

## SCORPIONFISHES OF FAMILIES SCORPIANENIDAE, TETRAROGIDAE AND APISTIDAE, FROM PAKISTAN

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### ABSTRACT

Scorpionfishes belonging to families Apistidae, Scorpienidae and Tetrarogidae are represented by many species in Pakistan, however, no comprehensive account of the known species of the area is ever published. Present study reports details of the scorpionfishes occurring in Pakistan based on published literature as well as through the collection of specimens from various parts of Pakistan. A total of 30 species were reported in this paper; of these, 1 species belonged to family Apistidae, 23 species belonged to Scorpienidae and 6 species belonged to family Tetrarogidae. Of these, blacklash scorpionfish (*Pontinus nigerimum*) and broadbarred firefish (*Pterois antennata*) reported for the first time from Pakistan coast.

**Key words:** Scorpionfishes, Apistidae, Scorpienidae, Tetrarogidae, *Pontinus* and *Pterois antennata*, *Scorpaenopsis lactomaculata*, *S. ramaraoi* *S. venosa*.

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### INTRODUCTION

Fishes belonging to Families Apistidae, Scorpienidae and Tetrarogidae are commonly categorized as scorpionfishes. They belong to Order Scorpaeniformes are known to have potent neurotoxin and, are responsible for the most marine envenomations annually (Diaz, 2015). Spines of these fishes (dorsal, pelvic and/or anal fins) have encapsulated glandular venom-producing integumentary sheaths that inject venom when come in contact with a victim resulting in painful wounds. Members of Families Apistidae, Scorpienidae and Tetrarogidae are mainly bottom dwellers in coastal waters as well as in waters as deep as 2,200 m. These species are no commercial importance and there is no target fisheries for scorpionfishes in Pakistan. Mostly the species of these families are caught as bycatch of bottom-set gillnet and trawl fisheries.

Scorpionfishes belonging to families Apistidae, Scorpienidae and Tetrarogidae were not separately described from Pakistan, however, the members of this order are included in many checklists including Hoda (1985, 1988), Hussain (2003) and Jalil and Khaliluddin (1971, 1982). Psomadakis *et al.* (2015) have reported 11 species belonging to these three families from Pakistan. In addition, Osmany and Moazzam (2018) have reported 11 species of stonefishes belonging to Family Synanceidae (Order Scorpaeniformes) from Pakistan. A review of species of families Apistidae, Scorpienidae and Tetrarogidae from Pakistan is given in the present paper.

### MATERIAL AND METHODS

Published scientific literature was examined for the records of various stonefish species from Pakistan coast. In addition, specimens of families Apistidae, Scorpienidae and Tetrarogidae collected between 2005 and 2023 from Karachi Fish Harbour. Samples collected from the harbour, were photographed and salient features and measurement were recorded, before, their preservation in 5 % neutralized formalin.

### RESULTS AND DISCUSSION

Locally known as “serin” (scorpion) in Sindhi and “bheel-alari (oscillating tides), the fishes of families Apistidae, Scorpienidae and Tetrarogidae are feared as these can inflict painful sting. In most cases, the specimens of these fishes are thrown overboard, if caught in fishing gears. These fishes were avoided by divers and snorkelers because of same reason. These species are arranged in alphabetical orders in this paper.

Family Apistidae (Waspfishes)  
*Apistus carinatus* (Bloch & Schneider, 1801)  
 (Fig. 1)

This species is commonly known as ocellated waspfish and it was reported from Pakistan by Ahmad and Qureshi (1970), deBeaufort and Briggs (1962), Froese and Pauly (2023), Hoda (1985, 1988), Hussain (2003), Jalil and Khalil (1972, 1981) and Poss and Rama Rao (1984). This species was originally described as *Scorpaena carinata* from Tranquebar, India by Bloch and Schneider (1801). Its holotype (ZMB 32338) is housed in Zoologisches Museum, Humboldt Universitat, Berlin (Frickle *et al.*, 2023).



