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FISHES OF FAMILIES DACTYLOPTERIDAE, PERISTEDIIDAE, PLATYCEPHALIDAE, AND TRIGILIDAE FROM PAKISTAN

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ABSTRACT

A review of fishes belonging to families Dactylopteridae, Peristediidae, Platycephalidae and Trigilidae from Pakistan indicates the presence of 30 species belonging to 13 genera. *Platycephalus indicus* is the only species which is commercially harvested for local consumption. *Cociella heemstrai* Knapp 1996 and *Ratabulus nigripinnis* (Regan 1905) are reported for the first time from Pakistan. There is no aimed fisheries for these member of order Scorpaeniformes in Pakistan, because these are caught as bycatch of bottom-set gillnet and trawl fisheries.

Keywords: Dactylopteridae, Peristediidae, Platycephalidae, Trigilidae *Platycephalus indicus*, *Cociella heemstrai* and *Ratabulus nigripinnis.*

INTRODUCTION

Fishes belonging to families Synanceidae Apistidae, Scorpianenidae and Tetrarogidae of order Scorpaeniformes from Pakistan have already been reported by Osmany and Moazzam (2018; 2022) and Moazzam and Osmany (2023). Members of four families Dactylopteridae, Peristediidae, Platycephalidae and Trigilidae belonging to order Scorpaeniformes have not been previously reviewed, however, a few species of these families are included in many checklists including Hoda (1985, 1988), Hussain (2003) and Jalil and Khaliluddinuddin (1972, 1981). Psomadakis *et al.* (2015) have reported 2 species of family Dactylopteridae, 5 species of family Trigilidae and 9 species of family Platycephalidae from Pakistan whereas no species of family Peristediidae was reported by them. There is no aimed fisheries for these member of these families in Pakistan, because these are caught as bycatch of bottom-set gillnet and trawl fisheries. Although species belonging to these families are not of commercial importance but these species play an important role in coastal and offshore demersal ecology. *Platycephalus indicus,* however, is the only species which is commercially harvested for local consumption. In the present paper, a review of species of families Dactylopteridae, Peristediidae, Platycephalidae and Trigilidae from Pakistan is presented.

MATERIAL AND METHODS

Published scientific literature was examined for the records of various members of the order Scorpaeniformes from Pakistan coast. In addition, specimens of families Dactylopteridae, Peristediidae, Platycephalidae and Trigilidae were collected between 2005 and 2023 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.

RESULTS AND DISCUSSION

Members of family Dactylopteridae are commonly known as flying gurnards whereas members of family Peristediidae are called armoured searobins. Family Trigilidae includes gurnards whereas family Platycephalidae includes flatheads which are relished by coastal communities in Pakistan.

Family Dactylopteridae (Flying gurnard)

Members of family Dactylopteridae are commonly known as flying gurnard and locally known as ‘Orni’ or ‘Jhirri’ in Sindhi and ‘Jirri’ in Balochi. These fishes have a large and blunt head with the bones forming a

helmet and have greatly enlarged pectoral fins. They exhibits a 'walking' movement on the sea floor, accomplished by an alternate movement of the pelvic fins while in search of their food which includes crustaceans, other small invertebrates and small fish. Three species of this family belonging to a genus including *Dactyloptena gilberti*, *D. orientalis* and *D. peterseni* are known from Pakistan. Of these, *D. peterseni* has a single elongate spine anterior to continuous part of spinous dorsal fin whereas *D. orientalis* and *D. gilberti* have a spine about midway between elongate anteriormost spine and those in continuous part of spinous dorsal fin. Interorbit is very wide in *D. gilberti* and moderate in *D. orientalis.*

Dactyloptena gilberti Snyder, 1909
(Fig. 1)

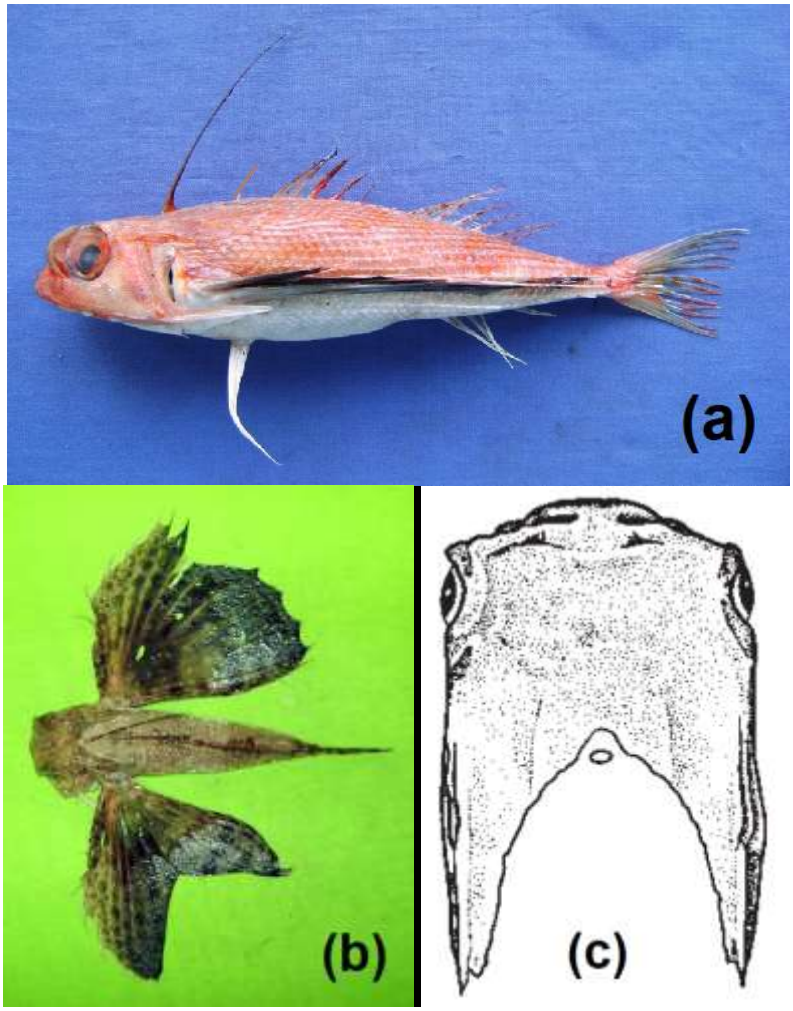

Fig. 1. *Dactyloptena gilberti* (a) Lateral view; (b) Dorsal view; (c) Dorsal view of head.

It is commonly known as Gilbert's flying gurnard. It was reported from Pakistan by Farooq and Muhammad (2022) and Psomadakis *et al*. (2015). This species is widely distributed in Indo-West Pacific area including Indo-West Pacific, from southern Red Sea, Somalia and Oman to the Gulf of Thailand and Japan, but not southern Southeast Asia or Australia (Froese and Pauly, 2023). It was originally described from Kagoshima, southern Japan by Snyder (1909). Its holotype (USNM 62952) is housed in United States Natural History Museum, Washington, D. C., USA (Frickle *et al*., 2023). Psomadakis *et al*. (2015) has some doubt about its identification, therefore, referred it as *D. cf. gilberti*, however, we have examined the specimens which comes in conformity with description given by Snyder (1909) and Eschmeyer (1997).

This species has a spine about midway between elongate anterior-most spine and those in continuous part of spinous dorsal fin (Fig. 1a). Snout somewhat rounded and wide (Fig. 1c). Its post-temporal spine strong, but not markedly elevated above rest of cranium and inter-orbit extremely wide (width 18 to 23% of standard length) and strongly concave, with depth 12 to 17% of head length (Fig. 1b). Its pectoral fins is dusky, with large dark spots arranged in row and especially dark over middle fin rays; separated anterior portion of pectoral fins paler, with no large ocellus or spot; pectoral fins black but without black spot or ocellus.

Material Examined

- 1 specimen collected from Karachi Fish Harbour on October 18, 2011 (18 cm TL).
- 1 specimen collected from Karachi Fish Harbour on March 15, 2013 (20 cm TL).
- 1 specimen collected from Karachi Fish Harbour on March 26, 2013 (15 cm TL).

