

## A REVIEW OF FISHES BELONGING TO THE FAMILY CARANGIDAE FROM PAKISTAN

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### ABSTRACT

The family Carangidae which includes commercially important fishes such as jacks, trevallies, scads, queenfishes, runners, and pompanos is represented in Pakistan by 64 species belonging to 28 genera. Three species including *Decapterus kurroides* Bleeker 1855, *Kaiwarinus equula* (Temminck and Schlegel 1844) and *Seriola lalandi* Valenciennes 1833 are reported for the first time from the Pakistan coast. Analysis of commercial landings of the members of the Family Carangidae for the period 1999 to 2023 reveals that this family contributes between 4.57 % (2012) to 8.45 % (2021) in total seafood production of Pakistan. Important food fishes belonging to this family include *Alectis ciliaris* (Bloch, 1787), *Atropus atropos* (Bloch and Schneider, 1801), *Carangichthys dinema* (Bleeker 1851), *Caranx ignobilis* (Forsskal, 1775), *Caranx lugubris* Poey, 1860, *Caranx sexfasciatus* Quoy and Gaimard, 1824, *Elagatis bipinnulata* (Quoy and Gaimard, 1825), *Ferdauia ferdau* (Fabricius 1775), *Gnathanodon speciosus* (Forsskal, 1775), *Parastromateus niger* (Bloch, 1795), *Platy-caranx malabaricus* (Bloch and Schneider 1801), *Scomberoides commersonianus* Lacepede, 1802, *Seriola dumerili* (Risso, 1810), *Seriola rivoliana* Valenciennes, 1833, *Trachinotus africanus* Smith, 1967, *Trachinotus baillonii* (Lacepede, 1801), *Trachinotus blochii* (Lacepede, 1801), *Trachinotus mookalee* Cuvier, 1832 and *Turru-m gymnotethus* (Cuvier, 1833) which are not only locally consumed but exported in frozen forms to southeast Asian and Persian Gulf countries. The scads belonging to genera *Alepes*, *Atule*, *Decapterus*, *Magalaspis*, *Selar*, *Selaroides*, and *Trachurus* are important source of raw material for fishmeal production.

**Keywords:** Family Carangidae, *Decapterus kurroides*, *Kaiwarinus equula*, *Seriola lalandi*, *Scomberoides commersonianus*, *Parastromateus niger*.

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### INTRODUCTION

The family Carangidae includes marine fishes commonly known as jacks, trevallies, scads, queenfishes, runners, and pompanos which are found in coastal water including estuaries, lagoons, and coral assemblages as well as in offshore pelagic waters. Most of the species of the family Carangidae are important food fishes, some of which are small (about 15 cm) whereas a few species can achieve a length of about 2 m. It is a highly diversified group of fish consisting of generally compressed bodies, although body shape is extremely variable from very deep to fusiform. Most species with only small cycloid scales but scales along the lateral lines are often modified into spiny plate-like scutes. Many species of this family are of great commercial importance in gillnet, handline, longline, trawl, and seine fisheries, and many species are important sport fish, and nearly all are good eating. The family is known to include about 39 genera, but some are not well-defined, and at least 147 species (Froese and Pauly, 2024).

No dedicated review of this family was previously published from Pakistan except Qamar *et al.* (2016) who have reported on the morphological characteristics and otoliths of 36 species of Family Carangidae occurring in Pakistan. In addition, species of this family are included in many checklists including Hoda (1985, 1988), Hussain (2003), and Jalil and Khaliluddin (1972, 1981). Psomadakis *et al.* (2015) have reviewed the fish and shellfish fauna of Pakistan and reported 53 species of the Family Carangidae from Pakistan.

The taxonomy of the Family Carangidae is complex and various species have been assigned to different genera. For example, black pomfrets have been assigned to genera *Stromateus*, *Apolectus*, *Formio* and now to *Parastromateus*. Kimura, *et al.* (2022) have revised the genus *Carangoides* and its related genera including *Alectis*, *Atropus*, *Parastromateus*, *Selene*, *Ulua*, and *Uraspis*, and reorganized them into 15 (including five new and four resurrected) genera based on both molecular-phylogenetic results and morphological analyses. Of these three new genera *Craterognathus* and *Flavocaranx* are *Platy-caranx* are also reported to occur in Pakistan.

## MATERIAL AND METHODS

Published scientific literature was examined for the records of groupers and allied species from the Pakistan coast. In addition, specimens of Family Carangidae were collected between 2005 and 2024 from Karachi Fish Harbour. Samples collected from the harbour; were photographed and salient features and measurements were recorded, before, their preservation in 5 % neutralized formalin. Historical data of landings of fishes of Family Carangidae was obtained from Anonymous (2012) and also from archive of Marine Fisheries Department, Government of Pakistan.

## RESULTS AND DISCUSSION

### Commercial Landings

There is no target fisheries for the members of the Family Carangidae in Pakistan and it is caught mainly by pelagic gillnet, bottom-set gillnet, seine net, handline line, troll lines and long lines. This Family of fishes are considered to be an important component of fin fisheries of Pakistan. Major fishing ground are located along both Maritime Provinces (Fig.1). There is an elaborate folk taxonomy of the fishes including the member of Family Carangidae in the two provinces, therefore, locals names of all species of this Family is provided in the paper.



Fig. 1. Pakistan coast.

The annual landings of fishes of Family Carangidae were observed to be fluctuating between 15,000 to 35,000 m. tons during 1999 and 2023 whereas it was observed to be a maximum of 34,300 m. tons in 2000 and a minimum of 15,777 m. tons in 2012 (Fig. 2). Annual landings of the family Carangidae were high during 1999 and 2001 and remained above 30,000 m. tons but decreased gradually to 2012 and started to increase to a level of 27,904 m. tons in 2018 but again started to decrease to about 22,000 m. tons during the last few years. The members of the family Carangidae are considered to be important group of fish which are harvested on commercial scale. The Family contribute between 4.57 % (2012) to 8.45 % (2021) in total seafood production of Pakistan (Fig. 3).



Fig. 2. Annual landings of Family Carangidae in Pakistan.

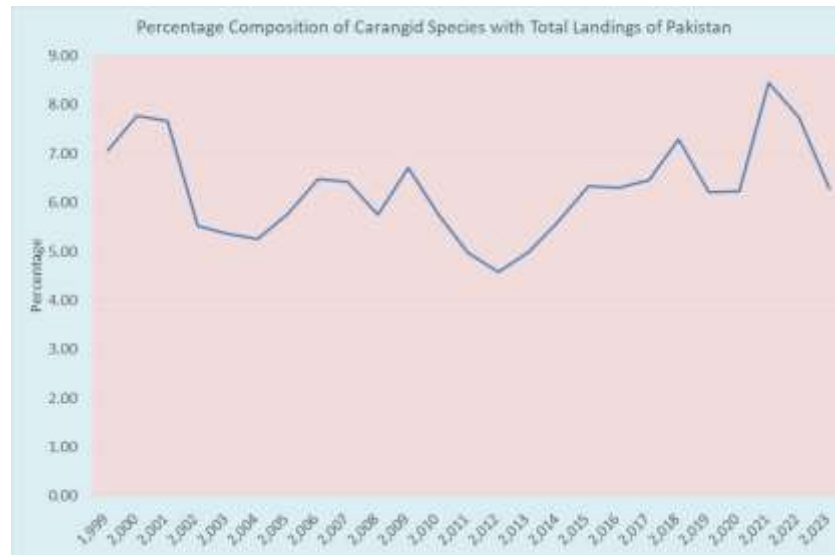


Fig. 3. Percentage composition of landings of the Family Carangidae in total landings of Pakistan

In Pakistan, commercial data is generally not collected on species levels and recorded as species group. In case of the Family Carangidae data of black pomfrets is recorded at species level (Fig. 40) whereas data of three species groups including scads, queenfishes and trevallies is recorded which is presented in Fig. 5, Fig.7 and Fig 45.

#### Species Composition

The members of the Family Carangidae from Pakistan are arranged alphabetically in this paper.

Family Carangidae (Jacks, Pompanos)  
 Genus *Alectis* Rafinesque 1815  
*Alectis ciliaris* (Bloch, 1787)  
 (Fig. 4)



Fig. 4 *Alectis ciliaris* collected from Karachi Fish Harbour. (a) Juvenile (8.2 cm). (b) Commercial landings.

This species is commonly known as African pompano. It is known as “oonth”, “oonth patal” or “patal” in Sindi and “ushtar”, “ushtar patar” or “siah patar” in Balochi whereas juveniles are called “banzali” in Balochi. It was reported from Pakistan without mentioning any specific location by Ahmad (1988), Ahmad and Niazi (1988), Anonymous (1993), Berry and Simth-Vaniz (1978), Bianchi (1985), Misra (1962), Froese and Pauly (2024), Hoda

(1988), Hussain (2003), Jalil and Khalil (1972, 1981), Majid *et al* (1992), Psomadakis *et al.* (2015), Qamar *et al.* (2016) and Smith-Vaniz (1984). It was originally described as *Zeus ciliaris* from Surat, India by Bloch (1787). Its holotype is not known, however, lectotype (ZMB 1593) is housed at Zoologisches Museum, Humboldt Universitat, Berlin (Frickle *et al.*, 2024).

Its body is deep and strongly compressed which is superficially naked (scaleless). Rays of dorsal and anal fins are long and filamentous in young and juveniles, resembling the stinging tentacles of jellyfish. Young are pelagic and drift in the oceanic environment where this apparent mimicry may protect them from some potential predators. Several specimens are recorded from tuna gillnet vessels that operated in the offshore waters of Pakistan. Adults are usually solitary and frequently found in shallow coastal waters and continental shelf areas.

This species has a circumtropical distribution in tropical, subtropical, and temperate seas. In the Indo-Pacific area, it is known from South Africa, the Persian Gulf, and the Red Sea, eastwards to India, Sri Lanka, and Australia (Frickle *et al.* 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022). It is considered a good-tasting fish which is generally marketed as fresh fish. Small quantities are, however, exported in frozen form. No separate data of landings for this species is recorded, however, landings of miscellaneous trevallies including this species are presented in Fig. 5.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour, 01 March 2004 (10.1 cm)
- 1 specimen collected from Damb, Balochistan, 22 November 2008 (11.2 cm)
- 1 specimen collected from Karachi Fish Harbour, 11 April, 2021 (95.0 cm)

Genus *Alepes* Swainson, 1839  
*Alepes djedaba* (Forsskal, 1775)  
 (Fig. 6-7)

This species is commonly known as shrimp scad. It is known as “para” in Sindhi and “bakoi” or “bakoi patar” and “Zarzaman” (in Gwadar) in Balochi. This species is reported from Sindh Coast by Anonymous (1955) Misra (1962), Murray (1880), Sorley (1932). It was also reported from Karachi by Anonymous (1955, 1973), Misra (1962) and Niazi (2001), Astola Island (Moazzam, 2024), Leth Nullah by Ahmad *et al.* (1984) and Niazi and Moazzam (1999). From Balochistan coast it was represented by Anonymous (1953, 1955, 1973), Misra (1962) Qureshi (1952) and Zugmayer (1913). It was reported from Pakistan coast without mentioning any specific location by Ahmad (1988), Bianchi (1985), Bauchot (1987), Froese and Pauly (2024), Hoda (1985, 1988), Hussain (2003), Jalil and Khalil (1972, 1981), Khan (1994), Majid *et al* (1992), Psomadakis *et al.* (2015), Qamar *et al.* (2016), and Smith-Vaniz (1984, 2022). Anonymous (1953, 1955) and Qureshi (1952) reported this species as *Caranx (Selar) djedaba* whereas Sorley (1932) referred it as *Caranx djedaba*. Ahmed *et al* (1973), Hoda (1985, 1988), Hussain (2003) and Misra (1962) listed it as *Selar kalla* and Jalil and Khalil (1972, 1981), Murray (1880), Sorley (1932) and Zugmayer (1913) called it *Caranx kalla*. This species was originally described as *Scomber djedaba* from Luhaiya, Yemen or Jeddah, Saudi Arabia or Suez, Red Sea by Forsskal (1775). Its holotype (ZMUC P46441) is housed in the Zoological Museum, University of Copenhagen, Denmark (Frickle *et al.*, 2024).

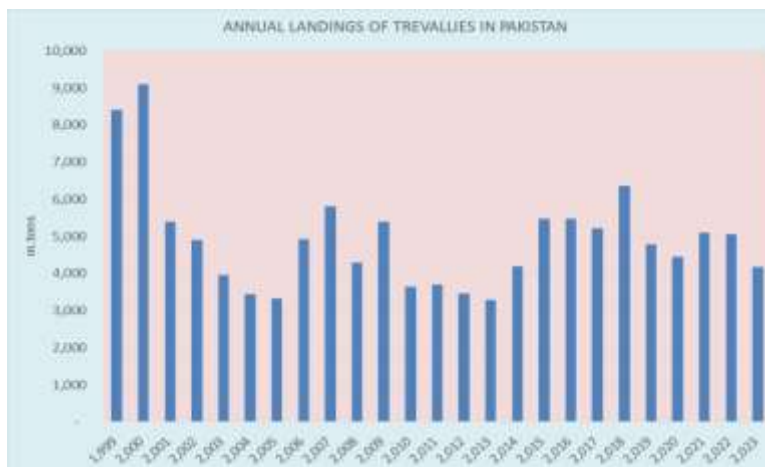


Fig. 5. Annual landings of miscellaneous trevallies in Pakistan.



Genus *Alepes* Swainson, 1839  
*Alepes djedaba* (Forsskal, 1775)  
 (Fig. 6-7)

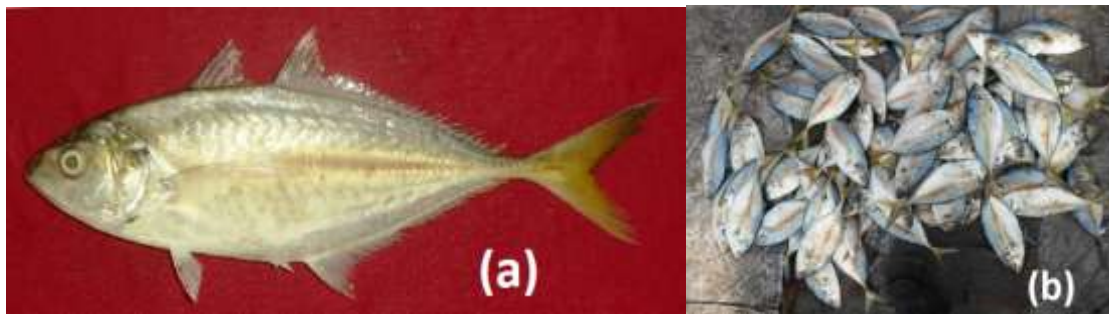


Fig. 6. *Alepes djedaba*. From Karachi Fish Harbour (a) collected on 28 October 2014 (22.0 cm). (b) Commercial landings at Karachi Fish Harbour

This species is commonly known as shrimp scad. It is known as “para” in Sindhi and “bakoi” or “bakoi patar” and “Zarzaman” (in Gwadar) in Balochi. This species is reported from Sindh Coast by Anonymous (1955) Misra (1962), Murray (1880), Sorley (1932). It was also reported from Karachi by Anonymous (1955, 1973), Misra (1962) and Niazi (2001), Astola Island (Moazzam, 2024), Leth Nullah by Ahmad *et al.* (1984) and Niazi and Moazzam (1999). From Balochistan coast it was represented by Anonymous (1953, 1955, 1973), Misra (1962) Qureshi (1952) and Zugmayer (1913). It was reported from Pakistan coast without mentioning any specific location by Ahmad (1988), Bianchi (1985), Bauchot (1987), Froese and Pauly (2024), Hoda (1985, 1988), Hussain (2003), Jalil and Khalil (1972, 1981), Khan (1994), Majid *et al.* (1992), Psomadakis *et al.* (2015), Qamar *et al.* (2016), and Smith-Vaniz (1984, 2022). Anonymous (1953, 1955) and Qureshi (1952) reported this species as *Caranx (Selar) djedaba* whereas Sorley (1932) referred it as *Caranx djedaba*. Ahmed *et al.* (1973), Hoda (1985, 1988), Hussain (2003) and Misra (1962) listed it as *Selar kalla* and Jalil and Khalil (1972, 1981), Murray (1880), Sorley (1932) and Zugmayer (1913) called it *Caranx kalla*. This species was originally described as *Scomber djedaba* from Luhaiya, Yemen or Jeddah, Saudi Arabia or Suez, Red Sea by Forsskal (1775). Its holotype (ZMUC P46441) is housed in the Zoological Museum, University of Copenhagen, Denmark (Frickle *et al.*, 2024).

The body of this schooling species is fusiform, compressed, greyish-green dorsally, and silvery to white ventrally. Its dorsal and ventral profiles are almost equally convex. There is a distinct black blotch on the upper edge of the opercle which is bordered above by smaller white spot. Its caudal fin is yellowish whereas the upper lobe is dusky to black distally. It can be distinguished from its congeners in having dark blotch on the upper edge of the opercle which does not extend onto the shoulder (dark blotch on the upper edge of the opercle extends onto the shoulder in *A. kleinii*). The interspinous membranes of the dorsal fin are transparent to dusky dark (dorsal-fin interspinous membranes black in *A. melanoptera*). This species differs from *A. vari* in having white spot present above the dark blotch on the upper edge of the opercle (no white spots in *A. vari*) and there are 39–51 large scutes on the lateral line (*A. vari* with 48–69 small scutes).

This species is known from the Indo-West Pacific area including South Africa, Madagascar, East Africa, the Red Sea, the Persian Gulf, Socotra (Yemen) and east to the Hawaiian Islands, north to Japan, and south to Australia (Frickle *et al.* 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022). It is a Lessepsian immigrant to the eastern Mediterranean through the Suez Canal extending westward to Malta (Froese and Pauly, 2024; Lanfranco, 1996).

It is usually caught with pelagic gillnet in coastal waters. It is not a preferred species for food in Pakistan, however, exported in frozen form to Southeast Asian countries. It is also used as a raw material for fish meal production. No separate data of landings for this species is recorded, however, landings of miscellaneous scads including this species are presented in Fig. 7.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour, 09 October 2010 (17.0 cm)

- 1 specimen collected from Karachi Fish Harbour, 26 May 2013 (23.0 cm)
- 1 specimen collected from Karachi Fish Harbour, 15 October 2014 (27.0 cm)
- 1 specimen collected from Karachi Fish Harbour, 26 October 2014 (22.0 cm)
- 1 specimen collected from Karachi Fish Harbour, 04 November 2016 (30.0 cm)



Fig. 7. Annual landings of miscellaneous scads in Pakistan.

*Alepes kleinii* (Bloch, 1793)

(Fig. 8)



Fig. 8. *Alepes kleinii* collected from Karachi Fish Harbour

This species is commonly known as razorbelly scad. It is known as “para” in Sindhi and “bakoi” or “bakoi patar” and “Zarzaman” (in Gwadar) in Balochi. This species was reported from Karachi by Niazi (2001), Khai Creek by Mirza and Baquer, (1994 and Astola Island (Moazzam, 2024). It was reported from the Pakistan coast without mentioning any specific location by Ahmad (1988), Bianchi (1985), Frickle *et al.* (2024), Froese and Pauly (2024), Hussain (2003), Psomadakis *et al.* (2015), Qamar *et al.* (2016), Robins *et al.* (1991) and Smith-Vaniz (2022). Bianchi (1985), Cuvier (1833), Hussain (2003), Mirza and Baquer (1994), Niazi (2001) and Qamar *et al.* (2016) reported this species as *Caranx para* whereas Ahmad (1988) referred to it as *Alepes kalla*. It was originally

described as *Scomber kleini* from Malabar Coast, India by Bloch (1793). Its holotype (ZMB 1580) is housed in Zoologisches Museum, Humboldt Universitat, Berlin (Frickle *et al.*, 2024).

Its body is bluish-grey dorsally and silvery below; with dark bands evident on sides above the lateral line. It has a large black spot on the upper edge of the opercle extending onto the adjacent area of the shoulder. Its caudal fin is yellowish, upper lobe is dark distally. It can be distinguished from its congeners in having dark blotch on the upper edge of the opercle extending onto the shoulder (dark blotch on the upper edge of the opercle does not extend onto the shoulder in all the species of *Alepes* occurring in the area). This species is known from the Indo-West Pacific including the Persian Gulf, Gulf of Oman, and Pakistan to Sri Lanka; the east coast of India, Thailand, northern Vietnam, Taiwan Island, Okinawa in Japan, the Philippines, Papua New Guinea and Australia (Frickle *et al.* 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

It is usually caught with pelagic gillnet in coastal waters. It is not a preferred species for food in Pakistan, however, exported in frozen form to Southeast Asian countries. It is also used as a raw material for fish meal production. No separate data of landings for this species is recorded, however, landings of miscellaneous scads including this species are presented in Fig. 7.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour, 11 November 2005 (18.0 cm)
- 1 specimen collected from Karachi Fish Harbour, 16 June 2006 (18.0 cm)
- 1 specimen collected from Karachi Fish Harbour, 13 May 2013 (17.5 cm)
- 1 specimen collected from Karachi Fish Harbour, 01 November 2013 (22.0 cm)
- 1 specimen collected from Karachi Fish Harbour, 28 January 2014 (17.0 cm)

#### *Alepes melanoptera* Swainson, 1839

(Fig. 9)

This species is commonly known as blackfin scad. It is known as “para” in Sindhi and “bakoi” or “bakoi patar” and “Zarzaman” (in Gwadar) in Balochi. It was reported from Sindh by Ahmad *et al.* (1973), Day (1876) and Sorley (1932), Karachi by Ahmad *et al.* (1973), Leth Nullah by Ahmad *et al.* (1984) and Niazi and Moazzam (1999) and Makran by Ahmad *et al.* (1973). It was reported from the Pakistan coast without mentioning any specific location by Bianchi (1985), Froese and Pauly (2024), Hussain (2003), Psomadakis *et al.* (2015), Qamar *et al.* (2016), and Smith-Vaniz (1984, 2022). Day (1876) and Sorley (1932) reported this species as *Caranx nigripinnis* whereas Ahmad *et al.* (1973), Hussain (2003), and Bleeker (1851) referred it as *Selar malam*. It was originally described as *Trachinus (Alepes) melanoptera* from Vishakhapatnam, India by Swainson (1839), however, no type is known (Frickle *et al.*, 2024).



Fig. 9. *Alepes melanoptera* collected from Karachi Fish Harbour

Its body is greyish blue dorsally, silvery to white ventrally with a distinct black blotch on the upper edge of the opercle which is not bordered above by smaller white spot. Its spinous dorsal-fin membranes is black whereas the caudal fin is yellowish and the upper leading edge of the caudal fin darker. The black colouration of the dorsal-fin interspinous membrane distinguishes it from other species of *Alepes* occurring in the area. It is known from Indo-West Pacific area including East Africa and the Persian Gulf, Oman to Pakistan, India and Sri Lanka, Gulf of Thailand, Indonesia, the Philippines, the South China Sea and northern Australia to further east to the Hawaiian Islands (U.S.A.), north to southern Japan, south to northern Australia (Frickle *et al.* 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

It is usually caught with pelagic gillnet in coastal waters. It is not a preferred species for food in Pakistan, however, exported in frozen form to Southeast Asian countries. It is also used as a raw material for fish meal production. No separate data of landings for this species is recorded, however, landings of miscellaneous scads including this species are presented in Fig. 7.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour, 6 October 2005 (32.6 cm)
- 1 specimen collected from Karachi Fish Harbour, 13 May 2006 (28.0 cm)
- 1 specimen collected from Karachi Fish Harbour, 22 November 2009 (29.5 cm)

#### *Alepes vari* (Cuvier, 1833)

(Fig. 10)



Fig. 10. *Alepes vari* collected from Karachi Fish Harbour

This species is commonly known as herring scad. It is known as “para” in Sindhi and “bakoi” or “bakoi patar” and “Zarzaman” (in Gwadar) in Balochi. It was reported from the Pakistan coast without mentioning any specific location by Bianchi (1985), Froese and Pauly (2024), Hussain (2003), Psomadakis *et al.* (2015), Qamar *et al.* (2016), and Smith-Vaniz (1984). It was originally described as *Caranx vari* from Pondicherry, India by Cuvier (1833). Its holotype is not known, however, the lectotype (MNHN A-5497) is housed in Museum National d’Histoire Naturelle, Paris, France (Frickle *et al.*, 2024).

The body of this pelagic fish is greyish-blue dorsally and silvery to white ventrally. It has a diffuse dusky blotch on the upper edge of the opercle but is not bordered above by a smaller white spot. Its spinous dorsal fin is pale to dusky whereas caudal fin is dusky dark. This species is similar to *Alepes djedaba* except that no white spots are present above the dark blotch on the upper edge of the opercle in *A. vari* and there are 48–69 small scutes on the lateral line (39–51 large scutes on the lateral line). This species is known from the Indo-West Pacific area, Red Sea, East Africa, Persian Gulf, Oman to Pakistan, India, and Sri Lanka, east to the Philippines and New Ireland (Papua New Guinea), Taiwan, north to Ryukyu Islands (Japan), south to Northern Australia, and the Solomon Islands and New Caledonia (Frickle *et al.* 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).



It is usually caught with pelagic gillnets in coastal waters often swimming near the surface, in dense schools over clear inner reefs. It feeds chiefly on shrimps, copepods, decapods, and small fishes. It is not a preferred species for food in Pakistan, however, exported in frozen form to Southeast Asian countries. It is also used as a raw material for fish meal production. No separate data of landings for this species is recorded, however, landings of miscellaneous scads including this species are presented in Fig. 7.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour, 15 October 2015 (38.0 cm)
- 1 specimen collected from Karachi Fish Harbour, 14 October 2016 (52.0 cm)

#### Genus *Atropus* Oken 1817

According to Kimura *et al.* (2022), the Members of the genus *Atropus* have a compressed body that is deep, disk-like, or rhomboidal. The dorsal contour of its upper lip around symphysis is roundly convex and jaws have vomer and palatines with villiform teeth forming bands except in *Atropus atropus* whereas the vomerine tooth patch is chevron-shaped or triangular. In addition, adipose eyelids are poorly developed and the naked area on the breast extends beyond the base of the last pelvic-fin soft ray and is connected with the naked pectoral-fin base. Scales on the body are small, and cycloid, except for the posterior lateral line; a single lateral line with curved anterior and straight posterior parts, the straight part beginning below the base of the fourth–14th dorsal-fin soft ray.

The genus *Atropus* is distinguished from genera *Alectis*, *Scyris* and *Parastromateus* by having interspinous membranes of the first dorsal fin (vs. lacking the membranes), from *Craterognathus*, *Parastromateus*, *Flavocaranx*, *Ferdauia*, *Uraspis*, *Carangichthys* and *Carangoides* by having a thoracic naked area extending posteriorly beyond pelvic-fin insertion (vs. thoracic naked are absent or not extending beyond pelvic-fin insertion, from *Turram* by having a shorter snout (7.4–10.7% Standard Length vs. 10.9–14.3% Standard Length), and *Platycaranx* by having a wide protrusion of upper-jaw symphysis (vs. narrow protrusion) (Kimura *et al.*, 2022).

The genus *Atropus* is represented in Pakistan by *Atropus armatus* (Forsskål 1775), *Atropus atropus* (Bloch and Schneider, 1801), *Atropus hedlandensis* (Whitley 1934), and *Atropus mentalis* (Cuvier 1833)

#### *Atropus armatus* (Forsskål 1775)

(Fig. 11)

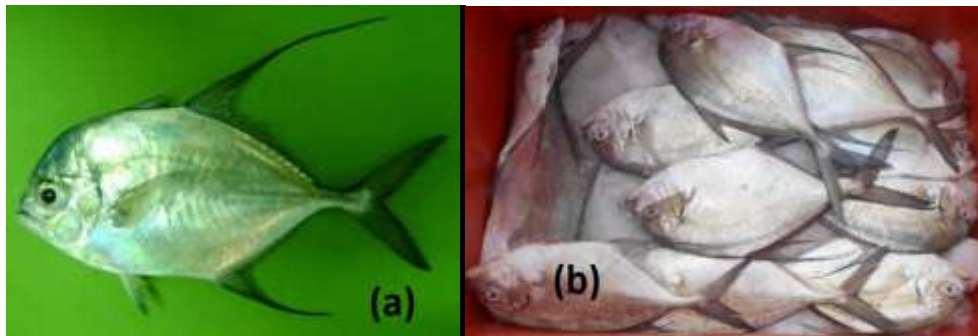


Fig. 11. *Atropus armatus*. (a) Collected from Karachi Fish Harbour; (a) Commercial landings

This species is commonly known as longfin trevally. It is known as “Kak-kar” or “Kak-kawan” in Sindhi and “patar” in Balochi. It was reported from Sindh by Misra (1962), Murray (1880), Sorley (1932), and Balochistan by Zugmayer (1913). It was also reported from the Pakistan coast without mentioning any specific location by Hoda (1985, 1988), Hussain (2003) and Jalil and Khalil (1972, 1981), Psomadakis *et al.* (2015), and Qamar *et al.* (2016) as *Carangoides armatus*. Smith-Vaniz 1984) has shown questionable distribution from Pakistan. Misra (1962) referred to it as *Citula armata* whereas Murray (1880), Sorley (1932), and Zugmayer (1913) referred to it as *Caranx armatus*. Murray (1880) also reported *Caranx ciliaris* from Sindh. It was originally described as *Citula armata* from the Red Sea by Ruppell (1830). Its holotype is not known, however, the lectotype (SMF 1601) is housed in

Forshungs Institut und Natur Museum Senckenberg, Frankfurt, Germany (Frickle *et al.*, 2024). *C. armatus* was originally described as *Citula ciliaris* from Massawa, Eritrea, Red Sea by Ruppell (1830). Its holotype is also not known, however, syntypes are housed in Forshungs Institut und Natur Museum Senckenberg, Frankfurt, Germany (Frickle *et al.*, 2024).