Fig. 1. *Apistus carinatus* collected from Cruise on board R/V Firdous on 15 November, 2009

This species is commonly known as ocellated waspfish and it was reported from Pakistan by Ahmad and Qureshi (1970), deBeaufort and Briggs (1962), Froese and Pauly (2023), Hoda (1985, 1988), Hussain (2003), Jalil and Khalil (1972, 1981) and Poss and Rama Rao (1984). This species was originally described as *Scorpaena carinata* from Tranquebar, India by Bloch and Schneider (1801). Its holotype (ZMB 32338) is housed in Zoologisches Museum, Humboldt Universitat, Berlin (Frickle *et al.*, 2023).

This species is known from East Africa south to Natal, South Africa, Red Sea and the Persian Gulf and India and the Philippines, China and Japan and Australia. (deBeaufort and Briggs, 1962; Poss and Rama Rao (1984). It is widely distributed in Indo-West Pacific Area (Froese and Pauly, 2023).

This species is found on continental shelf area with soft bottom. It is usually remain bury in the sand and if disturbed, it spreads its long pectoral fins with the bright upper color to threaten the predators (Froese and Pauly, 2023). It uses its barbells to detect preys which are buried in sediment (Kuitert and Tonozuka (2001)). Its spines on fins are venomous (Smith and Wheeler, 2006). During the present study a number of specimens were examined that ranged between 12 and 19 cm.

#### Material Examined

- One specimen collected from Cruise on board R/V Firdous on 15 November, 2009 (17.9 cm TL)
- One specimen collected from Karachi Fish Harbour on 26 January, 2014 (16.5 cm TL)
- One specimen collected from Karachi Fish Harbour on 15 February, 2014 (17.0 cm TL)
- One specimen collected from Karachi Fish Harbour on 17 October, 2014 (14.0 cm TL)
- One specimen collected from Karachi Fish Harbour on 04 September, 2018 (18.0 cm TL)
- One specimen collected from Karachi Fish Harbour on 11 March, 2020 (16.0 cm TL)
- One specimen collected from Karachi Fish Harbour on 19 October, 2020 (17.0 cm TL)

Family Scorpienidae (Scorpionfishes, Stingfishes, Stonefishes, Waspfishes, Coral crouchers)

*Caracanthus zeylonensis* (Day 1870)  
(Fig. 2)

This species was reported from Pakistan by Ahmed and Qureshi (1970), Hoda (1985, 1988), Hussain (2003) and Jalil and Khalil (1972, 1981). It was originally described as *Amphiprionichthys zeylonensis* from off Galle, Sri Lanka by Day (1870). No holotype of this species is known, however, syntypes used to be housed in Zoological Survey of India, Kolkata (Frickle *et al.*, 2023). Day (1875) later on published photograph of this species as *Micropus zeylonicus*. This species is now included in synonym of *Caracanthus unipinna* (Froese and Pauly, 2023; Poss and Motomura 2022). The latter was originally described as *Micropus unipinna* from Pacific Ocean by Gray (1831). Its holotype (BMNH 1971.7.16.2) used to be housed in Natural History Museum, London, U. K. (Frickle *et al.*, 2023).



Fig. 2. *Caracanthus zeylonensis* collected from Cruise on board R/V Fridtjof Nansen on 20 October, 2010

Day (1870) examined three specimens, upto 2 ½ inches in length which were dredged up off Galle, Sri Lanka. According to description of *Amphiprionichthys zeylonensis* given by Day (1870), this species has 7 spine dorsal fins and 14 rays, pectoral with 13 spines. Its length of head 1/3 of caudal fin and 1/5 of total length. It has bluish color along the upper half of the body, becoming dirty brown on the abdomen. An irregular series of about eight yellow blotches along the back, increasing in numbers towards the abdomen. Fins light-colored. It may be added that Day (1870) examined the preserved specimens, therefore, colour may not be different from live animal.

In comparison, *Caracanthus unipinna* has its body relatively uniformly brown, orangish red or greyish, without spots, but often darker above lateral line. It also lacks a notch and has continuous or barely notched in the dorsal fin. The specimens from Pakistan has bluish red along the middle of the body. There are dark blotches in irregular series along the back which increased in numbers towards abdomen. Fins hyaline. The color pattern of *Caracanthus zeylonensis* of specimens from Sri Lanka (as given by Day, 1870) and specimen from Pakistan are quite different from *Caracanthus unipinna*, therefore, there is reason to believe that *Caracanthus zeylonensis* is a valid species. This may, therefore, may not be included in synonym of *Caracanthus unipinna*. Consider this to be a valid species its common name may be used as Sri Lankan coral croucher.