Dactyloptena orientalis (Cuvier, 1829)
(Fig. 2)

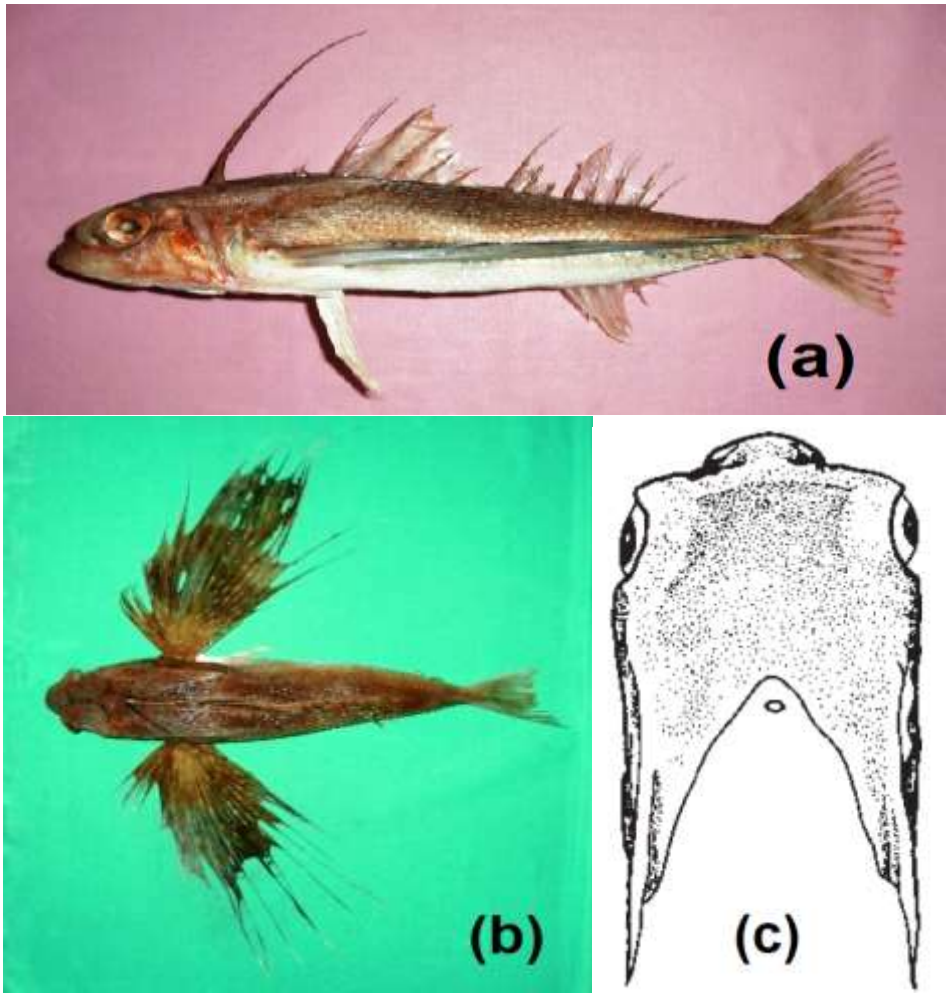

Fig. 2. *Dactyloptena orientalis*. (a) Lateral view; (b) Dorsal view; (c) Dorsal view of head.

This species is commonly known as oriental flying gurnard and seems to be most common of flying gurnards occurring in Pakistan. It was reported from Sindh coast by Ahmad *et al* (1973), Anonymous (1955), Poss (1980) and Niazi (2001). From Balochistan coast it was reported by Ahmad *et al*. (1973), Anonymous (1955), Qureshi (1952), Poss (1980) and Zugmayer (1913). It was reported from Pakistan without

mentioning any specific area by Ahmed and Qureshi (1970), Farooq and Muhammad (2022), Hoda (1985, 1988), Hussain (2003), Jalil and Khaliluddin (1972, 1981), Psomadakis *et al*. (2015) and Siddiqui (1956). Originally this species was described as *Dactylopterus orientalis* from Red Sea by Cuvier (1829). No types are known, however, some Cuvier's specimens are housed in Museum National d'Historie Naturelle, Paris, France and Forshungs Institut und Natur Museum Senckenberg, Frankfurt, Germany (Frickle *et al.*, 2023).

This species has two free dorsal-fin spines: first spine just behind head, second spine midway between first and main portion of spinous dorsal fin anterior, the first spine elongate, the second short (Fig. 1a). Snout rounded and slightly pointed (Fig. 2c); inter-orbital width 13 to 15% of standard length; inter-orbit moderately concave, with depth 8 to 11% of head length (Fig. 2b). Its colour is variable, usually yellowish brown above, lighter brown below; small orange spots over top of head and back; dusky, golden spots on pectoral fins; 4 golden bands on caudal fin; a yellow band along upper part of spinous dorsal fin. This species is not commercially harvested but caught incidentally in bottom set gillnet and trawl fisheries in Pakistan.

Material Examined

- 1 specimen collected from Karachi Fish Harbour on November 28, 2013 (33 cm TL).
- 1 specimen collected from Karachi Fish Harbour on March 9, 2016 (27 cm TL).
- 1 specimen collected from Karachi Fish Harbour on October 11, 2019 (31 cm TL).
- 1 specimen collected from Karachi Fish Harbour on February 22, 2022 (30 cm TL).

Dactyloptena peterseni (Nyström, 1887)
(Fig. 3)

This species is commonly known as starry flying gurnard. This species is reported for the first time from Pakistan by Hussain (2003). Later on Farooq and Muhammad (2022) reported this species claiming it to be record of its first occurrence in Pakistan. This species was originally described as *Dactylopterus peterseni* from Nagasaki, Japan by Nyström (1887). No holotype of this species is known, however, syntypes are housed in Zoological Museum, University of Copenhagen, Denmark (Frickle *et al*., 2023).

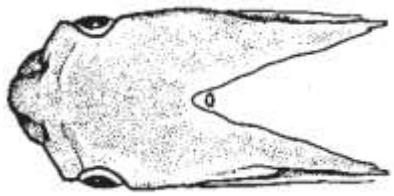

Fig. 3. *Dactyloptena peterseni* (Dorsal view of head).

This species is known to be distributed in the Indo-West Pacific area including South Africa, East Africa, Saya de Malha Bank, Comoros, Madagascar and western Mascarenes (La Réunion) to the Philippines, Japan and the Ogasawara Islands, south to northern Australia, including the Arafura Sea (Froese and Pauly, 2023; Frickle *et al*., 2023). It is also known from Russia in Peter the Great Bay, northward to Olga Bay (Novikov *et al*., 2002).

This species can be distinguished from its congeners in having one free dorsal-fin spine, just behind head, followed by wide gap to main portion of spinous dorsal fin. Its snout is rounded but not pointed (Fig. 3) and interorbital width 13 to 14% of standard length; its depth a midline about 2/3 width of Pupil and 5 to 7% of head length. Inter-orbit region weakly concave. No specimen of this species was examined during the present study.

Family Peristediidae (Armourd gurnard)

The members of this family are small to medium-sized benthic gurnards which have a worldwide distribution in tropical to warm-temperate seas. They inhabit benthic habitats on continental shelves and slopes with sandy or muddy substrates, rubble and reef-type bottoms. The gurnards use free rays of their

pectoral fins for support and as feelers searching for food. Their body is entirely encased in heavy spine-bearing plates and pre-orbitals each with a forward projection whereas their lower two rays of pectoral fin are free and enlarged (Kawai, 2013). Frikle *et al.* (2023) consider its member to belong to subfamily Peristediinae of Family Triglidae, however, Kawai (2008; 2013) and Kawai and Richards (2022) consider Peristediidae as a valid family. Two species of this family including *Satyrichthys laticeps* and *S. rieffeli* are known from Pakistan.

Satyrichthys laticeps (Schlegel 1852)

This species is commonly known as broadhead armourd gurnard. It was reported from Pakistan by Hussain (2003) as *Satyrichthys adeni* which is considered to be a synonym of this species (Kawai, 2013; Kawai and Richards, 2022). This species was originally described as *Peristedion laticeps* from Ambon Island, Molucca Islands, Indonesia by Schlegel (1852). Its holotype (RMNH PISC.523) is housed in Rijksmuseum voor Natuurlijke Historie, Leiden, the Netherlands (Frickle *et al*., 2023) whereas *S. adeni* was described as *Peristethus adeni* from Arabian Sea, Gulf of Aden, by Lloyd (1907). Its holotype (ZSI F1433/1) is housed in Zoological Survey of India, Kolkata (Frickle *et al*., 2023).

This species is known to be widely distributed in the Indo-West Pacific areas including South Africa, Mozambique, Saya de Malha Bank, Madagasca, Gulf of Aden, Oman, Arabian Sea, Saya de Malha Bank, India, Sri Lanka, the Andaman Sea, Maldives to Papua New Guinea, Indonesia, Taiwan, Sulu Sea, East China Sea and Japan (Frickle *et al*., 2023; Froese and Pauly, 2023; Kawai and Richards, 2022). No material of this species was examined during the present study.

Satyrichthys rieffeli (Kaup, 1859)

This species is commonly known as spotted armourd gurnard. It was reported from the Sindh coast by Murray (1880) as *Peristethus rieffli*. This species was originally described as *Peristethus rieffli* from China by Kaup (1859), however, no type is known (Frickle *et al*., 2023). This species is known from Japan, Taiwan, the Sea of Japan, the southern Pohai Sea, the East China Sea, the South China Sea, Indonesia and Australia (Froese and Pauly, 2023). No species of this species was examined and where about of specimen reported by Murray (1880) is known. It seems that its record from Pakistan is possibly based on misidentification as this species is known only from the southeastern, eastern Asian region and Australia (Kawai, 2013; Kawai and Richards, 2022). No material of this species was examined during the present study.

Family Platycephalidae (Flatheads)

Members of the family Platycephalidae are commonly known as flatheads. These are called "khukker" in Pakistan. As the name Platycephalidae indicates that species of this family characteristically have flattened shape of their head which are triangle-shaped and dorsoventrally depressed. Members of this family are known to inhabit continental shelf with mud or sand bottom, but some species are associated with rocky shores or coral reefs. They lie in wait buried by sand, with only their eyes poking out from the substrate. When prospective prey walks or swims close to the flathead, it strikes rapidly, engulfing the prey in its large mouth. These species feed on fishes and crustaceans and are considered to be important predators of benthic species.