Rüppell (1830) named the fish *Citula ciliaria*, placing the species in the genus *Citula* which was synonymised with *Pseudocaranx* whereas *C. ciliaria* was transferred to *Carangoides*, and the specific name was changed from *ciliaria* to *ciliaris*. Smith (1973) considered that there is a possibility that Forsskål (1775) described and named the species earlier which would make him the correct author under the International Code of Zoological Nomenclature (ICZN) rules. He named a species *Sciaena armata*, but the description has been too vague to make any certain conclusions, and this name is considered a *nomen dubium* that cannot hold priority and is placed in synonymy with *C. ciliaris*. Presently *Carangoides armatus* and *C. ciliaris* were considered synonymous by Smith (1973), however, some authorities still consider them both to be valid species (WoRMS, 2024). In the present paper, *Carangoides ciliaris* is considered a synonym of *A. armatus*.

Its body is bluish-grey dorsally, silvery below; blackish blotch on the upper edge of the opercle. Its pelvic fins are blackish in young, and pale in adults. This species is known from the Indo-West Pacific area including South Africa, East Africa, Seychelles, Madagascar, western Mascarenes, the Red Sea, the Gulf of Oman, the Persian Gulf, Pakistan, to southern India, and Sri Lanka east to the Gulf of Thailand, northern Vietnam and southern China, New Guinea, north to Hong Kong, Okinawa southern Japan (Frickle *et al.* 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

This species inhabits rocky and coral coastlines as well as shallow bays. It is considered to be a good food fish that is locally consumed, however, small quantities are also exported. No separate data of landings for this species is recorded, however, landings of miscellaneous trevallies including this species are presented in Fig. 5.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour, 6 October 2005 (32.6 cm)
- 1 specimen collected from Karachi Fish Harbour, 13 May 2006 (28.0 cm)
- 1 specimen collected from Karachi Fish Harbour, 22 November 2009 (29.5 cm)
- 

*Atropus atropus* (Bloch and Schneider, 1801)  
(Fig. 12)

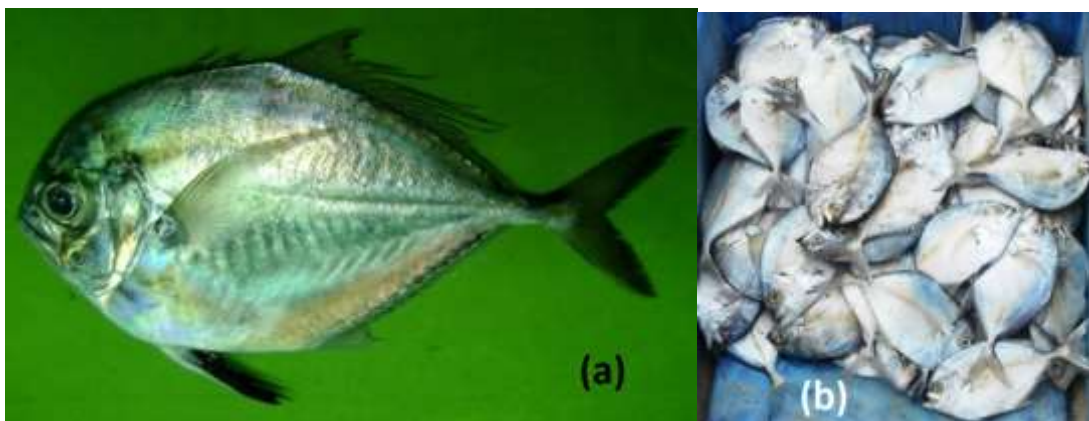


Fig. 12. *Atropus atropus*. (a) Lateral view; (b) A heap landed at Karachi Fish Harbour

This species is commonly known as cleftbelly trevally. It is known as “Mori” or “Patal” in Sindhi and “patar” in Balochi. It was reported from Sindh by Misra (1962), Murray (1880), and Sorley (1932), Leth Nullah by Ahmad *et al.* (1984), and Niazi and Moazzam (1999), and off Karachi by Anonymous (1993) and Niazi (2001). It was also reported from the Pakistan coast without mentioning any specific location by Bianchi (1985), Froese and Pauly

(2024), Hoda (1985, 1988), Hussain (2003), Jalil and Khalil (1971, 1982), Khan (1994), Majid *et al* (1992), Masuda *et al* (1984), Psomadakis *et al.* (2015), Qamar *et al.* (2016), and Smith-Vaniz (1984, 2022). Sorley reported this species as *Caranx atropus* whereas, Murray (1880) referred to it as *Brama atropus*. It was originally described as *Brama atropus* from Tranquebar, India by Bloch and Schneider (1801). Holotype (ZMB 8605) is housed in the Zoologisches Museum, Humboldt Universitat, Berlin (Frickle *et al.*, 2024).

Its body is bluish-grey dorsally and silvery ventrally. It has a small dusky blotch on the upper edge of the opercle whereas its pelvic fins are black. It is known from the Indo-West Pacific area including the Persian Gulf and Gulf of Oman Pakistan to southern India; elsewhere to the Bay of Bengal, Indo-Malayan Archipelago, east to the Philippines, north to Taiwan, China and Japan (Frickle *et al.* 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

It is a coastal water species that is considered to be a good food fish and is locally consumed, however, small quantities are also exported. No separate data of landings for this species is recorded, however, landings of miscellaneous trevallies including this species are presented in Fig. 5.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour, 22 December 1999 (18.1 cm)
- 1 specimen collected from Karachi Fish Harbour on 20 February 2013 (21.0 cm)
- 1 specimen collected from Karachi Fish Harbour, 9 October 2019 (13.0 cm) Juvenile

#### *Atropus hedlandensis* (Whitley 1934) (Fig. 13)

This species is commonly known as bumpnose trevally. It is known as “Kak-kar” in Sindhi and “Kak-kawan” in Balochi. It was reported from Karachi by Niazi (2001) as *Carangoides hedlandensis*. It was also reported from the Pakistan coast without mentioning any specific location by Bianchi (1985), Hussain (2003), Psomadakis *et al.* (2015), Qamar *et al.* (2016), and Smith-Vaniz (1984, 2022) as *Carangoides hedlandensis*. It was originally described as *Olistus hedlandensis* from Port Hedland, Western Australia by Whitley (1934). Its holotype (AMS I-12957) is housed in the Australian Museum, Sydney, Australia (Frickle *et al.*, 2024).

The breast in this species is naked to behind pelvic-fin origins and laterally to pectoral-fin bases. Its body is greenish blue dorsally, and silvery grey ventrally with blackish blotch on the upper edge of the opercle. Its pelvic fins are blackish in young but pale in adults and its caudal fin is yellowish. It is known from the Indo-West Pacific area including South Africa, East Africa, Seychelles, Madagascar and western Mascarenes (La Réunion), Pakistan, India and Sri Lanka, east to the Andaman Sea, the Philippines, Taiwan, Indonesia, southern Japan, Australia, New Caledonia, Fiji, Tonga and Samoa (Frickle *et al.* 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

It is a coastal water species that is considered to be a good food fish and is locally consumed, however, small quantities are also exported. No separate data of landings for this species is recorded, however, landings of miscellaneous trevallies including this species are presented in Fig. 5.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour, 9 May 2013 (36.0 cm)
- 1 specimen collected from Karachi Fish Harbour, 7 November 2016 (24.0 cm)
- 1 specimen collected from Offshore waters of Pakistan (24 55.000N; 65 56.000 E) on 31 August 2017 (34.0 cm)

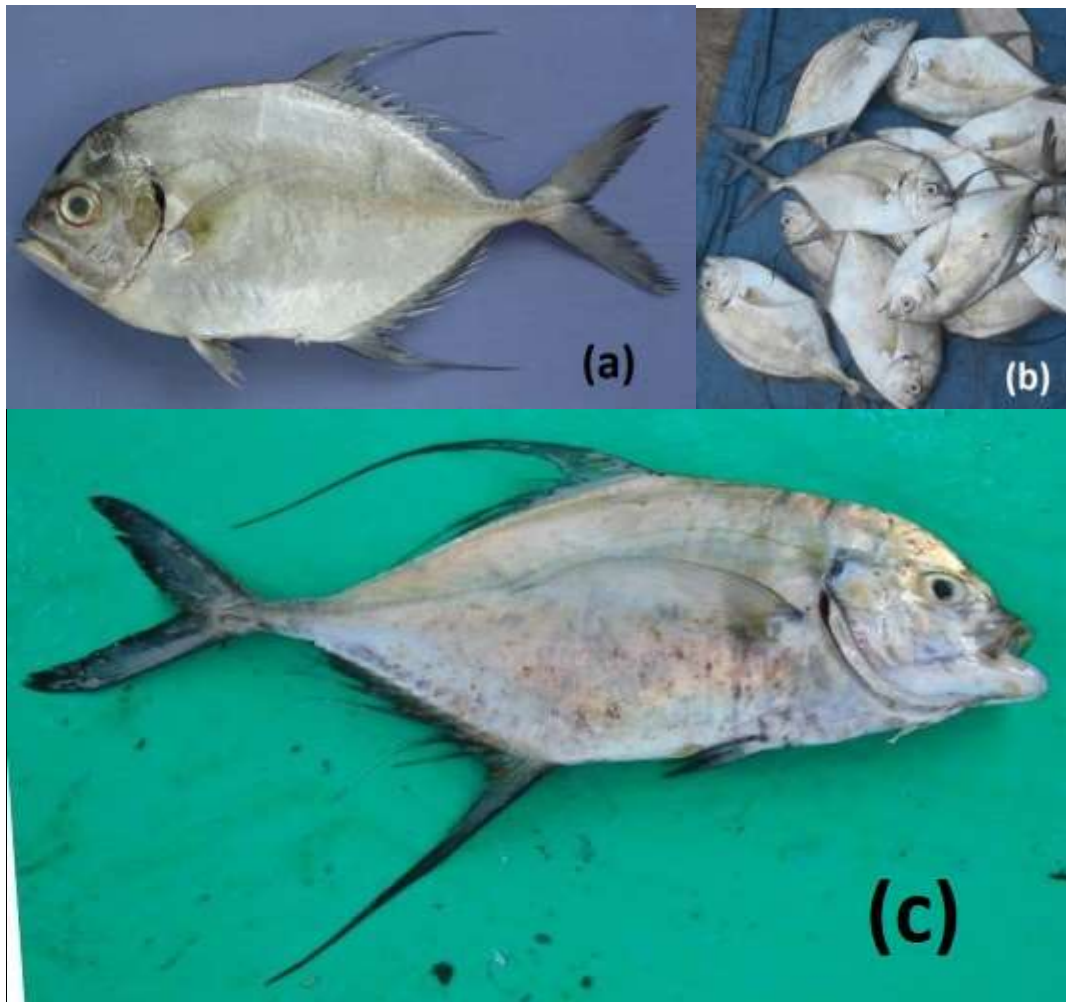


Fig. 13. *Atropus hedlandensis* from Karachi Fish Harbour (a) Subadult (b) commercial landings. (c) Adult specimen

*Atropus mentalis* (Cuvier 1833)  
(Fig. 14)



Fig. 14. *Atropus mentalis* collected from Karachi Fish Harbour



This species is commonly known as longraked trevally. It is known as “Patar” in Sindhi and “Patal” in Balochi. It was reported from Pakistan by Majid *et al* (1992) as *Ulua mentalis* (Cuvier, 1933). Smith-Vaniz (1984) has shown, its distribution in Pakistani waters with a question mark. The species is known from Oman (Randall, 1995). It was originally described as *Caranx mentalis* from Massawa, Eritrea, Red Sea by Cuvier (1833). Its holotype (ZMB 5226) is housed in the Zoologisches Museum, Humboldt Universitat, Berlin (Frickle *et al.*, 2024).

The breast of this species is naked to behind pelvic-fin origins and laterally to pectoral-fin bases. Its body is bluish-green dorsally and silvery ventrally. Its adults are found in shallow coastal waters near reefs whereas juveniles feed on benthic crustaceans; adults feed on crustaceans and fishes.

It is known from the Indo-West Pacific area including the Red Sea, East Africa, Persian Gulf, Oman, India, and Sri Lanka, Madagascar east to Indonesia, the Philippines and New Ireland (Papua New Guinea), north to Taiwan, Japan and south to northern Australia (Frickle *et al.* 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

It is a coastal water species that is considered to be a good food fish and is locally consumed, however, small quantities are also exported. No separate data of landings for this species is recorded, however, landings of miscellaneous trevallies including this species are presented in Fig. 5.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour, 11 November 2005 (76.0 cm)

Genus *Atule* Jordan and Jordan 1922

*Atule mate* (Cuvier, 1833)

(Fig. 15)



Fig. 15. *Atule mate* from Karachi Fish Harbour

This species is commonly known as yellowtail scad. It is known as “Seeri” in Sindhi and “Bakoi” or “Chonsar bakoi” in Balochi. It was reported from Sindh by Anonymous (1955), Misra (1962), Murray (1880), Punwani (1934), Sorley (1932) and Smith-Vaniz (1984), Karachi by Niazi (2001), Leth Nullah by Ahmad *et al.* (1984) and Niazi and Moazzam (1999), Balochistan by Anonymous (1953, 1955), Misra (1962) and Qureshi (1952). It was also reported from the Pakistan coast without mentioning any specific location Ahmad (1988), Bianchi (1985), Froese and Pauly (2024), Hussain (2003), Jalil and Khalil (1972, 1981), Psomadakis *et al.* (2015), Qamar *et al.* (2016), Qureshi (1960) and Smith-Vaniz (1986). Anonymous (Bennet, 1955), Jalil and Khalil (1972, 1981) and Qureshi (1952) reported this species as *Caranx (Selar) mate* whereas Hussain (2003), Misra (1962) and Qureshi (1952, 1960) referred it as *Selar mate*, Punwani (1934) and Sorley (1932) listed it as *Caranx affinis*. Murray (1880) reported it as *Caranx xanthurus*. It was originally described as *Caranx mate* from Pondicherry, Seychelles, New Guinea, and Anjer Strait by Cuvier (1833). Its holotype is not known, however, syntypes are housed in the Museum National Histoire Naturelle, Paris, France (Frickle *et al.*, 2024).

Its body is silvery, olive-green dorsally, white ventrally, and has 9 or 10 faint grey bars, wider than pale interspaces, usually present dorsolaterally. Its dorsal fins and caudal fin are dusky greenish-yellow. There is a black spot on the upper edge of the opercle. It is known from the Indo-Pacific area including the Persian Gulf, Red Sea, Oman to Mozambique, Madagascar, western Mascarenes (La Réunion), Seychelles, India and Sri Lanka; elsewhere

to Philippines, Japan, Marshall Island, Arafura Sea, Australia, Fiji, Samoa, French Polynesia and Hawaii (Frickle *et al.* 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

This is a schooling fish found in the inshore waters and on the shelf area. Its adults may be found in mangroves and coastal bays. It is usually caught with pelagic gillnets in coastal waters. It is not a preferred species for food in Pakistan, however, exported in frozen form to Southeast Asian countries. It is also used as a raw material for fish meal production. No separate data of landings for this species is recorded, however, landings of miscellaneous scads including this species are presented in Fig. 7.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour, 6 May 2007 (17.0 cm)
- 1 specimen collected from Karachi Fish Harbour, 23 October 2017 (14.0 cm)
- 

Genus *Carangichthys* Bleeker 1853  
*Carangichthys dinema* (Bleeker 1851)

This species is commonly known as shadow trevally. It is known as “Kak-kar” or “Kak-kawan” in Sindhi and “Patal” in Balochi. It was reported without mentioning any specific location by Hoda (1985), Hussain (2003), Jalil and Khalil (1972, 1981) as *Carangoides dinema*, however, Smith-Vaniz (1984) did not show the distribution of this species extending into the Arabian Sea. It was originally described from Jakarta, Java, Indonesia by Bleeker (1851), however, no type is known (Frickle *et al.*, 2024).

Characteristically in this species straight part of the lateral line has 0–6 Scales and 23–30 scutes whereas the curved part is slightly longer. Its breast is naked to pelvic-fin origins, and a small naked area laterally is usually separated from naked pectoral-fin bases by a band of scales. Its body is bluish-green dorsally and silvery white ventrally. It has small dark blotches on the back between the bases of dorsal-fin rays, becoming larger posteriorly.

It is known from the Indo-West Pacific area including South Africa, East Africa, Tanzania, and Madagascar, east to Indonesia, the Philippines, southern Japan, New Guinea, Australia, New Caledonia, Fiji, Tonga, and Samoa (Frickle *et al.* 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

This schooling fish is found in the coastal waters but rarely encountered. It is usually caught with gillnets in coastal waters. It is considered a tasty fish and used for food in Pakistan, however, exported in frozen form to Southeast Asian countries. No separate data of landings for this species is recorded, however, landings of miscellaneous trevallies including this species are presented in Fig. 5.

#### Material Examined

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

*Carangichthys oblongus* (Cuvier 1833)

This species is commonly known as coachwhip trevally. It is known as “Kak-kar” in Sindhi and “Kak-kawan” in Balochi. It was reported from Sindh by Misra (1962) as *Citula oblongus*, Karachi by Niazi (2001) as *Carangoides oblongus*. It was reported from the Pakistan coast without mentioning any specific location by Bianchi (1985), Hussain (2003) as *C. oblongus*. Smith-Vaniz (1984) mentioned that there is no record of the occurrence of this species from Pakistan. It was originally described as *Caranx oblongus* from Vanikoro by Cuvier (1833). Its holotype (MNHN A-6172) is housed in Museum National d’Histoire Naturelle, Paris, France (Frickand le *et al.*, 2024).

In this species straight part of the lateral line has 0–2 scales and 37–45 scutes, and the curved part is slightly shorter than the straight part. Its breast is naked to pelvic-fin origins, and the naked area is laterally separated from naked pectoral-fin bases by a broad band of scales. Its body is bluish-green dorsally and silvery ventrally. There are

small dark blotches on the back between the bases of dorsal fin rays. This species is known from the Indo-Pacific area including South Africa, the Gulf of Aden, Madagascar, Seychelles, Mascarenes (La Réunion, Mauritius), and India; elsewhere to Thailand, Indonesia, the Philippines, southern Japan, Solomon Is., Australia, Fiji and Tonga (Frickle *et al.* 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

This schooling fish is found in the coastal waters but rarely encountered. It is usually caught with gillnets in coastal waters. It is considered a tasty fish and used for food in Pakistan, however, exported in frozen form to Southeast Asian countries. No separate data of landings for this species is recorded, however, landings of miscellaneous trevallies including this species are presented in Fig. 5.

#### Material Examined

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

. Genus *Carangoides* Bleeker 1851  
*Carangoides praeustus* (Anonymous, 1830)  
(Fig.16)



Fig. 16. *Carangoides praeustus* collected from. Karachi Fish Harbour

This species is commonly known as brownback trevally. It is known as “Kak-kar” in Sindhi and “Kak-kawan” in Balochi. It was reported from Sindh by Murray (1880), Sorley (1932), Paradise Point, Karachi (Moazzam and Rizvi, 1980) and Miani Hor Ajazuddin and Ahmed (2002). It was also reported from Pakistan coast without mentioning any specific location by Bianchi (1985), Froese and Pauly (2024), Hoda (1985, 1988), Hussain (2003), Psomadakis *et al.* (2015), Qamar *et al.* (2016), and Smith-Vaniz (1984, 2022). Sorley (1932) reported this species as *Caranx ire* whereas Murray (1880) referred it as *Caranx melanostethos*. This species was originally described as *Caranx praeustus* from Sumatra, Indonesia by Anonymous (1830), however, no type is known (Frickle *et al.*, 2024).

In this species straight part of the lateral line has 4–12 scales and 24–34 scutes. Its breast is naked ventrally but frequently with small patch of pre-pelvic scales, and naked area laterally separated from naked pectoral-fin bases by broad band of scales. Its body is bluish-grey dorsally, silvery white below; distal half of soft-rayed dorsal-fin lobe abruptly black, sometimes with narrow white leading edge or tip; no dark spot on edge of the opercle.

This species is known from Indo-West Pacific including Red Sea, Gulf of Aden, Persian Gulf, Gulf of Oman, Pakistan to India and Sri Lanka, Bay of Bengal, Gulf of Thailand, Indonesia and the Philippines, north to northern Vietnam (Frickle *et al.* 2024; Smith-Vaniz, 2022).

This schooling fish is found in the coastal waters. It is usually caught with pelagic gillnet in coastal waters. It is not a preferred species for food in Pakistan, however, exported in frozen form to Southeast Asian countries. It is also

used as a raw material for fish meal production. No separate data of landings for this species is recorded, however, landings of miscellaneous trevallies including this species are presented in Fig. 5.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 16 September 2009 (16.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 24 April 2013 (22.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 29 October 2013 (20.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 3 May 2015 (21.5 cm)

Genus *Caranx* Lacepède 1801  
*Caranx heberi* (Bennett, 1830)  
(Fig. 17-19)

This species is commonly known as blacktip trevally. It is known as “Kak-kar” and “Kak-kawan” in Sindhi and “Gishran” in Balochi. It was reported from Astola Island by Moazzam (2024). It was reported from Pakistan without mentioning any specific location by Froese and Pauly (2024), Hoda (1985, 1988), Psomadakis *et al.* (2015), Qamar *et al.* (2016), Robins *et al.* (1991), Smith-Vaniz (1984, 2022). Hoda (1985, 1988) and Smith-Vaniz (1984) reported this species as *Caranx sem.* It was originally described as *Scomber heberi* from the yssouth coast of Sri Lanka by Bennett (1830), however, no type is known (Frickle *et al.*, 2024).



Fig 17. *Caranx heberi* Collected from Karachi Fish Harour (19 cm)



Fig. 18. *Caranx heberi* Collected from Karachi Fish Harour (67 cm)

Its body is oblong and compressed, dorsal profile strongly convex to the second dorsal fin whereas the ventral profile is slightly convex. It is dark-bronze to yellow-green dorsally, shading to silvery bronze to yellowish or



yellow-green ventrally. Its caudal fin is yellow to dusky with usually the outer half of the upper caudal lobe black. It lacks a dark spot at the upper end of the opercle.

It is known from the Indo-West Pacific area including the East Africa, Socotra (Yemen), Persian Gulf, Gulf of Oman to Pakistan and India, the Red Sea to South Africa, Madagascar, Seychelles and Mascarenes (La Réunion) to the east coast of India, southern Japan, Australia, New Caledonia, Fiji, Tonga, Rapa Islands, Marquesas Islands., Line Island and Hawaii and south to northern Australia (Frickle *et al.* 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

This schooling fish is found in the coastal waters and shelf area. It is usually caught with gillnet in coastal and offshore waters. It is considered a tasty fish and used for food in Pakistan, however, exported in frozen form to Southeast Asian countries.



Fig. 19. *Caranx heberi*. Commercial landings at Karachi Fish Harbour

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 16 September 2009 (67.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 19 September 2014 (19.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 23 September 2014 (20.0 cm)

#### *Caranx hippos* (Linnaeus, 1766)

This species is commonly known as Crevalle jack and reported from Sindh by Misra (1962), Sorley (1932), Karachi by Anonymous (1999). It was also reported from Pakistan without mentioning any specific location by Qureshi (1960, 1965). Anonymous (1999), Qureshi (1960, 1965), Misra (1962) and Sorley (1932) reported this species as *Caranx carangus*. It was originally described as *Scomber hippos* from Carolina, U. S. A. Linnaeus (1766). Its holotype or syntype (Linn. Soc. Lond. 130) is housed in Linnean Society of London, London, U. K., (Frickle *et al.*, 2024).

This species is known from the Western Atlantic, southern-central Atlantic and eastern Atlantic (Frickle *et al.*, 2024). Its reports from Pakistan may be based on misidentification of some other species.

This schooling fish is found in the coastal waters. It is usually caught with pelagic gillnet in coastal waters.

#### Material Examined

- No specimen examined during the present study.

*Caranx ignobilis* (Forsskal, 1775)  
(Fig. 20)



Fig. 20. *Caranx ignobilis* (a) Adult (85 cm); (b) Commercial landings at Karachi Fish Harbour

This species is commonly known as giant trevally. It is known as “Kak-kar” and “Kak-kawan” in Sindhi and “Gishran” in Balochi. It was reported from Sindh by Misra (1962), Murray (1880) and Karachi by Jenkins (1910). It was also reported from Pakistan without mentioning any specific location by Ahmad (1988), Bianchi (1985), Chan *et al.* (1974), Hoda (1985, 1988), Hussain (2003), Jalil and Khalil (1972, 1981), Psomadakis *et al.* (2015) and Qamar *et al.* (2016). Jenkins (1910) and Murray (1880) reported this species as *Caranx ekala*. Jenkins (1910) also reported it as *Caranx sansun*. Misra (1962) reported it as *Caranx sansun*. This species was originally described as *Scomber ignobilis* from Jeddah, Saudi Arabia and Luhaiya, Yemen, Red Sea by Forsskal (1775). Its holotype is not known, however, syntypes are housed in Zoological Museum, University of Copenhagen, Denmark (Frickle *et al.*, 2024).

The breast in this species is naked ventrally, but typically with a small patch of pre-pelvic scales. The straight part of the lateral line in this species has 26–38 strong scutes. Its colour is mainly silvery grey to black dorsally and usually paler ventrally. Its fins area is usually uniformly grey to black and there is no dark spot at the upper end of the opercle.

This species is known from the Indo-West Pacific area including the Red Sea, South Africa, East Africa, Socotra (Yemen), Persian Gulf, Seychelles, Comoros, Madagascar and Mascarenes (La Réunion, Mauritius, Rodrigues) east coast of India, east to Hawaiian Islands (U.S.A.), Line Islands (Kiribati) and Pitcairn Group, north to southern Korea and Japan, south to Australia, New Caledonia, Tonga and Rapa (Frickle *et al.* 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022). In the eastern Pacific, it occurs in French Clipperton Atoll (Frickle *et al.* 2024).

This schooling fish is found in coastal waters and on the continental shelf. It is usually caught with gillnets in coastal waters. It is a preferred species for food in Pakistan. No separate data of landings for this species is recorded, however, landings of miscellaneous trevallies including this species are presented in Fig. 5.

Material Examined

- 1 specimen collected from R/V Firdous Cruise 2015 on 11 November 2010 (85.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 14 September 2011 (36.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 21 October 2016 (42.0 cm)

*Caranx lugubris* Poey, 1860  
(Fig. 21)

This species is commonly known as black trevally or black jack. It is known as “Kak-kar” and “Kak-kawan” in Sindhi and “Gishran” in Balochi. It was reported from Pakistan without mentioning any specific location by Psomadakis *et al.* (2015). It was originally described from Cuba by Poey (1860), however, no type is known (Frickle *et al.*, 2024).

This breast of species is completely scaly. The straight part of its lateral line has 26–32 strong scutes. Its body and fins are mostly uniformly grey to black. There is a small dark spot present at the upper end of the opercle. This is a circumtropical species which is found in the Western Indian Ocean (South Africa, Gulf of Oman, Reunion, Mauritius, Cargados Carajos, Seychelles to Chagos, Lakshadweep and Sri Lanka to northwestern Australia), the

Western Pacific (South China Sea, east China Sea, southern Sea of Japan, to New Caledonia and Tonga), the Western Atlantic (Bermuda and the northern Gulf of Mexico to Brazil), the Eastern Atlantic (Azores, Madeira, St. Paul's Rocks, Ascension Island, Cape Verde, and Gulf of Guinea) and the Eastern Central Pacific (Mexico, Revillagigedo Islands to Costa Rica) (Frickle *et al.* 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).