#### Material Examined

- One specimen collected from Cruise on board R/V Fridtjof Nansen on 20 October, 2010 (4.0 cm TL)-Partially mutilated.

#### *Brachyterois serrulata* (Richardson, 1846)

Sawcheek scorpionfish was reported from Pakistan by Poss and Motomura (2022). This species was originally described as *Sebastes serrulatus* from Seas of China by Richardson (1846). Its holotype used to be housed in British Museum of Natural History which is apparently lost (Frickle *et al.*, 2023). Matsunuma *et al.* (2013) revised the genus *Brachyterois* Fowler 1938. According to them *Brachyterois serrulata* has

16 pectoral-fin rays (rarely 15 or 17). Its caudal fin has relatively few large dark spots, 2–10 spots on longest (middle) ray whereas posterior lacrimal spine usually directed downward.

According to Poss and Motomura (2022), it has widespread distribution in the Indo-Pacific area including the western Indian Ocean: Red Sea, Oman, Gulf of Oman (Iran), Pakistan, India and Madagascar; elsewhere to Myanmar, Philippines, Taiwan, Japan and Australia. According to Frickle *et al.* (2023), *Brachyterois serrulata*, may have restricted to the western Pacific including Gulf of Thailand, Borneo and Vietnam to southern Japan. Elsewhere, its distribution may be carefully studied. During present study no specimen of this species was examined.

***Brachyterois serrulifer* Fowler 1938**

(Fig. 3)

This species is commonly known as sawmaxilla scorpionfish and was reported from Pakistan by Psomadakis *et al.* (2015) and off Sonmiani, Balochistan, Pakistan by Matsunuma *et al.* (2013). It was originally described as *Brachyterois serrulifer* from Philippines (16°30'36"N, 120°11'06"E), Albatross station D.5542, depth 45 fathoms by Fowler (1938). Its holotype (USNM 98886) is housed in National Museum of Natural History, Washington D.C., U.S.A. (Frickle *et al.*, 2023).



Fig. 3. *Brachyterois serrulifer* Fowler 1938 collected from off Sonmiani Cruise on board R/V Firdous on 15 November, 2009

*Brachyterois serrulifer* differed from *B. serrulata* in having 15–17 pectoral-fin rays (14–16 in *B. serrulata*) and 2–10 spots on the longest caudal-fin ray (5–13 in *B. serrulata*). *B. serrulata* always lacked spines on the median lateral ridge of the maxilla whereas *B. serrulifer* may have 0–22 spines in specimens larger than 60 mm SL

*Brachyterois serrulifer* is widely distributed in the Indo-west Pacific region, including Madagascar, Red Sea and Persian Gulf, east to the Philippines, South and East China seas, and north to southern Japan (Matsunuma *et al.*, 2013). Record of *Brachyterois serrulata* from Pakistan and other parts of Western Indian Ocean by Poss and Motomura (2022) is possibly based on misidentification of *B. serrulifer*.

**Material Examined**

- One specimen collected from off Sonmiani Cruise on board R/V Firdous on 15 November, 2009 (13.5 cm TL)
- One specimen collected from Karachi Fish Harbour on 15 April 2010 (12.0 cm TL)
- One specimen collected from Karachi Fish Harbour on 24 October, 2013 (16.0 cm TL)

- One specimen collected from Karachi Fish Harbour on 02 September, 2014 (13.0 cm TL)
- One specimen collected from Karachi Fish Harbour on 02 September, 2014 (12.0 cm TL)

*Dendrochirus zebra* (Cuvier, 1829a)

Zebra turkeyfish as it is commonly known as reported from Native Jetty, Karachi and Churna Island by Ahmed and Wazarat (1993). It was also reported by Ahmad and Qureshi (1970) and Hoda (1985, 1988) from Pakistan without mentioning any specific location. Ahmad and Qureshi (1970) and Hoda (1985, 1988) reported this species as *Pterois zebra* whereas Ahmed and Wazarat (1993) referred it as *Brachirus zebra*. It was originally described as *Pterois zebra* from Ambon Island, Moluccas Islands, Indonesia, Mauritius, Moluccas and New Guinea by Cuvier (1829a). No holotype is known, however, syntypes are housed in Museum National d'Historie Naturelle, Paris, France (Frickle *et al.*, 2023).