Some species including *Cociella crocodile, Grammoplites suppositus, Platycephalus indicus* and *Rogadius melanopterus* are consumed locally and relished. The member of this is generally caught as bycatch of gillnet, longline and trawl fisheries, however, there is a target fishery for *Platycephalus indicus* in Ras Juddi, Pasni, Balochistan where these are caught with a cast net. A total of 19 species of this family belonging to 8 genera are known from Pakistan.

Cociella crocodilus (Cuvier 1829)
(Fig.4)

This species is known as crocodile flathead and reported from Bhambhore, Sindh by Ahmed and Abbas, (1999a, 2000; Ahmed *et al*, 1999), from Karachi by Niazi (2001) from Korangi Creek by Ahmed and Abbas (1999b, 2000; Ahmed *et al.*, 1999) and Sindh coast by Knapp (1984) and Murray (1880). From Miani Hor (Balochistan coast) it was reported by Ahmed and Abbas (1999a, 2000) and Ajazuddin and Ahmed (2002). It

was reported from Pakistan without mentioning any specific location by Ahmad (1988), Ahmed and Qureshi (1970), Bianchi (1985), Hoda (1985, 1988), Hussain (2003), Jalil and Khaliluddin (1972, 1981), Khan (1994), Majid *et al.* (1992) and Psomadakis *et al*. (2015).

Originally this species was described as *Platycephalus crocodilus* from Nagasaki, Japan by Cuvier (1829), however, no type is known (Frickle *et al*., 2023). Ahmad (1988), Ahmad and Qureshi (1970) and Hoda (1985, 1988) reported this species as *Platycephalus crocodiles* whereas Jalil and Khaliluddin (1972, 1981) listed it as *Thysanophrys crocodiles* and Murray (1880) called it *Platycephalus malabaricus.* This species is known from Indo-West Pacific area including East Africa, South Africa and Persian Gulf east to Solomon Islands, north to southern Sea of Japan (Korea, Japan), south to New Caledonia (Frickle *et al*., 2023; Imamura and Yoshino, 2009).

Fig. 4. *Cociella crocodilus*. (a) Lateral view; (b) Dorsal view.

This species is brownish in colour with small dark spots on upper body; usually with 4-5 dark brown and dark greenish cross bands over the body; spiny dorsal with broad black band near edge and small black spots below, other fins darkly spotted and ventral region is clear white in colour (Froese and Pauly, 2023; Thomas *et al*., 2022).

Material Examined

- 1 specimen collected from Karachi Fish Harbour on November 11, 2013 (34 cm TL).
- 1 specimen collected from Karachi Fish Harbour on April 23, 2018 (39 cm TL).
- 1 specimen collected from Karachi Fish Harbour on October 09, 2021 (34 cm TL).
- 1 specimen collected from Karachi Fish Harbour on May 08, 2023 (23 cm TL).

Cociella heemstrai Knapp 1996
(Fig. 5)

This species is commonly known as yellowtail flathead. It is reported for the first time from Pakistan. It was originally described from, Kenya, western Indian Ocean by Knapp (1996). It holotype (USNM 326281) is housed in the United States National Museum, Washington, D. C. USA (Frickle, *et al*., 2023). This species is known from Kenya to South Africa and Madagascar (Knapp, 2022). Present paper extends its distribution to further north to Pakistan coast (Arabian Sea).

This species has 9–11 gillrakers. Its supraorbital ridge is smooth anteriorly, bearing 5–7 spines over rear half of eye; upper pre-opercular spine reaching nearly to opercle margin; inter-opercle with narrow, elongate flap. Scales 52–55, first 3–19 scales with weak spines. Its head and body greyish or brownish, with small dark spots; 3 or 4 blackish spots on each inter-spinous dorsal fin membrane; each dorsal-fin ray with 3 or 4 black or reddish brown spots; pectoral fins with dark spots; caudal fin dusky with dark blotches near upper margin with yellow area near middle or distal half of fin forming a bright yellow horizontal bar in the middle of the caudal fin.

Material Examined

- 1 specimen collected from Karachi Fish Harbour on October 2, 2007 (33 cm TL).
- 1 specimen collected from Karachi Fish Harbour on March 21, 2009 (34 cm TL).
- 1 specimen collected from Karachi Fish Harbour on November 1, 2011 (35 cm TL).
- 1 specimen collected from Karachi Fish Harbour on December 8, 2019 (32 cm TL).
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Fig. 5. *Cociella heemstrai.* (a) Lateral view; (b) Dorsal view.

Cociella punctata (Cuvier, 1829)
(Fig. 6)

Fig. 6. *Cociella punctata.* (a) Lateral view; (b) Dorsal view.

This species is commonly known as spotted flathead. It was reported from Sindh coast by Anonymous (2001), Knapp (1996) and Sorley (1932). It was reported from Pakistan without mentioning any specific location by Froese and Pauly (2023), Knapp (1999) and Psomadakis *et al*. (2015). It was originally described as *Platycephalus punctatus* from Trincomalee, Sri Lanka and Vanicoro by Cuvier (1829). No holotype is known, however, syntypes are housed in Museum National d'Historie Naturelle, Paris, France (Frickle *et al.*, 2023). It is widely distributed in the Indo-Pacific area including South Africa, Madagascar, Comoros, Red Sea, Gulf of Oman, Pakistan, India, Sri Lanka extending Thailand, Indonesia, Philippines, Taiwan, to New Hebrides to Papua New Guinea, New Caledonia and Vanuatu (Froese and Pauly, 2023; Knapp, 2022).

This species can be distinguished from its congeners in having 6 or 7 gillrakers and 11 rays in its second dorsal fin and anal fin 11 rays. Its head and dorsum have small dark spots, and 4 or 5 dark saddle blotches on body. Its head and body brownish and have 4 or 5 dark saddle blotches dorsally on the body. Its first dorsal fin have broad sub-marginal dark band.

Material Examined

- 1 specimen collected from Karachi Fish Harbour on March 11, 2011 (31cm TL).
- 1 specimen collected from Karachi Fish Harbour on December 21, 2019 (33 cm TL).

Cociella somaliensis Knapp 1996

(Fig. 7)

This species is commonly known as spot-tail or Somali flathead. It was reported from Pakistan by Frickle *et al*., (2023) and Knapp (2022). It was originally described from South of Ras Hafun, Somalia, western Indian Ocean by Knapp (1996). Its holotype (USNM 326300) is housed in United States National Museum, Washington, D. C. USA (Frickle, *et al*., 2023). This species is known from Somalia, Oman and Pakistan (Frickle *et al*., 2023).

Fig.7. *Cociella somaliensis* (a) Lateral view; (b) Dorsal view.

This species characteristically have 12–18 gillraker. It has two spines on suborbital ridge below and behind eye; and inter-opercular flap present (Knapp, 1996; Imamura, (1996). Its body is buff dorsally, usually with scattered small dark spots; dorsal fin with large dark spots, and distinct black spots on rays; pectoral fins dusky; caudal fin pale, with bold dark spots and dark horizontal bars. It is not uncommon in Pakistan, usually caught by trawl and bottom-set gillnets in coastal waters. During the present study, a number of specimens were examined which comes in conformity with description given by Knapp (1996; 2022).

Material Examined

- 1 specimen collected from Karachi Fish Harbour on November 30, 2008 (29 cm TL).
- 1 specimen collected from Karachi Fish Harbour on January 16, 2011 (27 cm TL).

Grammoplites scaber (Linnaeus, 1758)
(Fig. 8)

This species is commonly known as rough flathead. It was reported from Sindh by Anonymous (1955, 1993, 2000, 2001) Hureau (1991), Mirza and Baquer (1994), Murray (1880), Niazi (2001) and Balochistan by Anonymous, (1955), de Beaufort and Briggs (1962), Qureshi (1952) Zugmayer (1913). It was reported from Pakistan without mentioning any specific location by Ahmad (1988), Ahmed and Qureshi (1970), Hoda (1985, 1988), Hussain (2003), Jalil and Khaliluddin (1972, 1981), Knapp (1984), Psomadakis *et al*. (2015) and Qureshi (1960). This species was originally described as *Cottus scaber* from probably East Indies by Linnaeus (1758). Its holotype (NRM 24) is housed in Naturhistoriska Riksmuseet, Stockholm, Sweden (Frickle *et al.*, 2023).

This species is distributed widely in the Indo-Pacific area including from the southern Arabian Sea and Bay of Bengal through Malaysia, Indonesia to Bali and Celebes, Gulf of Thailand, Vietnam, Hong Kong and southern Philippines Froese and Pauly (2023). According to them records from the northern Arabian Sea, Persian Gulf and east coast of Africa are probably refer to some other species. Ahmad (1988), Ahmed and Qureshi (1970), Anonymous (1955), deBeaufort and Briggs (1962), Hoda (1985, 1988), Hussain (2003), Jalil and Khaliluddin (1972, 1981), Mirza and Baquer (1994), Niazi (2001), Qureshi (1952, 1960) and Zugmayer (1913) as *Platycephalus scaber* whereas Murray (1880) reported it as *Platycephalus neglectus* which is considered as a synonym of this species.

