig. 24. *Pristipomoides filamentosus*

This species is commonly known as crimson jobfish. Sorley (1932) reported it from Sindh as *Lutianus roseus*. This species was reported from Pakistan without mentioning any specific location by Allen (1985), Froese and Pauly (2025), and Psomadakis *et al.* (2015). It was originally described as *Serranus filamentosus* from St. Denis, Réunion Island and Mauritius by Valenciennes (1830). Its holotype is not known, however, syntypes are housed in the Muséum National d'Historie Naturelle, Paris, France (Frickle *et al.*, 2025).

The body of this species is elongate and laterally compressed. Its jaws are about equal whereas lower jaw is slightly protruding. The last soft ray of its both dorsal and anal fins are well produced, longer than next to last ray whereas caudal fin is forked and pectoral fins are long. The membranes of its dorsal and anal fins are without scales. The colour of its body is variable, ranging from brownish to lavender or reddish purple, whereas the snout and interorbital space have narrow yellow lines and blue spots. Its dorsal and caudal fins are light blue or lavender with reddish orange margins

It is an Indo-Pacific species known from the Red Sea, Gulf of Oman to South Africa, Seychelles, Mascarenes, Chagos, Maldives, southwestern India and Sri Lanka, extending to Indonesia, southern Japan, Australia, Samoa, Society Islands, Lord Howe Island, Hawaii and New Guinea (Froese and Pauly, 2025; Heemstra and Heemstra, 2022).

Material Examined:

- 1 specimen collected from R/V Firdous Cruise 2009 on 13 November 2009 (29 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 29 October 2013 (31 cm TL)

Pristopomoides multidentis (Day, 1871)

This species is known as goldbanded jobfish. It was reported from Pakistan without mentioning any specific location by Allen (1984, 1985), Bianchi (1985), Froese and Pauly (2025), Hoda (1985, 1988), Hussain (2003), and Psomadakis *et al.* (2015). It was originally described as *Mesoprion multidentis* from Andaman Islands, India by Day (1871). Its holotype is not known, however, syntypes are housed in the the Zoological Survey of India, Kolkata (Frickle *et al.*, 2025).

This species has a flat interorbital space and its lower jaw is slightly protruding. The bases of the dorsal and anal fin are without scales. The last soft rays extended into short filaments whereas its pectoral fins are long, reaching the level of the anus. The colour of its body is pale bluish laterally, brownish dorsally, and pale pinkish ventrally. The side of its snout and cheek has two golden stripes bordered with blue whereas the top of its head has a series of chevron-shaped yellow bands.

It is an Indo-Pacific species known from the Red Sea, Oman, Kenya to South Africa, Madagascar, Reunion, Chagos, Sri Lanka extending to Andaman Islands, Japan, Australia and Samoa (Froese and Pauly, 2025; Heemstra and Heemstra, 2022). No specimen of this species was examined during the present study.

Material Examined:

– None

Pristipomoides sieboldii (Bleeker, 1855)

This species is commonly known as lavender jobfish. It was reported from Pakistan without mentioning any specific location by Allen (1985), Froese and Pauly (2025), and Psomadakis *et al.* (2015). Bleeker (1855) originally described it as *Chaetopterus sieboldii* from Japan; however, its types are not known (Frickle *et al.*, 2025).

This species has a flat interorbital space, and its lower jaw is slightly protruding. The bases of its dorsal and anal fins are without scales. The last soft rays in this species extended into short filaments. Its pectoral fins are long, reaching the level of anus. The colour of its body is silvery with a lavender hue. The top of the head has dark spots whereas the margin of the dorsal fin is orange, and the caudal fin is purplish, and the inner margin of the fork pale.

It is an Indo-Pacific species known from the Persian Gulf, the Red Sea, Oman, Kenya, South Africa, Reunion, Mauritius, and Maldives extending to Japan, New Caledonia, Tahiti, and Hawaii (Froese and Pauly, 2025; Heemstra and Heemstra, 2022). No specimen of this species was examined during the present study.

Material Examined:

– None

Pristipomoides zonatus (Valenciennes, 1830)

This species is known as the oblique-banded snapper. It was reported from Pakistan without mentioning any specific location by Allen (1984, 1985), Bianchi (1985), Froese and Pauly (2025), Hoda (1985, 1988), Hussain (2003), and Psomadakis *et al.* (2015). It was originally described as *Serranus zonatus* from Mauritius by Valenciennes (1830). Its holotype (MNHN 7034) is housed in the Museum National d'Historie Naturelle, Paris, France (Frickle *et al.*, 2025). Allen (1984,) and Hoda (1985, 1988) reported this species as *Tropidinius zonatus*.