Dorsal-fin is membranous and deeply incised anteriorly, nearly to fin base whereas pectoral fin membranes not incised, except between lower unbranched rays which are incised along. Its body and fins have 7 or 8 broad, dark brown or brownish red bars separated by paler, cream or white areas, often interspersed with narrower, slightly more obscure bars; bars on head primarily radiate from eyes, with bar from orbit to subopercle and lower part of opercle prominent and sometimes nearly black; dorsal-fin spines alternating between transverse dark and pale bands; dorsal- and anal-fin rays white or nearly so, with regularly arranged nearly black spots, and fin membranes transparent; pectoral fins greenish or greyish distally, with pinkish or reddish bars over rays more proximally, and usually with 1 or 2 irregular darker reddish brown bars at base between paler pinkish areas, and white or yellow spot in axil; pelvic fins dusky grey-black; tipped Y- or nearly T-shaped brownish red bar on peduncle (Poss and Motomura, 2022).

This species is widely distributed in the Indo-Pacific including Western Indian Ocean (Red Sea, Kenya to Mozambique, Comoros, Seychelles, Mascarenes, Chagos, Maldives and India). It is also known from Thailand, Vietnam, Indonesia, Philippines, Taiwan, southern Japan, Palau, New Guinea, New Caledonia, Vanuatu, Fiji, Tonga, Samoa, Australia, Lord Howe Island, to Society Islands (Frickle *et al.*, 2023; Froese and Pauly, 2023; Poss and Motomura, 2022). During the present study, no specimen of this species was examined.

*Ebosia falcata* Eschmeyer & Rama-Rao 1978  
(Fig. 4)



Fig. 4. *Ebosia falcate* collected during Cruise on board R/V Firdous on 15 November, 2009

This species is commonly known as falcate lionfish and reported from Pakistan by Froese and Pauly (2023), Matsunuma and Motomura (2014) and Psomadakis *et al.* (2015). This species was originally described from Somalia (11°04'N, 51°15'E, depth 76-80 m) by Eschmeyer and Rama-Rao (1978). Its holotype (USNM 218411) is housed in the National Museum of Natural History, Washington D.C., U.S.A. (Frickle *et al.*, 2023).

This species is characterized in having a blotch above pectoral-fin base and blotches on pectoral-fin membrane relatively large; yellowish median fins and broadly yellow pectoral fin in males; elongated parietal spine in males relatively narrow and strongly falcate posterodorsally, its tip reaching fourth to eighth dorsal-fin spine bases (Matsunuma and Motomura, 2014). *E. falcata* can be distinguished from *E. saya* and *E. vespertina* in having postorbital length 19–24% of standard length (17 to 21 % in two other species) and having 4 or 5 scale rows above lateral line (4 to 6 in other species). In addition, *E. saya* has more spines on the preocular, supraocular, and postocular bones compared to *E. falcata* and has a blotch above the pectoral-fin base and smaller blotches on the pectoral fin (Poss and Motomura, 2022).

*E. falcata* can be readily distinguishable from *E. bleekeri* by having usually one more anal-fin soft ray and usually one more pectoral fin ray (16–18), and males with a narrow strongly falcate parietal spine and a broadly yellow pectoral fin.

*Ebosia falcata* is known from Somalia, Pakistan and the west coast of India in the northwestern Indian Ocean, and off the Myanmar, Andaman Sea coast of Thailand (Eschmeyer and Rama-Rao, 1978; Frickle *et al.*, 2023; Kotthaus, 1979; Matsunuma and Motomura, 2014). During the present study, a number of specimens were examined which ranged between 11.0 and 13.0 cm.

#### Material Examined

- One specimen collected during Cruise on board R/V Firdous on 15 November, 2009 (11.7 cm TL)
- One specimen collected from Karachi Fish Harbour on 18 April 2014 (12.0 cm TL).

#### *Neomerinthe erostris* (Alcock, 1896) (Fig. 5)



Fig. 5. *Neomerinthe erostris* collected during trawled from offshore waters (depth 130 m) southwest of Karachi,

It is commonly known as round scorpionfish and was reported from Pakistan by Osmany and Moazzam (2022). This species was originally described as *Scorpaena erostris*, Alcock (1896) from off

southern Sri Lanka. Its holotype is not known, however, lectotype (ZSI F 12977) and paralectotypes (ZSI F 12978) are housed in Zoological Survey of India Museum, Kolkata, India (Fricke *et al.*, 2023).