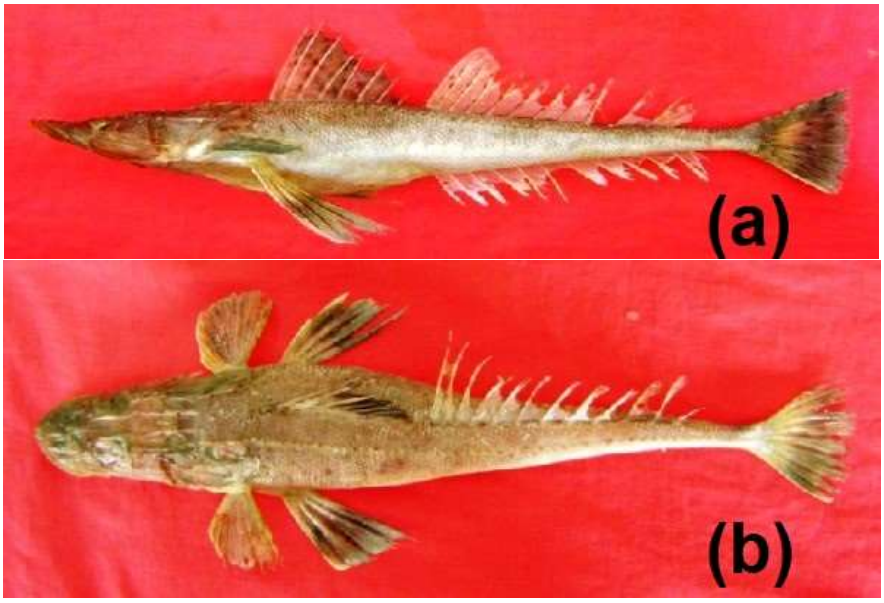

Fig.8. *Grammoplites scaber* (a) Lateral view; (b) Dorsal view.

In this species interorbital width is 1.4–6 in orbit diameter and usually 9–13% in head length. Supraorbital ridge in this species has ~6–8 spines, 1 pre-ocular spine and suborbital ridge usually with 1 spine in front of eye, 1 spine under middle of eye, 1 spine under rear edge of eye, and 3 or 4 spines behind eye. Its upper preopercular spine reaches about halfway to opercle margin. It has 5 or 6 gillrakers and 52–54 lateral line scales.

It colour is brownish dorsally and often with 4 or 5 faint dark saddle bars. Its first dorsal fin with broad sub-marginal dark band whereas second dorsal, anal and pectoral fins with dark spots on rays. Its caudal fin has sub-marginal and basal dark band, dark spots near upper edge.

Material Examined

- 1 specimen collected from Karachi Fish Harbour on October 28, 2013 (27 cm TL).
- 1 specimen collected from Karachi Fish Harbour on October 31, 2013 (23 cm TL).

Grammoplites suppositus (Troschel, 1840)
(Fig. 9)

This species is commonly known as spotfin flathead. This species is reported from Sindh by Ahmed *et al.* (1999), Anonymous (2001), Murray (1880) and Niazi (2001). It was reported from Pakistan without mentioning any specific location by Bianchi (1985), Hoda (1985, 1988), Hussain (2003), Psomadakis *et al*. (2015). Originally this species was described as *Platycephalus suppositus* by Troschel (1840). Its type locality or holotype are not known, however, syntypes are housed in Zoologisches Museum, Humboldt Universitat, Berlin (Frickle *et al*., 2023). Murray (1880) reported this species as *Platycephalus suppositus* whereas Hoda (1985, 1988) listed it as *Platycephalus maculipinna*. This species is known to be distributed in the Indian Ocean including southern Red Sea; northwestern Indian Ocean: Somalia, Gulf of Oman, Persian Gulf east to Sri Lanka and east coast of India (Frickle *et al*., 2023).

This species is characteristically known to 1.6–2.6 time interorbital width in orbit diameter; orbit diameter 4.3–5.6 in head length; head length 2.8–3.1 in standard length. Its supraorbital ridge with ~8–12 small serrae; 1 pre-ocular spine; suborbital ridge with 1 spine in front of eye, 1 spine below middle of eye, 1 spine below rear edge of eye, and none behind eye. Upper pre-opercular spine reach past opercle margin. Gillraker 8–10 and lateral length scales 51–55, the last few scales usually lacking a spine. During the present study, a number of specimens were examined.

Its body is dark dorsally, pale ventrally; fins more or less dusky. Its first dorsal fin with prominent black blotch posteriorly; dark spots along rays of the second dorsal fin, on upper part of pectoral fins, and upper caudal-fin margin.

Fig. 9. *Grammoplites suppositus.* (a) Lateral view; (b) Dorsal view.

Material Examined

- 1 specimen collected from Karachi Fish Harbour on October 23, 2009 (17 cm TL).
- 1 specimen collected from Karachi Fish Harbour on March 15, 2013 (27 cm TL).
- 1 specimen collected from Karachi Fish Harbour on October 31, 2013 (17 cm TL).

Grammoplites vittatus (Valenciennes 1833)
(Fig. 10)

This species is commonly designated as Pakistan flathead. It was previously included in the synonym of *Grammoplites scaber*. However, Knapp and Imamura (2014) examined a number of specimens collected from Pakistan and west coast of India and considered it to be valid species. Knapp (2022) and Knapp and Imamura (2014) reported this species from Pakistan. It was originally described as *Platycephalus vittatus*, from Malabar, India by Valenciennes (1833). Its holotype (MNHN 0000-6903) is housed in Museum National d'Historie Naturelle, Paris, France (Frickle *et al*., 2023). This species is known from Persian Gulf, Pakistan and west coast of India (Frickle *et al*., 2023; Knapp, 2022) and Knapp and Imamura, 2014).

Fig. 10. *Grammoplites vittatus.* Dorsal view.

The uppermost pre-opercular spine in this species does not the reach opercular margin. Interorbital width narrow in this species; orbit diameter is 5–10% in head length whereas preorbital spines are 1–3 (usually 3). It has 7 or 8 gillrakers (usually 6 in *G. scaber*) whereas lateral line scales are 52–54 with a spine on every lateral-line scale and pored lateral-line scales with one opening to the exterior.

Colour according to the original description of Valenciennes (1833) was dark fawn on the back and light on the belly. Three pale bands cross the body; the first is on the occiput; the second at the base of the first ray of the second dorsal; the third on the tail. A longitudinal stripe of bright yellow on each side. The first dorsal and the ventral ones are black and the other fins are varied from gold to yellow. According to Knapp (2022), the anal-fin margin in this species is whitish.

Material Examined

- 1 specimen collected from Karachi Fish Harbour on September 11, 2007 (21 cm TL).
- 1 specimen collected from Karachi Fish Harbour on February 21, 2019 (17 cm TL).

Insidiator macracanthus (Bleeker 1869)
(Fig. 11)

This species is known as large-spined flathead. It was reported from the Sindh coast by Sorley (1933), from Hajamro and Sisa Creek by Mirza and Baquer (1994) and from Makran, Balochistan by Qureshi (1952). It was reported from Pakistan without mentioning any specific location by Anonymous (1955), Hoda (1995, 1988), Hussain (2003), Jalil and Khaliluddin (1972, 1981) and Qureshi (1960). It was originally described as *Platycephalus macracanthus* from Ambon Island, Moluccas Island, Indonesia by Bleeker (1869). Its holotype is not known, however, syntypes are housed in Rijksmuseum van Natuulijke Histoire, Leiden (Frickle *et al*., 2023). It was reported as *Platycephalus macracanthus* by Anonymous (1955), Qureshi (1952) and Sorley (1933) whereas all other reports from Pakistan consider this to be *Suggrundus macracanthus.*

Its interorbital width is 2.8–4.1 in orbit diameter whereas its orbit diameter 3.9–4.4 in head length. Head length is 2.5–3.1 in standard length. Supraorbital ridge smooth over the front third of the eye, with ~9 minute

spines posteriorly; suborbital ridge bearing stout spines; pre-opercular spines 3, uppermost long, bayonet-like, reaching to or past opercle margin. Iris lappet is crenate or bi-lobed. There are 7–10 gill rakers whereas lateral line scales 50–55, first 13–33 scales with small spine or ridge.

Fig. 11. *Insidiator macracanthus.* (a) Lateral view; (b) Dorsal view.

Its colour is brownish dorsally, with 7 dark crossbars, pale ventrally; 1st dorsal fin dusky with dark horizontal streaks; 2nd dorsal fin transparent with small brown spots on rays; anal fin transparent, with a few dark streaks on rear rays; pectoral fins with dark spots on upper surface, greyish on lower surface; pelvic fins greyish; caudal fin brownish.

It was reported from Indo-Pacific areas including southern India, Sri Lanka Myanmar, Gulf of Thailand, Indonesia, Philippines, Taiwan and Australia (Frickle *et al*., 2023; Knapp, 2022).

Material Examined

- 1 specimen collected from Karachi Fish Harbour on October 24, 2009 (19 cm TL).