This species has convex a interorbital space and its jaws are about equal, or the lower jaw slightly protruding. The bases of dorsal and anal fins are without scales. Their last soft rays extended into short filaments. The pectoral fins are long; reaching level of the anus. The overall colour of its body is pink or reddish with four oblique orange or yellow bars on the sides. Its dorsal and caudal fins are yellow.

It is an Indo-Pacific species known from Mozambique, Comoros, Mascarenes, Maldives, and Sri Lanka extending to Japan, Lord Howe Island, Australia, Marquesas Islands, Hawaii, Tahiti, and Galapagos Islands, and Hawaii (Froese and Pauly, 2025; Heemstra and Heemstra, 2022). No specimen of this species was examined during the present study.

Material Examined:

– None

Family Caesionidae (Fusiliers)
Genus *Caesio* Lacepède, 1801
Caesio lunaris Cuvier, 1830
(Fig 25)

This species is commonly known as lunar fusilier. It was reported from Pakistan without mentioning any specific location by Carpenter (1988), Froese and Pauly (2025), Hoda (1988), and Psomadakis *et al.* (2015). Cuvier (1830) initially described it from the East Indies, the Red Sea, and New Ireland Island, Bismarck Archipelago. Its holotype is not known, however, syntypes are housed in the Muséum National d'Historie Naturelle, Paris, France and Zoologisches Museum, Humboldt Universitat, Berlin, Germany (Frickle *et al.*, 2025).



Fig. 25. *Caesio lunaris*

This species has a single postmaxillary process, whereas a supratemporal band of scales is generally interrupted at the dorsal midline by a narrow scaleless zone. The colour of its body is bluish whereas its belly is paler than the upper sides, and the tips of the caudal fin lobes, axil of the pectoral fins, and upper base of the pectoral fins are black. The caudal fin is blue whereas the pectoral, pelvic and anal fins are white to pale blue and the dorsal fin is bluish.

It is an Indo-Pacific species known from the Red Sea, Gulf of Oman, Persian/Arabian Gulf, Kenya to South Africa, Mozambique Channel, Madagascar, Comoros, Seychelles, Mascarenes, Chagos, Maldives, and India, extending to the Andaman Islands, Indonesia, the Philippines, Japan, Marshall Islands, New Guinea, Australia, Great Barrier Reef, and Solomon Islands (Carpenter and Holleman, 2022; Froese and Pauly, 2025).

Material Examined:

- 1 specimen collected from Karachi Fish Harbour on 11 April 2013 (42 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 18 September 2013 (39 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 1 November 2022 (40 TL)

Caesio varilineata Carpenter, 1987

(Fig. 26)

This species is commonly known as variable-lined fusilier. It was reported from Pakistan without mentioning any specific location by Carpenter (1988), Froese and Pauly (2025), and Psomadakis *et al.* (2015). Carpenter (1987) initially described it as *Caesio (Caesio) varilineata* from the northeast side of Jana Island, Saudi Arabia, Persian Gulf. Its holotype (BPBM 30816) is housed in the Bernice P. Bishop Museum, Honolulu, Hawaii, U.S.A. (Frickle *et al.*, 2025).

It was a moderately deep-bodied, fusiform fusilier. Its supratemporal scale band is divided. The upper part of its body is blue has three to six longitudinal yellow stripes (two and three stripes are above or on the lateral line, and two or three stripes are below) and with a turquoise midlateral stripe. Its dorsal fin is pale blue, with narrow black margin. Its pectoral, pelvic and anal fins are white whereas axil of pectoral fin is black and the upper part of the fin base has triangular black patch. Its caudal-fin lobes are greyish blue whereas its upper and lower edges are pale blue, and tips with large black blotch.



Fig. 26. *Caesio varilineata*

This species is known from Indian Ocean including the Persian Gulf, Gulf of Oman, Red Sea, Kenya to South Africa, northwestern Madagascar, Comoros, Seychelles, Maldives, southeastern India and Sri Lanka, extending to Indonesia (Mentawai Islands, Sumatra and Java) (Carpenter and Holleman, 2022; Froese and Pauly, 2025).