Osmany and Moazzam (2022) provided detailed characteristics of the specimen of this species collected from offshore waters of Karachi. It is widely distributed in the Indo-West Pacific Ocean including Madagascar, Pakistan, Réunion Island, Yemen, Sri Lanka, Taiwan, the Philippines, Indonesia, the Solomon Islands, New Caledonia, Vanuatu, and the Wallis and Futuna Islands (Fricke *et al.*, 2023; Motomura *et al.*, 2015; Osmany and Moazzam, 2022). Along the Pakistan coast, it was trawled from a depth of 130 m (Osmany and Moazzam, 2022). Motomura *et al.* (2015), however, recorded this species from depths of 52–505 m whereas according to Poss and Motomura (2022) it is found over mud bottom, at 58–330 m.

#### Material Examined

- One specimen collected during trawled from offshore waters (depth 130 m) southwest of Karachi, Arabian Sea on 22 January 2022 (13.5 cm TL).

#### *Parapterois macrura* (Alcock 1896)

(Fig. 6)

Its common name is thin scorpionfish. It was reported from Pakistan by (Fricke *et al.* (2023), Poss and Motomura (2022), and Psomadakis *et al.* (2015). It was originally described as *Pterois macrura* from Malabar Coast off Calicut, India by Alcock (1896) Its holotype is not known, however, lectotype (ZSI 13828) is housed in in Zoological Survey of India, Kolkata (Fricke *et al.*, 2023).

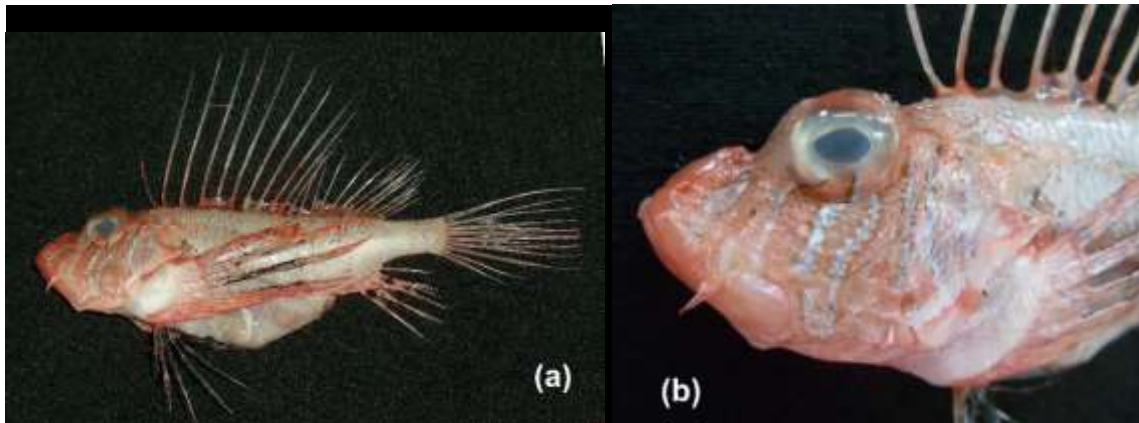


Fig. 6. *Parapterois macrura* (a) specimen collected from Karachi Fish Harbour on 16 September 2014; (b) Head showing lacrimal bone with prominent tentacle.

Its common name is thin scorpionfish. It was reported from Pakistan by (Fricke *et al.* (2023), Poss and Motomura (2022), and Psomadakis *et al.* (2015). It was originally described as *Pterois macrura* from Malabar Coast off Calicut, India by Alcock (1896) Its holotype is not known, however, lectotype (ZSI 13828) is housed in in Zoological Survey of India, Kolkata (Fricke *et al.*, 2023).

This species is known to have 1 or 2 upper caudal-fin rays filamentous. Upper margin of orbit above level of dorsal fin origin; area between eyes and upper margin of lachrymal and suborbital bones broad; vertical scale rows 43–49; no scales between posterior nostrils (Motomura, 2004). Its head and body reddish brown, with dark narrow vertical bars on flanks and beneath eyes; a flap with small black spots may be present on tip of 1st dorsal-fin spine; upper and lower edges of pectoral fins orange-red.