Fig. 21. *Caranx lugubris* collected from off Indus Delta in 2013.

This schooling fish is found in the oceanic and insular species, found mainly in the oceanic waters. It is usually caught with pelagic gillnets in coastal waters. It is a preferred species for food in Pakistan. No separate data of landings for this species is recorded, however, landings of miscellaneous trevallies including this species are presented in Fig. 5.

#### Material Examined

- 1 specimen collected from off Indus Delta in EEZ of Pakistan on 29 December 2013 (86.0 cm)
- 1 specimen collected from EEZ of Pakistan off Ormara on 16 December 2016 (62.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 9 October 2023 (55.0 cm)

#### *Caranx melampygus* Cuvier, 1833

(Fig. 22)



Fig. 22. *Caranx melampygus*

This species is commonly known as bluefin trevally or black jack. It is known as “Kak-kar” and “Kak-kawan” in Sindhi and “Gishran” in Balochi. It was reported from Astola Island by Moazzam (2024). It was reported from Pakistan without mentioning any specific location by Ahmad (1988), Bianchi (1985), Froese and Pauly (2024); Hoda (1985, 1988), Hussain (2003), Jalil and Khalil (1972, 1981), Psomadakis *et al.* (2015) and Smith-Vaniz (2022). Hoda (1985, 1988), Hussain (2003) and Jalil and Khalil (1972, 1981) reported this species as *Caranx stellatus*. According to Smith-Vaniz (1984), this species does not occur in Pakistan. This species was described from Waigeo (Indonesia), Rawak Island (Bismarck Archipelago), Buru, Vanikoro and Mauritius by Cuvier (1833). Its holotype is not known, however, syntypes are housed in Museum National d’Histoire Naturelle, Paris, France (Frickle *et al.*, 2024).

The breast of this species is completely scaly. The straight part of the lateral line has 0-10 anterior scales and 27-42 strong scutes. The head and dorsal half of body of this species is brassy, suffused with blue, and covered with small blue-black spots. Its second dorsal, anal, and caudal fins are electric blue.

This species is widely distributed in Tropical Indo-Pacific to eastern Pacific area including South Africa, East Africa, Socotra (Yemen), Red Sea, Persian Gulf, Pakistan India, Seychelles, Comoros, Mozambique Channel, Madagascar and Mascarenes (La Réunion, Mauritius, Rodrigues, east to Indonesia, southern Japan, New Guinea, Australia, Solomon Island, New Caledonia, Fiji, Tonga, Pitcairn Island to Hawaiian Islands, Rapa (French Polynesia). In the eastern Pacific, it is known from the Pacific coast of southern Baja California Sur (Mexico) south to Colombia, including the southern Gulf of California (Mexico), Panama, Clipperton Island (France) and Galapagos Islands (Ecuador) (Frickle *et al.* 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

This schooling fish is found in the oceanic and insular species, found mainly in the oceanic waters. It is usually caught with pelagic gillnets in coastal waters. It is a preferred species for food in Pakistan. No separate data of landings for this species is recorded, however, landings of miscellaneous trevallies including this species are presented in Fig. 5.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 22 October, 2008 (58.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 14 October 2013 (68.0 cm)

#### *Caranx sexfasciatus* Quoy and Gaimard, 1824 (Fig.23)

This species is commonly known as bigeye trevally or black jack. It is known as “Kak-kar” and “Kak-kawan” in Sindhi and “Gishran” in Balochi. It was reported from Sindh by Misra (1962), Leth Nullah by Ahmad *et al.* (1984), Niazi and Moazzam (1999), Astola Island (Anonymous, 1993, Moazzam, 2024). It was reported from Pakistan coast without mentioning any specific location by Bianchi (1985), Froese and Pauly (2024), Hoda (1985, 1988), Hussain (2003), Jalil and Khalil (1972, 1981), Psomadakis *et al.* (2015), Qamar *et al.* (2016), and Smith-Vaniz (1984, 2022). It was originally described from Waigeo, Indonesia by Quoy and Gaimard (1824). Its holotype (MNHN A-6054) is housed in Museum National d’Histoire Naturelle, Paris, France (Frickle *et al.*, 2024).

The dorsal profile of this species moderately convex anteriorly. Its breast is completely scaly. The straight part of its lateral line is with 27–36 strong scutes. This species is silvery olive to iridescent blue-green dorsally, silvery white ventrally and has small blackish spot near the upper end of the opercle. The soft-rayed dorsal-fin lobe in this species is with white tip. Its caudal fin is yellowish to black.

This species is known from Indo-Pacific area including South Africa, East Africa, Socotra (Yemen), Red Sea, Persian Gulf, Oman to Pakistan and India, Seychelles, Comoros, Madagascar and western Mascarenes (La Réunion, Mauritius), Chagos to Indonesia, north to southern Sea of Japan (Korea, Japan), south to Western Australia, New South Wales (Australia), New Caledonia, Fiji, Tonga, east to Hawaiian Islands, Marquesas Islands (French Polynesia), Norfolk Island (Australia) and Austral Islands (French Polynesia) and the eastern Pacific including southern California (U.S.A.) south to southern Gulf of California (Mexico), Clipperton Island (France) and Galapagos Islands (Ecuador) (Frickle *et al.* 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).



This schooling fish is associated with coral assemblages and coastal waters off rocky and sandy shores. It is usually caught with pelagic gillnets in coastal waters and most dominating species of the genus *Caranx*. It is a preferred species for food in Pakistan. No separate data of landings for this species is recorded, however, landings of miscellaneous trevallies including this species are presented in Fig. 5.

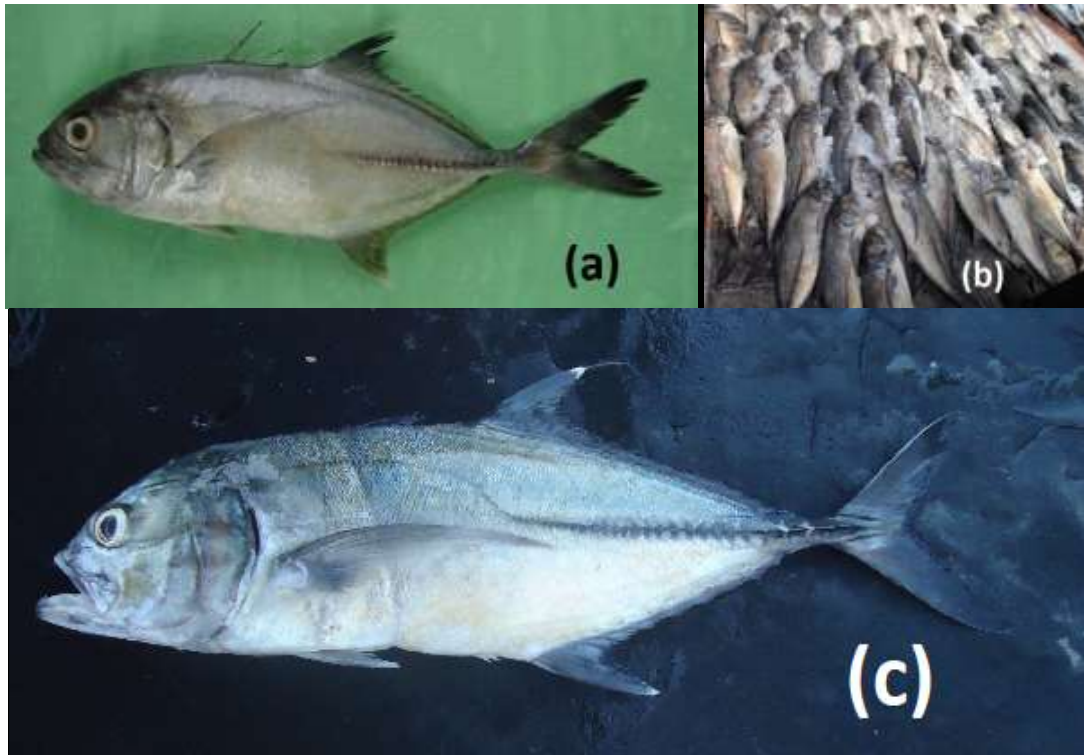


Fig. 23. *Caranx sexfasciatus*. (a) Small specimen (40 cm); (b) Commercial landings at Karachi Fish Harbour; (c) Large specimen (64 cm).

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 27 May, 2013 (40.0 cm)
- 1 specimen collected from offshore water near Ghora Bari on 6 November 2014 (51.0 cm)
- 1 specimen collected from offshore water in the EEZ of Pakistan on 11 December 2016 (64.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 31 July, 2023 (47.0 cm)

#### *Caranx tille* Cuvier, 1833

(Fig. 24)

This species is commonly known as tille trevally. It is known as “Kak-kar” and “Kak-kawan” in Sindhi and “Gishran” in Balochi. It was reported from Pakistan without mentioning any specific location by Hussain (2003), Psomadakis *et al.* (2015) and Smith-Vaniz (2022). It was originally described from Pondicherry, India by Cuvier (1833). Its holotype (MNHN A-5569) is housed in Museum National d’Histoire Naturelle, Paris, France (Frickle *et al.*, 2024).

The breast in this species is completely scaly. The straight part of its lateral line has 33–42 strong scutes. This species is dark olive-green to bluish grey dorsally, shading to silvery white ventrally. There is a blackish spot, at least half pupil diameter, present on the upper end of the opercle. The soft-rayed dorsal fin lobe in this species is olive-grey to blackish whereas lateral line scutes are grey, darker on peduncle.

This species is known from Indo-West Pacific area including South Africa, East Africa, Zanzibar, Mozambique Channel and Madagascar, Pakistan, India, Sri Lanka, Bay of Bengal, east to Mariana Islands and Fiji, north to

Ryukyu Islands (Japan), south to New Guinea, northern Australia and New Caledonia (Frickle *et al.* 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

This schooling fish is found in coastal waters. It is usually caught with pelagic gillnets in coastal waters. It is a preferred species for food in Pakistan. No separate data of landings for this species is recorded, however, landings of miscellaneous trevallies including this species are presented in Fig. 5.



Fig.24. *Caranx tille*. (a) Small specimen (28 cm); (b) Large specimen (58 cm).

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 16 September 2009 (28.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 11 January 2017 (58.0 cm)

Genus *Craterognathus* Kimura, Takeuchi and Yadome 2022  
*Craterognathus plagiotaenia* (Bleeker 1857)

This species is commonly known as barcheek trevally. It is known as “Kak-kar” and “Kak-kawan” in both Sindhi and Balochi. It was reported from Pakistan without mentioning any specific location by Bianchi (1985), Hussain (2003), Psomadakis *et al.* (2015) and Smith-Vaniz (1984, 2022) as *Carangoides plagiotaenia*. It was originally described from Ambon Island, Moluccas Islands, Indonesia by Bleeker (1857). No holotype is known, however, lectotype (RMNH 26974) is housed in Rijksmuseum van Natuurlijke Historie, Leiden (Frickle *et al.*, 2024).

The adults of this species have their lower jaw somewhat enlarged and projecting beyond upper jaw. Straight part of the lateral line in this species has 20–26 scales and 11–18 scutes whereas its breast is completely scaly. Its body is generally silvery, sometimes with 6 or 7 dusky oblique bars whereas in adults rear margin of preopercle is distinctly dark or black whereas there is no dark spot on the edge of the opercle.

This species is known from Indo-West Pacific area including South Africa, East Africa, Red Sea, Gulf of Aden, Pakistan, Seychelles, Madagascar and Mascarenes (Mauritius), Chagos and India to Sri Lanka, Andaman Islands, Indonesia, east to Marshall Islands, Tonga and Samoa, north to Ryukyu Islands (southern Japan), New Guinea, Australia, New Caledonia, Fiji, Tonga and Samoa (Frickle *et al.* 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

This species may occur singly or form small schools and is found in coastal waters along edges of steep outer edges of the rocky shore. It is usually caught with both pelagic and bottom-set gillnets in coastal waters. It is a preferred species for food in Pakistan. No separate data of landings for this species is recorded, however, landings of miscellaneous trevallies including this species are presented in Fig. 5.

#### Material Examined

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

Genus *Decapterus* Bleeker 1851  
*Decapterus kurroides* Bleeker 1855  
(Fig. 25)

This species is commonly known as redbtail scad, It is locally known as “Seem” or “Chumma” in Sindh or Balochi. This species is a new record from Pakistan. This species was originally described by Bleeker (1855) from Ambon Island, Molucca Islands, Indonesia. Its holotype (RMNH.PISC 26977) is housed in Rijksmuseum van Natuurlijke Historie, Leiden (Frickle *et al.* 2024).

The tip of adpressed pectoral fin in this species usually extends to or slightly beyond vertical at 2nd dorsal fin origin. Its opercle margin is smooth. The straight part of its lateral line has 31–36 scutes. Its body is bluish-green dorsally and silvery white ventrally. The dorsal-fin lobe is dark distally, sometimes with a pale tip and caudal fin red. There is a black spot on the edge of the opercle. The oral valve of the upper jaw transparent to dusky

It is known from the Indo-West Pacific area including the Red Sea, Kenya, Tanzania Madagascar, and western Mascarenes (La Réunion), elsewhere to Andaman Sea, Indonesia, the Philippines, north to southern Japan, south to Western Australia, and Fiji (Frickle *et al.* 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).



Fig. 25. *Decapterus kurroides* collected from Karachi Fish Harbour.

It is a pelagic and schooling fish species that is found mostly in open water and commonly in coastal and shelf areas. It is usually caught with pelagic gillnet in coastal waters. It is not a preferred species for food in Pakistan. It is mainly used as a raw material for fish meal production. No separate data of landings for this species is recorded, however, landings of miscellaneous scads including this species are presented in Fig. 7.

Material Examined

- 1 specimen collected from Karachi Fish Harbour on 16 September 2009 (18.0 cm)

*Decapterus macarellus* Cuvier, 1833  
(Fig. 26)



Fig.26. *Decapterus macarellus* collected from Karachi Fish Harbour.

This species is commonly known as mackerel scad, It is locally known as “Seem” or “Chumma” in Sindh or Balochi. It was reported from Pakistan without mentioning any specific location by Aftab and Ali-Khan (1992), Ali-Khan and Aftab (1993), Psomadakis *et al.* (2015) and Smith-Vaniz (1984, 2022). It was originally described as *Caranx macarellus* from Martinique Island, West Indies by Cuvier (1833). Its holotype is not known, however, lectotype (MNHN 5850) is housed in Museum National d’Histoire Naturelle, Paris, France (Frickle *et al.*, 2024).

The rear end of the upper jaw in this species is moderately rounded and slanted anteroventrally. The tip of its adpressed pectoral fin falls considerably short of vertical at 2nd dorsal-fin origin and its opercle margin is smooth. The straight part of its lateral line has 14–29 scales and 24–40 scutes. Its body is bluish-green dorsally and silvery ventrally. Its caudal fin is yellow-green with small black blotch on the edge of the opercle whereas the oral valve of the upper jaw is conspicuously white.

It is a circumglobal in tropical and subtropical seas which are reported from the Western Atlantic (Nova Scotia, Canada, and Bermuda to Rio de Janeiro, Brazil), the Eastern Atlantic (St. Helena, Ascension, Cape Verde, and Gulf of Guinea, Azores and Madeira), the Indian Ocean: Red Sea, Gulf of Aden, Seychelles, Mascarenes, South Africa, Pakistan, Sri Lanka and the Eastern Pacific (Gulf of California, Mexico, and Revillagigedo Island to Ecuador) and Sea of Japan (Frickle *et al.* 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

It is a pelagic and schooling fish species that is found mostly in open water and commonly in coastal and shelf areas. It is usually caught with pelagic gillnet in coastal waters. It is not a preferred species for food in Pakistan. It is mainly used as a raw material for fish meal production. No separate data of landings for this species is recorded, however, landings of miscellaneous scads including this species are presented in Fig. 7.

#### Material Examined

- 1 specimen collected from R/V Dr. Fridtjof Nansen Cruise on 16 November 2010 (14.0 cm)

*Decapterus macrosoma* Bleeker, 1851  
(Fig. 27)



Fig. 27. *Decapterus macrosoma* collected from Karachi Fish Harbour.

This species is commonly known as shortfin scad. It is locally known as “Seem” or “Chumma” in Sindh or Balochi. It was reported from Karachi by Niazi (2001). It was also reported from Pakistan without mentioning any specific location by Bianchi (1985), Froese and Pauly (2024), Hoda (1985, 1988), Hussain (2003), Psomadakis *et al.* (2015) and Smith-Vaniz (1984, 2022). It was originally described from Jakarta, Java, Indonesia by Bleeker (1851). Its holotype is not known, however, syntypes are housed in British Museum of Natural History, London, U. K., and Rijksmuseum van Natuurlijke Histoire, Leiden (Frickle *et al.*, 2024).



The rear end of its upper jaw is concave above, rounded, and produced below. Tip of its adpressed pectoral fin falling well short of vertical at 2nd dorsal-fin origin. Its opercle margin is smooth. The straight part of its lateral line has 14–29 scales, 24–40 scutes. Its body is blue to greenish dorsally, and silvery ventrally. Its caudal fin is hyaline to dusky. There is a small black spot on the upper edge of the opercle whereas the oral valve of the upper jaw is transparent to dusky.

This species is known from the Indo-Pacific area including South Africa, East Africa, the Red Sea, the Persian Gulf, Oman, India, Seychelles and Madagascar east to Hawaiian Islands (U.S.A.), northern Line Islands (Kiribati) and Gambier Islands (French Polynesia), north to southern Sea of Japan (Korea, Japan), south to Australia, New Caledonia and Tonga; also known from eastern Pacific including Pacific coast of southern Baja California Sur (Mexico) south to Peru, including Gulf of California (Mexico) and Galapagos Islands (Ecuador) (Frickle *et al.* 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

It is a pelagic and schooling fish species that is found mostly in open water and commonly in coastal and shelf areas. It is usually caught with pelagic gillnet in coastal waters. It is not a preferred species for food in Pakistan. It is mainly used as a raw material for fish meal production. No separate data of landings for this species is recorded, however, landings of miscellaneous scads including this species are presented in Fig. 7.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 9 April 2014 (23.0 cm)

*Decapterus muroadsi* (Temminck and Schlegel 1844)  
(Fig. 28)



Fig. 28. *Decapterus muroadsi* collected from Karachi Fish Harbour.

This species is commonly known as amberstripe scad. It is locally known as “Seem” or “Chumma” in Sindh or Balochi. It was reported from Pakistan without mentioning any specific location by Frickle *et al.* (2024), Psomadakis *et al.* (2015) and Smith-Vaniz (2022). It was originally described as *Caranx muroadsi* from Ōmura Bay, Nagasaki, Nagasaki Prefecture, Kyūshū, Japan by Temminck and Schlegel (1844). Its holotype (RMNH D941) is housed in Rijksmuseum van Natuurlijke Historie, Leiden (Frickle *et al.* 2024).

The tip of adpressed pectoral fin in this species is slightly short of vertical at 2nd dorsal-fin origin. Its opercle margin is smooth. The straight part of its lateral line has 5–15 scales and 32–42 scutes. Its body is bluish-green dorsally and silvery ventrally. It has an amber stripe often present on sides. Its dorsal-fin lobe is dark distally and often with a white tip. The upper lobe of its caudal fin is greenish-yellow whereas the lower lobe is dusky. There is a small black spot on the upper edge of the opercle whereas the oral valve of the upper jaw is conspicuously white in adults.



This species is known from the Southern central Atlantic (Saint Helena), the western Indian Ocean (South Africa, Pakistan), the eastern Indian Ocean and Pacific (Myanmar; Australia, New Zealand, Rapa Islands, Easter Island, Sala-y-Gomez Ridge and Nazca Ridge, south to Lord Howe and Kermadec Islands, Guam, southern Korea and Japan and Hawaiian Islands), the central California, south to Peru, including Galapagos Islands (Ecuador) (Frickle *et al.* 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

It is a pelagic and schooling fish species that is found mostly in open water and commonly in coastal and shelf areas. It is usually caught with pelagic gillnet in coastal waters. It is not a preferred species for food in Pakistan. It is mainly used as a raw material for fish meal production. No separate data of landings for this species is recorded, however, landings of miscellaneous scads including this species are presented in Fig. 7.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 21 October 2013 (60.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 4 December 2015 (47.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 7 April 2017 (42.0 cm)

***Decapterus russelli*** (Ruppell, 1830)  
(Fig. 29)



Fig. 29. *Decapterus russelli* collected from Karachi Fish Harbour.

This species is commonly known as Indian scad, It is locally known as “Seem” or “Chumma” in Sindh or Balochi. It was reported from Sindh by Misra (1962), Murray (1880) and Sorley (1933) Karachi by Hussain and Kidwai (1994) and Niazi (2001), Korangi by Ahmed and Abbas (1999c, 2000) and Abildgaard *et al.* (1994), Paradise Point, Karachi by Moazzam and Rizvi (1980). It was reported from Pakistan coast without mentioning any specific location by Bianchi (1985), Froese and Pauly (2024), Hoda (1985, 1988), Hussain (2003), Iqbal (1991), Jalil and Khalil (1972, 1981), Majid *et al.* (1992), Qamar *et al.* (2016), Qureshi (1960, 1965), Psomadakis *et al.* (2015), Smith-Vaniz (1984, 2022). Murray (1880) and Sorley (1932) reported this species as *Caranx kurra* whereas Hussain (2003) and Jalil and Khalil (1972, 1981) referred this species *Decapterus kiliche*. It was originally described as *Caranx russelli* from El Tor, Red Sea by Ruppell (1830), however, no type is known (Frickle *et al.* 2024).

The tip of the adpressed pectoral fin in this species is usually slightly short of vertical at 2nd dorsal-fin origin. Its opercle margin is smooth. The straight part of its lateral line has 0–4 scales and 30–40 scutes. Its body is bluish-green dorsally and silvery ventrally. Its dorsal fin is dusky distally and sometimes with a pale tip. Its caudal fin is hyaline to dusky-yellow. There are small black spots on the upper edge of the opercle. The oral valve of the The upper jaw is transparent to dusky.

This species is known from the Indo-West Pacific area including South Africa, East Africa, Socotra (Yemen), Persian Gulf, Oman to Pakistan, Seychelles and Mascarenes (Mauritius), Sri Lanka east coast of India, Indonesia, east to the Philippines and Fiji, north to southern Japan, south to Ningaloo Reef, Australia, New Caledonia (Frickle

*et al.* 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022). It is a Lessepsian migrant to the Mediterranean Sea through the Red Sea (Galil, 2007).

It is a pelagic and schooling fish species that is found mostly in open water and commonly in coastal and shelf areas. It is the most common species of *Decapterus* found in Pakistan. It is usually caught with pelagic gillnet in coastal waters. It is not a preferred species for food in Pakistan. It is mainly used as a raw material for fish meal production. No separate data of landings for this species is recorded, however, landings of miscellaneous scads including this species are presented in Fig. 7.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 12 April 2013 (13.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 1 November 2013 (19.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 16 October 2014 (20.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 22 January 2015 (17.0 cm)

*Decapterus smithvanizi* Kimura, Katahira and Kuriwa 2013  
(Fig. 30)



Fig. 30. *Decapterus smithvanizi*. collected from Karachi Fish Harbour.

This species is commonly known as Smith-Vaniz's scad. It is locally known as "Seem" or "Chumma" in Sindh or Balochi. It was reported from Pakistan without mentioning any specific location by Frickle *et al.* (2024), Psomadakis *et al.* (2015) and Smith-Vaniz (2022). It was originally described as *Decapteru smithvanizi*. Fish market in Bitung, North Sulawesi, Indonesia by Kimura *et al.* (2013). Its holotype (MZB 21372) is housed in the Museum Zoologicum Bogoriense, Cibinong, Indonesia (Frickle *et al.*, 2024)

The tip of the upper jaw of this species is not hooked. Its opercular membrane is entirely without serration and the posterior tip of the pectoral fin usually extends beyond a vertical through the origin of the second dorsal fin. The straight part of the lateral line is shorter than the curved part; scutes cover the posterior curved part and the entire length of the straight part of the lateral line. Its head and body is pale-black dorsally, silvery white laterally and ventrally. The snout and upper jaw is reddish There is a black blotch present on the upper edge of the opercle. The margins of both dorsal fins, caudal fin, pectoral fins, and dorsal finlet are red whereas anal fin, pelvic fins, and ventral finlet are white.

This species is known from the Indo-West Pacific area including Pakistan, Myanmar, the Andaman Sea, the South China Sea and Indonesia east to the Philippines and north to Japan (Frickle *et al.* 2024; Froese and Pauly, 2024). Smith-Vaniz, 2022 shown its distribution in Pakistan with a question mark.

It is a pelagic and schooling fish species that is found mostly in open water and commonly in coastal and shelf areas. It is usually caught with pelagic gillnet in coastal waters. It is not a preferred species for food in Pakistan. It is mainly used as a raw material for fish meal production. No separate data of landings for this species is recorded, however, landings of miscellaneous scads including this species are presented in Fig. 7.

## Material Examined

- 1 specimen collected from Karachi Fish Harbour on 11 March 2011 (12.6 cm)
- 1 specimen collected from Karachi Fish Harbour on 23 October 2018 (11.0 cm)

*Decapterus tabl* Berry, 1968  
(Fig. 31)



Fig. 31. *Decapterus tabl* collected from Karachi Fish Harbour.

This species is commonly known as rougher scad. It is locally known as “Seem” or “Chumma” in Sindh or Balochi. It was reported from possible distribution in Pakistan without mentioning any specific location by Smith-Vaniz (1984). It was originally described from Colombia (12°13'N, 72°29'W), Oregon station 5711 by Berry (1968). Holotype (USNM 202744) is housed in National Museum of Natural History, Washington D.C., U.S.A. (Frickle *et al.*, 2024).

The tip of adpressed pectoral fin in this species is usually slightly short of vertical at 2nd dorsal-fin origin. Its opercle margin has minute serrations. The straight part of its lateral line has 4–12 scales, 30–40 scutes. Its body is bluish-green dorsally and silvery ventrally. Its dorsal-fin lobe is sometimes red distally and caudal fin is red. There are small black spot on the upper edge of the opercle.

This species is circumglobal in tropical and warm temperate seas including the Pacific Ocean (Japan, Indonesia, Australia and the Hawaiian Islands), the Western Atlantic (Canada to North Carolina, USA to Venezuela, Brazil and Argentina), the Eastern Atlantic (St. Helena Island) and the Indian Ocean (off Kenya to South Africa, Mozambique and Madagascar, but probably more widely distributed) (Frickle *et al.*, 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

It is a pelagic and schooling fish species that is found mostly in open water and commonly in coastal and shelf areas.. It is usually caught with pelagic gillnet in coastal waters. It is not a preferred species for food in Pakistan. It is mainly used as a raw material for fish meal production. No separate data of landings for this species is recorded, however, landings of miscellaneous scads including this species are presented in Fig. 7.

## Material Examined

- 1 specimen collected from Karachi Fish Harbour on 12 April 2019 (12.0 cm)

Genus *Elagatis* Bennett 1840  
*Elagatis bipinnulata* (Quoy and Gaimard, 1825)  
(Fig. 32)

This species is commonly known as rainbow runner, It is locally known as “Sai” or “Gaidro” in Sindh and “Sanppo” in Balochi. It was reported from Sindh by Misra (1962) and Sorley (1932). It was reported from Pakistan coast without mentioning any specific location by Bianchi (1985), Froese and Pauly (2024), Hoda (1985, 1988), Hussain (2003), Psomadakis *et al.* (2015), Qamar *et al.* (2016), and Smith-Vaniz, (1984). Sorley (1932) reported this species as *Seriolichthys bipinnulatus*. It was originally described as *Seriola bipinnulata* from Papous by Quoy and

Gaimard (1825). Its holotype is not known, however, syntypes are housed in Museum National d’Histoire Naturelle, Paris, France (Frickle *et al.*, 2024).