Material Examined:

- 1 specimen collected from Karachi Fish Harbour on 14 October 2013 (27 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 7 February 2018 (31 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 11 November 2018 (32 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 7 March 2019 (30 cm TL)
- 1 specimen collected from Karachi Fish Harbour on 21 April 2021 (28 TL)

Genus *Pterocaesio* Bleeker, 1876
Pterocaesio chrysozona (Cuvier, 1830)

This species is commonly known as goldband fusilier. It was reported from Pakistan without mentioning any specific location by Qureshi (1964) as *Caesio chrysozona*. Cuvier (1830) originally described it as *Caesio chrysozona* from the East Indies. Its holotype (RMNH 1052 or D291) is housed in Rijksmuseum van Natuurlijke Historie, Leiden (Frickle *et al.*, 2025).

The body of this species is fusiform and elongate. The ventrolateral surface of its basioccipital has a broad process for the insertion of Baudelot's ligament. The colour of its body is light blue to brownish dorsally and white to pinkish ventrally. There is a broad yellow stripe just under the lateral line. Its caudal-fin tips are distinctly black, whereas the pectoral-fin axil is black.

It is an Indo-Pacific species known from the Red Sea, Gulf of Oman to Kenya, Mozambique, Seychelles, Chagos, Maldives, India and Sri Lanka extending to the Bay of Bengal, Indonesia, the Philippines, Taiwan, New Guinea, Australia, Great Barrier Reef, New Caledonia and Samoa (Carpenter and Holleman, 2022; Froese and Pauly, 2025). No specimen of this species was examined during the present study.

Material Examined:

- None

Pterocaesio diagramma (Bleeker, 1864)

This species is commonly known as double-lined fusilier. Carpenter (1984) reported it from Pakistan without mentioning any specific location. It was originally described as *Caesio diagramma* from Ambon Island, Moluccas Islands, Indonesia by Bleeker (1864). Its holotype (RMNH 5715) is housed in Rijksmuseum van Natuurlijke Historie, Leiden (Frickle *et al.*, 2025).

There is a broad process on its ventrolateral surface of basioccipital for attachment of Baudelot's ligament, extending ventrally beyond a horizontal with the condyle's rim, adjacent to the condyle. The colour of its body is blue to greenish dorsally, and white ventrally. There are two thin yellow-to-orange lines on the body whereas the lower line is mostly just below the lateral line. There are black tips on the caudal fin.

It is an Indo-Pacific species (Carpenter and Holleman, 2022; Froese and Pauly, 2025). No specimen of this species was examined during the present study.

Material Examined:

- None.

Pterocaesio pisang (Bleeker, 1853)

This species is commonly known as banana fusilier. It was reported from Pakistan without mentioning any specific location by Carpenter (1984) and Hoda (1988), but in a later publication, Carpenter (1988) pointed out its absence from the Northern Arabian Sea. Bleeker (1853) originally described it as *Caesio pisang* from Ambon Island, Moluccas Islands, and Jakarta, Java, Indonesia. Its holotype is not known, however, syntypes are housed in Rijksmuseum van Natuurlijke Histoire, Leiden, Netherlands, and National Museum of Victoria, Melbourne, Victoria, Australia (Frickle *et al.*, 2025).

The ventrolateral surface of the basioccipital in this species has a broad process for attachment of Baudelot's ligament. Its postmaxillary has two processes, and the posterior end of the maxilla is tapered. This species has variable body coloration ranging from dark red to silvery, paler ventrally with a darker lateral line. It often has a yellowish snout and eyes. Its caudal fin tips have reddish to black spots, the spots with a pale halo.

It is an Indo-Pacific species known from Somalia to South Africa, Mozambique Channel, Seychelles, Maldives, southern India, Sri Lanka, Bay of Bengal, Indonesia, Philippines, Ryukyu Is., Marshall Is., New Guinea, Australia, New Caledonia and Fiji (Carpenter and Holleman, 2022; Froese and Pauly, 2025). No specimen of this species was examined during the present study.

Material Examined:

- None.