Kumococius rodericensis (Cuvier, 1829)

This species is commonly known as spiny flathead. It was reported from Pakistan by Froese and Pauly (2023), Hoda (1985, 1988), Hussain (2003), Jalil and Khaliluddin (1972, 1981), Knapp (1984, 1999) and Psomadakis *et al*. (2015). Originally it was described as *Platycephalus rodericensis* from Reunion Island by Cuvier (1829). Its holotype is not known, however, lectotype (MNHN 6838) is housed in Museum National d'Historie Naturelle, Paris, France (Frickle *et al*., 2023). Hoda (1985, 1988) and Knapp (1984) reported this species as *Suggrundus rodericensis* whereas Hussain (2003), Jalil and Khaliluddin (1972, 1981) listed it as *Platycephalus rodericensis*. This species is known to have second spine of dorsal fin much shorter than third spine. Its interorbital width 3.8–5.3 in orbit diameter and orbit diameter 3.6–4.1 in head length. It has single pre-ocular and pre-orbital spine. Gillraker 9–11 and lateral line scales 52–55.

Its body is brownish dorsally, with scattered minute dark spots, and 4 or 5 dark bars dorsally and first dorsal fin with dark marginal spot between second and third spine and behind fourth spine. Its pectoral fins dark with pale area in middle whereas caudal fin dusky distally.

This species is known from Indo-West Pacific area including Persian Gulf, Gulf of Oman to India, Mascarenes (La Réunion, Mauritius), Bay of Bengal, Indonesia, south China Sea, east to Philippines, north to southern Japan, south to northern Australia (Frickle *et al*., 2023; Knapp, 2022). During present study, no specimen of this species was examined.

Onigocia pedimacula (Regan, 1908)

It is commonly known as broadtail flathead. It was reported from Pakistan by Froese and Pauly (2023), Imamura (1996), Knapp (1999, 2022) and Psomadakis *et al*. (2015). It was originally described as *Platycephalus pedimacula* from Kolumadulu, Maldives, Indian Ocean by Regan (1908). Its holotype (BMNH 1901.12.31.45) is housed in British Museum of Natural History, London, U. K. (Frickle *et al*., 2023).

This species is known to have interorbital width 5.4–6.5 in orbit diameter whereas orbit diameter is 3–3.4 in head length. Its infra-orbital ridge entirely serrated over eye. There is no supra-ocular cirrus. Gillrakers 4 or 5 and lateral line 29–32 with first three scales with spine.

Its body is grey or brown dorsally, with broad dark zone below first dorsal fin, and 3 or 4 dark bars posteriorly; fins usually with dark spots, and first dorsal fin generally dusky whereas pelvic fins with prominent dark blotch at centre and smaller dark blotch near base.

This species is known from Indo-West Pacific area including South Africa to Pakistan (Karachi) to Rodrigues and Maldives to South China Sea, Philippines, northwest shelf of Australia, Timor and Arafura seas, Great Barrier Reef, Australia, Solomon Island, New Caledonia Guadalcanal and Tonga (Frickle *et al*., 2023; Knapp, 2022). During present study, no specimen of this species was examined.

Platycephalus indicus (Linnaeus, 1758)

(Fig. 11)

This is the most common and commercially important flathead found in Pakistan. It is commonly known as bartail flathead and was reported from Sindh coast by Jenkins (1910), Knapp (1984), Misra (1962), Murray (1880) from Karachi by Anonymous (1993, 1999, 2001), Niazi (2001) from Korangi Creek by Ahmed *et al*. (1999), from Paradise Point, Karachi by Moazzam and Rizvi (1980) and Tidal Link Canal, Badin District by Jafri (2004) and Jafri *et al*. (2000). From Balochistan coast it was reported by de Beaufort and Briggs (1962), Knapp (1984), and Zugmayer (1913), from Miani Hor by Ahmed and Abbas (1999a, 2000) and Ajazuddin and Ahmed (2002). It was reported from Pakistan without mentioning any specific location by Ahmad (1988), Ahmed and Qureshi (1970), Bianchi (1985), Froese and Pauly (2023), de Beaufort and Briggs (1966), Hoda (1985, 1988), Hussain (2003), Jalil and Khaliluddin (1972, 1981) and Psomadakis *et al*. (2015).

This species was originally described as *Callionymus indicus* from Asia by Linnaeus (1758), however, no type is known (Frickle *et al*., 2023). Ahmed and Abbas (1999a, 2000), de Beaufort and Briggs (1966), Hoda (1985, 1988), Jafri (2004), Jafri *et al* (2000), Jalil and Khaliluddin (1972, 1981) and Moazzam and Rizvi (1980) reported this species as *Thysoanophrys indicus* whereas Anonymous (1999), Jenkins (1910), Murray (1880) and Zugmayer (1913) referred it as *Platycephalus insidiator*.

Fig. 11. *Platycephalus indicus.* (a) Lateral view; (b) Dorsal view.

The head of this species is strongly depressed. Its interorbital width 0.8–1.9 in orbit diameter whereas orbit diameter 5.3–8.2 in head length. Head length 3.1–3.4 in standard length. Pre-ocular spine single, small;

2 pre-opercular spines, lower spine slightly longer. Its iris lappet is simple elongated lobe whereas inter-opercular flap is finger-like. It has 7–10 gillrakers and lateral line scales 68–83; first 1 or 2 scales with spine or ridge. Its body brownish or greyish dorsally, whitish ventrally; caudal fin white and yellow, with two or three horizontal black stripes.

This species is known to be widely distributed in the Indo-West Pacific from South Africa, Madagascar, Comoros, Seychelles, Red Sea and East Africa to Persian Gulf, Pakistan, southern India, Sri Lanka, Bangladesh to the Indonesia, Philippines, New Guinea, north to southern Japan and Korea, south to northern Australia. It is a lessepsian migrant to eastern Mediterranean Sea through Red Sea (Frickle *et al*., 2023; Knapp, 2022).

It is a commercially important species which is harvested almost throughout the year from intertidal areas to a depth of 25 m. It is caught mainly by bottom set gillnets, cast nets, handline, bottom-set longlines and trawl net. There is an aimed fishery for this species in Ras Juddi (Pasni), Balochistan where it is caught with cast nets in the intertidal rocky areas. Its annual production is estimated to be about 150 m. tons bulk of which is caught during September and December. It is relished locally.

Material Examined

- 1 specimen collected from Karachi Fish Harbour on September 16, 2009 (33 cm TL).
- 1 specimen collected from Karachi Fish Harbour on October 24, 2013 (27 cm TL).
- 1 specimen collected from Karachi Fish Harbour on March 7, 2017 (33 cm TL).
- 1 specimen collected from Karachi Fish Harbour on August 30, 2019 (54 cm TL).
- 1 specimen collected from Karachi Fish Harbour on April 22, 2022 (33 cm TL).

Platycephalus platysoma Zugmayer, 1912

It is commonly known as Zugmayer's flathead. This species is reported from Gwadar by Frickle *et al*., (2023) and Zugmayer (1912, 1913). It was originally described from Gwadar, Pakistan by Zugmayer (1912). Its holotype used to be housed among old collection of ZSM but destroyed in in the World War II (Neumann, 2006). This species was known from its holotype only and since then no other specimen of this species was collected.

According to Zugmayer (2012), this species is distinct from all other species by its strongly depressed body, whose depth is less than 1/12 of the total length. It has uniform reddish brown colour and spine and rays of dorsal with row of black spots. Its caudal fin is yellow, with an oblique black bar in its lower and two oblong black blotches in the upper half. No specimen of this species was examined during the present study.

Ratabulus melanopterus (Knapp and Wongratana, 1987)
(Fig. 12)

This species is commonly known as obscure flathead. It was reported from Khori Great Bank by Knapp and Wongratana (1987), from off Sindh coast by Anonymous (2001) and from off Sonmiani, Balochistan by Knapp and Wongratana (1987).). It was reported from Pakistan without mentioning any specific location by Psomadakis *et al*. (2015). This species was originally described as *Sorsogona melanoptera* from off Cochin, India by Knapp and Wongratana (1987). Its holotype (USNM 280331) is housed in National Museum of Natural History, Washington D.C., U.S.A. (Frickle *et al*., 2023). Mostly it is referred as *Sorsogona melanoptera*, however, Frickle *et al.* (2023) included it under genus *Ratabulus.* Genus *Ratabulus* was revised by Imamura and Gomon (2010).

Its interorbital width 2.5–3.7 in orbit diameter whereas orbit diameter 3.6–4.3 in the head length. Head length 2.5–3.2 in standard length. Pre-ocular margin with modest spine and often 3–6 smaller spines, and usually with 1 or more rows of tubercles in front of marginal spine row; supraorbital and suborbital ridges finely serrate; ventral edge of suborbital with spines and blunt knobs; pre-opercular spines 3. Iris lappet bi-lobed. Gillraker 10–12 whereas Lateral line scales 52–55; first 13–34 scales with weak spines.

Fig. 12. *Ratabulus melanopterus.* (a) Lateral view; (b) Dorsal view.

Its colour is brown dorsally, some with indistinct dark crossbars. First dorsal fin dusky, with dark spots along spines whereas second dorsal fin with dark spots along rays. Its pectoral fins and anal fin more or less transparent; caudal-fin base pale, dusky distally.

This species is widely distributed in from Gulf of Oman, Pakistan to India, Andaman Sea and Thailand (Froese and Pauly, 2023; Randall, 1995; Knapp, 2022).