The body of this species is dark olive-green or blue dorsally and white ventrally. There are 2 narrow pale blue or bluish-white stripes present along the sides, with broader olive or yellowish stripes between them. The fins have an olive or yellow tint. It is a circumglobal in tropical and warm temperate seas, including the Western Atlantic (Massachusetts, USA and northern Gulf of Mexico to Rio de Janeiro, Brazil), the Eastern Atlantic (off Genoa, Italy in the Mediterranean and from Côte d’Ivoire to Angola) the Indo-Pacific area (including Red Sea, Persian Gulf, Pakistan and Oman to South Africa, Seychelles, Mascarenes, Chagos, Maldives and India to Sea of Japan) and the Eastern Pacific (mouth of Gulf of California to Ecuador; including the Galapagos Islands) (Frickle *et al.*, 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

It is an oceanic species that is also found in coastal waters, generally near the surface or often around floating logs or other debris. It is generally caught by pelagic gillnet fisheries of the offshore waters. Sometimes also caught by surface gillnets, handlines, and troll lines. Considered to be an excellent food fish that is locally consumed. Small quantities exported in chill form to Persian Gulf countries.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 17 May 2011 (42.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 14 September 2013 (46.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 18 September 2013 (48.0 cm)
- 1 specimen collected from offshore waters of Pakistan on 4 May 2017 (32.0 cm)

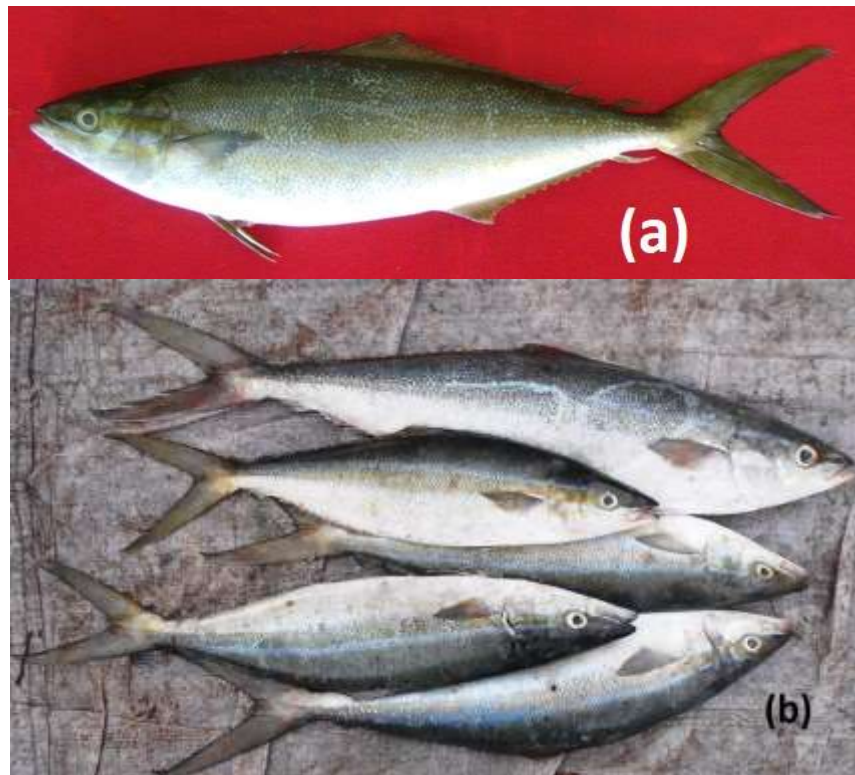


Fig. 32. *Elagatis bipinnulata* (a) Specimen showing typical colouration. (b) Commercial landings.

Genus *Ferdauia* Jordan, Evermann and Wakiya 1927

*Ferdauia ferdau* (Fabricius 1775)

(Fig. 33)



This species is commonly known as blue trevally. It is known as “Kak-kar” or “Kak-kawan” in Sindhi and “Patal” in Balochi. It was reported from Balochistan by Zugmayer (1913) as *Caranx ferdau*. It was reported from Pakistan without mentioning any specific location by Bianchi (1985), Froese and Pauly (2024), Hoda (1985, 1988), Hussain (2003), Jalil and Khalil (1972, 1981), Psomadakis *et al.* (2015) and Smith-Vaniz (1984, 2022) as *Carangoides ferdau*. It was originally described as *Scomber ferdau* from Jeddah, Saudi Arabia, Red Sea by Forsskal (1775). Its holotype is not known, however, Forsskal’s specimen is housed in Zoological Museum, University of Copenhagen, Denmark (Frickle *et al.*, 2024).

The breast in this species is naked to pelvic-fin origins, and the naked area is laterally separated from naked pectoral-fin bases by a broad band of scales. The straight part of its lateral line has 10–30 scales, and 21–37 small scutes, and the curved part of the lateral line is only weakly arched. It is generally silvery blue-green dorsally and paler ventrally. The sides are usually with 5 or 6 dusky bands, however, inconspicuous golden spots are sometimes present. There is no dark spot on the edge of the opercle.



Fig. 33. *Ferdauia ferdau* collected from Karachi Fish Harbour.

It is known from the Indo-West Pacific area including Red Sea; South Africa, East Africa, Socotra (Yemen), Persian Gulf, Gulf, Oman, Pakistan, India to Sri Lanka, Seychelles, Madagascar and Mascarenes (La Réunion, Mauritius, Rodrigues), east to the Philippines, New Guinea, Hawaiian Islands (U.S.A.), Line Islands (Kiribati) and Pitcairn Group, north to Kyoto Prefecture (central Japan), south to Western Australia, New Caledonia, Norfolk Island (Australia) and Rapa (French Polynesia), Fiji, Tonga, Samoa (Frickle *et al.*, 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

This species inhabits coastal waters adjacent to sandy beaches and rocky habitats. Usually caught with handlines, troll lines and pelagic gillnets. Considered to be an excellent food fish that is locally consumed. Small quantities exported in frozen form to Southeast Asian countries. No separate data of landings for this species is recorded, however, landings of miscellaneous trevallies including this species are presented in Fig. 5.

#### Material Examined

- 1 specimen collected from Dr. Fridtjof Nansen Cruise 2010, 11 November 2010 (52.0 cm)

Genus *Flavocaranx* Kimura, Takeuchi and Yadome 2022

*Flavocaranx bajad* (Fabricius 1775)

(Fig. 34)

This species is commonly known as orange-spotted trevally. It is known as “Kak-kar” or “Kak-kawan” in Sindhi and “Patal” in Balochi. It was reported from Pakistan without mentioning any specific location by Bianchi (1985), Hoda (1985, 1988), Hussain (2003), Psomadakis *et al.* (2015) and Smith-Vaniz (1984, 2022) as *Carangoides bajad*. It was originally described as *Scomber ferdau bajad* from Red Sea by Forsskal (1775). Its holotype is not known, however, syntypes are housed in Zoological Museum, University of Copenhagen, Denmark (Frickle *et al.*, 2024).

The breast of this species is completely scaly or with a narrow naked area anteroventrally (at most scarcely visible in lateral view). The straight part of its lateral line has 14–26 scales and 20–30 scutes. Its body is brassy



dorsally, and silvery white on the sides. The sides have numerous prominent orange spots whereas occasionally its body may be all yellow-orange. There is no dark spot on the edge of its opercle.

It is known from the Indo-West Pacific area including Red Sea, Madagascar, the Gulf of Aden, Socotra (Yemen), the Persian Gulf, the Gulf of Oman, Pakistan to Gulf of Thailand, Indonesia, the Philippines, Papua New Guinea southern Japan and Solomon Islands (Frickle *et al.*, 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).



Fig. 34. *Flavocaranx bajad* collected from Karachi Fish Harbour.

This species inhabits coastal waters adjacent to sandy beaches and rocky habitats. Usually caught with handlines, troll lines, and pelagic gillnets. Considered to be an excellent food fish that is locally consumed. Small quantities exported in frozen form to Southeast Asian countries. No separate data of landings for this species is recorded, however, landings of miscellaneous trevallies including this species are presented in Fig. 5.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 14 October 2013 (85.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 21 June 2017 (50.0 cm)

Genus *Gnathanodon* Bleeker 1850  
*Gnathanodon speciosus* (Forsskal, 1775)  
(Fig. 35)



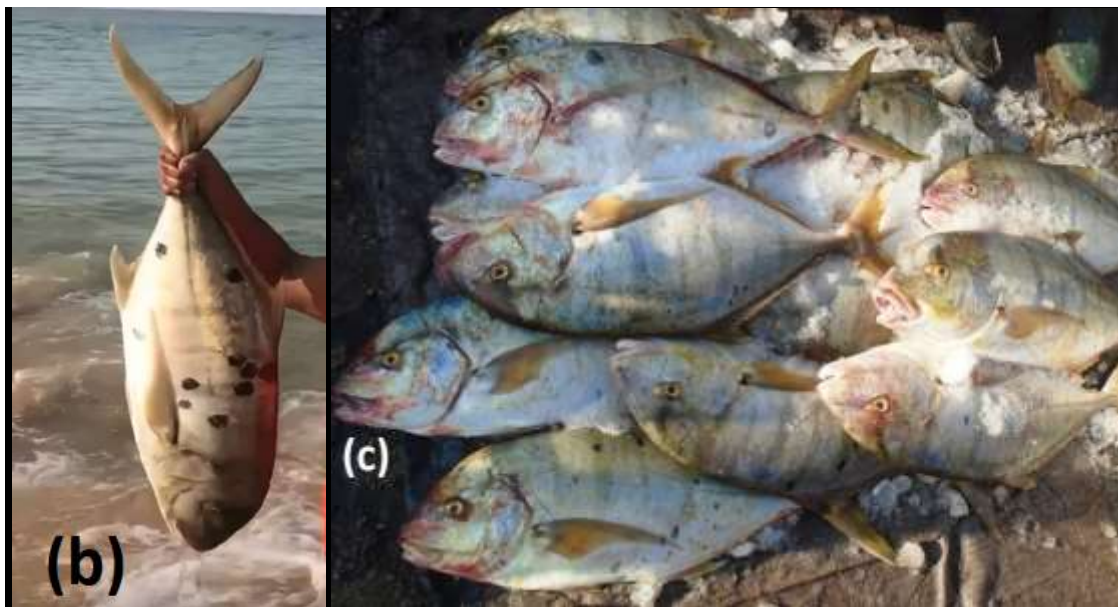


Fig. 35. *Gnathanodon speciosus*. (a) Specimen with typical colouration; (b) A large specimen collected at Astola Island; (c) Commercial landings at Karachi Fish Harbour.

This species is commonly known as golden trevally. It is known as “Gaddy”. “Kak-kar” or “Kak-kawan” in Sindh and “Galbat” of “Gishran” in Balochi. It was reported from Sindh by Murray (1880), Karachi by Niazi (2001), Astola Island (Moazzam, 2024), and Balochistan by Zugmayer (1913). It was reported from Pakistan without mentioning any specific location by Ahmad *et al.* (1973), Bianchi (1985), Froese and Pauly (2024), Hoda (1985, 1988), Hussain (2003), Jalil and Khalil (1972, 1981). Murray (1880), Psomadakis *et al.* (2015), Qamar *et al.* (2016), and Smith-Vaniz (1984, 2022). Zugmayer (1913) reported this species as *Caranax speciosus*. It was originally described as *Scomber speciosus* from Jeddah, Saudi Arabia, Red Sea by Forsskal (1775), however, no type is known (Frickle *et al.*, 2024).

The breast of this species is completely scaly. Its young and small adults are silvery yellow, and have 7–11 narrow, blackish, vertical bars. Its fins are tinged yellow and caudal-fin tips are black. Adults of this species have a few black spots or blotches on the sides, and vertical bars are faint or absent.

This species is circumglobal in tropical to subtropical seas and known from the Indo-Pacific area including Red Sea, South Africa, East Africa, Persian Gulf, Pakistan, Oman Socotra (Yemen), Seychelles, Comoros, Madagascar, western Mascarenes (La Réunion, Mauritius), Chagos, Maldives and India, north to Mie Prefecture, Japan, east to Hawaiian Islands, north to the Kuril Islands, south to New South Wales (Australia), Tonga and Austral Islands (French Polynesia) (Frickle *et al.*, 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022). It is also found in the eastern Pacific including the Pacific coast of southern Baja California Sur (Mexico) south to Colombia, including the southern Gulf of California (Mexico) including strays to the Mediterranean Sea, but rare in the eastern Atlantic (Smith-Vaniz, 2022).

This species is a pelagic, usually at or near the surface over rocky ledges, but sometimes far offshore and often around floating debris. It inhabits coastal waters adjacent to sandy beaches and rocky habitats. Usually caught with handlines, troll lines, and pelagic gillnets. Considered to be an excellent food fish that is locally consumed. Small quantities exported in frozen form to Southeast Asian countries. No separate data of landings for this species is recorded, however, landings of miscellaneous trevallies including this species are presented in Fig. 5.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 26 May 2013 (23.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 26 June 2013 (51.0 cm)

- 1 specimen collected from offshore water Pakistan (24° 42.500'N; 66° 36.600'E) 2 January 2021 (57.0 cm)

Genus *Kaiwarinus* Suzuki 1962  
*Kaiwarinus equula* (Temminck & Schlegel 1844)  
 (Fig. 36)

This species is commonly known as whitefin trevally. It is known as “Kak-kar” or “Kak-kawan” in Sindhi and “Patal” in Balochi. It was reported for the first time from the Pakistan coast. It was originally described as *Caranx equula* from Nagasaki, Japan by Temminck and Schlegel (1844). Its holotype is not known, however, the lectotype (RMNH 1311) is housed in Rijksmuseum van Natuurlijke Historie, Leiden (Frickle *et al.*, 2024).

The straight part of the lateral line in this species has 0–6 scales and 22 or 23 scutes. Its breast is completely scaly. Its body is bluish-grey to green dorsally and silvery white ventrally. The soft-rayed dorsal fin and anal fin are with brownish submarginal stripes. The fin lobes are white distally. There is no dark spot on the edge of its opercle.



Fig. 36. *Kaiwarinus equula* collected from Karachi Fish Harbour.

This species is reported from the Indo-Pacific area including the Red Sea, the Persian Gulf, the Gulf of Oman, East Africa, Gulf of Aden, Somalia, South Africa to southern Japan, Hawaii, the Arafura Sea,, Australia, New Zealand, and Easter Island as well as Southeast Atlantic including southeast coast of South Africa (Frickle *et al.*, 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

This species was observed to be rare and found mainly on the continental shelf and slope habitats. Usually caught with pelagic gillnet. It is locally consumed. No separate data of landings for this species is recorded, however, landings of miscellaneous trevallies including this species are presented in Fig. 5.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 21 March 2013 (43.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 12 February 2014 (31.0 cm)

Genus *Megalaspis* Bleeker 1851  
*Megalaspis cordyla* (Linnaeus, 1758)  
 (Fig. 37)

This species is commonly known as torpedo scad. It is known as “Binday-wal” in Sindhi and “Dar-dumb” in Balochi. It was reported from Sindh by Murray (1880) and Misra (1962), Karachi by Jenkins (1910), GBIF (2024) and Niazi (2001), and Sonmiani Bay (GBIF, 2024). It was reported from the Pakistan coast without mentioning any specific location by Ahmad (1988), Bianchi (1985), Froese and Pauly (2024), Hoda (1985, 1988), Hussain (2003),

Jalil and Khalil (1972, 1981), Khan (1994), Majid *et al* (1992). Psomadakis *et al.* (2015), Qamar *et al.* (2016), and Smith-Vaniz (1984, 2022). Jenkins (1910) and Murray (1880) reported this species as *Caranx rottleri*. It was originally described as *Scomber cordyla* from America by Linnaeus (1758), however, no type is known (Frickle *et al.*, 2024).



Fig. 37. *Magalaspis cordyla* (a) Specimens showing broad scutes. (b) Commercial landings at Karachi Fish Harbour.

Its body is fusiform with very long pectoral fins. The straight part of its lateral line with 51–59 very large scutes. The rear 7–10 rays of dorsal and anal fins form separate finlets. Its body is bluish-grey to green dorsally, and silvery ventrally. Its pectoral fins are dark and there is a large black spot on the upper edge of the opercle.

This species is known from the Indo-West Pacific area including the Red Sea, South Africa, East Africa and Persian Gulf, Pakistan, Oman, India, Sri Lanka; east to Indonesia, Marshall Islands and Samoa, north to southern Korea and southern Japan, south to Australia, New Caledonia and Tonga Africa (Frickle *et al.*, 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

It is primarily an oceanic, pelagic and schooling fish which is found near the surface waters. It is usually caught with pelagic gillnet and seine nets in coastal waters. It is not a preferred species for food in Pakistan, however, consumed mainly by Bangaldeshi immigrants. It is also used as a raw material for fish meal production. No separate data of landings for this species is recorded, however, landings of miscellaneous scads including this species are presented in Fig. 7.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 9 October 2010 (28.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 25 July 2013 (22.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 23 September 2014 (24.0 cm)
- 1 specimen collected from offshore water of Sindh (23° 54.672'N; 67° 07.808'E, on May 26, 2015 (24.0 cm)

Genus *Naucrates* Rafinesque 1810  
*Naucrates ductor* (Linnaeus, 1758)  
 (Fig. 38)



Fig. 38. *Naucrates ductor* collected from Karachi Fish Harbour.

This species is commonly known as pilotfish. It is known as “Naram kak-kawan” in Sindhi and “Zarkaowk” or “Zarkao” in Balochi. It was reported from Sindh by Murray (1880) and Sorley (1932), Karachi by Anonymous,



(2000), Balochistan by Zugmayer (1913). It was reported from Pakistan without mentioning any specific location by Bianchi (1985), Froese and Pauly (2024), Hoda (1985, 1988), Hussain (2003), Jalil and Khalil (1972, 1981), Majid *et al* (1992), Norman (1939), Psomadakis *et al.* (2015) and Smith-Vaniz (1984). Murray (1880) reported this species as *Naucrates indicus*. It was originally described as *Gasterosteus doctor* from “Pelagic Ocean” by Linnaeus (1758). Its holotype is not known, however, syntypes are housed in NRM (Frickle *et al.*, 2024).

Its body is elongated and slender, not strongly compressed. The end of the upper jaw is relatively narrow, terminating below the front margin of the eye. There are no scutes in its lateral line. Its head and body are pale-bluish to dark blue, with 6 or 7 broad dark bars (rear 3 bars extending onto dorsal fin). Its caudal-fin lobes with distal third dark, and prominent white tips. There are smaller white tips on 2nd dorsal- and anal-fin lobes.

This species is circumglobal in tropical and warm temperate seas including the Western Atlantic (Nova Scotia, Canada to Argentina), the Eastern Atlantic (British Isles, Norway and Bay of Biscay to Namibia, including the Mediterranean Sea, Black Sea and Canary Islands), the Eastern Pacific (Vancouver Island, British Columbia, Canada to the Galapagos Islands and Chile), the Indo-Pacific area (Red Sea, Persian Gulf to South China Sea; East China Sea and Sea of Japan) (Frickle *et al.*, 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

It is a pelagic and oceanic species that has a semi-obligate commensal relationship with sharks, rays, other large fishes, and turtles. Sometimes rides the bow wave of ships or large fishes. It is not a preferred species in Pakistan but is occasionally caught by tuna gillnets. The landing data of this species is not being recorded and generally included in miscellaneous fish.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 13 September 2008 (24.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 25 February 2013 (30.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 19 June 2013 (24.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 21 October 2016 (32.0 cm)

Genus *Parastromateus* Bleeker 1864  
*Parastromateus niger* (Bloch, 1795)  
(Fig. 39)

This species is commonly known as black pomfret. It is known as “Kala paplait” and “Karo-pitho” in Sindh and “Siah-e-tighlum”, “Siah pithoo” or “Siah pushat” in Balochi. It was reported from Sindh by Aitken (1907), Anonymous (1955), Jayaram (1981), Misra (1962) and Murray (1880), Karachi by Anonymous (1955, 1993), Misra (1962), Niazi (2001) and; Punwani (1934), Indus delta by Mahmood *et al.* (1999), Balochistan by Anonymous (1953), Niazi (1994), and Zugmayer (1913), from Makran by Anonymous (1955), Jayaram (1981), Misra (1962) and Qureshi (1952). It was reported from Pakistan without mentioning any specific location by Ahmad (1988), Ahmad and Niazi (1988), Ali (2002), Bianchi (1985), Froese and Pauly (2024), Hoda (1985, 1988), Hussain (2003), Hussain and Kidwai (1994), Iqbal *et al* (1999), Jalil and Khalil (1972, 1981), Majid *et al* (1992), Mujib (1985), Psomadakis *et al.* (2015), Qamar *et al.* (2016), Qureshi (1960, 1965, 1969), Siddiqi (1956), Smith-Vaniz (1984, 2022). Hoda (1985, 1988) and Hussain and Kidwai (1994) reported as *Formio niger* whereas Aitken (1907), Mujib (1985), Murray (1880), Punwani (1934) and Zugmayer (1913) referred to it as *Stromateus niger*. It was originally described as *Stromateus niger* from East India by Bloch (1795). Its holotype (ZMB 875) is housed in the Zoologisches Museum, Humboldt Universitat, Berlin (Frickle *et al.*, 2024).

It is a deep-bodied fish which is nearly orbicular, and strongly compressed. The profile of its soft-rayed dorsal and anal fins are alike, with elevated, broadly rounded anterior lobes. The dorsal and anal fins are almost completely scaly. The straight part of its lateral line is largely on peduncle, with 8–19 weak scutes forming slight keel. Its body is bluish-brown dorsally and silvery grey ventrally. Its fins have dark edges. The paired fins are yellowish. There is a dark blotch on the opercle margin opposite pectoral fins.

This species is known from the Indo-West Pacific area including the Red Sea, South Africa, East Africa, Persian Gulf, Pakistan, Oman, Socotra (Yemen), Seychelles, Madagascar and western Mascarenes (La Réunion, Mauritius), India, Sri Lanka; east to Indonesia, the Philippines, north to southern Sea of Japan, south to Queensland (Australia) and Fiji (Frickle *et al.*, 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).





Fig. 39. *Parastromateus niger*. (a) Typical colouration. (b) Commercial landings at Karachi Fish Harbour

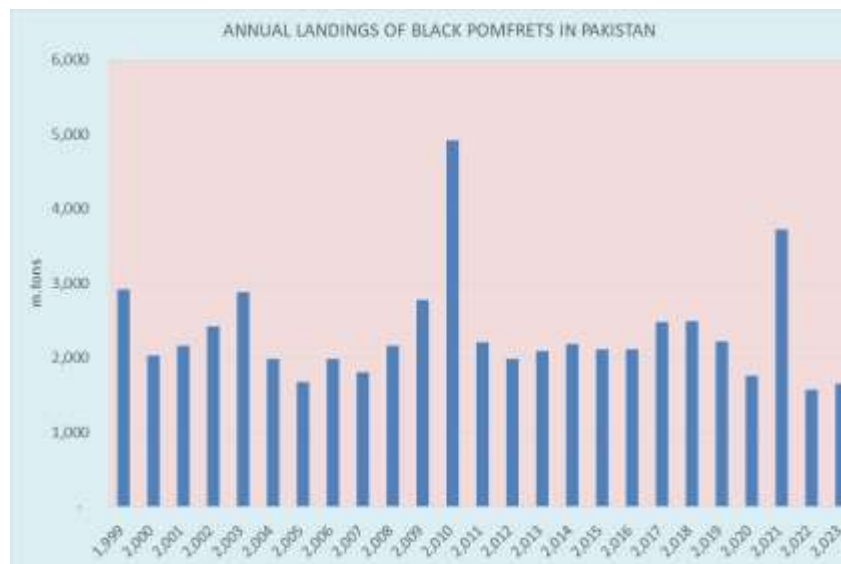


Fig. 40. Annual landings of black pomfrets in Pakistan.

It is a pelagic fish which often forms large schools in offshore, coastal waters as well as in the Indus Delta. It is considered as an excellent food fish which is locally consumed and also exported in frozen form to Persian Gulf and the Southeast Asian countries. Separate data of landings for this species is recorded is presented in Fig. 40.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 30 September 2009 (16.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 24 June 2010 (25.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 18 March 2017 (18.0 cm)

Genus *Platycaranx* Kimura, Takeuchi and Yadome, 2022

*Platycaranx chrysophrys* (Cuvier 1833)

(Fig. 41)

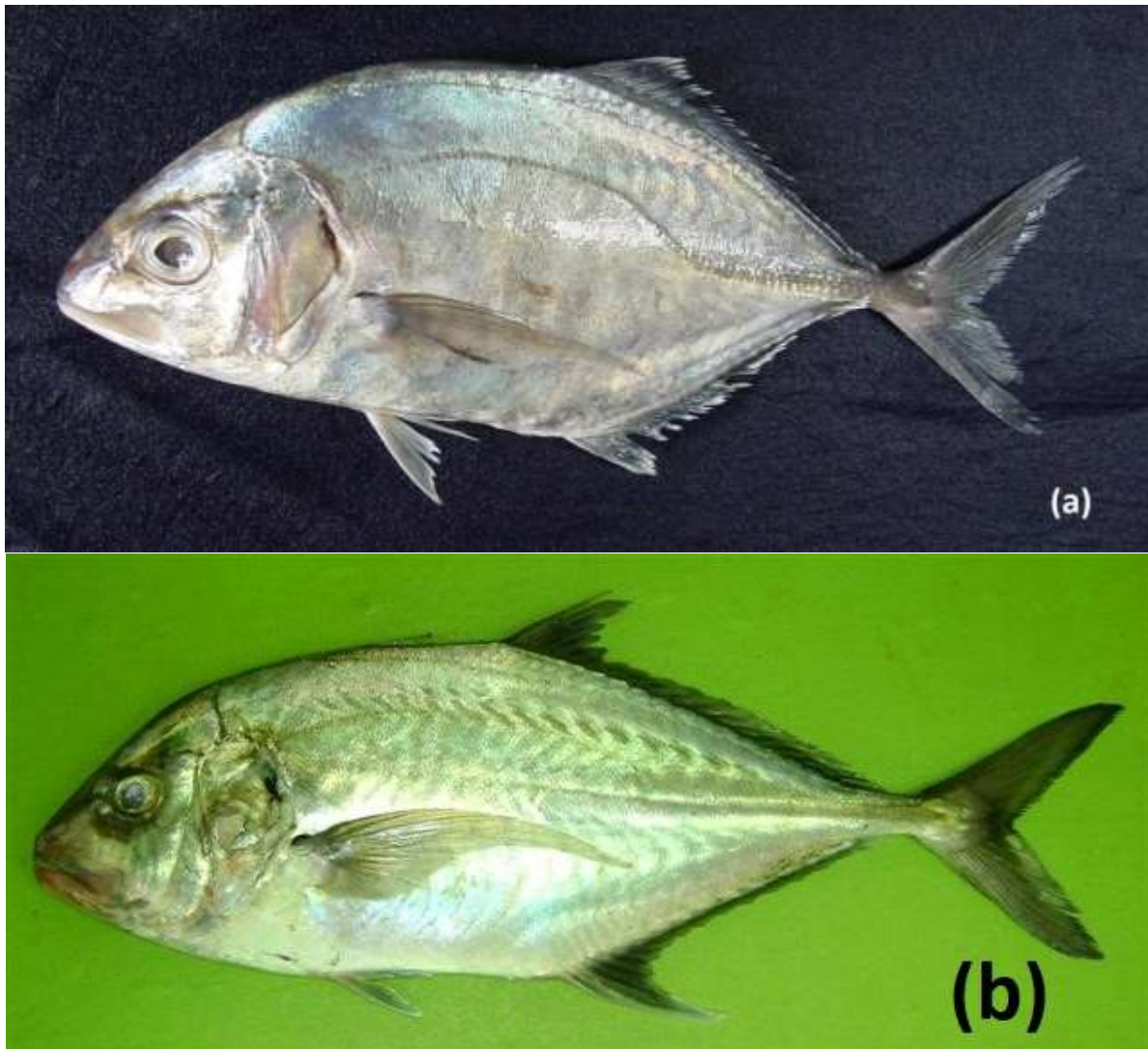


Fig. 41. *Platycaranx chrysophrys* (a) Small specimen (31 cm); (b) Large specimen (50 cm).

This species is commonly known as longnose trevally. It is known as “Kak-kar” and “Kak-kawan” in Sindhi and “Gishran” or “patar” in Balochi. It was reported from Leth Nullah by Ahmad *et al.* (1984) and Niazi and Moazzam (1999), Paradise Point, Karachi by Moazzam and Rizvi (1980), Astola Island (Moazzam, 2024), Balochistan by Zugmayer (1913). It was reported from Pakistan without mentioning any specific location by

Ahmad (1988), Bianchi (1985), Froese and Pauly (2024), Hoda (1985, 1988), Hussain (2003), Jalil and Khalil (1972, 1981), Psomadakis *et al.* (2015), Qamar *et al.* (2016), Smith-Vaniz (1984), All these authors reported this species as *Carangoides chrysophrys*. It was originally described as *Caranx chrysophrys* from Seychelles by Cuvier (1833). Holotype (MNHN A-0560) is housed in Museum National d'Historie Naturelle, Paris, France (Frickle *et al.*, 2024).