CONCLUSION

Fishes of families Lutjanidae (snappers) and Caesionidae (fusiliers) are considered important food fishes in Pakistan. These fish are found in the coastal waters, estuaries, mangrove areas, and on the continental shelf. Fusiliers are mainly associated with coral habitats, rocky outcrops, and shipwrecks along the Pakistan coast. Members of two families are caught mainly by handlines, longlines, gillnets, and trawlnets along the coast of Pakistan. Handlines are frequently used in the mangrove habitats of the Indus Delta and Miani Hor to catch snapper, including mangrove snapper (*Lutjanus argentimaculatus*) and John's snapper (*L. johnii*). Coral habitats, rocky outcrops, and shipwrecks along the Pakistan coast are usually teamed with bigeye snappers (*L. lutjanus*) and other species of the genus *Lutjanus*. Along the coast of Pakistan, the members of these two families are commonly found on the Sindh coast, including the estuarine area of the Indus Delta and in the Sonmiani Bay area. Its members are of rare occurrence along the Makran coast, where only one species blubberlip snapper (*L. rivulatus*) is frequently caught with handlines. Karachi Fish Harbour is the main landing center for the members of two families (Fig. 27). In addition, Korangi Fish Harbour, Damb and Keti Bundar are other important landing centers for these species.

The present study revealed that both families (Lutjanidae and Caesionidae) are highly diversified in Pakistan. Family Lutjanidae is represented by 41 species belonging to 10 genera whereas family Caesionidae has 5 species belonging to 2 genera. Genus *Lutjanus* was observed to be represented by 26 species whereas 4 species represent genus *Pristipomoides* whereas most other are monotypic in Pakistan or represented by 2 or 3 species. Three species including Indian snapper (*Lutjanus madras*), yellowfin snapper (*L. xanثopinnis*) and slender pinjalo (*Pinjalo lewisi*) are reported for the first time from the Pakistan coast.

Data for snappers, being a commercially important fish group is reported by the Marine Fisheries Department (Anonymous, 2012; updated from MFD archives). Being rare in occurrence, the data of fusiliers is not reported. Present annual snapper landings in Pakistan are estimated to be 1,400 m. tons. The data for annual landings of snappers for the period 1970 to 2024 is presented in Fig. 28, which revealed that the annual landings between 1970

and 1984 fluctuated between 2,000 and 2500. In 1985, the annual landings of snapper dropped to 1,515 m. tons but gradually increased to a maximum of 3,195 in 1999. After achieving this peak, annual landings of snapper started to decrease steadily to 1,100 m. tons in 2016 and since then started recovering, reaching a level of 1,600 m. tons in 2024. The decrease in the landings of snapper from 2000 onward is attributed to their overfishing (Fanning *et al.*, 2016). It is feared that if overfishing continues in the future, it will lead to a collapse of the stocks of snappers in Pakistan.



Fig. 27. A heap of *Lutjanus johnii* in Karachi Fish Harbour

Snappers and fusiliers are consumed locally and are considered among the best food fish in Pakistan, fetching high prices in the local markets. Snappers are regarded as an important sport fish, mainly caught around rocky outcrops and shipwrecks. Snappers are also exported in frozen form to Persian Gulf countries, whereas small quantities of fillets are exported to Turkey and Southeast Asian countries.



Fig. 28. Annual landings of Snappers from Pakistan (data obtained from archives of Marine Fisheries Department)

REFERENCE

Abbas, G. (1999). Optimal feeding rate of juvenile red snapper *Lutjanus argentimaculatus* in seawater tanks. *Indian Journal of Animal Sciences*, 69: 458-561.