Material Examined

- 1 specimen collected from Karachi Fish Harbour on May 21, 2005 (14 cm TL).
- 1 specimen collected from Karachi Fish Harbour on April 8, 2010 (13 cm TL).
- 1 specimen collected from Karachi Fish Harbour on October 17, 2012 (14 cm TL).

Ratabulus nigripinnis (Regan 1905)

This species is commonly known as blackfin flathead and reported for the first time from Pakistan coast. It was originally described as *Platycephalus nigripinnus* from Muscat, Oman by Regan (1905). Its holotype (BMNH 1904.5.25.145) is housed in British Museum of Natural History, London, U. K. (Frickle *et al*., 2023). It was reported from Gulf of Aden, Somalia and Oman by Froese and Pauly (2023) and Knapp (1984, 2022).

Its interorbital width 1.8–2.6 in orbit diameter whereas orbit diameter 4–5 in head length. Head length 2.7–2.9 in standard length. Pre-ocular spines 7–9; supraorbital and suborbital ridges with many fine serrae; pre-opercular spines 3. Iris lappet is bi-lobed. Gill raker 15–19 and lateral line scales 52–55, first 15–30 scales with small spine or ridge. Its colour brown dorsally, with 4 or 5 dark crossbars; 1st dorsal fin brown; 2nd dorsal fin with brown sub-marginal band; caudal fin and paired fins dusky.

Material Examined

- 1 specimen collected from Karachi Fish Harbour on September 11, 2004 (17 cm TL). The specimen was lost and could not be photographed.

Ratabulus prionotus (Sauvage 1873)

This species is commonly known as halfspined flathead. This species was reported from Karachi by Anonymous (1999) and Regan (1905). It was reported from Pakistan without mentioning any specific location by Froese and Pauly (2023); Knapp (1986, 2022) and Psomadakis *et al*. (2015). It was originally described as *Platycephalus prionotus* from Red Sea (?Madagascar) by Sauvage (1873). Its holotype (MNHN A-2338) is housed in Museum National d'Historie Naturelle, Paris, France (Frickle *et al*., 2023). Regan (1905) described another species *Platycephalus townsendi* from Karachi, Pakistan; and Muscat, Oman which is also considered to be a synonym of this species. No holotype of the latter is known, however, syntypes are housed in British Museum of Natural History, London, U. K. (Frickle *et al*., 2023). Knapp (1986) reported this species as *Sorsogona prionota* whereas Anonymous (1999) referred it as *Platycephalus subfasciatus.*

Its interorbital width 2.5–4.3 in orbit diameter whereas orbit diameter 3.7–4.7 in head length. Head length 2.7–3.1 in standard length. Pre-ocular spine 1, plus 2–5 smaller spines or ridges along orbit margin; supraorbital and suborbital ridges bearing many fine serrations; base of lower opercular spine with fine serrations. Iris lappet simple to bi-lobed. Gillraker 9–13 whereas lateral line scales 50–54, first 15–40 scales with small spine or ridge.

Its colour is brown dorsally, with 4 or 5 vague dark crossbars. First dorsal fin with russet band; 2nd dorsal fin and pectoral and pelvic fins with dark spots; caudal fin with 3–5 narrow vertical dark bars; humeral area beneath operculum dusky purple with pale reticulated lines.

This species is known from western Indian Ocean including Red Sea (Gulf of Suez) to Gulf of Oman and Pakistan, and to South Africa, Madagascar, Seychelles and Mauritius (Kanpp, 2022). It is a recent Lessepsian migrant to Mediterranean Sea (Froese and Pauly 2023). No specimen of this species was examined during the present study.

Ratabulus tuberculatus (Cuvier 1829)
(Fig. 13)

This species is commonly known as tuberculated flathead. It was reported from Sindh coast by Murray (1880). It was reported from Pakistan without mentioning any specific location by Ahmed and Qureshi (1970), Froese and Pauly (2023), Hoda (1985, 1988) and Misra (1962). It was originally described as *Platycephalus tuberculatus* from Trincomalee, Sri Lanka by Cuvier (1829). Its holotype is not known, however, syntypes are housed in Museum National d'Historie Naturelle, Paris, France (Frickle *et al*., 2023). Ahmed and Qureshi (1970), Hoda (1985, 1988), Misra (1962) and Murray (1880) reported this species as *Platycephalus tuberculata.* Froese and Pauly (2023) reported it as *Sorsogona tuberculata.*

Fig. 13. *Ratabulus tuberculatus.* Lateral view;

Interorbital width 3–4.7 in orbit diameter whereas orbit diameter 3.4–4.7 in the head length. Head length 2.5–2.7 in standard length. Pre-ocular spines 2–6; supraorbital and suborbital ridges bearing serrae or spines; pre-opercular spines 4–9. Iris lappet is crenate. It has 7–9 gillrakers whereas lateral line scales 47–54, first 12–28 scales bearing small spine or ridge; scales in rows above front part of the lateral line sometimes bearing a hook or tubercle.

Its colour pale olive or tan dorsally, with 3 or 4 dark crossbars; 1st dorsal fin with sub-marginal brown band; 2nd dorsal fin with small brown spots on rays; anal fin white, with a few dark streaks on rear rays; pectoral and pelvic fins with several black spots, margins whitish; caudal fin whitish, with faint brown spots on rays and several indistinct vertical brown bands.

This species is reported from Indo-Pacific area including Madagascar, Persian Gulf, Maldives; elsewhere, east coast of India, Gulf of Thailand, Indonesia, Vietnam, Philippines, southern China, western and northern Australia (Frickle *et al*., 2023; Knapp, 2022)..

Material Examined

- 1 specimen collected from Karachi Fish Harbour on October 22, 2009 (13 cm TL).

Rogadius asper (Cuvier, 1829)

This species is commonly known as olive-tailed flathead. It was reported from Pakistan by Hoda (1985, 1988) and Knapp (1984). It was originally described as *Platycephalus asper* from Japan by Cuvier (1829). Its holotype is not known by syntypes (possibly holotype (MNHN A-2338?) are housed in Museum National d'Historie Naturelle, Paris, France and Zoologisches Museum, Humboldt Universitat, Berlin (Frickle *et al*., 2023).

Lower edge of the preopercle projecting downward as a strong antrorse spine. Infraorbital and suborbital ridges bearing many fine serrations. With a single pre-ocular spine; pre-opercular spine usually four, plus a fifth antrorse spine anteriorly. Lower side of head is unicarinate. Iris lappet is bilobed. Gillraker 6-7 whereas lateral line scales 49-54, first 5-12 scales with small spine. Its colour is brown dorsally shading to paler ventrally, with 4 or 5 dark bars. Large dark blotched on paired fins. Caudal fin with a white basal band, a broad dusky sub-marginal band and a narrow white edge.

According to Imamura (2018), the distribution of *R. asper* is revised to extend from southern Japan to Nha Trang, Vietnam, including South Korea, East China Sea and Taiwan. The records of this species from Pakistan and other areas including Papua New Guinea (Kailola, 1987), the Philippines, Taiwan (Shao and Chen, 1987) and India (Kapoor *et al*., 2002), therefore, may possible be *R. pristiger*. During the present study no specimen of this species was examined.

Rogadius pristiger (Cuvier, 1829)

This species is commonly known as thorny flathead. It is a new record from Pakistan. Originally it was described as *Platycephalus pristiger* from New Guinea; Sulawesi, Indonesia by Cuvier (1829). No holotype is known, however, syntypes are housed in Museum National d'Historie Naturelle, Paris, France (Frickle *et al*., 2023).

Its interorbital width 5.4–8.1 in orbit diameter whereas orbit diameter 3.1–4.1 in head length. Head length 2.5–2.6 in standard length. Pre-ocular spine single, without small spines at base; pre-opercular spines 5 or 6 (includes antrorse spine). It has 6-8 gillrakeres whereas lateral line scales are 48–55, first 4–12 scales with small spine. Its colour is brownish or greyish dorsally, with 4 or 5 darker saddles; 1st dorsal fin dusky, with transverse series of black spots forming sub-marginal dark band; 2nd dorsal fin with dark spots along rays; pectoral fins with prominent dark spots and white interspaces on upper surface, lower surface dusky with pale margin; pelvic fins dark, with dark spots on upper surface; caudal fin with narrow white basal band, broad submarginal dark band, and narrow white margin.

This species is known from western Indian Ocean, the Red Sea, Persian Gulf Madagascar, Indonesia, Gulf of Thailand, Philippines, Papua New Guinea, the Arafura Sea, Northwest Shelf of Australia and New Caledonia. (Carpenter *et al*, 1997; Froese and Pauly, 2023; Randall, 1995). Although no specimen of this species was examined but its presence in Pakistani waters cannot be ruled out.

Rogadius serratus (Cuvier, 1829)

This species is commonly known as serrated flathead. It was reported from Pakistan by Froese and Pauly (2023), Knapp (1999) and Psomadakis *et al*. (2015). It was originally described as *Platycephalus serratus* from Trincomalee, Sri Lanka by Cuvier (1829). Its holotype (MNHN 6847) is housed in Museum National d'Historie Naturelle, Paris, France (Frickle *et al*. 2023).