The dorsal profile of the snout in this species is gently sloped and then abruptly vertical just above the mouth cleft. Its soft-rayed dorsal fin is falcate in young. The straight part of the lateral line in this species has 20–37 weak scutes whereas it is breast is naked to behind pelvic-fin origins and laterally to pectoral-fin bases. Its body is generally silvery and greenish dorsally with a small black spot on the upper edge of the opercle.

This species is known from Indo-West Pacific area including the Red Sea, South Africa, East Africa, Socotra (Yemen), Persian Gulf, Pakistan, Oman, southwestern India; elsewhere to east coast of India, Seychelles, Madagascar and western Mascarenes (La Réunion, Mauritius) east to Philippines and Fiji, north to southern Sea of Japan, south to Exmouth Gulf (Western Australia), New Zealand, Vanuatu and New Caledonia (Frickle *et al.*, 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

It is a coastal water species that is considered to be a good food fish and is locally consumed, however, small quantities are also exported. No separate data of landings for this species is recorded, however, landings of miscellaneous trevallies including this species are presented in Fig. 5.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour, 11 June 2008 (31.0 cm)
- 1 specimen collected from Offshore waters of Pakistan on board R/V Dr Fridtjof Nansen Cruise 2, November 2010 (49.0 cm)
- 1 specimen collected from Offshore waters of Pakistan on board R/V Firdous Cruise 1, 11 November 2010 (50.0 cm)

#### *Platycaranx malabaricus* (Bloch and Schneider 1801)

(Fig. 42)

This species is commonly known as Malabar trevally. It is known as “Kak-kar” and “Kak-kawan” in Sindhi and “Gishran” or “patar” in Balochi. It was reported from Sindh by Ahmad *et al.* (1973), Anonymous (1955), Misra (1962), Karachi by Ahmad *et al.* (1973), Anonymous (1955, 1999), Khan (1924), Misra (1962), Niazi (2001), Makran by Ahmad *et al.* (1973), Anonymous (1955) and Misra (1962). It was reported from Pakistan without mentioning any specific location by Ahmad (1988), Ahmed (1996), Ahmed and Wazarat (1993), Bianchi (1985), Froese and Pauly (2024), Hoda (1965, 1988), Hussain (2003), Hussain and Kidwai (1994), Iqbal *et al.* (1999), Jalil and Khalil (1972, 1981), Majid *et al.* (1992), Psomadakis *et al.* (2015), Qamar *et al.* (2016), Qureshi (1960, 1965), Smith-Vaniz (1984, 2022), Williams and Venkatarmani (1978). Ahmed (1996), Ahmed and Wazarat (1993), Anonymous (1999), Hoda (1985) and Khan (1924) reported this species as *Caranx malabaricus* whereas Misra (1962) referred to it as *Cituel malabaricus*. Anonymous (1955) listed it as *Caranx (Carangoides) malabaricus* whereas all other authors refer this species as *Carangoides malabaricus*. It was originally described as *Scomber malabaricus* from Tranquebar, India by Bloch and Schneider (1801). Holotype (ZMB 8760) is housed in Zoologisches Museum, Humboldt Universitat, Berlin (Frickle *et al.*, 2024).

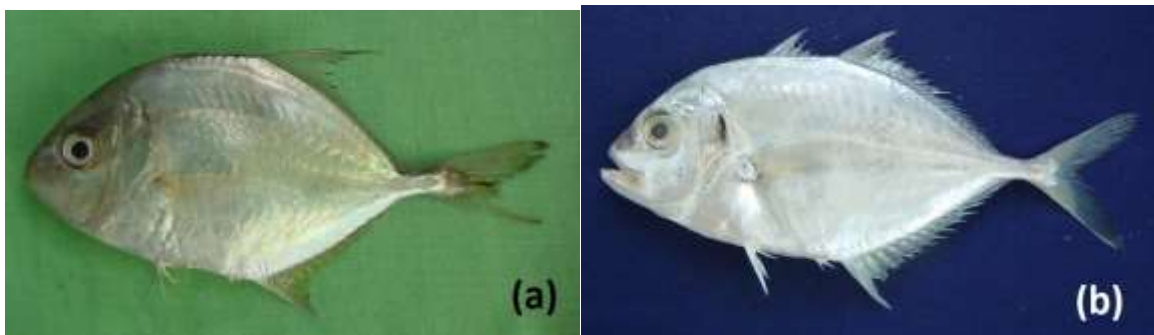


Fig. 42. *Carangoides malabaricus*. (a) Juvenile (16 cm); (b) Adult (36 cm)

The breast in this species is naked to behind pelvic-fin origins and laterally to pectoral-fin bases, including small area anteriorly just above fins. The straight part of its lateral line with 19–36 weak scutes. Its body is generally silvery-bluish grey dorsally with small white spot often at base of anal fin rays. There are small dusky spot on the upper edge of the opercle. Its tongue is brown to greyish-brown.

This species is known from the Indo-West Pacific area including South Africa, East Africa, Madagascar, the Red Sea, the Persian Gulf, Oman, Pakistan to India and Sri Lanka and east to the Gulf of Thailand, the Philippines and New Guinea, north to Japan and Kuril Islands, south to Australia and New Caledonia (Frickle *et al.*, 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

It is a benthic and schooling which is found in coastal waters as well found over continental shelf. It is considered to be a good food fish and is locally consumed, however, small quantities are also exported. No separate data of landings for this species is recorded, however, landings of miscellaneous trevallies including this species are presented in Fig. 5.

#### Material Examined

- 1 specimen collected from Offshore waters of Pakistan on board R/V Firdous Cruise 1, 03 November 2009 (36.0 cm)
- 1 specimen collected from Karachi Fish Harbour, 16 July 2013 (16.0 cm)

#### *Platycaranx talamparoides* (Bleeker 1852)

This species is commonly known as imposter trevally. It is known as “Kak-kar” and “Kak-kawan” in Sindhi and “Gishran” or “patar” in Balochi. It was reported from Karachi by Niazi (2001). It was reported from Pakistan without mentioning any specific location by Bianchi (1985), Froese and Pauly (2024), Hoda (1985, 1988), Hussain (2003), Psomadakis *et al.* (2015), Smith-Vaniz (1984, 2022), Williams and Venkatarmani (1978) as *Carangoides talamparoides*. It was originally described as *Carangoides talamparoides* from Sibogha, western Sumatra, Indonesia by Bleeker (1852). Its holotype (RMNH 6099) is housed in Rijksmuseum van Natuurlijke Historie, Leiden (Frickle *et al.*, 2024).

The breast of this species is naked to behind pelvic-fin origins and laterally to pectoral-fin bases, including a small area anteriorly just above fins. The straight part of its lateral line has 20–30 weak scutes. Its body is generally silvery-bluish grey dorsally and has a small blackish spot on the upper edge of the opercle. Its tongue is white to pale grey.

This species is known from the Indo-West Pacific area including the Red Sea, the Gulf of Aden, the Gulf of Oman, Iran, Pakistan to India and Sri Lanka, east the Gulf of Thailand, Indonesia, the Philippines, Guam (Mariana Islands, U.S.A.) and New Guinea, north to southern Japan and south to Australia (Frickle *et al.*, 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

It is a benthic and schooling which is found in coastal waters as well found over continental shelf. It is considered to be a good food fish and is locally consumed, however, small quantities are also exported. No separate data of landings for this species is recorded, however, landings of miscellaneous trevallies including this species are presented in Fig. 5.

#### Material Examined

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

#### Genus *Scomberoides* Lacepède 1801 *Scomberoides commersonianus* Lacepède, 1802 (Fig. 43)





Fig. 43. *Scomberoides commersonianus*. (a) Specimen with typical colouration. (b) Commercial landings at Karachi Fish Harbour

This species is commonly known as Talang queenfish. It is known as “Aal” in Sindhi and “Saraam” or “Saram Gazdani” or “Saram Aanam” (large specimen) in Balochi. It was reported from Sindh by Murray (1880), Karachi by Niazi (2001), Korangi Creek by Hussain (2003), Sandspit by Ahmad *et al.* (1999), Astola Island (Moazzam, 2024), Balochistan by Niazi (1994). It was reported from Pakistan without mentioning any specific location by Ahmad (1988), Ahmad and Niazi (1988), Ali (2002), Bainchi (1985), Froese and Pauly (2024), Hussain (2003), Hussain *et al.* (1990), Majid *et al.* (1992), Panhwar and Jahangir (2013a; 2013b), Psomadakis *et al.* (2015), Qamar *et al.* (2016), and Smith-Vaniz (1984, 2022). Murray (1880) reported this species as *Chorinemus commersonianus*. It was originally described as *Scomberoides commersonianus* from Fort Dauphin, Madagascar by Lacepede (1801), however, no type is known (Frickle *et al.*, 2024).

The maxilla in this species extends well beyond the eye in adults. The scales on its midbody are oval. Its body is silvery-grey. The adults have 5–8 large purplish grey blotches above or touching the lateral line; the first 2 may intersect the lateral line. Its dorsal-fin lobe is uniformly dusky or dark.

This species is known from Indo-West Pacific area including South Africa, East Africa, the Red Sea, the Persian Gulf, Socotra (Yemen), Madagascar and western Mascarenes (La Réunion, Mauritius), Oman, Pakistan,



India, Sri Lanka, east to the Philippines, Taiwan, New Ireland (Papua New Guinea), north to southern Sea of Japan (Korea, Japan), south to Western Australia, Sydney (New South Wales) and New Caledonia (Frickle *et al.*, 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

It is a schooling fish in coastal and offshore waters and is harvested mainly with pelagic gillnets. Small juveniles (less than 3 cm) are found in the estuaries of ephemeral rivers along the Balochistan coast. Sometimes caught on handlines, troll lines, and longlines. It is considered one of the favorite fish among the fishermen community therefore, it is locally consumed. No separate data of landings for this species is recorded, however, landings of miscellaneous queenfishes including this species are presented in Fig. 44.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour, 16 January 2010 (43.0 cm)
- 1 specimen collected from Offshore waters of Pakistan on board R/V Dr Fridtjof Nansen Cruise 2, 17 November 2010 (54.0 cm)
- 1 specimen collected from Karachi Fish Harbour, 20 March 2014 (83.0 cm)
- 1 specimen collected from Karachi Fish Harbour, 26 May 2014 (26.0 cm)
- 1 specimen collected from offshore water Pakistan (24° 45.400'N; 66° 07.300'E) 24 April 2017 (85.0 cm)
- 

#### *Scomberoides lysan* (Forsskal, 1775)

(Fig. 45)

This species is commonly known as double spotted queenfish. It is known as “Aal” in Sindhi and “Saraam” or “Saram kainchan” in Balochi. It was reported from Sindh by Aitken (1907), Anonymous (1955), Misra (1962), Murray (1880), and Sorley (1932), Bhambhore by Ahmed and Abbas (1999a, 2000), Indus Delta by Mahmood *et al.* (1999), Karachi by Anonymous (1955, 1993, 1999) and Jenkins (1910), Balochistan by Niazi (1994) and Zugmayer (1913), Astola Island (Moazzam, 2024), 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 (2024), Hoda (1985, 1987, 1988), Hussain (2003), Jalil and Khalil (1972, 1981), Qamar *et al.* (2016), Qureshi (1955, 1960, 1962, 1965), Psomadakis *et al.* (2015), Siddiqi (1956) and Smith-Vaniz (1984, 2022). Anonymous (1993, 1999), Hoda (1985, 1987, 1988), Hussain (2003), Jalil and Khalil (1972, 1981) and Zugmayer (1913) reported this species as *Chorinemus lysan* whereas Ahmad (1988), Aitken (1907), Cuvier (1832), Hoda (1985), Hussain (2003), Jalil and Khalil (1972, 1981), Misra (1962), Murray (1880), and Sorley (1932) referred it as *Chorinemus sanctipetri*. Anonymous (1955), Hoda (1985, 1988), Qureshi (1952, 1955, 1960, 1962, 1965) and Siddiqi (1956) listed it as *Chorinemus tolooparah* and Jenkins (1910) and Zugmayer (1913) called it as *Chorinemus moadetta*. It was originally described as *Scomber lysan* from Jeddah, Saudi Arabia or Luhaiya, Yemen, Red Sea by Forsskal (1775). Its holotype is not known, however, lectotype (ZMUC P-46435) is housed in Zoological Museum, University of Copenhagen, Denmark (Frickle *et al.*, 2024).

The maxilla in this species extends to or slightly beyond rear margin of eye in adults. Scales on mid-body below its lateral line are lanceolate. Its body is silvery whereas the adults have double series of 6–8 dusky roundish blotches above and below lateral line. The distal half of dorsal-fin lobe in this species is abruptly and heavily pigmented. It has venom glands associated with dorsal and anal-fin spines which can inflict painful stings.

This species is known from the Indo-West Pacific area including South Africa, East Africa, the Red Sea, the Socotra (Yemen), Persian Gulf, Seychelles, Comoros, Madagascar and western Mascarenes (La Réunion), Chagos, Pakistan, Oman, India to Sri Lanka, to southern Japan, New Guinea, Australia, New Caledonia, Tonga, Rapa Iti and Hawaii, Marquesas, Line and Tuamotu Islands, south to Australia, Tonga and Rapa (French Polynesia) (Frickle *et al.*, 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

It is a schooling fish in coastal and offshore waters and is harvested mainly with pelagic gillnets. Small juveniles (less than 3 cm) are found in the estuaries of ephemeral rivers along the Balochistan coast. Sometimes caught on handlines, troll lines, and longlines. It is considered one of the favorite fish among the fishermen community therefore, it is locally consumed. No separate data of landings for this species is recorded, however, landings of miscellaneous queenfishes including this species are presented in Fig. 44.

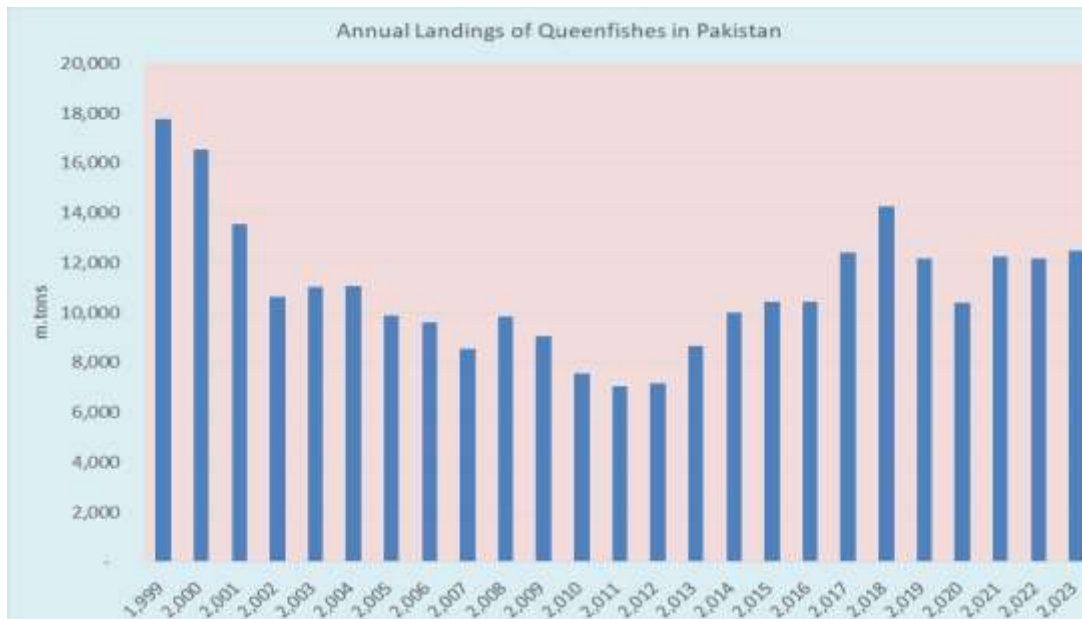


Fig. 44. Annual landings of miscellaneous queenfishes in Pakistan.



Fig. 45 *Scomberoides lysan* collected from Karachi Fish Harbour

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour, 6 May 2013 (41.0 cm)
- 1 specimen collected from Karachi Fish Harbour, 27 May 2013 (58.0 cm)
- 1 specimen collected from offshore water Pakistan (24° 18.000'N; 66° 17.000'E) 13 March 2017 (53.0 cm)

#### *Scomberoides tala* (Cuvier, 1832) (Fig. 46)

This species is commonly known as barred queenfish. It is known as “Aal” in Sindhi and “Saraam” or “Saram kainchan” in Balochi. It was reported from Sindh by Ahmad *et al* (1973), Anonymous (1955), Misra (1962), Murray (1880) and Sorley (1932), Karachi by Anonymous, (1955), Ahmad *et al.* (1973), Jenkins (1910) and Misra (1962), Balochistan by Anonymous (1953), Astola Island (Moazzam, 2024), Makran by Anonymous (1955), Ahmad *et al.* (1973) and Misra (1962). It was reported from Pakistan without mentioning any specific location by Psomadakis *et al.* (2015), Qamar *et al.* (2016), Qureshi (1960, 1965), and Smith-Vaniz (2022). Jenkins (1910),

Murray (1880), Qureshi (1960, 1965), and Sorley (1932) reported this species as *Chorinemus toloo* whereas Anonymous (1953) listed it as *Scomberoides toloo*. Ahmad *et al* (1973), Murray (1880) and Qureshi (1960) called it *Chorinemus tala*. It was originally described as *Chorinemus tala* from Malabar, India by Cuvier (1832). No holotype is known, however, lectotype (MNHN 6588) is housed in Museum National d'Historie Naturelle, Paris, France (Frickle *et al.*, 2024).

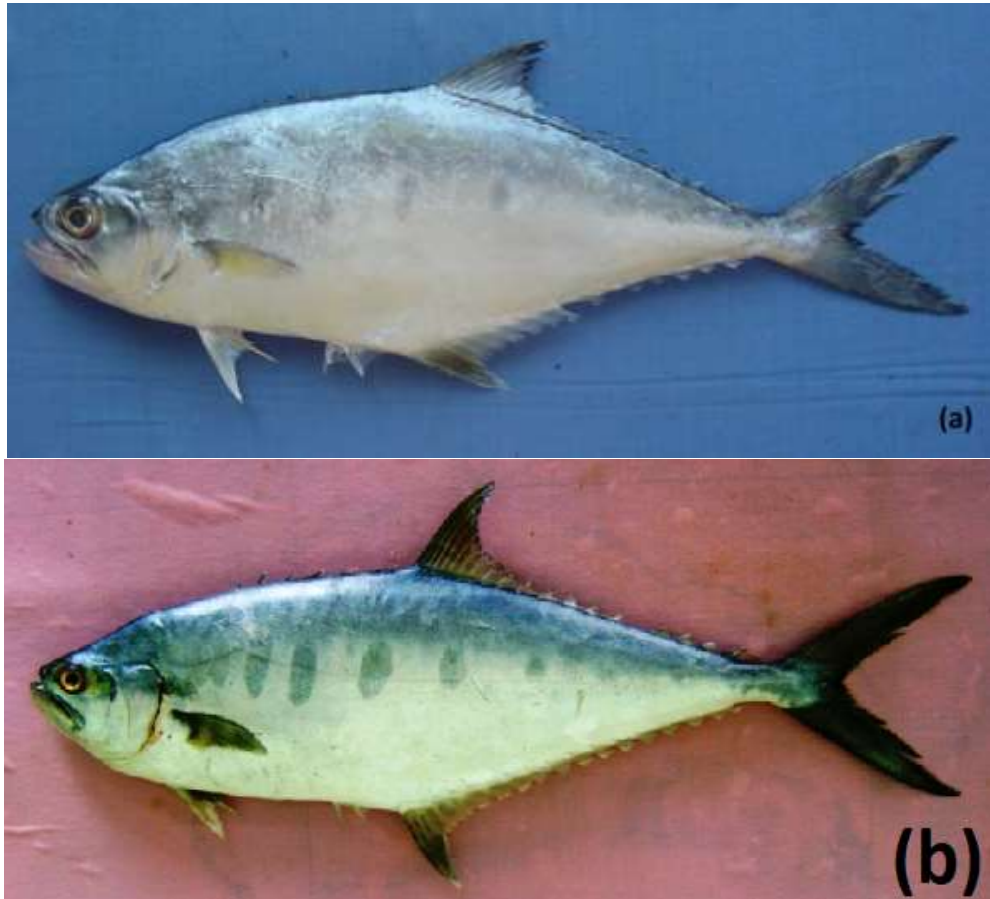


Fig. 36. *Scomberoides tala*. (a) Juvenile (21 cm); (b) Adult (54 cm)

The maxilla in this species extends slightly beyond the rear margin of the eye in adults. Scales on the mid-body in this species are bluntly lanceolate. Its body is silvery and brownish dorsally. The adults have a series of 4 to 8 dusky vertically elongated blotches, most intersecting lateral lines. The dorsal-fin lobe is uniformly dusky to dark.

It is known from the Indo-West Pacific area including East Africa, Pakistan, Oman, India, Sri Lanka, the Andaman Islands, the Gulf of Thailand, the Philippines, north to China and southern Japan, south to Australia, and the Solomon Islands (Frickle *et al.*, 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

It is an inhabitant of the coastal and offshore waters and may occur solitary. It is harvested mainly with pelagic gillnets. Small juveniles (less than 3 cm) are found in the estuaries of ephemeral rivers along the Balochistan coast. Sometimes caught on handlines, troll lines, and longlines. It is considered one of the favorite fish among the fishermen community therefore, it is locally consumed. No separate data of landings for this species is recorded, however, landings of miscellaneous queenfishes including this species are presented in Fig. 44.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour, 12 November 2008 (51.0 cm)

- 1 specimen collected from Karachi Fish Harbour, 14 October 2013 (54.0 cm)
- 1 specimen collected from Karachi Fish Harbour, 1 November 2013 (21.0 cm)

*Scomberoides tol* (Cuvier, 1832)  
(Fig. 47)



Fig. 47. *Scomberoides tol*. Specimen showing typical colouration; (b) Commercial landings at Karachi Fish Harbour.

This species is commonly known as needle-scaled queenfish. It is known as “Aal” or “Say-hi all” or “Sain-yon” in Sindhi and “Saraam” or “Saram kainchan” in Balochi. It was reported from Cape Monz (GBIF, 2024), Dabbo Creek Mirza and Baquer (1994), Karachi (GBIF, 2024), Balochistan by Niazi (1994), 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 (2024), Hoda (1985, 1988), Hussain (2003), Jalil and Khalil (1972, 1981), Khan (1994), Psomadakis *et al.* (2015), Qamar *et al.* (2016) and Smith-Vaniz (1984, 2022). Ahmed and Abbas (1999b, 2000), Hoda (1985, 1988) and Jalil and Khalil (1972, 1981) reported this species as *Chorinemus tol*. It was originally described as *Chorinemus tala* from Malabar, India by Cuvier (1832). Its holotype is not known, however, lectotype (MNHN A-6605) is housed in Museum National d’Histoire Naturelle, Paris, France (Frickle *et al.*, 2024).

The maxilla in this species extends to the rear margin of the pupil in adults. Scales on the mid-body below its lateral line are slender and needle-like. Its body is silvery, greyish-brown dorsally. The adults have 5–8 oval or vertically oblong black blotches, the first 4 or 5 intersecting the lateral line. The distal half of its dorsal-fin lobe is abruptly and heavily pigmented.

This species is known from the Indo-West Pacific area including South Africa, East Africa, Madagascar, Socotra (Yemen), Persian Gulf, Pakistan, Oman, India to Sri Lanka, east to Indonesia, the Philippines and Marquesas Islands (French Polynesia), north to southern Korea and southern Sea of Japan, south to Exmouth Gulf (Western Australia), Queensland (Australia), New Caledonia, Tonga, Fiji, Marquesas Islands (Frickle *et al.*, 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).



It is schooling fish which inhabitant of the coastal and offshore waters. It is harvested mainly with pelagic gillnets. Small juveniles (less than 3 cm) are found in the estuaries of ephemeral rivers along the Balochistan coast. Sometimes caught on handlines, troll lines, and longlines. It is considered one of the favorite fish among the fishermen community therefore, it is locally consumed. No separate data of landings for this species is recorded, however, landings of miscellaneous queenfishes including this species are presented in Fig. 44.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour, 23 March 2014 (52.0 cm)
- 1 specimen collected from Karachi Fish Harbour, 23 April 2014 (48.0 cm)
- 

Genus *Scyris* Cuvier 1829  
*Scyris indica* Rüppell 1830  
 (Fig. 48)

This species is commonly known as Indian threadfish. It is known as “Oonth Patal” or “Patal” in Sindhi and “Ushtar patar” or “Safey patar” in Balochi. It is reported from Sindh by Anonymous (1955), Jenkins (1910), Misra (1962), Murray (1880) and Sorley (1932), Karachi by Anonymous (1955) and Niazi (2001), Astola Island (Moazzam, 2024), Leth Nullah by Ahmad *et al.* (1984) and Niazi and Moazzam (1999), Makran by Anonymous (1955), Miani Hor by Ahmed and Abbas (1999b, 2000) and Qureshi, 1952). It was reported from Pakistan without mentioning any specific location by Ahmad (1988), Ahmad and Niazi (1988), Ali (2002), Bianchi (1985), Froese and Pauly (2024), Hoda (1988), Hussain (2003), Jalil and Khalil (1972, 1981), Majid *et al.* (1992), Psomadakis *et al.* (2015), Qamar *et al.* (2016), Qureshi (1960, 1965), Siddiqi (1956) and Smith-Vaniz (1984), All these author referred this species as *Alectis indicus*. It was originally described as *Scyris indicus* from Jeddah, Saudi Arabia, Red Sea by Ruppell (1830). Its holotype (SMF 1647) is housed in Forshungs Institut und Natur Museum Senckenberg, Frankfurt, Germany (Frickle *et al.*, 2024).

Its body is deep and strongly compressed and superficially naked as scales are minute and embedded where present; in adults. The profile of its forehead is steep whereas the head profile becomes angular at the nape. Its body is mostly silvery, with a dusky-green tinge dorsally and with small, diffuse, and a dark spot on the upper edge of the opercle its juveniles have 5–7 broad and dark bands.

This species is known from the Indo-West Pacific area including South Africa, East Africa, the Red Sea, the Persian Gulf, Socotra (Yemen), Seychelles, Madagascar, and western Mascarenes (La Réunion, Mauritius), Oman, Pakistan, India, Sri Lanka, Bangladesh, east to Tuamotu Archipelago (French Polynesia), north to southern Japan, south to Arafura Sea Australia and Tuamotu Islands (Frickle *et al.*, 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

It is a school-forming fish that inhabits coastal waters and shelf areas. It is usually harvested with pelagic gillnets. It is considered a good-tasting fish which is generally marketed as fresh fish. Small quantities are, however, exported in frozen form. No separate data of landings for this species is recorded, however, landings of miscellaneous trevallies including this species are presented in Fig. 5.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour, 20 March 2009 (23.0 cm)
- 1 specimen collected from R/V Dr. Fridtjof Nansen Cruise on 18 November 2010 (27.0 cm)
- 1 specimen collected from offshore water Pakistan (23° 39.500'N; 66° 36.300'E) 24 April 2016 (24.0 cm).