- Abbas, G. (2001). Growth parameters and body constituents of juvenile red snapper, *Lutjanus argentimaculatus* (Pisces, Lutjanidae) reared in seawater tank. *Pakistan Journal of Zoology*, 33: 29-34.
- Abbas, G. (2002). Growth, feed conversion and body composition of juvenile mangrove red snapper, *Lutjanus argentimaculatus* (Pisces, Lutjanidae) reared in concrete tanks. *Pak. Jour. Zool.*, 34: 147-154.
- Abbas, G. and M. Ahmed (1999). Optimal level of dietary protein for juvenile red snapper, *Lutjanus argentimaculatus*, in seawater. *Pakistan Journal of Marine Biology*, 5: 133-142.
- Ahmad, M. F. (1988). Fish of Pakistan's mangrove areas. In: *Marine Sciences of the Arabian Sea. Proceedings of an International Conference.* (Thomspson, M.-F., and Tirmizi, N. M. eds). American Institute of Biological Sciences, Washington, D. C. Pp. 429-438.
- Ahmad, M. F. and M.S. Niazi (1988). *Important edible fishes of Pakistan.* Zoological Survey Department, Government of Pakistan. 31p.
- Ahmad, M.F. M.S. Niazi and S. A. Khan (1985). Fishes of Leth Nullah, a brackish channel near Mirpur Sakro, Distt. Thatta (Sind). *Records Zoological Survey of Pakistan*, 10: 1-24.
- Ahmad, M.F., M. S. Niazi, S. F. A. Zaidi, and A. Ahmad (1973). Marine fauna supplement, Pisces. *Records Zoological Survey of Pakistan*, 4: 22-44.
- Ahmed, M. and G. Abbas (1999a). Abundance of finfish and shellfish juveniles in the tidal backwaters of Bhanbhore, Sindh (Pakistan). *Pakistan Journal of Zoology*, 31: 129-140.
- Ahmed, M. and G. Abbas (1999b). 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 (1999c). Summer abundance of juvenile finfish and shellfish juveniles in Korangi Creek, Karachi (Pakistan: Northern Arabian Sea). *Pakistan Journal of Zoology*, 31: 365-378.
- Ahmed, M. and G. Abbas (2000). Growth parameters of the finfish and shellfish juveniles in the tidal waters of Bhanbhore, Korangi Creek and Miani Hor Lagoon. *Pakistan Journal of Zoology*, 32: 21-26.
- Ahmed, M., Z. Ayub and Zaib-un-Nisa (1999). Distribution and abundance of juvenile and subadult fishes in Sindh creeks and backwaters (Pakistan). *Pakistan Journal of Zoology*, 31:327-338.
- Allen, G. R. (1984). Lutjanidae. 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.
- Allen, G.R. (1985). *FAO species catalogue.* Vol. 6. Snappers of the world. An annotated and illustrated catalogue of lutjanid species known to date. *FAO Fisheries Synopsis*, 6: 1-208..
- Allen, G. R., W. T. White and M. V. Erdmann (2013). Two new species of snappers (Pisces: Lutjanidae: *Lutjanus*) from the Indo-West Pacific. *Journal of the Ocean Science Foundation*, 6: 33-51.
- Ali, Q. M. (2002). *Some important fishes of Pakistan.* <http://edu.iucnp.org/edu/table9.htm> 3p.
- Anderson, W. D., Jr., P. K. Talwar and G. D. Johnson (1977). A replacement name for Tangia Chan (Pisces: Perciformes: Lutjanidae) with redescrptions of the genus and type-species. *Proceedings of the Biological Society of Washington*, 89: 509-517.
- Anonymous (1953). *Fisheries of the Makran coast (Investigation Report No. 4).* Government of Pakistan Publication, 28p.
- Anonymous (1955). *Marine Fishes of Karachi and the coast of Sind and Mekran.* Government of Pakistan, Ministry of Food and Agriculture (Central Fisheries Department), Karachi. 8
- Anonymous (1993). *Computerized catalog of the fish collection.* California Academy of Sciences, San Francisco, California.
- 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 (2012). *Handbook of Fisheries Statistics of Pakistan.* Marine Fisheries Department, Karachi.
- 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. (1849). Bijdrage tot de kennis der Percoiden van den Malaijo-Molukschen Archipel, met beschrijving van 22 nieuwe soorten. *Verhandelingen van het Bataviaasch Genootschap van Kunsten en Wetenschappen.* 22: 1-64.
- Bleeker, P. (1850). Bijdrage tot de kennis der Maenoiden van den Soenda-Molukschen Archipel. *Verhandelingen van het Bataviaasch Genootschap van Kunsten en Wetenschappen.* 23 (no. 7): 1-13.
- Bleeker, P. (1852). Diagnostische beschrijvingen van nieuwe of weinig bekende vischsoorten van Sumatra. Tiental I - IV. *Natuurkundig Tijdschrift voor Nederlandsch Indië*, 3: 569-608.
- Bleeker, P. (1853). Derde bijdrage tot de kennis der ichthyologische fauna van Amboina. *Natuurkundig Tijdschrift voor Nederlandsch Indië*, 4: 91-130.