Its interorbital width 4.6–7.2 in orbit diameter whereas orbit diameter 3.2–4.1 in head length. Head length 2.4–2.8 in standard length. Preocular spine with smaller spine at base; pre-opercular spines usually 3. It has 5-8 gillrakers and lateral line scale 50–54, first 1–10 scales bearing small spine. Its colour is buff dorsally, with 7 or 8 dark crossbars, and series of irregular dark blotches on sides. Its first dorsal fin dusky; second dorsal fin with dark spots on rays; pectoral fins with dark spots on upper surface, lower surface dusky with whitish margin; caudal fin with dark bands at base and near margin, central area pale, with few dark spots near upper margin.

This species is known to have distribution in the Indo-West Pacific area including Somalia, Mauritius, Seychelles, Pakistan, India, Sri Lanka, Maldives, Chagos Archipelago, Indonesia, Philippines, Port Moresby, northern Queensland and New Caledonia (Froese and Pauly, 2023). No specimen of this species was examined during the present study.

Family Trigilidae (Gurnards)

Members of this family are commonly known as gurnards which has distribution in all temperate and tropical seas. These are small to medium-sized fishes that have bony head which is casque-like mainly inhabiting on continental and insular shelves of tropical and warm-temperate seas. The species of this family commonly found up to a depth of 200 m, but several species occur at much deeper depths. These are benthic species which are found on sandy, muddy, rubble or reef-type bottoms. They move on bottom using their free pectoral-fin rays for support and use feelers for searching food. These are generally of no commercial importance mainly because of their small size. Usually caught as bycatch of bottom-set gillnets and trawl nets and considered trash fish used for production of fish meal. In Pakistan, this family is represented by 6 species belong to 3 genera.

Lepidotrigla bispinosa Steindachner, 1898
(Fig. 14)

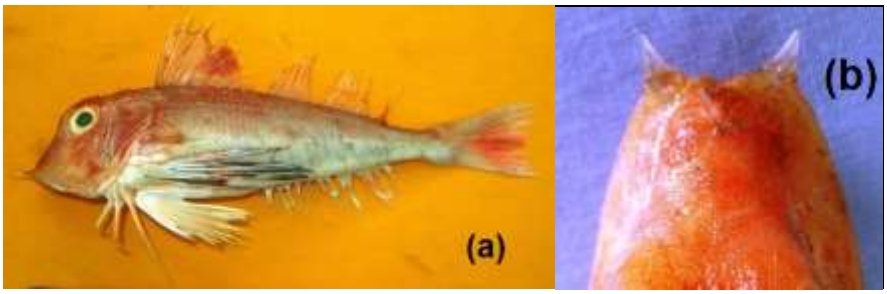

Fig. 14. *Lepidotrigla bispinosa*. (a) Lateral view; (b) Dorsal view of head.

This species is commonly known as bullhorn gurnard. It is reported from Karachi by Niazi (2001), from off Sindh coast by Anonymous (1993) from off Pasni, Balochistan by Anonymous (2001). It was reported from Pakistan without mentioning any specific location by Bianchi (1985), Froese and Pauly (2023), Hoda (1985, 1988), Hussain (2003), Psomadakis *et al*. (2015), Richards (1984; 2022) and Richards and Saksena (1977). It was originally described from Suez, Red Sea by Steindachner (1898). Its holotype is not known, however, syntypes are housed in Naturhistorisches Museum, Wien (Vienna), Austria, Museo Civico di Storia Naturale di Genova 'Giacomo Doria', Genova, Italy and Zoological Museum, University of Copenhagen, Denmark (Frickle *et al*., 2023).

Its rostral process with prominent blade-like spine (Fig. 14b). No pre-opercle ridge. Scales firmly attached; nape and belly scaly; breast and inter-pelvic area naked; Lateral line scales 53–60; 15–19 scale rows below lateral line.

Its head is reddish, upper body and flanks pinkish, breast and belly white; median fins mostly whitish. Its first dorsal fin with large red spot on margin at 5th–8th spines.

This species is known from Indo-West Pacific area including Red Sea, Somalia to Oman, Persian Gulf, Iran and Pakistan to northern India (Richards, 2022; Frickle *et al*., 2023). It is one of the common gurnard found in Pakistan. During present study a number of specimens of this species were examined.

Material Examined

- 1 specimen collected from Karachi Fish Harbour on February 27, 2013 (17 cm TL).

- 1 specimen collected from Karachi Fish Harbour on October 9, 2016 (16 cm TL).
- 1 specimen collected from Karachi Fish Harbour on March 11, 2017 (14 cm TL).
- 1 specimen collected from Karachi Fish Harbour on November 22, 2020 (15 cm TL).

Lepidotrigla faurei Gilchrist and Thompson, 1914
(Fig. 15)

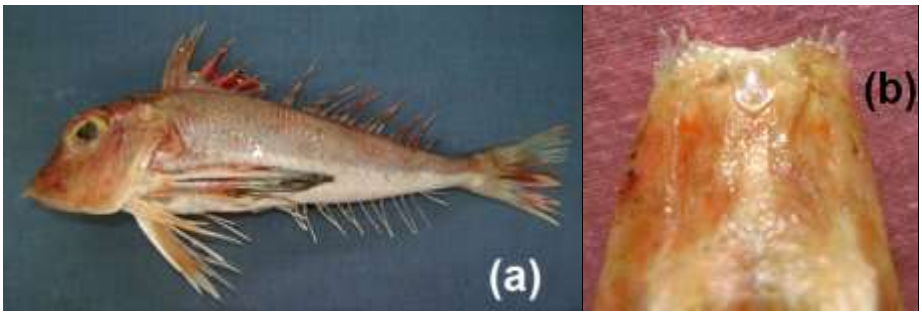

Fig. 15. *Lepidotrigla faurei*. (a) Lateral view; (b) Dorsal view of head.

This species is commonly known as scaly-breast gurnard. It was reported from Pakistan without mentioning any specific location by Froese and Pauly (2023), Hoda (1985, 1988), Hussain (2003), Psomadakis *et al*. (2015), Richards (1992, 2022) and Richards and Saksena (1977). It was described for the first time from off Tugela River mouth, Natal, South Africa by Gilchrist and Thompson (1914). Its holotype is not known, however, syntypes are housed in South African Museum, Cape Town, South Africa (Frickle *et al*., 2023).

Its rostral process with several prominent spines (Fig. 15b). No pre-opercle ridge. Scales weakly attached; nape and belly fully scaled; breast and inter-pelvic area naked, Lateral line scales 56–64; 12–16 scale rows below lateral line. Its head and upper body pale orangish pink; lower flanks, breast, and belly paler but not white.

This species is reported from Western Indian Ocean including East Africa to South Africa, Persian Gulf, Oman, Pakistan and India but not reported from Red Sea (Frickle *et al*., 2023; Richards, 2022). During the present study a number of specimens were examined.

Material Examined

- 1 specimen collected from Karachi Fish Harbour on October 2, 2013 (15 cm TL).
- 1 specimen collected from Karachi Fish Harbour on January 21, 2015 (14 cm TL).
- 1 specimen collected from Karachi Fish Harbour on March 11, 2017 (11 cm TL).

Lepidotrigla omanensis Regan, 1905
(Fig. 16)

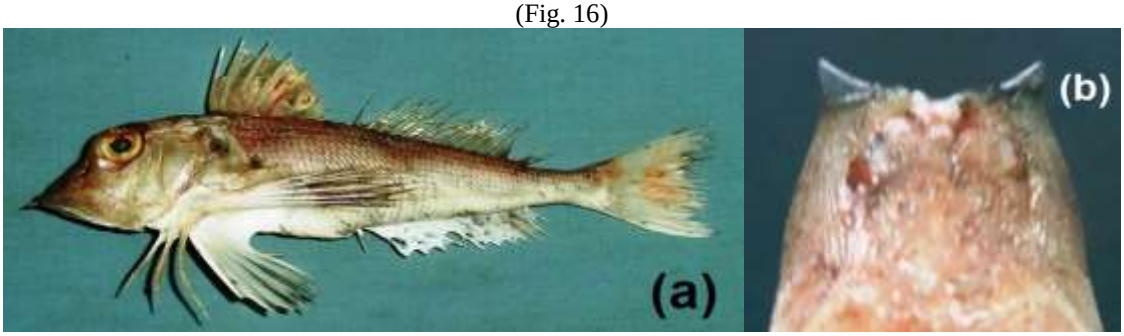

Fig. 16. *Lepidotrigla omanensis.* (a) Lateral view; (b) Dorsal view of head

This species is commonly known as Oman gurnard. It was reported from off mouth of River Indus, Sindh Coast by Anonymous (1993, 2001), from Makran Coast, Balochistan by Ahmed and Qureshi (1970), from off Pasni by Anonymous (1993). It was reported from Pakistan without mentioning any specific

location by Ahmed and Qureshi (1970), Bianchi (1985), Hoda (1985, 1988), Hussain (2003), Jalil and Khaliluddin (1971, 1984), Psomadakis *et al*. (2015), Richards (1984, 1992) and Richards and Saksena (1977). It was described for the first time from sea of Oman by Regan (1905). Its holotype is not known, however, lectotype (BMNH 1904.5.25.20) is housed in British Museum of Natural History, London, U. K. (Frickle *et al*., 2023).