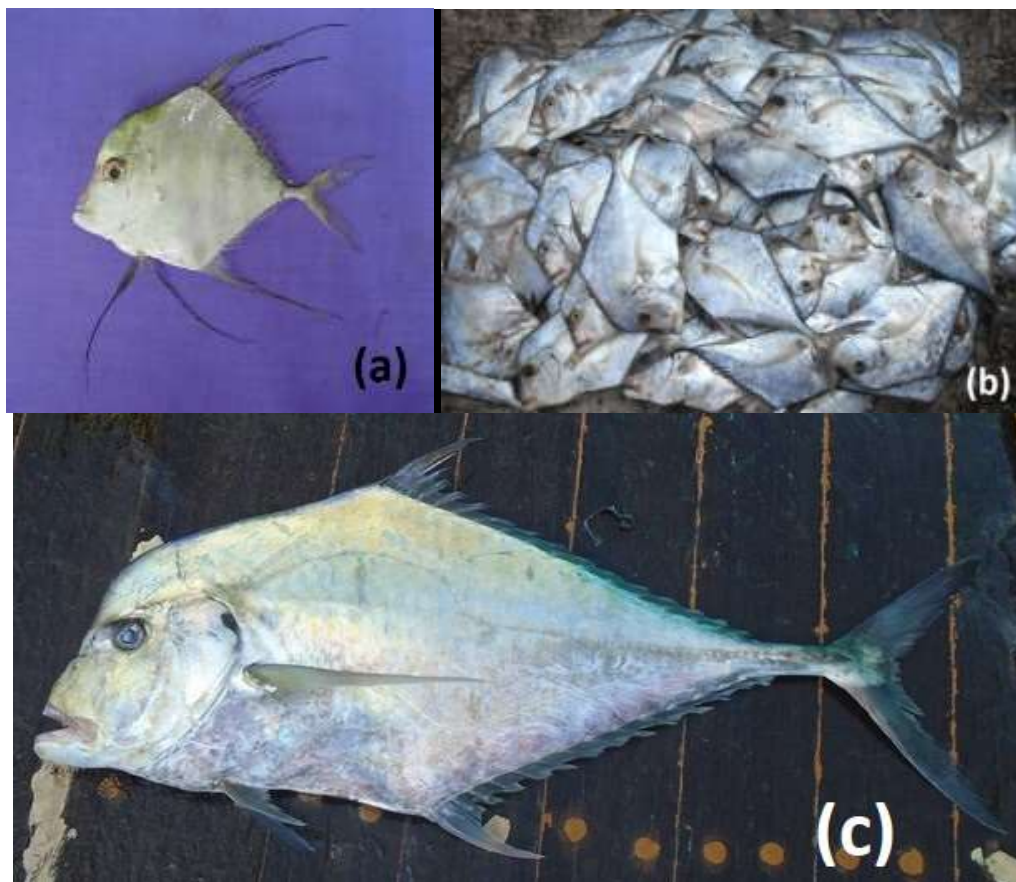


Fig. 48. *Scyris indica* (a) Juvenile (23 cm); (b) Commercial landings at Karachi Fish Harbour; (c) Large specimens from offshore waters.

Genus *Selar* Bleeker 1851  
*Selar boops* Cuvier, 1833  
 (Fig. 49)

This species is commonly known as oxeye scad. It is known as “seem” in Sindhi and “bakoi” or “seem” and “Zarzaman” (in Gwadar) in Balochi. It is reported from Sindh by Misra (1962) and Sorley (1932). It was reported from Pakistan without mentioning any specific location by Ahmad (1988) and Frickle *et al.* (2024). Sorley (1932) reported this species as *Caranx boops*. It was originally described as *Caranx boops* from Ambon Island, Moluccas Islands, Indonesia, Vanikoro Island, Santa Cruz Islands, southwest Pacific (11°37'S, 166°58'E) by Cuvier (1833). Its holotype is not known, however, syntype is housed in Museum National d'Historie Naturelle, Paris, France (Frickle *et al.*, 2024). Although Frickle *et al.* (2024) and others reported this species from Pakistan, Froese and Pauly (2024) and Smith-Vaniz (1984) this species is distributed in the western Pacific area and did not consider extension of its distribution extending to the northern Arabian Sea (Pakistan).



Fig. 49. *Selar boops* from Karachi Fish Harbour.

This species can be separated from its close relative *Selar crumenophthalmus* mainly based on scutes on the lateral line. The curved part of the lateral line in this species has 21 to 24 scales (48 to 56 scales in *S. crumenophthalmus*). The curved part of its lateral line has short, chord of the curved part contained 2.1 to 3 times in the straight part (the curved part of the lateral line moderate, with the chord of the curved part contained 0.7 to 1.2 times in the straight part in *S. crumenophthalmus*). Its scutes are large (smaller in *S. crumenophthalmus*).

This species is known from the Pacific Ocean including the Andaman Islands to Vanuatu Caroline Islands and the Solomon Islands, north to northern Vietnam, the Philippines, south to northern Australia and New Caledonia (Frickle *et al.*, 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

It is a school-forming fish that inhabits coastal waters and shelf areas. It is usually harvested with pelagic gillnets and seine net in the coastal water. It is not considered a good-tasting fish, therefore, almost entire catch is destined to fishmeal production. No separate data of landings for this species is recorded, however, landings of miscellaneous scads including this species are presented in Fig. 7.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour, 20 May 2010 (21.0 cm)

***Selar crumenophthalmus*** (Bloch, 1793)  
(Fig.50)



Fig.50. *Selar crumenophthalmus* from Karachi Fish Harbour.

This species is commonly known as bigeye scad, It is known as “seem” in Sindhi and “bakoi” or “seem”, “Chumma” and “Zarzaman” (in Gwadar) in Balochi. It is reported from Sindh by Anonymous (1955), Misra (1962), and Sorley (1932), Karachi by Anonymous (1955), Misra (1962) and Niazi (2001), from Makran by Anonymous (1953, 1955) and Qureshi (1952). It was reported from Pakistan without mentioning any specific location by Bianchi (1985), Froese and Pauly (2024), Hoda (1985, 1988), Hussain (2003), Jalil and Khalil (1972, 1981), Psomadakis *et al.* (2015), Qamar *et al.* (2016), and Smith-Vaniz (1984, 2022). It was originally described as *Scomber crumenophthalmus*. From Acara, Guinea, West Africa by Bloch (1793). Holotype (ZMB 1532) is housed in Zoologisches Museum, Humboldt Universitat, Berlin (Frickle *et al.*, 2024).

The straight part of its lateral line has 0–11 scales and 29–42 scutes. Its head and body are metallic-blue to bluish-green dorsally, silvery-white ventrally. There is a yellow stripe usually present from the opercle to the upper part of the peduncle. There is a small dusky spot on the edge of the opercle.

This species can be separated from its close relative *Selar boops* mainly based on scutes on the lateral line. The curved part of the lateral line in this species has 48 to 56 scales (21 to 24 scales in *S. boops*). The curved part of its lateral line is moderate, chord of the curved part contained 0.7 to 1.2 times in the straight part (the curved part of the

lateral line is short, with the chord of the curved part contained 2.1 to 3 times in the straight part in *S. boops*. Its scutes are smaller (larger in *S. boops*).

It is a circumglobal species in tropical and warm temperate seas including the Indo-Pacific (South Africa, East Africa, Seychelles, Mascarenes, Chagos, the Red Sea, the Persian Gulf, Pakistan, Oman, India, Sri Lanka to Rapa, north to southern Japan and the Hawaiian Islands, south to New Caledonia), the Eastern Pacific (Mexico to Peru, including the Galapagos Islands), the Western Atlantic (Nova Scotia, Canada and Bermuda through the Gulf of Mexico and the Caribbean to São Paulo, Brazil) and the Eastern Atlantic (Cape Verde to southern Angola) (Frickle *et al.*, 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

It is a school-forming fish that inhabits coastal waters and shelf areas. It is usually harvested with pelagic gillnets and seine net in the coastal water. It is not considered a good-tasting fish, therefore, almost entire catch is destined to fishmeal production. No separate data of landings for this species is recorded, however, landings of miscellaneous scads including this species are presented in Fig. 7.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour, 20 March 2009 (6.0 cm)
- 1 specimen collected from Karachi Fish Harbour, 22 May 2014 (22.0 cm)

Genus *Selaroides* Bleeker 1851  
*Selaroides leptolepis* (Cuvier, 1833)  
 (Fig. 51)

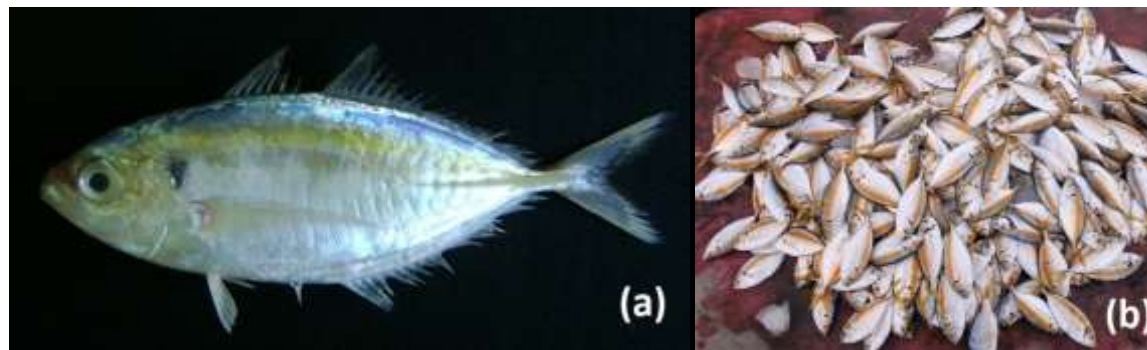


Fig. 51. *Selaroides leptolepis*. (a) Specimen showing yellow stripe; (b) commercial landings at Karachi Fish Harbour.

This species is commonly known as yellowstripe scad, It is known as “seem” in Sindhi and “bakoi” or “Tailgi seem”, “Chumma” and “Zarzaman” (in Gwadar) in Balochi. It is reported from Sindh by Anonymous (1955), Karachi by Anonymous (1955), Astola Island (Moazzam, 2024), and Makran by Anonymous (1955). It was reported from Pakistan without mentioning any specific location by Bianchi (1985), Froese and Pauly (2024), Hoda (1985, 1988), Hussain (2003), Psomadakis *et al.* (2015), Qamar *et al.* (2016), and Smith-Vaniz (1984, 2022). It is originally described as *Caranx leptolepis* from Java, Indonesia by Cuvier (1833). Its holotype (MNHN A-6080) is housed in Museum National d’Histoire Naturelle, Paris, France (Frickle *et al.*, 2024).

The body of this fusiform and compressed. Its upper jaw is strongly protractile. There is no teeth on upper jaw. The rear end of upper jaw concave above, rounded and produced below. The straight part of its lateral line has 13–25 scales and 24–29 small scutes. Its body is pale grey-blue dorsally and silvery-white ventrally. There is a broad yellow stripe from the upper margin of the eye to the peduncle. There is a large black spot on the upper edge of the opercle encroaching onto shoulder.

This species is known from the Indo-West Pacific area including Persian Gulf, Oman, Pakistan, India, Sri Lanka, Bay of Bengal, the Gulf of Thailand, Indonesia, the Philippines, east to New Ireland (Papua New Guinea), north to southern Japan, south to Arafura Sea, New Guinea and Australia (Frickle *et al.*, 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).



It is a school-forming fish that inhabits coastal waters and shelf areas. It is usually harvested with pelagic gillnets and seine net in the coastal water. It is not considered a good-tasting fish, therefore, almost entire catch is destined to fishmeal production. No separate data of landings for this species is recorded, however, landings of miscellaneous scads including this species are presented in Fig. 7.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour, 18 March 2013 (16.0 cm)
- 1 specimen collected from Karachi Fish Harbour, 25 June 2013 (13.0 cm)

Genus *Seriola* Cuvier 1816  
*Seriola dumerili* (Risso, 1810)  
(Fig. 52)

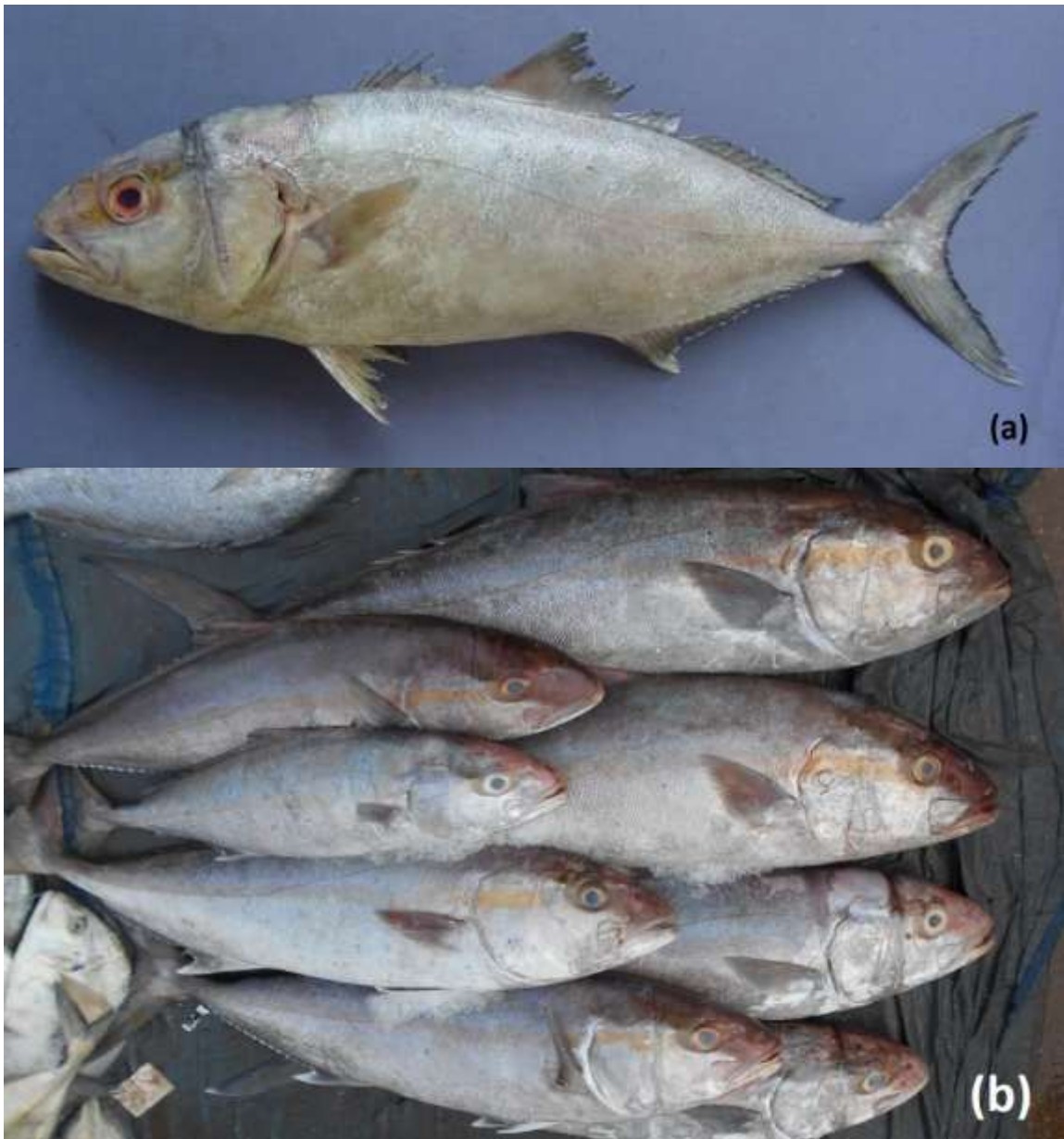


Fig. 52. *Seriola dumerili* (a) Specimen showing typical colour; (b) Commercial landings at Karachi Fish Harbour

This species is commonly known as the greater amberjack. It is known as “Zarkao” or “Zarkaok” in both Sindhi and Balochi. It is reported from Astola Island by Moazzam (2024). This species was reported from Pakistan without mentioning any specific location by Psomadakis *et al.* (2015), Qamar *et al.* (2016), and Smith-Vaniz (2022). It was originally described as *Caranx dumerili* from Nice, France by Risso (1810). Its holotype (MNHN B-0868) is housed in Museum National d’Histoire Naturelle, Paris, France (Frickle *et al.*, 2024).

Its body is fusiform, somewhat elongated, and compressed. The upper jaw in this species is relatively broad at the end, with a broad supramaxilla. The height of its dorsal-fin lobe is equal to or slightly greater than the pectoral-fin length. Its body is bluish-grey or olive dorsally, and silvery-white ventrally. Its mid-sides may have an amber stripe. Its fins are mostly dusky except pelvic fins which are pale.

It is a circumglobal in tropical and warm temperate seas including the Indo-West Pacific area (including South Africa, the Red Sea, the Persian Gulf, Oman, Pakistan, India to southern Japan and the Hawaiian Islands, south to New Caledonia; Mariana and Caroline islands in Micronesia), the Western Atlantic area (including Bermuda, Nova Scotia, Canada to Brazil, the Gulf of Mexico and the Caribbean Sea), the Eastern Atlantic area (British coast (vagrant) to Morocco) and the Mediterranean Sea, the Black Sea (Frickle *et al.*, 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

It is a solitary as well as schooling fish in offshore waters and is harvested mainly with pelagic gillnets, troll lines, handlines, and longlines. It is considered a favorite fish, therefore, it is locally consumed. No separate data of landings for this species is recorded, however, landings of miscellaneous trevallies including this species are presented in Fig. 5. The landing data of this species in Pakistan is not being recorded and generally included in miscellaneous fish.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour, 24 January 2010 (76.0 cm)
- 1 specimen collected from Karachi Fish Harbour, 7 May 2013 (60.0 cm)
- 1 specimen collected from Karachi Fish Harbour, 3 February 2017 (37.0 cm)

#### *Seriola lalandi* Valenciennes 1833 (Fig. 53)



Fig. 53. *Seriola lalandi* collected from Karachi Fish Harbour.

This species is commonly known as yellowtail amberjack. It is known as “Zarkao” or “Zarkaok” in both Sindhi and Balochi. This is a new record from Pakistan. It was originally reported from Brazil by Valenciennes (1833). Its holotype is not known, however, syntypes (MNHN A-0780) is housed in Museum National d’Histoire Naturelle, Paris, France (Frickle *et al.*, 2024).

In this species, the upper jaw is moderately slender at the end, with a slender supramaxilla. Its caudal fin is yellowish. Adults have a moderate lateral keel on the peduncle. Its body is blue to olive dorsally, and silvery white ventrally; sometimes with a narrow bronze stripe along the midsides. Its caudal fin is olive-yellow.

This species is circumglobal in subtropical waters in distribution. It is known from the Indo-Pacific area (including South Africa, Mascarenes, Walter Shoals, Amsterdam Island, Japan, Australia, New Zealand, New Caledonia, Hawaii, Rapa, Pitcairn Island, and Easter Island), the Eastern Pacific (including British Columbia, Canada to Desventuradas Islands and Juan Fernández Islands) and the Eastern Atlantic including (St. Helena, South Africa) (Frickle *et al.*, 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

It is a schooling fish in the offshore waters and is harvested mainly with pelagic gillnets, troll lines, handlines, and longlines. It is considered a favorite fish, therefore, it is locally consumed. No separate data of landings for this species in Pakistan is recorded and generally included in miscellaneous fish.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour, 18 September 2008 (76.0 cm)
- 1 specimen collected from Karachi Fish Harbour, 17 August 2013 (57.0 cm)

Genus *Seriolina* Wakiya 1924  
*Seriola rivoliana* Valenciennes, 1833  
(Fig. 54)

species is commonly known as Almaco jack. It is known as “Zarkao” or “Zarkaok” in both Sindhi and Balochi.. It was reported from Pakistan by Psomadakis *et al.* (2015) and Smith-Vaniz (2022). It was originally described from the Greek Archipelago by Valenciennes (1833). Its holotype (MNHN A-6633) is housed in Museum National d’Histoire Naturelle, Paris, France ((Frickle *et al.*, 2024).

In this species, the upper jaw reaches below the midpoint of the pupil. In adults, the height of the dorsal-fin lobe is 1.3–1.6 times greater than the pectoral-fin length. Its body is olive to bluish-green dorsally, sides and belly are paler, and sometimes with brassy or lavender reflections. An oblique dark bar is present from the eyes to the nape. A faint amber stripe may be frequently present along midsides.



Fig. 54. *Seriola rivoliana* collected from Karachi Fish Harbour.

This species has Circumglobal distribution in tropical to warm-temperate seas including the Indo-West Pacific area ( Kenya, South Africa, Mascarenes, Chagos, Seychelles, Pakistan, Oman, India, Sri Lanka, Gulf of Oman, and



east to South China Sea; East China Sea, Sea of Japan, Mariana and Wake islands in Micronesia, north to the Ryukyu Islands, south to New Caledonia and the Kermadec Islands), the Eastern Pacific (USA to Peru, including Galapagos Islands), the Western Atlantic (Cape Cod, USA to northern Argentina) and Lampedusa Island in the Mediterranean (Frickle *et al.*, 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

It is a schooling fish in the offshore waters and is harvested mainly with pelagic gillnets, troll lines, handlines, and longlines. It is considered a favorite fish, therefore, it is locally consumed. No separate data of landings for this species is recorded and generally included in miscellaneous fish.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour, 22 February 2010 (23.0 cm)
- 1 specimen collected from Karachi Fish Harbour, 3 April 2013 (28.0 cm)
- 1 specimen collected from Karachi Fish Harbour, 30 April 2013 (41.0 cm)
- 1 specimen collected from Karachi Fish Harbour, 18 May 2017 (65.0 cm)
- 1 specimen collected from Karachi Fish Harbour, 15 November 2018 (52.0 cm)
- 

#### *Seriolina nigrofasciata* (Ruppell, 1829) (Fig. 56)

This species is commonly known as black banded trevally. It is known as “Zarkao” or “Zarkaok” in both Sindhi and Balochi. It was reported from Balochistan by Zugmayer (1913). This species was reported from Pakistan without mentioning any specific location by Bianchi (1985), Froese and Pauly (2024), Hoda (1985, 1988), Hussain (2003), Jalil and Khalil (1972, 1981), Majid *et al* (1992), Misra (1962), Psomadakis *et al.* (2015), Qamar *et al.* (2016), and Smith-Vaniz (1984, 2022). Jalil and Khalil (1972, 1981) reported this species as *Zonichthys nigrofasciata* whereas Misra (1962) and Zugmayer (1913) referred it as *Seriola nigrofasciatus*. It was originally described as *Nomeus nigrofasciatus* from Massawa, Eritrea, Red Sea by Ruppell (1829). Its holotype is not known, however, syntypes are housed in Forshungs Institut und Natur Museum Senckenberg, Frankfurt, Germany (Frickle *et al.*, 2024).



Fig. 56. *Seriolina nigrofasciata*. (a) Specimen showing typical colouration; (b) Commercial landings at Karachi Fish Harbour; (c) Juvenile (6 cm); Large specimen (32 cm)



The body of this species is elongate, moderately shallow, and slightly compressed, with a blunt snout; peduncle with grooves dorsally and ventrally, and the rear end of the maxilla broadly rounded and reaching below the rear margin of the eye. There are no scutes in the lateral line. Its body is bluish-grey to black dorsally and dusky to white ventrally. Its spinous dorsal fin is black, soft-rayed dorsal and anal fins are dusky-brown and lobe tips are white. The pelvic fins and caudal fin are yellowish-brown to black. Young specimens have 5–7 dark, oblique blotches or broken bands on the upper body, fading with age.

This species is known from the Indo-West Pacific area including South Africa, East Africa, the Red Sea/Seychelles, Comoros, Madagascar and western Mascarenes (La Réunion, Mauritius), the Persian Gulf, Oman, Pakistan, India, Sri Lanka, east to Philippines, north to East China Sea (China, Korea, Japan) and southern Sea of Japan (Korea, Japan), south to New Guinea and Australia, the Southeastern Atlantic including South Africa (Frickle *et al.*, 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

It is a solitary occurring fish found in the coastal and offshore waters and is harvested mainly with pelagic gillnets, troll lines, handlines, and longlines. It is considered a favorite fish, therefore, it is locally consumed. The landing data of this species is not being recorded and is generally included in miscellaneous fish.

#### Material Examined

- 1 specimen collected from Offshore waters of Pakistan on board R/V Firdous Cruise 1, 05 November 2009 (6.0 cm)
- 1 specimen collected from Offshore waters of Pakistan on board R/V Firdous Cruise 1, 05 November 2009 (18.0 cm)

Genus *Trachinotus* Lacepède 1801

*Trachinotus africanus* Smith, 1967

(Fig. 57)

This species is commonly known as African or southern pompano. It is known as “Sonaf” in Sindhi and “Sonab” or “Sonam” in Balochi. This species was reported from Pakistan without mentioning any specific location by Ahmad and Niazi (1988), Bianchi (1985), Hussain (2003), Psomadakis *et al.* (2015), and Smith-Vaniz (1984, 2022). It was originally described from Knysna, Cape Province, South Africa by Smith (1967). Its holotype (RUSI 11075) is housed at the J. L. B. Smith Institute of Ichthyology, Grahamstown, South Africa (Frickle *et al.*, 2024).



Fig. 57. *Trachinotus africanus*. collected from Karachi Fish Harbour.

The tongue of this species has a narrow patch of teeth. The first 2 supraneural bones are similarly shaped; in adults of this species, the supraoccipital bone (on the dorsal midline of the skull) is thin and blade-like. Adults of this species are bluish-silvery dorsally, and silvery white ventrally. Its anal fin lobe is yellow; its caudal fin and paired fins are yellowish.

This species is known from the Indian Ocean including Pakistan, the Gulf of Oman, the Gulf of Aden, Mozambique to South Africa, and western Indonesia. It is also known from the Eastern Atlantic (Bay of Biscay, British, and Baltic Sea; North Sea; Mediterranean Sea; Sea of Marmara, Angola, including the Mediterranean Sea including Azores, Madeira, and São Tomé and Príncipe) and the southern-central Atlantic (Saint Helena) (Frickle *et al.*, 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022). International Game Fish Association (IGFA) World Record of 6.23 kg is from Karachi, Pakistan, in February 2004 (IGFA, 2024).

This species is found in coastal as well as offshore waters. It is usually caught with pelagic gillnets but also caught by handlines. It is considered to be a good food fish that is locally consumed, however, small quantities are also exported. No separate data of landings for this species is recorded, however, landings of miscellaneous trevallies including this species are presented in Fig. 5.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour, 26 November 2009 (42.0 cm)
- 1 specimen collected from Karachi Fish Harbour, 1 March 2013 (54.0 cm)
- 1 specimen collected from Karachi Fish Harbour, 21 November 2016 (51.0 cm)
- 1 specimen collected from Karachi Fish Harbour, 11 April 2017 (54.0 cm)
- 1 specimen collected from Karachi Fish Harbour, 27 October 2018 (43.0 cm)
- 1 specimen collected from Karachi Fish Harbour, 11 March 20 22 (50.0 cm)

#### *Trachinotus baillonii* (Lacepede, 1801)

(Fig.58)

This species is commonly known as smallspotted dart. It is known as “Sonaf” in Sindhi and “Kainchan” or “Sonab” or “Sonam” in Balochi. This species was reported from Sindh by Misra (1962), Murray (1880), Sorley (1932), Paradise Point, Karachi by Moazzam and Rizvi (1980), and Astola Island (Moazzam, 2024). This species was reported from Pakistan without mentioning any specific location by Ahmad and Niazi (1988), Bianchi (1985), GBIF (2024), Froese and Pauly (2024), Hoda (1985, 1988), Hussain (2003), Psomadakis *et al.* (2015), Qamar *et al.* (2016), and Smith-Vaniz (1984, 2022). It was originally described as *Caesiomorus baillonii* from Fort Dauphin, Madagascar by Lacepede (1801), however, no type is known (Frickle *et al.*, 2024).

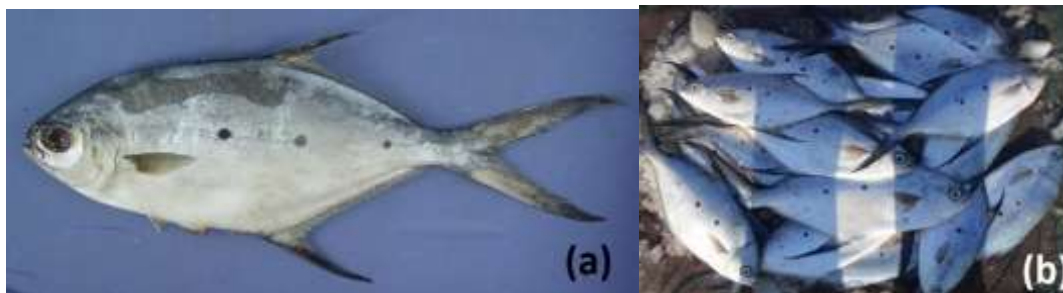


Fig. 58. *Trachinotus baillonii*. (a) Specimen showing typical colouration; (b) Commercial landings at Karachi Fish Harbour.

Adults of this species are silvery-blue to grey dorsally, and silvery-white ventrally. Its sides with 1–5 small black spots in longitudinal row on or near lateral line, spots equal to or smaller than eye diameter, number of spots generally increasing with age. Its median fins are grey to black, and the lobes are usually darkest.