This species is known to be distributed in Bay of Bengal and Arabian Sea including southwestern India, Somalia and southern Oman east to Pakistan (Fricke *et al.*, 2023; Matsunuma *et al.*, 2013). It is found between 41–271 m (Poss and Motomura (2022). During the present investigation only one specimen collected from Karachi Fish Harbour on 16 September 2014 was examined

## Material Examined

- One specimen collected from Karachi Fish Harbour on 16 September 2014 (16.4 cm TL).

*Pontinus nigerimum* Eschmeyer 1983  
(Fig. 7)



Fig. 7. *Pontinus nigerimum* collected from Karachi Fish Harbour on 16 January, 2008

This species is commonly known as blacklash scorpionfish. It is first report of occurrence of this species in Pakistan coast. It was originally described as *Pontinus nigerimum* from off KwaZulu-Natal, South Africa, and southwestern Indian Ocean by Eschmeyer (1983). Its holotype (SAIAB -formerly RUSI-11132) is housed in South African Institute for Aquatic Biodiversity, Rhodes University, Grahamstown, Makhanda, South Africa (Frickle *et al.*, 2023).

According to Ajina, *et al.* (2022) it is reddish in color; large tentacle above eye, with black lower portion. Its body is pinkish or rose-red with indications of yellow; belly pale; when present, supraocular cirrus (damaged in examined) specimen with black bands (Poss and Motomura, 2022).

This species is known from South Africa, Mozambique, Madagascar and western Mascarenes (La Réunion), Chagos Archipelago; India in Andaman and Nicobar Islands (Ajina *et al.*, 2022; Frickle *et al.*, 2023; Poss and Motomura 2022). Present paper extends the distribution of this species to further north to the Arabian Sea, Pakistan coast.

## Material Examined

- One specimen collected from Karachi Fish Harbour on 16 January, 2008 (12.7 cm TL).
- One specimen trawled from offshore waters off Sonmiani Bay on 14 July, 2009 (14.3 cm TL)

*Pterois antennata* (Bloch, 1787)  
(Fig. 8)



Fig. 8. *Pterois antennata* photographed by Dr. Amer Bazi Khan at Churna Island on 11 December 2022



It is commonly known as broadbarred firefish and reported for the first time from Pakistan. It was originally described as *Scorpaena antennata* from Ambon Island, Moluccas Islands Indonesia by Bloch (1787). Its holotype (ZMB 796) is housed in Zoologisches Museum, Humboldt Universitat, Berlin (Frickle *et al.*, 2023).

Head and body of this species is known to have with many red or reddish brown bars with narrow white or pale margin, bars narrower posteriorly, those on peduncle narrowest, irregular, oblique; supraoccipital tentacle banded white and dark brown or black; large pale or white cirrus at rear end of lachrymal and another near tip of maxilla. It has dark brown or black spot on subopercle; dorsal fin spines alternating from nearly black to white, except proximally where they are paler and reddish; upper part of pectoral-fin bases may have small white spot, fin membranes have dark spots proximally, and filamentous rays white to pale red. Tentacle above eye long and with dark bands broken in the specimen examined from Pakistan).

This species is reported by de Beaufort and Briggs (1962) from Muscat (Oman) and India. It is widely distributed in the Indo-Pacific area including South Africa to Marquesan and Mangareva islands Madagascar, Comoros, Seychelles, Mascarenes and Chagos, Indonesia, southern Japan, Queensland, Australia and Micronesia (Froese and Pauly, 2023). A number of specimens that were trawled from the coastal waters of Karachi (off Cape Monz) and in the Sonmiani Bay, were examined during present study.

#### Material Examined

- One specimen collected from Karachi Fish Harbour on 08 January, 2006 (17.9 cm TL).
- One specimen collected from Karachi Fish Harbour on 12 March, 2018 (19.1 cm TL)

#### *Pterois miles* (Bennett, 1828)

(Fig. 9)

This species is commonly known as devil firefish and was reported from Sindh coast by Murray (1880) and Sorely (1932) and from Balochistan coast by Zugmayer (1913). It was originally described as *Scorpaena miles* from south coast of Sri Lanka by Bennett (1828), however, no type is known (Frickle *et al.*, 2023).