- Bleeker, P. (1855). Nieuwe nalezingen op de ichthyologie van Japan. *Verhandelingen van het Bataviaasch Genootschap van Kunsten en Wetenschappen*, 6: 1-132.
- Bleeker, P. (1860). Dertiende bijdrage tot de kennis der vischfauna van Celebes (visschen van Bonthain, Badjoa, Sindjai, Lagoesi en Pompenoea). *Acta Societatis Regiae Scientiarum Indo-Neerlandicae*, 8: 1-60.
- Bleeker, P. (1864). Description de quelques espèces inédites de poissons de l'Archipel des Moluques. *Nederlandsch Tijdschrift voor de Dierkunde*, 2: 177-181.
- Bleeker, P. (1869). Description d'une espèce inédite de Caesio de l'île de Nossibé. *Verslagen en Mededeelingen der Koninklijke Akademie van Wetenschappen. Afdeling Natuurkunde (Ser. 2)*. 3: 78-79.
- Bleeker, P. (1873). Mededeelingen omtrent eene herziening der Indisch-Archipelagische soorten van *Epinephelus*, *Lutjanus*, *Dentex* en verwante geslachten. *Versl. Akad. Amsterdam*, (Ser. 2) 7: 40-46.
- Bleeker, P. (1874). Poissons de Madagascar et de l'île la Réunion des collections de MM. Pollen et van Dam. In: (P. L. Pollen and D. C. van Dam eds.). *Recherches sur la faune de Madagascar et de ses dépendances d'après les découvertes de François 4e partie*. E. J. Brill, Leide. *Poissons de Madagascar et de l'île la Réunion Part 4*: 1-104.
- Bleeker, P. (1876). Notice sur les genres *Gymnocaesio*, *Pterocaesio*, *Paracaesio* et *Liocaesio*. *Verslagen en Mededeelingen der Koninklijke Akademie van Wetenschappen. Afdeling Natuurkunde*, (Ser. 2) 9: 149-154.
- Bloch, M. E. (1790). *Naturgeschichte der ausländischen Fische*. Berlin. 4: 1-128.
- Bloch, M. E. (1792). *Naturgeschichte der ausländischen Fische*. Berlin. 6: 1-126
- Bloch, M. E. (1793). *Naturgeschichte der ausländischen Fische*. Berlin. 7: 1-144.
- Bloch, M. E. and J. G. Schneider (1801) In: *E. Blochii, Systema Ichthyologiae Iconibus ex Illustratum. Post obitum auctoris opus inchoatum absolvit, correxit, interpolavit Jo. Gottlob Schneider*, Saxo. Berolini. Sumtibus Auctoris Impressum et Bibliopolio Sanderiano Commissum. 1-584.
- Carpenter, K. (1984). Caesionidae. 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.
- Carpenter, K.E. (1987). Revision of the Indo-Pacific fish family Caesionidae (Lutjanoidea), with descriptions of five new species. *Indo-Pacific Fishes*, 15: 1-56.
- Carpenter, K.E. (1988). FAO species catalogue. Vol. 8. Fusilier fishes of the world. *An annotated and illustrated catalogue of Caesionid species known to date. FAO Fisheries. Synopsis*. 8: 1-75.
- Carpenter, K. E. and W. Holleman (2022).). Family Caesionidae (Fusiliers) 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: 252-263.
- Chan, W. L. (1970). A new genus and two new species of commercial snappers from Hong Kong. *Hong Kong Fisheries Bulletin, Fisheries Branch of the Agriculture and Fisheries Department. Hong Kong. No. 1*: 19-38.
- Cuvier, G. (1816). 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. Les reptiles, les poissons, les mollusques et les annélides. Edition 1. *Règne Animal* (ed. 1) 2: 1-532.
- Cuvier, G. in Cuvier, G. and A. Valenciennes (1828). Histoire naturelle des poissons. *Tome second. Livre Troisième. Des poissons de la famille des perches, ou des percoïdes*, 2: 1-490.
- Cuvier, G. in Cuvier, G. and A. Valenciennes (1830). Histoire naturelle des poissons. *Tome Sixième. Livre sixième. Partie I. Des Sparoïdes; Partie II. Des Ménides*, 6: 1-559.
- Day, F. (1871). On the fishes of the Andaman Islands. *Proceedings of the Zoological Society of London* (1870): 677-705.B
- 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*, 548pp; 2, 509 p. London, Taylor and Francis.
- Forskål, P. (1775). *Descriptiones animalium avium, amphibiorum, piscium, insectorum, vermium; quae in itinere orientali observavit* (Niebuhr, C.). Post mortem auctoris edidit Carsten Niebuhr. Hauniae. 1-164.
- Forster, J. R. (1801). *Systema Ichthyologiae Iconibus ex Illustratum. Post obitum auctoris opus inchoatum absolvit, correxit, interpolavit Jo. Gottlob Schneider*, Saxo. Berolini. Sumtibus Auctoris Impressum et Bibliopolio Sanderiano Commissum. (in Bloch, M. E. and J. G. Schneider) 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 (2024). The Global Biodiversity Information Facility. *GBIF Home Page*. (<https://www.gbif.org>)