It is known from the Indo-West Pacific area including East Africa, Red Sea; Socotra (Yemen), Seychelles, Comoros, Madagascar, Mascarenes (La Réunion, Mauritius, Rodrigues), the Persian Gulf, Pakistan, India, Sri Lanka, east to the northern Line Islands, Mangaréva islands and the Gambier Islands, north to southern Korea and Miyagi Prefecture (northern Japan), south to Australia, Lord Howe Island, Tonga, and Rapa (Frickle *et al.*, 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

This species is found in coastal especially inhabiting surf zones along the sandy and rocky shores. It is usually caught with pelagic gillnets but also caught by handlines along rocky and sandy shores. It is considered to be a good food fish that is locally consumed, however, small quantities are also exported. No separate data of landings for this species is recorded, however, landings of miscellaneous trevallies including this species are presented in Fig. 5.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour, 2 October 2009 (29.0 cm)
- 1 specimen collected from Karachi Fish Harbour, 18 April 2013 (29.0 cm)
- 1 specimen collected from Karachi Fish Harbour, 28 April 2013 (33.0 cm)

#### *Trachinotus blochii* (Lacepede, 1801) (Fig. 59)

This species is commonly known as snubnose pompano. It is known as “Sonaf” in Sindhi and “Kainchan” or “Sonab” or “Sonam” in Balochi. This species was reported from Sindh by Ahmad *et al.* (1973) and Misra (1962), Karachi by Anonymous (1955), and Makran by Anonymous (1955). This species was reported from Pakistan without mentioning any specific location by Ahmad (1988), Ahmad and Niazi (1988), Bianchi (1985), Chan *et al.* (1974), Froese and Pauly (2024), Hoda (1985, 1988), Hussain (2003), Jalil and Khalil (1972, 1981), Psomadakis *et al.* (2015), Qamar *et al.* (2016), and Smith-Vaniz (1984, 2022). It was originally described as *Caesiomorus blochii* from Fort Dauphin, Madagascar by Lacepede (1801), however, no type is known (Frickle *et al.*, 2024).

The tongue of this species does not have any teeth. Its first predorsal bone is oval or inverted tear-shaped. Its supraorbital bone in adults (on the dorsal midline of the skull) is thin and blade-like. Its body is generally silvery and paler ventrally. Large adults of this species are sometimes golden orange, especially on the lower half of the body. The anal fin is dusky to orange with leading-edge brownish. Its pelvic fins are white to dusky orange whereas pectoral fins and caudal fins are dark or orangish.

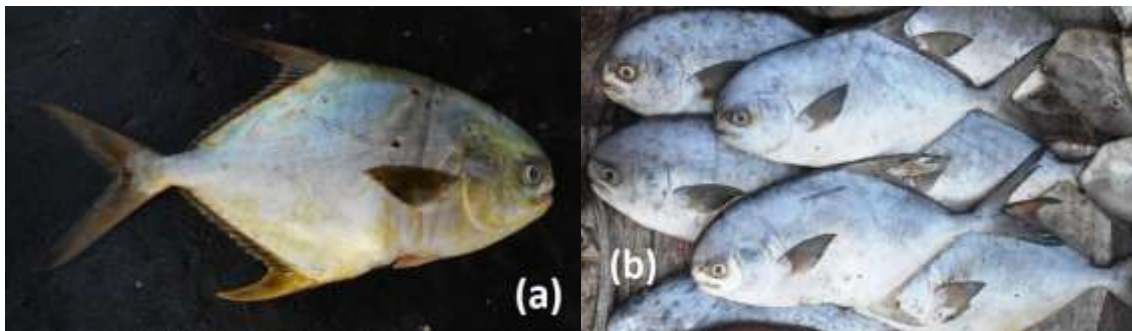


Fig. 59. *Trachinotus blochii*. (a) Specimen showing typical colouration; (b) Commercial landings at Karachi Fish Harbour.

This species is known from the Indo-West Pacific area including South Africa, East Africa, the Red Sea, Socotra (Yemen), Seychelles, Madagascar, and Mascarenes (La Réunion, Mauritius, Rodrigues). The Persian Gulf, Pakistan, Oman, India, Sri Lanka, east to the Mariana Islands, Marshall Islands, Solomon Islands, Samoa, Tonga, north to Taiwan, southern Korea and southern Japan, south to Australia and New Caledonia, Norfolk Islands and Fiji (Frickle *et al.*, 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

This species is found in coastal as well as offshore waters. It is usually caught with pelagic gillnets but also caught by handlines. It is considered to be a good food fish that is locally consumed, however, small quantities are also exported. No separate data of landings for this species is recorded, however, landings of miscellaneous trevallies including this species are presented in Fig. 5.

#### Material Examined

- 1 specimen collected from Offshore waters at Malan, 25 October 2013 (32.0 cm)

*Trachinotus botla* (Shaw, 1803)

(Fig. 60)

Fig. 60 *Trachinotus botla* collected from Karachi Fish Harbour.

This species is commonly known as largespot pompano. It is known as “Sonaf” in Sindhi and “Kainchan” or “Sonab” or “Sonam” in Balochi. This species was reported from Sindh by Misra (1962) and Sorley (1932), and Balochistan by Zugmayer (1913). Ahmad (1988), Hoda (1985), Qureshi (1960, 1961). This species was reported from Pakistan without mentioning any specific location by Ahmad (1988), Hoda (1985), Misra (1962), Qureshi (1960, 1961), Psomadakis *et al.* (2015), Qamar *et al.* (2016), Smith-Vaniz (2022), Sorley (1932) and Zugmayer (1913) reported this species as *Trachinotus russelli*. It was originally described as *Scomber botla* from Vishakhapatnam, India by Shaw (1803), however, no type is known (Frickle *et al.*, 2024).

Adults of this species are silvery-bluish-black dorsally and silvery ventrally. The sides have 1–5 large purplish grey spots along or near the lateral line, and 2 anterior spots larger than the eye (the number of spots generally increases with age). Its median fins are dusky to blue-black, and lobes are usually darker.

This species is known from the Indian Ocean including South Africa, East Africa, Kenya, Pakistan, Socotra (Yemen), Madagascar, Seychelles, India, Sri Lanka, Myanmar to Western Australia (Frickle *et al.*, 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

This species is found in coastal as well as offshore waters. It is usually caught with pelagic gillnets but also caught by handlines. It is considered to be a good food fish that is locally consumed, however, small quantities are also exported. No separate data of landings for this species is recorded, however, landings of miscellaneous trevallies including this species are presented in Fig. 5.

## Material Examined

- 1 specimen collected from Karachi Fish Harbour, 14 October 2013 (60.0 cm)
- 1 specimen collected from Karachi Fish Harbour, 18 April 2014 (39.0 cm)
- 1 specimen collected from Karachi Fish Harbour, 14 October 2014 (37.0 cm)
- 1 specimen collected from Karachi Fish Harbour, 29 October 2014 (36.0 cm)

*Trachinotus mookalee* Cuvier, 1832

(Fig. 61)

This species is commonly known as the Indian pompano. It is known as “Sonaf” in Sindhi and “Kainchan” or “Sonab” or “Sonam” in Balochi. This species was reported from Pakistan without mentioning any specific location by Ahmad and Niazi (1988), Bianchi (1985), Froese and Pauly (2024), GBIF (2024), Hoda (1985, 1988), Hussain (2003), Majid *et al.* (1992), Psomadakis *et al.* (2015), Qamar *et al.* (2016), and Smith-Vaniz (1984, 2022). It was originally described from the Malabar Coast, India by Cuvier (1832). Its holotype is not known, however, syntypes are housed in Museum National d’Histoire Naturelle, Paris, France (Frickle *et al.*, 2024).



In adults, the supraoccipital bone (on the dorsal midline of the skull) is broad and sausage-shaped in profile. Its first predorsal bone is shaped as an inverted 'L' with the arm projecting anteriorly. Its tongue has a narrow band of teeth. Its body is generally silvery, and paler ventrally. The large adults are mostly golden orange, especially on the lower half of the body. Its anal fin is dusky to bright yellow and pelvic fins are pale yellow to white whereas pectoral fins and caudal fin are dusky or yellow.

This species is known from the Indo-West Pacific area including the Persian Gulf, the Gulf of Oman, Pakistan, India, Sri Lanka, east to the Gulf of Thailand, eastern China (East China Sea), and north to southern Japan (Frickle *et al.*, 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

This species is found in coastal as well as offshore waters. It is usually caught with pelagic gillnets but also caught by handlines. It is considered to be a good food fish that is locally consumed, however, small quantities are also exported. No separate data of landings for this species is recorded, however, landings of miscellaneous trevallies including this species are presented in Fig. 5.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour, 16 September 2009 (16.0 cm)
- 1 specimen collected from R/V Dr. Fridtjof Nansen Cruise on 18 November 2010 (34.0 cm)
- 1 specimen collected from offshore waters of Pakistan on 22 October 2016 (23° 27.240'N; 67° 18.100'E) (57.0 cm)

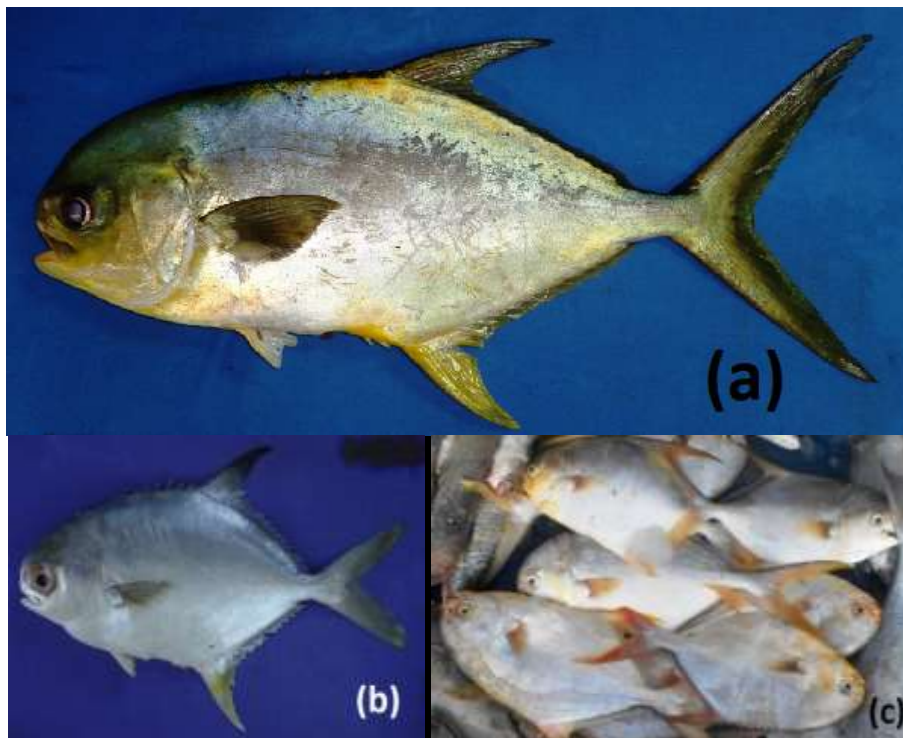


Fig. 61. *Trachinotus mookalee*. (a) Specimen showing typical coloration; (b) Juvenile (16 cm); (c) Commercial landings at Karachi Fish Harbour.

#### *Trachinotus ovaus* (Linnaeus, 1758)

This species is commonly known as pompano or derbio. It is known as “Sonaf” in Sindhi and “Kainchan” or “Sonab” or “Sonam” in Balochi. This species was reported from Sindh by Murray (1880) and Sorley (1932) and

Karachi by Anonymous (1999) and Jenkins, 1910). It was originally described as *Gasterosteus ovatus* from Asia (probably an error for East Atlantic) by Linnaeus (1758). Its holotype (ZMUU Linn. Coll. 202) is housed in Uppsala Universitet, Zoologiska Museet, Uppsala, Sweden (Frickle *et al.*, 2024).

Its tongue has a small band of teeth. Its body is back greenish-grey, sides silvery with 3-5 vertically elongated black spots on the anterior half of the lateral line. Its dorsal-, anal- and caudal-fin lobes are black-tipped.

This species is known from the Eastern Atlantic including the Bay of Biscay, British and Scandinavian waters to Angola, including the Mediterranean Sea and offshore islands (Frickle *et al.*, 2024; Froese and Pauly, 2024). Although this species is reported from Pakistan this species is primarily found in the Atlantic Ocean and Mediterranean Sea. There are doubtful records from Hong Kong (Ni and Kwok, 1999), China (Huang (2001), and Monkolprasit *et al.* (1997). Its presence in Pakistan may be attributed to misidentification.

#### Material Examined

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

Genus *Trachurus* Rafinesque 1810

*Trachurus indicus* Nekrasov, 1966

(Fig. 62)

This species is commonly known as Arabian scad. It is known as “Seem” or “Chumma” in Sindhi and “Tailagi seem” or “Chumma” in Balochi. This species was reported from Pakistan without mentioning any specific location by Bianchi (1985), Froese and Pauly (2024), Hoda (1985, 1988), Hussain (2003), Psomadakis *et al.* (2015), Qamar *et al.* (2016), and Smith-Vaniz (2022). It was originally described as *Trachurus mediterraneus indicus* from the Gulf of Aden (15°26'N, 52°00'E), Indian Ocean by Nekrasov (1966). Its holotype (ZISP 37519) is housed in the Zoological Institute, Academy of Sciences, St. Petersburg, Russia (Frickle *et al.*, 2024).



Fig. 62. *Trachurus indicus* collected from Karachi Fish Harbour.

Its dorsal accessory lateral line ends below the dorsal-fin spine 7–9. Its curved lateral line has enlarged scute-like scales. Its curved lateral line has 33–41 scales and scutes whereas the straight lateral lines have 33–40 scutes. Its body is bluish-green to nearly black above, and silvery to white below. There is a black spot on the edge of the opercle.

This species is known from the Western Indian Ocean including Pakistan and the Persian Gulf, Oman to the Gulf of Aden and Red Sea, Somalia and Saya de Malha Bank (including the Gulf of Suez and Gulf of Aqaba), and also Lessepsian migrant to the Mediterranean Sea through the Red Sea (Frickle *et al.*, 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

It is a school-forming fish that inhabits coastal waters and shelf areas. It is usually harvested with pelagic gillnets and seine nets in the coastal water. It is not considered a good-tasting fish, therefore, almost the entire catch

is destined for fishmeal production. No separate data of landings for this species is recorded, however, landings of miscellaneous scads including this species are presented in Fig. 7.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour, 14 October 2013 (37.0 cm).

Genus *Turrum* Whitley, 1932  
*Turrum coeruleopinnatum* (Rüppell 1830)  
(Fig. 63)

This species is commonly known as coastal trevally. It is known as “Kak-kar” or “Kak-kawan” in Sindhi and “Patal” in Balochi. It was reported from Karachi by Niazi, (2001). This species was reported from Pakistan without mentioning any specific location by Bianchi (1985), Froese and Pauly (2024), Hoda (1985, 1988), Psomadakis *et al.* (2015) and Smith-Vaniz (1984, 2022). All these authors reported this species as *Carangoides caeruleopinnatus*. This species was originally described as *Caranx caeruleopinnatus* from the Red Sea by Ruppell (1830), however, no type is known (Frickle *et al.*, 2024).

The soft-rayed dorsal-fin lobe of this species is filamentous in juveniles, and usually shorter than head length in adults. Its breast is naked to behind pelvic-fin origins, and usually laterally to pectoral-fin bases. The straight part of its lateral line has 20–38 small scutes. Its body is bluish-green dorsally, and silvery ventrally. Its sides have numerous small yellow spots and small black blotch on the upper edge of the opercle.



Fig.63. *Turrum coeruleopinnatum* collected from Karachi Fish Harbour.

This species is known from the Indo-West Pacific area including South Africa, East Africa, Seychelles, Madagascar and western Mascarenes (La Réunion), the Red Sea, the Persian Gulf, Pakistan, Sri Lanka, east to the Gulf of Thailand, the Philippines, Samoa, north to Japan, south to northern Australia, New Caledonia, Fiji and Tonga (Frickle *et al.*, 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

This schooling fish is found in the coastal waters but rarely encountered. It is usually caught with gillnets in coastal waters. It is considered a tasty fish and used for food in Pakistan, however, exported in frozen form to Southeast Asian countries. No separate data of landings for this species is recorded, however, landings of miscellaneous trevallies including this species are presented in Fig. 5.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 14 March 2009 (37.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 21 December 2021 (41.0 cm)

***Turrum fulvoguttatum*** (Forsskål 1775)  
(Fig. 64)

This species is commonly known as yellowspotted trevally. It is known as “Kak-kar” or “Kak-kawan” in Sindhi and “Patal” in Balochi. It was reported from Karachi by Niazi, (2001). This species was reported from Pakistan without mentioning any specific location by Bianchi (1985), Froese and Pauly (2024), Hoda (1985, 1988), Hussain (2003), Psomadakis *et al.* (2015) and Smith-Vaniz (1984, 2022). All these authors reported this species as *Carangoides fulvoguttatus*. It was originally described as *Scomber fulvoguttatus* from Red Sea by Forsskal (1775), however, no type is known (Frickle *et al.*, 2024).

The adults of this species have mouth-cleft distinctly below level of lower margin of eye. Its breast naked to behind pelvic-fin origins and variable laterally, extending uninterrupted to pectoral-fin base or separated by band of scales. The straight part of its lateral line has 18–27 scales and 15–21 scutes. Its body is blue-green dorsally, silvery ventrally and usually has many small brassy spots on sides. The large adults of this species are often with 3 black blotches in row on flanks.

This species is known from the Indo-West Pacific areas including South Africa, East Africa, Seychelles, Madagascar and Mascarenes (La Réunion, Mauritius, Rodrigues), the Red Sea, the Persian Gulf, Socotra (Yemen), the Gulf of Oman, Pakistan, India to Sri Lanka, east to Indonesia, Palau, Tonga, New Ireland (Papua New Guinea) and Vanuatu, north to Ryukyu Islands, south to Australia and New Zealand (Frickle *et al.*, 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

This schooling fish is found in the coastal waters but rarely encountered. It is usually caught with gillnets in coastal waters. It is considered a tasty fish and used for food in Pakistan, however, exported in frozen form to Southeast Asian countries. No separate data of landings for this species is recorded, however, landings of miscellaneous trevallies including this species are presented in Fig. 5.

Material Examined

- 1 specimen collected from Karachi Fish Harbour on 11 March 2009 (41.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 17 August 2014 (47.0 cm)

***Turrum gymnostethus*** (Cuvier 1833)  
(Fig. 64)



Fig. 54. *Turrum gymnostethus*. collected from Karachi Fish Harbour.



This species is commonly known as bludger. It is known as “Kak-kar” or “Kak-kawan” in Sindhi and “Patal” in Balochi. It was reported from Sindh by Sorley (1932). This species was reported from Pakistan without mentioning any specific location by Bianchi (1985), Froese and Pauly (2024), Hoda (1985, 1988), Hussain (2003), Psomadakis *et al.* (2015) and Smith-Vaniz (1984, 2022). All these authors reported this species as *Carangoides gymnostethus*. It was originally described as *Caranx gymnostethus* from Seychelles by Cuvier (1833). Holotype (MNHN A-5582) is housed in Museum National d’Histoire Naturelle, Paris, France (Frickle *et al.*, 2024).

The adults of this species have mouth cleft at the level of the lower margin of the eye. Its breast is naked to behind pelvic-fin origins and laterally to pectoral-fin bases. The straight part of its lateral line has 14–25 scales and 20–31 scutes. Its body is olive-green dorsally and silvery white ventrally. There are a few brown or golden spots sometimes present midlaterally. Its opercular spot is dusky and usually inconspicuous.

This species is known from the Indo-West Pacific area including South Africa, East Africa, Socotra (Yemen), Seychelles, Madagascar and western Mascarenes (La Réunion, Mauritius), the Red Sea, the Persian Gulf, Oman, Pakistan, India, Sri Lanka, east to Indonesia, Marshall Islands and Tuamotu Archipelago (French Polynesia), north to Ryukyu Islands (Japan), south to the Great Barrier Reef (Australia), New Caledonia and Tonga (Frickle *et al.*, 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

This solitary occurring fish is found in the coastal waters but rarely encountered. It is usually caught with gillnets in coastal waters. It is considered a tasty fish and used for food in Pakistan, however, exported in frozen form to Southeast Asian countries. No separate data of landings for this species is recorded, however, landings of miscellaneous trevallies including this species are presented in Fig. 5.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour on 14 May 2013 (74.0 cm)
- 1 specimen collected from Karachi Fish Harbour on 14 October 2013 (90.0 cm)

Genus *Uraspis* Bleeker 1855  
*Uraspis helvola* (Forster, 1801)  
(Fig. 65)

This species is commonly known as whitemouth jack. It is known as “Patar” in Sindhi and “Patar” in Balochi. It was reported from the Pakistan coast without mentioning any specific location by Froese and Pauly (2024). Psomadakis *et al.* (2015) and Smith-Vaniz (1984, 2022). It was originally described as *Scomber helvolus* from probably Society Islands by Forster (1801). Holotype (BMNH 1963.3.27.4) is housed in British Museum of Natural History, London, U. K. (Frickle *et al.*, 2024).

The breast of this species is naked to pelvic-fin origins, laterally separated from naked pectoral-fin bases by a broad band of scales. The straight part of its lateral line has spines of some scutes directly anteriorly (antrorse) in juveniles and small adults. The adults of this species are uniformly dark grey to bluish-black. Its juveniles have 6 or 7 wide dark bars with pale interspaces whereas pelvic fins are black. Its tongue, roof, and floor of the mouth are white or cream-coloured and the rest of the mouth is blue-black.



Fig. 65. *Uraspis helvola*. collected from Karachi Fish Harbour.

It is considered to be nearly circumglobal in tropical and subtropical seas including the Gulf of Mexico and Caribbean Sea, St. Helena, and Ascension islands. In the Western Indian Ocean, it is known from South Africa, the Red Sea; the Persian Gulf, Pakistan, Oman, India, Sri Lanka to the Arafura Sea and the Sea of Japan and the Eastern Pacific (Hawaiian and Revillagigedo islands) (Frickle *et al.*, 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

It is a coastal water species that is considered to be a good food fish and is locally consumed. No separate data of landings for this species is recorded, however, landings of miscellaneous trevallies including this species are presented in Fig. 5.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour, 21 December 2008 (23.0 cm)
- 1 specimen collected from Karachi Fish Harbour, 19 October 2013 (12.0 cm) Juvenile

***Uraspis secunda*** (Poey, 1860)  
(Fig.70)



Fig. 70. *Uraspis secunda*. collected from Karachi Fish Harbour.

This species is commonly known as cottonmouth jack. It is known as “Patar” in Sindhi and “Patar” in Balochi. It was reported from the Pakistan coast without mentioning any specific location by Bianchi (1985), Froese and Pauly (2024). Hussain (2003), Psomadakis *et al.* (2015), Qamar *et al.* (2016) and Smith-Vaniz (1984, 2022). It was originally described as *Caranx secundus* from Cuba by Poey (1860). Its holotype is not known, however, syntypes are housed in MCZ (Frickle *et al.*, 2024). It was considered a synonym of *Uraspis helvola* by Frickle *et al.* (2024).

The adults of this species are dark to bluish-black, however, juveniles have 6-7 dark bands with pale interspaces. This species has a worldwide distribution in warm waters including the Western Indian Ocean (Tanzania), the Eastern Central Pacific (California, USA to Costa Rica, Hawaii), the Western Atlantic (Massachusetts, USA and northern Gulf of Mexico to Brazil), the Eastern Atlantic (Mauritania to Angola, South Africa) (Frickle *et al.*, 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

It is a coastal water species that is considered to be a good food fish and is locally consumed. No separate data of landings for this species is recorded, however, landings of miscellaneous trevallies including this species are presented in Fig. 5.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour, 11 December 2011 (21.0 cm)

***Uraspis uraspis*** (Gunther, 1860)  
(Fig.71)

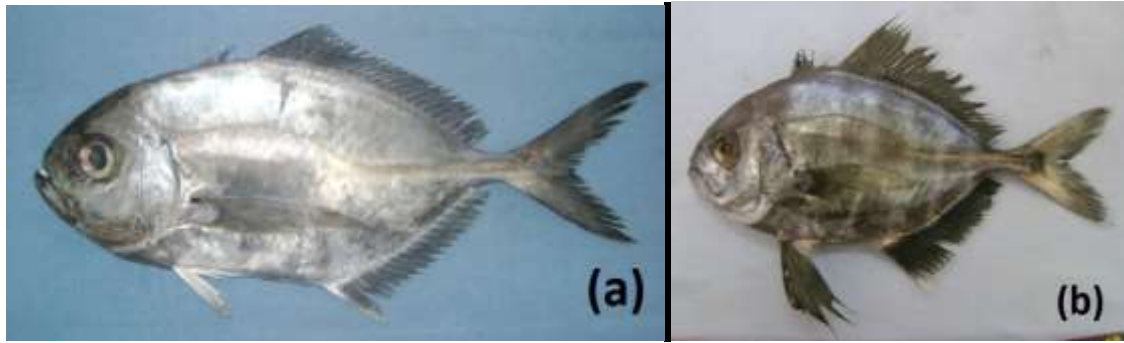


Fig. 71. *Uraspis uraspis* (a) Adult (33 cm); (b) Juvenile (16cm)

This species is commonly known as whitemouth jack. It is known as “Patar” in Sindhi and “Patar” in Balochi. It was reported from the Pakistan coast without mentioning any specific location by Froese and Pauly (2024), Kapoor *et al.* (2002), Majid *et al.* (1992), Psomadakis *et al.* (2015), Qamar *et al.* (2016), and Smith-Vaniz (1984, 2022). It was originally described as *Caranx uraspis* from Ambon Island, Moluccas Islands, Indonesia by Gunther (1860), however, no type is known (Frickle *et al.*, 2024).

The breast of this species is entirely naked to pelvic-fin origins and laterally to pectoral-fin bases. The straight part of its lateral line with spines of some scutes directly anteriorly (antrorse) in juveniles and small adults. The adults of this species are uniformly dark grey to bluish-black. Its juveniles have 6 or 7 wide dark bands with pale interspaces. Its pelvic fins are whitish with a distal third black, becoming entirely pale at larger sizes. Its tongue, roof and floor of the mouth are white or cream-coloured, rest of the mouth is blue-black.

This species is known from the Indo-West Pacific area including the Red Sea, western Mascarenes (La Réunion), the Persian Gulf, Pakistan, India, Sri Lanka, the Bay of Bengal, the Philippines, Thailand, Guam (Mariana Islands), Hawaii, north to southern Japan), south to northern Australia (Frickle *et al.*, 2024; Froese and Pauly, 2024; Smith-Vaniz, 2022).

It is found in coastal as well as continental shelf areas. Usually harvested with pelagic gillnets. It is considered to be a good food fish and is locally consumed. No separate data of landings for this species is recorded, however, landings of miscellaneous trevallies including this species are presented in Fig. 5.

#### Material Examined

- 1 specimen collected from Karachi Fish Harbour, 18 September 2013 (33.0 cm)
- 1 specimen collected from Karachi Fish Harbour, 24 October 2013 (16.0 cm) Juvenile

#### CONCLUSIONS

The family Carangidae is considered to be one of the most diversified families which includes important fishes such as jacks, amberjacks, jack mackerels, leatherjackets, pilotfishes, pompanos, queenfishes, runners, scads, and trevallies. Most members of this family are marine, fast-swimming, and predatory fishes found in the Atlantic, Indian, and Pacific Oceans. The family Carangidae contains about 30 genera and approximately 152 species whereas present studies reveal that the family is represented by 64 species belonging to 28 genera in Pakistan. Three species including *Decapterus kurroides* Bleeker 1855, *Kaiwarinus equula* (Temminck & Schlegel 1844), and *Seriola lalandi* Valenciennes 1833 are reported for the first time from the Pskidtan coast.

Almost all the species belonging to the family Carangidae are commercially important. They are either well-known food fishes belonging to genera *Alectis*, *Atropus*, *Carangichthys*, *Carangoides*, *Caranx*, *Craterognathus*, *Elagatis*, *Ferdauia*, *Flavocaranx*, *Gnathanodon*, *Kaiwarinus*, *Naucrates*, *Parastromateus*, *Platyccaranx*, *Scomberoides*, *Seriola*, *Trachinotus*, *Turum* and *Uraspis* which are not only locally consumed but exported in frozen forms to southeast Asian and Persian Gulf countries. Of these, *Gnathanodon speciosus* (Forsskal, 1775), *Parastromateus niger* (Bloch, 1795), *Platyccaranx malabaricus* (Bloch and Schneider 1801), *Scomberoides*

*commersonianus* Lacepede, 1802, *Trachinotus baillonii* (Lacepede, 1801) and *Trachinotus blochii* (Lacepede, 1801) are considered delicious especially by the fishermen community. The scads belonging to genera *Alepes*, *Atule*, *Decapterus*, *Magalaspis*, *Selar*, *Selaroides*, and *Trachurus* are considered important sources of raw material for fishmeal production in Pakistan.