Fig. 9. *Pterois miles* courtesy Mr. Shabib Asghar. Photographed at Churna Island.

This species is characteristically known to have 13 dorsal fin spines, interspinous membranes incised nearly to base, 9–11 elongate rays; pectoral fins with 12–14 long rays and membranes feathery. Supraocular cirrus usually fimbriate. Pale background and dark red or reddish brown vertical bars on the

head and body, typically of irregular width; 3 or 4 broad stripes radiate from eyes; supraocular cirrus usually dark brown or black, sometimes faintly barred; dorsal-fin spines with dark brown, dark grey or dark red areas alternating with nearly white areas; dorsal-, anal- and caudal fin rays with numerous black spots, membranes translucent.

This species is reported from Indian Ocean including Red Sea, Eastern Cape and South Africa, East Africa, Socotra (Yemen), Seychelles, Comoros, Madagascar, La Réunion, Mauritius, Rodrigues, Persian Gulf, to Singapore and Indonesia. This species is a Lessepsian migrant to Mediterranean Sea through Red Sea and is possibly invasive in western Atlantic and Caribbean Sea (Frickle *et al.*, 2023; Froese and Pauly, 2023; Poss and Motomura, 2022).

Material Examined:

- One Specimen – Photographed by Mr. Shabib Asghar; a SCUBA diver, at Churna Island, Balochistan on 30 October 2022.

*Pterois mombasae* (Smith, 1957)

(Fig. 10)

This species is commonly known as Mombasa or frillfin turkeyfish and was reported from Pakistan by Poss and Motomura (2022) and Psomadakis *et al.* (2015). It was originally described as *Pteropterus mombasae* from reef near Mombasa, Kenya by Smith (1957). Its holotype SAIAB (formerly RUSI) 117 is housed in South African Institute for Aquatic Biodiversity, Rhodes University, Grahamstown, Makhanda, South Africa (Frickle *et al.*, 2022).



Fig. 10. *Pterois mombasae*. collected from Karachi Fish Harbour

This species has numerous head spines bifid or multifid; lachrymal and suborbital ridge with numerous small spines. Body mostly red-orange or brownish red dorsally, somewhat paler ventrally, and salmon-pink on breast and chin; dark reddish brown ocellus on subopercle; colours darkest in broad, roughly vertical bars, alternating from broad to narrow, with white or pale pink in between, except on peduncle where bars are incomplete and more irregular, and some bars appear to radiate from eyes; dorsal-fin spines and membranes annulated with black, dark grey or brown, separated by white or pinkish regions; soft median-fin membranes usually pinkish and nearly transparent but with numerous small black spots.

This species is known from Red Sea; Indian Ocean: Aliwal Shoal (South Africa), East Africa, Socotra (Yemen), Seychelles, Sri Lanka and Madagascar east to western Indonesia (Frickle *et al.*, 2023). Many specimens of this species were examined during the present study which ranged between 21 and 25 cm (TL).

Material Examined:

- One specimen collected from Karachi Fish Harbour on 20 February 2013 (25.0 cm TL).

- One specimen collected from Karachi Fish Harbour on 26 February 2013 (22.0 cm TL)
- One specimen collected from Karachi Fish Harbour on 26 March 2015 (24.0 cm TL)
- One specimen collected from Karachi Fish Harbour on 02 March 2017 (21.0 cm TL)
- One specimen collected from Karachi Fish Harbour on 10 October 2017 (24.0 cm TL)

***Pterois radiata*** Cuvier, 1829a

This species is commonly known as radial firefish and reported from Native Jetty and Thandi Sarak, Karachi and Churna Island (Ahmed, 1996; Ahmed and Wazarat, 1993). It was originally described from Tahiti, Society Islands by Cuvier (1829a), however, no type is known (Frickle *et al.*, 2023). There are five broad dark black bands on the side of body and a horizontal broad dark band on caudal peduncle; the fourth and fifth body bands relatively narrow (Matsunuma and Motomura, 2015).

This species is known to be widely distributed in the Indo-Pacific area including Red Sea to South Africa, East Africa, Persian Gulf, Socotra (Yemen), Seychelles, Comoros and Madagascar and to the Society Islands, the Ryukyu Islands, and to Western Australia, Queensland (Australia), New Caledonia and Tonga (Frickle *et al.*, 2023; Froese and Pauly, 2023). No specimen of this species was collected/recorded from Pakistan.