- Heemstra, P. C. and E. Heemstra (2022). Family Lutjanidae, Snappers 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: 227-251.
- Hoda, S. M. S. (1985). Identification of coastal fish varieties of Pakistan. *Pakistan Agriculture*, 7:38-44.
- Hoda, S. M. S. (1987). Reflections on fishery production. *Pakistan Agriculture*, 9: 50-55.
- Hoda, S. M. S. (1988). Fishes from the coast of Pakistan. *Biologia (Lahore)* 34: 1-38.
- 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 Z. Khatoon (2000). Preliminary studies on cage culture of *Lutjanus johni* (snapper) and *Pomadasys kaakan* (grunt) marine fishes. *Pakistan Journal of Zoology*, 32: 85-91.
- Hussain, S. M., and S. Kidwai (1994). Midwater fishes collected from the Arabian Sea. *Marine Research*, 3: 57-81.
- Iqbal, M., S.S. Shaikat and M. A. Kazmi (1999). Diversity of fish communities in Pakistan's coastal waters, northern Arabian Sea. In: *Proceedings of Seminar on Aquatic Biodiversity of Pakistan*. (Kazmi, Q. B., and Kazmi, M. A. eds.). Marine Reference Collection and Resources Centre and Department of Zoology, University of Karachi. Karachi. pp. 55-62.
- Iwatsuki, Y., J.M. Al-Mamry and P.C. Heemstra (2016). Validity of a blue stripe snapper, *Lutjanus octolineatus* (Cuvier 1828) and a related species, *L. bengalensis* (Bloch 1790) with a new species (Pisces; Lutjanidae) from the Arabian Sea. *Zootaxa*, 4098:511-528.
- Iwatsuki, Y., F. Tanaka and G. R. Allen (2015). *Lutjanus xanthopinnis*, a new species of snapper (Pisces: Lutjanidae) from the Indo-west Pacific, with a redescription of *Lutjanus madras* (Valenciennes 1831). *Journal of the Ocean Science Foundation*, 17: 22-42.
- Jafri, S. I. H. (2004). An overview of inland and brackish water fish of lower Sindh. In: *Proceedings of Consultative Workshop on Indus Delta Eco-region (IDER)*. Dec. 16-19, 2002, Karachi (Ahmad, E., Omar, S., and Rasool, F. eds.). WWF-Pakistan. Pp. 69-86.
- Jafri, S. I. H., S. S. Ali, M. A. Mahar, S. M. Hussain and Z. Khatoon (2000). Fisheries potential of tidal link lakes (District Badin) of Sindh Coast (Northern Arabian Sea). *Pakistan Journal of Zoology*, 32: 301-306.
- Jalil, S. A., and M. Khaliluddin (1972). *A checklist of marine fishes of Pakistan*, Government of Pakistan.
- Jalil, S. A., and M. Khaliluddin (1981). *A checklist of marine fishes of Pakistan*, Government of Pakistan.
- Jenkins, J. T. (1910). Notes on fish from India and Persia with description of new species. (IV. On a collection of fish from Karachi, with a description of two new pleuronectids). *Records of Indian Museum*, 5: 123-140.
- Lacepède, B. G. E. (1801). *Histoire naturelle des poissons*, 3: 1-558.
- Leghari, S. M., T. M. Jahangir, M. Y. Khukhawar and A. Laghari (2003). Assessment of water quality and fishes potential in the feeding and spinal drains of the left outfall drain (LBOD), Sindh, Pakistan. *23rd Pakistan Congress of Zoology (Abstract) FEWFM-12: 70*.
- 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.
- Masood, Z. and R. Y. Farooq (2010a). Review of fishes belonging to the family Lutjanidae (Order Perciformes). *Pakistan Congress of Zoology, 2-4 March 2010, University of Agriculture, Faisalabad* 30: 156-157. (Abstract).
- Masood, Z. and R. Y. Farooq (2010b). Length-weight relationship, condition and relative condition of Lutjanid fishes (Perciformes: Lutjanidae) from Karachi Fish harbour. *Pakistan Congress of Zoology, 2-4 March 2010, University of Agriculture, Faisalabad* 30: 157. (Abstract).
- Masood, Z. and R. Yasmeen (2011a). Morphometric analysis of the two species of genus *Lutjanus* (Family Lutjanidae) collected from Karachi Fish harbour. *Pakistan Congress of Zoology (International), April 19-21, 2011, University of Azad Jammu and Kashmir, Muzaffarabad, Pakistan* 31: FEWFM-4, 172-173 (Abstract)
- Masood, Z. and R. Yasmeen (2011b). Frequency distribution pattern of five species of genus *Lutjanus* (Family Lutjanidae) collected from Karachi Fish harbour. *Pakistan Congress of Zoology (International), April 19-21, 2011, University of Azad Jammu and Kashmir, Muzaffarabad, Pakistan* 31: FEWFM-5, 173 (Abstract)
- 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.