There is no target fisheries for the members of the Family Carangidae in Pakistan and it is caught mainly by pelagic gillnet, bottom-set gillnet, seine net, handline line, troll lines and long lines. Major fishing ground of these species are located along the continental shelf areas of Pakistan, however, most scads are found in coastal waters including bays, lagoons, and estuarine areas. Juveniles and early stages of some of the important members are found in coastal waters and estuarine areas of the River Indus and the ephemeral rivers along the Balochistan coast.

Although no separate statistics for the members of the Family Carangidae are recorded in Pakistan, however, The annual landings of this family were recorded to fluctuate between 15,000 to 35,000 m. tons during 1999 and 2023 whereas it was observed to be a maximum of 34,300 m. tons in 2000 and a minimum of 15,777 m. tons in 2012 (Fig. 2). Overall this family contributed between 4.57 % (2012) to 8.45 % (2021) in total seafood production of Pakistan (Fig. 3). In Pakistan, commercial data is generally not collected on species levels and recorded as species group. In the case of the Family Carangidae data of black pomfrets (*Parastromateus niger*) is the only species whose data is recorded at the species level (Fig. 40). The data reveals that annual landings of black pomfrets ranged between 1,500 and 3,000 m. tons annually except in 2010 and 2021 when its landings reached 4,914 and 3,724 m. tons respectively. In the case of trevallies, the landings remained between 3,288 (2013) and 5,819 m. tons (2007) except in 1999, 2000, and 2018 when the landings of trevallies were observed to be 8,407, 9, 111, and 6,367 m. tons respectively (Fig. 5). Scads are commercially important species caught mainly by seine nets and pelagic gillnets and their landings were observed to be less than 6,000 m. tons between 1999 and 2023 except in 2000, 2001, and 2006 when landings of scads were reported to be 6,617, 9,722, and 6,134 m. tons respectively (Fig. 7).

Annual landing data for queenfishes (genus *Scomberoides*) is recorded in Pakistan and presented in Fig. 45. Talang queenfish (*Scomberoides commersonianus*) is the most dominating and popular food fish along the Balochistan coast. It is equally abundant along the Sindh coast and on the continental shelf along the Pakistan coast. On the contrary, doublespotted queenfish (*Scomberoides lysan*) was reported to be the most common queenfish in the Indian Ocean (Smith-Vaniz, 2022). *S. lysan*, is seldom found along the coast of Pakistan whereas Talang queenfish is the most common Carangid species found along the Balochistan coast. The data of annual landings indicates that queenfish are the most dominating group of the family Carangidae with a maximum landings of 17,779 m. ton in 1999 which gradually decreased to 7,043 m. tons in 2011 but again increased to a second maximum of 14,244 m. tons during 2018. The landings of queenfish almost flattened after 2019 and remained at a level above 12,000 m. tons.

The taxonomy of the genus *Carangoides* is considered complicated and several studies have been carried out to resolve it (Kimura *et al.*, 2022; Lin and Shao, 1999; Reed *et al.*, 2002; Williams and Venkatarmani, 1978; Williams *et al.*, 1980; Zhu *et al.*, 2007). The genus *Carangoides* was created by Bleeker (1851) to accommodate a species of carangid fish, although the species he created the genus for is unknown. To rectify this, *Caranx praeustus* was selected to be the type species of the genus Lin and Shao, 1999). Reviews of the family Carangidae eventually placed 21 species into *Carangoides* (Froese and Pauly, 2024).

Kimura *et al.* (2022) constructed the phylogenetic relationships among the species of the subfamily Caranginae to understand the phylogenetic positions of the species belonging to *Carangoides*, and relationships among the members of *Carangoides* and its related genera. They reconstructed the previous *Carangoides* and its related genera (*Alectis* Rafinesque 1815, *Atropus* Oken 1817, *Parastromateus* Bleeker 1864, *Selene* Lacepede 1802, *Ulua* Jordan and Snyder 1908, and *Uraspis* Bleeker 1855) are reorganized into 15 (including five new and four resurrected) genera based on both molecular-phylogenetic results and morphological analyses. Out of these 15, 12 genera including *Parastromateus* Bleeker 1864, *Scyris* Cuvier 1829, *Alectis* Rafinesque 1815, *Craterognathus* Kimura, Takeuchi and Yadome, 2022, *Uraspis* Bleeker 1855, *Carangoides* Bleeker 1851, *Carangichthys* Bleeker 1853, *Flavocarax* Kimura, Takeuchi and Yadome 2022, *Ferdauia* Jordan, Evermann and Wakiya in Jordan, Evermann and Tanaka 1927, *Platy-caranx* Kimura, Takeuchi and Yadome 2022, *Tururum* Whitley 1932 and *Atropus* Oken 1817.



## REFERENCES

- Abildgaard, N. L., W. Khan and S. Qureshi (1994). Results of the sonar surveys carried out between January and April 1986 of the small pelagic fish resources in Pakistani waters. In: (A. Majid, M. Y. Khan, M. Moazzam and J. Ahmed eds.). *Proceedings of National Seminar on Fisheries Policy and Planning* Marine Fisheries Department, Government of Pakistan, Karachi. Pp. 24-40.
- Aftab, J. and J. Ali-Khan (1992). Composition and distribution of fish larvae in EEZ of Pakistan during January and February 1977. *Proceedings of Pakistan Congress of Zoology*, 12: 501-514.
- Ahmad, M. F. (1988). Fish of Pakistan's mangrove areas. In: (, M.-F. Thomspson and and N. M. Tirmizi, eds). *Marine Sciences of the Arabian Sea. Proceedings of an International Conference*. American Institute of Biological Sciences, Washington, D. C. Pp. 429-438.
- Ahmad, M. F. and M.S. Niazi (1988). *Important edible fishes of Pakistan*. Zoological Survey Department, Government of Pakistan. 31 p.
- Ahmad, M.F. M.S. Niazi and S. A. Khan (1984). 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 Abbas, G., (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.
- Ahmed, N. (1996). *Extraction, exploration and demand forecasting for aquarium fishes from Pakistan*. Ph. D. Dissertation, Department of Economics, University of Karachi, 242p.
- Ahmed, N. and S. Wazarat (1993). Seawater aquarium fishes of Pakistan. In: (N. M. Tirmizi and Q. B. Kazmi eds.). *Proceedings of a National Seminar on Study and Management in Coastal Zones in Pakistan* Marine Reference Collection and Resource Centre, University of Karachi, Karachi. Pp. 73-119.
- Aitkin, E. H. (1907). *Gazetteer of the Province of Sind*. Karachi. 519p.
- Ajazuddin, S. and M. Ahmed (2002). Some observations on occurrence and abundance of finfishes in the Miani Hor lagoon, Balochistan (Northern Arabian Sea, Pakistan). *Pakistan Journal of Zoology*, 34: 101-111.
- Ali, Q. M., 2002. *Some important fishes of Pakistan*. <http://edu.iucnp.org/edu/table9.htm> 3p.
- Ali-Khan, J. and J. Aftab (1993). Relative abundance of fish larvae in Pakistani waters based on "Dr. Fridtjof Nansen" cruises 1 and 2, 1997. *Marine Research*, 2: 1-9.
- Anonymous (Bennett, E. T.) (1830). Class Pisces.. In: *Memoir of the life and public services of Sir Thomas Stamford Raffles.... By his Widow John Murray*, London. Pp. 686-694.
- 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. 80p
- Anonymous (1973). National Standardised Zoological Collection Number. *Records Zoological Survey of Pakistan*, 3:1-101.
- 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, (2000). *The ichthyological collection of the Zoological Museum Hamburg (ZMH)* Division of Ichthyology and Herpetology, Zoological Museum Hamburg (ZMH)
- Anonymous (2012). *Handbook of Fisheries Statistics of Pakistan*. Marine Fisheries Department, Government of Pakistan. Vol. 20: 204 pp.

- Bauchot, M. –L. (1987). Poissons osseux. In: (W. Fischer, M.L. Bauchot and M. Schneider eds.) *Fiches FAO d'identification pour les besoins de la pêche. (rev. 1). Méditerranée et mer Noire. Zone de pêche 37*. Vol. II. Commission des Communautés Européennes and FAO, Rome. Pp. 891-1421.
- Bennett, F. D. (1840). *Narrative of a whaling voyage round the globe, from the year 1833 to 1836*. R. Bentley, London. 2: 1-395.
- Bennett, J. W. (1830). *A selection from the most remarkable and interesting fishes found on the coast of Ceylon*. London. First Edition: 30.
- Berry, F. H. (1968). A new species of carangid fish (*Decapterus tabl*) from the western Atlantic. *Contributions in Marine Science*, 13: 145-167.
- Berry, F.H. and W.F. Smith-Vaniz, 1978. Carangidae. In W. Fischer (ed.) *FAO species identification sheets for fishery purposes. West Atlantic (Fishing Area 31). volume 1*. FAO, Rome. [var. pag.]
- 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. Rome: FAO. 200 p
- Bleeker, P. (1850). Visschen van Banka. *Natuurkundig Tijdschrift voor Nederlandsch Indië*, 1: 159-161.
- Bleeker, P. (1851). Over eenige nieuwe soorten van Pleuronectoïden van den Indischen Archipel. *Natuurkundig Tijdschrift voor Nederlandsch Indië*, 1: 401-416.
- Bleeker, P. (1852). Bijdrage tot de kennis der Makreelachtige visschen van den Soenda-Molukschen Archipel. *Verhandelingen van het Bataviaasch Genootschap van Kunsten en Wetenschappen*, 24: 1-93.
- Bleeker, P. (1853). Derde bijdrage tot de kennis der ichthyologische fauna van Celebes. *Natuurkundig Tijdschrift voor Nederlandsch Indië*, 3: 739-782
- Bleeker, P. (1855). Negende bijdrage tot de kennis der ichthyologische fauna van Borneo. Zoetwatervisschen van Pontianak en Bandjermasin. *Natuurkd. Tijdschr. Neder. Indië*, 9: 415-430.
- Bleeker, P. (1857). Achtste bijdrage tot de kennis der vischfauna van Amboina. *Acta Societatis Regiae Scientiarum Indo-Neerlandicae*, 2: 1-102.
- Bleeker, P. (1864). Sixième notice sur la faune ichthyologique de Siam. *Nederlandsch Tijdschrift voor de Dierkunde*, 2: 171-176
- Bloch, M. E. (1787). *Naturgeschichte der ausländischen Fische. Berlin*. 3: 1-146.
- Bloch, M. E. (1793). *Naturgeschichte der ausländischen Fische. Berlin*. 7: 1-144.
- Bloch, M. E. (1795). *Naturgeschichte der ausländischen Fische. Berlin*. 9: 1-192.
- Bloch, M. E. and J. G. Schneider (1801). *M. E. Blochii, Systema Ichthyologiae Iconibus cx Illustratum. Post obitum auctoris opus inchoatum absolvit, correxit, interpolavit* Jo. Gottlob Schneider, Saxo. Berolini. Sumtibus Auctoris Impressum et Bibliopolio Sanderiano Commissum. 1-584.
- Chan, W., F. Talbot and P. Sukhavisidh (1974). Carangidae. In W. Fischer and P.J.P. Whitehead (eds.) *FAO species identification sheets for fishery purposes. Eastern Indian Ocean (Fishing Area 57) and Western Central Pacific (Fishing Area 71)*. Volume 1. FAO, Rome.
- 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*. A. Belin, Paris. Edition 1. 2: 1-532.
- Cuvier, G. (Cuvier, G. and A. Valenciennes) (1829). *Histoire naturelle des poissons. Tome troisième. Suite du Livre troisième. Des percoïdes à dorsale unique à sept rayons branchiaux et à dents en velours ou en cardes*. F. G. Levrault, Paris. 3: 1-500.
- Cuvier, G. (Cuvier, G. and A. Valenciennes) (1832). *Histoire naturelle des poissons. Tome huitième. Livre neuvième. Des Scombroïdes*. F. G. Levrault, Paris: 1-509.
- Cuvier, G. (Cuvier, G. and A. Valenciennes) (1833). *Histoire naturelle des poissons. Tome neuvième. Suite du livre neuvième. Des Scombroïdes*. 9: 1-512.
- Day, F. (1876). *The fishes of India; being a natural history of the fishes known to inhabit the seas and fresh waters of India, Burma, and Ceylon*. Part 2: 169-368.
- Fabricius, J. C. (Niebuhr, C.) (1775). *Descriptiones animalium avium, amphibiorum, piscium, insectorum, vermium; quae in itinere orientali observavit Petrus Forskål. Post mortem auctoris edidit Carsten Niebuhr*. Hauniae. 1-20: 1-164.
- Forskål, P. S. (Niebuhr, C.) (1775). *Descriptiones animalium avium, amphibiorum, piscium, insectorum, vermium; quae in itinere orientali observavit Petrus Forskål. Post mortem auctoris edidit Carsten Niebuhr*. Hauniae. 1-20: 1-164.

- Forster, J. R. (Bloch, M. E. and J. G. Schneider) (1801). M. 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.
- Fricke, R., W. N. Eschmeyer and R. Van der Laan (eds). (2024). *ECoF. Eschmeyer's Catalog of Fishes: Genera, Species, References*. California Academy of Sciences. San Francisco. Electronic version accessed 15 May 2024.
- Froese, R. and D. Pauly. Eds. (2024). FishBase. World Wide Web electronic publication. [www.fishbase.org](http://www.fishbase.org) version (02/2024).
- GBIF (2024). The Global Biodiversity Information Facility. *GBIF Home Page*. (<https://www.gbif.org>)
- Galil, B. S. (2007). Seeing Red: Alien species along the Mediterranean coast of Israel. *Aquatic Invasions* 2: 281-312.
- Günther, A. (1860). *Catalogue of the fishes in the British Museum. Catalogue of the acanthopterygian fishes in the collection of the British Museum. Squamipinnes, Cirrhitidae, Triglidae, Trachinidae, Sciaenidae, Polynemidae, Sphyraenidae, Trichiuridae, Scombridae, Carangidae, Xiphiidae*. British Mus., London. . 2: 1-548.
- 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.
- Huang, Z., (2001). Marine species and their distribution in China's seas. p. 404-463. *Vertebrata*. Smithsonian Institution, Florida, USA. 598 p.
- Hussain, S. A. J. Aftab and S. Ajazuddin (1990). Fisheries of the talang queenfish (*Scomberoides commersonianus* Lacepede 1802 in Pakistan. *10<sup>th</sup> Pakistan Congress of Zoology. Abstract*.
- Hussain, S. M. (2003). *Brief Report on Biodiversity in the Coastal Areas of Pakistan*. Regional Technical Assistance. (RETA) ADB/IUCN.113p (Draft).
- Hussain, S. M., and S. Kidwai (1994). Midwater fishes collected from the Arabian Sea. *Marine Research*, 3: 57-81.
- IGFA (The International Game Fish Association) (2024). IGFA World Records Database <https://igfa.org/member-services/world-record/>
- Iqbal, M., S. S. Shaukat and M. A. Kazmi (1999). Diversity of fish communities in Pakistan's coastal waters, northern Arabian Sea. In: (Q. B. Kazmi, and M. A. Kazmi eds.): *Proceedings of Seminar on Aquatic Biodiversity of Pakistan*. Marine Reference Collection and Resource Center and Department of Zoology, University of Karachi. Pp. 55-62.
- Jalil, S. A., and M. Khaliluddin (1972). *A checklist of marine fishes of Pakistan*, Government of Pakistan.
- Jalil, S. A., and M. Khaliluddin (1981). *A checklist of marine fishes of Pakistan*, Government of Pakistan.
- Jayaram, K. C. (1981). *Freshwater Fishes of India, Pakistan, Bangladesh, Burma and Sri Lanka- A Handbook*. Zoological Survey of India. 475 p.
- 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.
- Jordan D. S., B. W. Evermann and Y. Wakiya (1927). Notes on new or rare fishes from Hawaii. In: (D. S. Jordan, B. W. Evermann and S. Tanaka eds.). *Proceedings of the California Academy of Sciences* (Series 4) 16: 649-680.
- Jordan, D. S. and E. K. Jordan (1922). A list of the fishes of Hawaii, with notes and descriptions of new species. *Memoirs of the Carnegie Museum*, 10: 1-92.
- Kapoor, D., R. Dayal and A.G. Ponniah, (2002). *Fish biodiversity of India*. National Bureau of Fish Genetic Resources Lucknow, India.775 p.
- Khan, I. A. (1924). Fishes from Karachi. *Proceedings of Lahore Philosophical Society*, 3: 86-87.
- Khan, M. Y., 1994. Fishing techniques in coastal waters of Pakistan. In: (A. Majid, M. Y. Khan, M. Moazzam and J. Ahmed eds.). *Proceedings of National Seminar on Fisheries Policy and Planning* Marine Fisheries Department, Government of Pakistan, Karachi. Pp. 345-364.
- Kimura, S., S. Takeuchi and T. Yadome (2022) Generic revision of the species formerly belonging to the genus *Carangoides* and its related genera (Carangiformes: Carangidae). *Ichthyological Research*, 69: 433-487.
- Lacepède, B. G. E. (1801). *Histoire naturelle des poissons*. 3: 1-558.
- Lacepède, B. G. E. (1802). *Histoire naturelle des poissons*. 4: 1-728.
- Lanfranco, G. G. (1996). *The fish around Malta (Central Mediterranean)*. Progress Press Co. Ltd. (Malta). 132 p
- Lin, P. -L., K. -T. Shao (1999). A review of the carangid fishes (Family Carangidae) from Taiwan with descriptions of four new records. *Zoological Studies*, 38: 33-68.
- Linnaeus, C. (1758). *Systema Naturae per regna tria naturae, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis. Editio decima, reformata [10th revised edition]*, 1: 1-824.
- Linnaeus, C. (1766). *Systema naturae sive regna tria naturae, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis. Laurentii Salvii, Holmiae. 12th ed.* 1: 1-532.

- 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., Khan, M. W. and M. Khaliluddin (1992). *Commercially Important Marine Fishes of Pakistan*. Dept. Composition, Compilation and Translation, Federal Government Urdu Science College, Karachi 263p.
- Masuda, H., K. Amaoka, C. Araga, T. Uyeno and T. Yoshino (1984). *The fishes of the Japanese Archipelago*. Vol. 1 (text). Tokai University Press, Tokyo, Japan.
- Mirza, F. B. and J. Baquer. (1994). Epibenthic fauna of Indus deltaic region and adjoining areas. In: (A. Majid, M. Y. Khan, M. Moazzam and J. Ahmed eds.). *Proceedings of National Seminar on Fisheries Policy and Planning* Marine Fisheries Department, Government of Pakistan, Karachi. Pp. 264-276.
- 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. (2024). An assessment of fish biodiversity of Astola Island Marine Protected Area. *International Journal of Biology and Biotechnology*, 21: xxx-xxx.
- 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.
- Monkolprasit, S., S. Sontirat, S. Vimolohakarn and T. Songsirikul (1997). *Checklist of Fishes in Thailand*. Office of Environmental Policy and Planning, Bangkok, Thailand. 353 p.
- Mujib, B. (1985). Identification of coastal fish varieties of Pakistan. *Pakistan Agriculture*, 7: 20-26.
- Murray, J. A. (1880). *A Hand-book to the Geology, Botany and Zoology of Sind*. Beacon Press, Kurruchee 310p.
- Ni, I.-H. and K.-Y. Kwok (1999). Marine fish fauna in Hong Kong waters. *Zoological Studies*, 38:130-152.
- Niazi, M. S., 1994. Need for standardization of vernacular name of commercial seafishes of Pakistan. In: (A. Majid, M. Y. Khan, M. Moazzam and J. Ahmed eds.). *Proceedings of National Seminar on Fisheries Policy and Planning*. Marine Fisheries Department, Government of Pakistan, Karachi. Pp. 252-260.
- Nekrasov, V. V. (1966). A new subspecies of *Trachurus* (*Trachurus mediterraneus indicus* Necrassov subsp. n.) in the Indian Ocean. *Zoologicheskii Zhurnal*, 45: 141-144.
- 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.
- 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.
- Norman, J. R. (1939). In: (Anonymous). *John Murray Expedition Scientific Reports. Vol. 7. Fishes*. British Museum of Natural History, London. Pp. 1-116.
- Oken, L. (1817). *V. Kl. Fische. Isis* (Oken) v. 1 (pt 8) (no. 148): 1779-1782 + 1782a.
- Panhwar, S. K. and S. Jahangir (2013a). Assessment of growth, mortality and recruitment pattern of Talang queenfish *Scomberoides commersonianus* (Fam: Carangidae) in Pakistan. *33<sup>rd</sup> Pakistan congress of Zoology FEWFM-69*: 312 (abstract).
- Panhwar, S. K., and S. Jahangir (2013b). Length-weight, length-length relationship and relative condition factor (RN) of Talang queenfish *Scomberoides commersonianus* (Lacepede, 1802) in Pakistan. *33<sup>rd</sup> Pakistan congress of Zoology FEWFM-71*: 313 (abstract).
- Poey, F. (1860). Memorias sobre la historia natural de la Isla de Cuba, acompañadas de sumarios Latinos y extractos en Francés. *La Habana*, 2: 97-336.
- Psomadakis, P. N., H. B. Osmany and M. Moazzam (2015). *Field identification guide to the living marine resources of Pakistan. FAO species identification guide for fishery purposes*. Food and Agriculture Organization of the United Nations, Rome.
- Punwani, M. G. (1934). Karachi Fish. *Journal of Sind Natatural History Society*, 2: 44-47.
- Qamar, N., S.K. Panhwar and G. Siddiqui (2016). Fishery status and taxonomy of the Carangids (Pisces) in the northern Arabian sea coast of Pakistan. In: (H. Mikkola ed.). *Fisheries and Aquaculture in the Modern World*, InTech, 212 pp.
- 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.
- Quoy J. R. C., and J. P. Gaimard (1825). *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. Voyage Uranie, Zool. 329-616.
- 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 of 4th Pan Indian Ocean Congress (16-24 November, 1960) B: Biological Sciences*, pp.229-233.
- Qureshi, M. R. (1962). A field key to the identification of fishes, Order Perciformes, Suborder Percoidei (Families Latidae and Serranidae). *Agriculture Pakistan*, 13: 530-546.
- Qureshi, M. R. (1965). A field key to the identification of fishes Order Perciformes. Part. II. Family Pseudochromidae, Diploprionidae, Tharaponidae, Plesiopidae, Kuhliidae, Priacanthidae, Apogonidae, Sillaginidae, Malacanthidae and Lactariidae. *The Scientist*, 7: 172-186.
- Qureshi, M. R. (1969). Fishes of Order Perciformes, Sub-ordera Clionymoidei, Siganoidei, Acanthuroidei, Trichiuroider, Stromateoidei and Kurtoidei. *Agriculture Pakistan*, 20: 469-480.
- Rafinesque, C. S. (1810). *Caratteri di alcuni nuovi generi e nuove specie di animali e piante della sicilia, con varie osservazioni sopra i medesimi*. 3-69.
- Rafinesque, C. S. (1815). *Analyse de la nature, ou tableau de l'univers et des corps organisés*. Palerme. 1-224.
- Randall, J. E. (1995). *Coastal Fishes of Oman*. University of Hawaii Press, Honolulu, Hawaii, USA.
- Reed, D. L., K. E. Carpenter and M. J. de Gravelle (2002). Molecular systematics of the Jacks (Perciformes: Carangidae) based on mitochondrial cytochrome b sequences using parsimony, likelihood, and Bayesian approaches. *Molecular Phylogenetics and Evolution*, 23: 513–524.
- Risso, A. (1810). *Ichthyologie de Nice, ou histoire naturelle des poissons du Département des Alpes Maritimes*. F. Schoell, Paris. 1-388.
- Robins, C.R., R.M. Bailey, C.E. Bond, J.R. Brooker, E.A. Lachner, R.N. Lea and W.B. Scott, (1991). World fishes important to North Americans. Exclusive of species from the continental waters of the United States and Canada. *American Fisheries Society Special Publication*, 21:1-243.
- Rüppell, W. P. E. S. (1829). *Atlas zu der Reise im nördlichen Afrika. Fische des Rothen Meers*. Frankfurt am Main (Heinrich Ludwig Brönnner).Part 2: 27-94.
- Rüppell, W. P. E. S. (1830). *Atlas zu der Reise im nördlichen Afrika. Fische des Rothen Meers*. Frankfurt am Main (Heinrich Ludwig Brönnner). 1-141 (25-35).
- Shaw, G. (1803). *General zoology or systematic natural history ... Pisces*. G. Kearsley, London, 1800-1826. 4: 187-632.
- Siddiqi, M. I. (1956). The fishermen's settlements on the coast of West Pakistan. *Selbstverlag des Geographischen Instituts der Universität Kiel*14: 1-92.
- Smith, J. L. B. (1967). Studies in carangid fishes. No. 3. The genus *Trachinotus* Lacepede, in the Western Indian Ocean. *Occasional Papers of the Department of Ichthyology, Rhodes University* No. 14: 157-166.
- Smith, M. M. (1973). Identity of *Caranx armatus* (Pisces: Carangidae). *Copeia*, 352–355.
- Smith-Vaniz, W.F. (1984). Carangidae. In: W. Fischer and G. Bianchi (eds.) *FAO species identification sheets for fishery purposes. Western Indian Ocean fishing area 51*. Vol. 1. [pag. var.]. FAO, Rome.
- Smith-Vaniz, W.F., (1986). Carangidae. In: (M.M. Smith and P.C. Heemstra eds.) *Smiths' sea fishes*. Springer-Verlag, Berlin. Pp. 638-661
- Smith-Vaniz, W.F., (2022). Family Carangidae-Trevallies. In: (P. C Heemstra, E. Heemstra, D. A. Ebert, W. Holleman and J. E. Randall eds.). *Coastal Fishes of the Western Indian Ocean*. Vol. 4. South African Institute for Aquatic Biodiversity, Makhanda, South Africa. Pp. 28-67.
- Sorley, H. T. (1932). *Marine Fisheries of the Bombay Presidency*. Govt. Press, Bombay.
- Sukhavisidh (1974). Carangidae. In W. Fischer and P.J.P. Whitehead (eds.) *FAO species identification sheets for fishery purposes. Eastern Indian Ocean (Fishing Area 57) and Western Central Pacific (Fishing Area 71)*. Volume 1. FAO, Rome.
- Suzuki, K. (1962). Anatomical and taxonomical studies on the carangid fishes of Japan. *Report of the Faculty of Fisheries University of Mie*, 4: 43-232
- Swainson, W. (1839). *On the natural history and classification of fishes, amphibians, & reptiles, or monocardian animals*. Spottiswoode & Co., London. 2: 1-452.
- Temminck, C. J., and Schlegel, H., 1844. Pisces. In: Fauna Japonica, sive descriptio animalium quae in itinere per Japoniam suscepto annis 1823-30 collegit, notis observationibus et adumbrationibus illustravit P. F. de Siebold. *Pisces, Pisces, Fauna Japonica* 73-112.
- Valenciennes, A., (1833). (Cuvier, G., and A. Valenciennes). Histoire naturelle des poissons. Tome neuvième. Suite du livre neuvième. Des Scomberoïdes. *Hist. Nat. Poiss.* 9:1-512.
- Whitley, G. P. (1932). Studies in ichthyology. No. 6. *Records of the Australian Museum*, 18: 321-348.
- Whitley, G. P. (1934). Studies in ichthyology. No. 8. *Records of the Australian Museum*, 19: 153-163.
- Williams, F., P. C. Heemstra and A. Shameem (1980) Notes on Indo-Pacific carangid fishes of the genus *Carangoides* Bleeker II. The *Carangoides armatus* group. *Bulletin of Marine Sciences*, 30:13–20.

- Williams F., and V. K. Venkatarmani (1978). Notes on Indo-Pacific crangid fishes of the genus *Carangoides* Bleeker. 1. The *Carangoides malabaricus* group. *Bulletin of Marine Sciences*, 28: 501-511.
- Wakiya, Y. (1924). The carangoid fishes of Japan. *Annals of the Carnegie Museum*, 15: 139-292.
- WoRMS (2024). World Register of Marine Species. Available from <https://www.marinespecies.org> at VLIZ. Accessed 2024-06-24.
- Zhu, S. -H., Z. W. -J. Zing, J.-X. Zou, Y. -C. Yang and X. -Q. Shen (2007). Molecular phylogenetic relationship of Carangidae based on the sequences of complete mitochondrial cytochrome b gene. *Acta Zoologica Sinica*, 53: 641-650.
- Zugmayer, E. (1913). Die Fische von Balutschistan. *Abhandlungen der königlich Bayerischen Akademie der Wissenschaften (mathematisch-physikalische Klasse.)* 26: 1-35.