Its rostral process with prominent blade-like projection (Fig. 16b). Body scales firmly attached; nape and belly fully scaled; breast and inter-pelvic area naked; Lateral line scales 53–58; 10–14 scale rows below lateral line. Its colour is reddish; 1st dorsal-fin membrane with black blotch; inner surface of pectoral fins black, separate lower rays pale.

This species is reported from Arabian Sea, from Gulf of Aden to Gulf of Oman, Pakistan, India and Myanmar but not known from Red Sea or Persian Gulf (Froese and Pauly, 2023; Richards, 2022). During the present study a number of specimens were examined.

Material Examined

- 1 specimen collected from Karachi Fish Harbour on May 7, 2014 (16 cm TL).
- 1 specimen collected from Karachi Fish Harbour on February 15, 2017 (12 cm TL).

Lepidotrigla spiloptera Gunther,1880
(Fig. 17)

This species is commonly known as spotted-wing gurnard. It was reported from Pakistan without mentioning any specific location by Bianchi (1985), de Beaufort and Briggs (1962), Hussain (2003), Psomadakis *et al*. (2015), Richards (1992; 2022) and Richards and Saksena (1977). It was described for the first time from Kai Islands, Challenger station 192, Indonesia, Arafura Sea by Gunther (1880). Its holotype (BMNH 1879.5.14.269) is housed in British Museum of Natural History, London, U. K. (Frickle *et al*., 2023).

Its rostral process projecting slightly, with several spines, the lateral spine largest and medial spines smallest (Fig. 17b). No pre-opercle ridge. Scales weakly attached; nape and belly fully scaled; breast and inter-pelvic area naked; lateral line scales 60–65; 15–21 scale rows below lateral line. It head and upper body reddish orange; lower flanks, breast and belly distinctly white; 1st dorsal fin with red spot between 4th and 6th spines; 2nd dorsal fin and caudal fin pinkish; inner surface of pectoral fins dusky; pelvic fins and anal fin white.

This species is known to widely distributed in Madagascar, Somalia, Tanzania (Zanzibar), Oman, Persian Gulf, Gulf of Aqaba, Red Sea, Arabian Sea and Pakistan, northeastern India, Bay of Bengal, Indonesia, Australia, and Philippines (Froese and Pauly, 2023; Richards, 2022). Records from the Philippines and Japan may represent another species (Richards and Saksena, 1977). During the present study a number of specimens were examined.

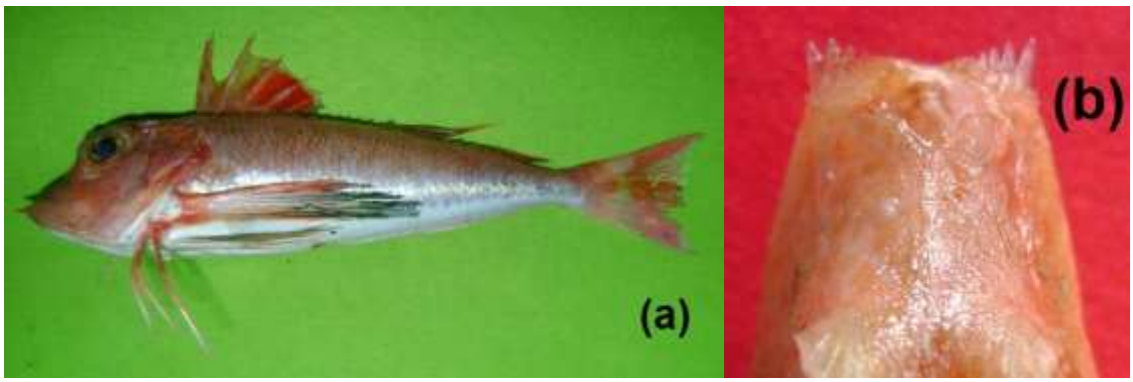

Fig. 17. *Lepidotrigla spiloptera*. (a) Lateral view; (b) Dorsal view of head.

Material Examined

- 1 specimen collected from R/V Firdous cruise dated October 1, 2009 (13 cm TL).
- 1 specimen collected from Karachi Fish Harbour on November 14, 2013 (17 cm TL).

Pterygotrigla (Otohime) arabica (Boulenger, 1888)
(Fig. 18)

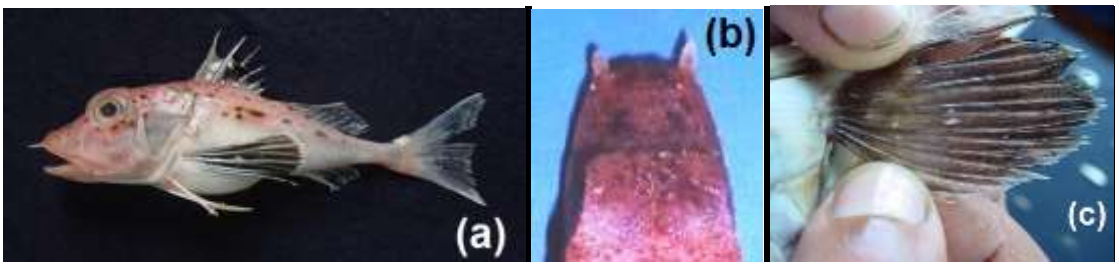

Fig.18. *Pterygotrigla (Otohime) arabica.* (a) Lateral view; (b) Dorsal view of head; (c) Pectoral fin black, without white spots.

This species is commonly known as Arabian gurnard. It was reported from Balochistan by Zugmayer (1913) and from Pakistan without mentioning any specific location by Psomadakis *et al*. (2015) and Richards (2022). It was originally described as *Trigla arabica* by Boulenger (1888). Its Holotype (BMNH 11.11.233, 1) is housed in British Museum of Natural History, London (Frickle *et al*., 2023). Zugmayer (1913) reported this species as *Trigla hemisticta* which is known to have distribution in eastern Indian Ocean and western Pacific. The records of the species from northern Indian Ocean according to Golani and Barznes (1997) and Richards *et al.* (2003) are referable to *P. arabica.* The latter is usually synonomized with this species however, *P. arabica.* is quite distinct from this species in having different coloration and in having numerous and slightly longer gillrakers.

In this species cleithral spine present;opercular spine long, extending behind cleithrum; rostral spine short; no nasal spine or antrorse rostral spine. Gillrakers 1 or 2/10–15. Breast scaly or naked; lateral line scales 53 or 54. Body pinkish red, dorsum with distinct, irregular black spots; 1st dorsal fin with black blotch on membranes between spines 3–5; inner surface of pectoral fins black, without white spots (Fig. 18c).

This species is reported from Western Indian Ocean including Persian Gulf, Gulf of Oman, Pakistan to southwestern India (Kerala) and Bay of Bengal (Frickle *et al*., 2023). During the present study a number of specimens were examined.

Material Examined

- 1 specimen collected from R/V Fridtjof Nansen cruise dated October 18, 2010 (22 cm TL).
- 1 specimen collected from Karachi Fish Harbour on August 30, 2017 (24 cm TL).
- 1 specimen collected from Karachi Fish Harbour on September 3, 2018 (20 cm TL).

Trigla lyra Linnaeus, 1758

This species is commonly known as piper gurnard. It was reported from off Karachi coast by Hussain and Kidwai (1994) and Hussain (2003). It was recorded for the first time from British Seas by Linnaeus (1758), however, no type is known (Frickle *et al*., 2023). This species is known from the eastern Atlantic and Mediterranean (Froese and Pauly, 2023). It is definitely a misidentification and since the sample of this species is not available, therefore, cannot be assigned to any other species. No specimen of this species was examined during the present study.

CONCLUSION

Most species belonging to families Dactylopteridae, Peristediidae, Platycephalidae and Trigilidae are small in size, therefore, are of almost no commercial value except bartail flathead (*Platycephalus indicus*) which can grow to a length of 80 to 90 cm and may attain a weight of 3 to 5 kg, therefore, commercially harvested and consumed locally in Pakistan (Fig. 19). There is no aimed fisheries for this species, however, it is targeted in the intertidal area at Ras Juddi, Pasni along Balochistan during summer month. It is considered to be a good food fish which is marketed in fresh or chilled forms. Almost all the species of four families are primarily benthic species and predatory in nature, therefore, play important role in the coastal ecology. Family Platycephalidae is most commonly occurring group among the four families whereas members of

Family Peristediidae are extremely rare and only seldom caught. Flatheads lie in wait buried by sand, with only their eyes poking out from the substrate. When prospective prey walks or swims close to its head, the flathead strikes rapidly, engulfing the prey in its large mouth. As flatheads are ambush predators they are expected to be relatively sedentary and not move large distances as adults.

Fig. 19. A heap of bartail flathead (*Platycephalus indicus*) at Karachi Fish Harbour.

The present study revealed that these four families are represented by 30 species belong to 13 genera in Pakistan. Of these; Dactylopteridae is represented by 3 species belonging to 1 genus, Family Peristediidae represented by 2 species and 1 genus, Family Platycephalidae represented by 19 species belong to 8 genera whereas Family Trigilidae is represented by 6 species belonging to 3 genera. It may be added that the occurrence of *Satyrichthys rieffeli* (Kaup, 1859) and *Trigla lyra* Linnaeus, 1758 are based of misidentification of some other species which requires further investigations.

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