- Moazzam, M. and S. H. N. Rizvi (1980). Fish entrapment in the sea water intake of a power plant at Karachi. *Environmental Biology of Fishes*, 5: 49-57.
- 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.
- Niazi, M. S., and M. Moazzam, 1999. Spatial variations in the fish faunal composition in the Indus estuarine area. In: Anonymous (ed.) "*Proceedings of the National Seminar on Mangrove Ecosystem Dynamics of the Indus Delta*". Sindh Forest and Wildlife Department & The World Bank, Karachi. Pp. 170-180
- 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.
- Park, M. (1797). Descriptions of eight new fishes from Sumatra. *Transection of the Linnaeus Society of London*, 3: 33-38.
- Peters, W. (C. H.) (1869). Über neue oder weniger bekannte Fische des Berliner Zoologischen Museums. *Monatsberichte der Königlich Preussischen Akademie der Wissenschaften zu Berlin*, 1869: 703-711.
- 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.
- 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. (1960). Fishes of commercial importance belonging to the order Perciformes. *Proceedings Fourth Pan Indian Ocean Congress (16-24 November, 1960) B: Biological Sciences* (Anonymous eds.). Pp. 229-233.
- 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.
- Qureshi, M. R. (1965). *Common freshwater fishes of Pakistan*. Government of Pakistan, Food and Agriculture Council, Karachi 61 pp.
- Randall, J. E., G. R. Allen and W. D. Anderson, Jr. (1987). Revision of the Indo-Pacific lutjanid genus Pinjalo, with description of a new species. *Indo-Pacific Fishes*, No. 14: 1-17.
- Rüppell, W. P. E. S. (1838). Neue Wirbelthiere zu der Fauna von Abyssinien gehörig. *Fische des Rothen Meeres. Siegmund Schmerber, Frankfurt am Main.*, 81-148.
- Schneider, J. G. (1801) In: Bloch, M. E. and J. G. Schneider. *E. Blochii, Systema Ichthyologiae Iconibus ex Illustratum. Post obitum auctoris opus inchoatum absolvit, correxit, interpolavit Jo. Gottlob Schneider*, Saxo. Berolini. Sumtibus Auctoris Impressum et Bibliopolio Sanderiano Commissum. 1-584.
- 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.
- Valenciennes, A. (1828). *Histoire naturelle des poissons. Tome second. Livre Troisième. Des poissons de la famille des perches, ou des percoïdes*. (Jointly authored by Cuvier, G. and A. Valenciennes) 2: 1-490.
- Valenciennes, A. (1830). *Histoire naturelle des poissons. Tome Sixième. Livre sixième. Partie I. Des Sparoïdes; Partie II. Des Ménides*. Cuvier, G. and A. Valenciennes 6: 1-559.
- Valenciennes, A. (1831). Cuvier, G. and A. Valenciennes- *Histoire naturelle des poissons. Tome septième. Livre septième. Des Squamipennes. Livre huitième. Des poissons à pharyngiens labyrinthiformes*. F. G. Levrault, Paris. 7: 1-531
- Valenciennes, A. (1862). Description de quelques espèces nouvelles de poissons envoyées de Bourbon par M. Morel, directeur du Muséum d'Histoire naturelle de cette île. *Comptes Rendus Hebdomadaires des Séances de l'Académie des Sciences*, 54: 1165-1170.
- Weber, M. and L. F. de Beaufort (1936). The fishes of the Indo-Australian Archipelago. VII. Perciformes (Continued) Families: Chaetodontidae, Toxotidae, Monodactylidae, Pempheridae, Kyphosidae, Lutjanidae, Lobotidae, Sparidae, Nandidae, Sciaenidae, Malacanthidae, Cepolidae. E. J. Brill, Leiden. *Fishes of Indo-Australian Archipelago*, 7: 1-607.
- Zugmayer, E. (1913). Die Fische von Balutschistan. *Abhandlungen der königlich Bayerischen Akademie der Wissenschaften (mathematisch-physikalische Klasse)* 26: 1-35.

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