***Pterois russellii*** Bennett, 1831

(Fig. 11)

This species is commonly known as plintail turkeyfish. It was reported from, Sindh coast by Ahmad *et al* (1973), Murray (1880), Poss and Rama-Rao (1984), from Balochistan by Ahmad *et al* (1973). It was also reported from Pakistan coast without mentioning any specific location by Ahmad and Qureshi (1970), Froese and Pauly (2023), Halstead *et al.* (1990), Hoda (1985, 1988), Hussain (2003), Jalil and Khalil (1972, 1981) and by Poss and Motomura (2022). This species was originally described from India by Bennett (1831), however, no type is known (Frickle *et al.*, 2023).

The head, body and fins of this species are red or reddish pink, with ~16 brown or reddish brown vertical bars on body alternating with narrower whitish bars; pectoral fins reddish or pinkish, with black spots over 2 uppermost rays, small white spots typically present in axil, and large black spot over cleithrum; some reddish spots but no dark spots on median fins. This species can be distinguished from other members of genus *Pterois* in having no spots on the median fins and generally, it has shorter dorsal spines (Allen and Erdmann, 2008).



Fig. 11. *Pterois russellii* on board R/V Firdous on 03 November 2009.

This species is known from the Indo-Pacific area including Tanzania to South Africa, Madagascar, Mascarenes to Arabian Sea (Pakistan), Persian Gulf, Gulf of Oman, and India; elsewhere to Bay of Bengal, Thailand, Malaysia, Indonesia, Philippines, Taiwan and Australia (Frickle *et al.*, 2023; Froese and Pauly, 2023; Poss and Motomura, 2022).

This species is occasionally caught in fishing operations in coastal waters over continental shelf especially off rocky ledges and reef area. During the present study a number of specimens ranging between 21.0 and 30.0 cm (TL) were examined

Material Examined:

- One specimen collected on board R/V Firdous on 03 November 2009 (24.0 cm TL).
- One specimen collected from Karachi Fish Harbour on 20 February 2013 (25.0 cm TL)
- One specimen collected from Karachi Fish Harbour on 25 June 2015 (30.0 cm TL)
- One specimen collected from Karachi Fish Harbour on 06 March 2017 (21.0 cm TL)
- One specimen collected from Karachi Fish Harbour on 07 March 2017 (25.0 cm TL)

*Pterois volitans* (Linnaeus, 1758)

This species is commonly known as red lionfish. It was reported from Sindh by Niazi (2001) and Sorely (1932), from Balochistan by Zugmayer (1913). It was also reported from Pakistan coast without mentioning any specific location by Ahmad and Qureshi (1970), Hoda (1985, 1988), Hussain (2003), Jalil and Khalil (1972, 1981). It was originally described as *Gasterosteus volitans* from Ambon Island, Moluccas Islands, Indonesia by Linnaeus (1758) however, no holotype of this species is known (Frickle *et al.*, 2023).

This species is known to have variable color, usually in relation to habitat. It often has large tentacles above eyes. It is known from the eastern Indian Ocean and western Pacific including Christmas Island and Cocos-Keeling Islands east to Marquesas Islands, Sea of Japan, Western Australia, New South Wales, Lord Howe Island, Kermadec Islands and French Polynesia (Frickle *et al.*, 2023). It is an invasive in and now established in western Atlantic: Florida (U.S.A.) south to Brazil including Gulf of Mexico and Caribbean Sea (Froese and Pauly, 2023). It may not be occurring in western Indian Ocean including Pakistan and records of this species from Pakistan (and also from the Red Sea to Sumatra) may be misidentification of *Pterois miles*. No specimen of this species was examined during present study.

*Parascorpaena picta* (Cuvier, 1829a)

This species is commonly known as northern scorpionfish. It was reported from Pakistan by Hoda (1985, 1988), Hussain (2003), Jalil and Khalil (1972, 1981). It was reported as *Pseudoscorpaena picta* by Hoda (1988), Jalil and Khalil (1972, 1981). It was originally described as *Scorpaena picta* from Java, Indonesia by Cuvier (1829a). Its holotype (MNHN 6707) is housed in Museum National d'Historie Naturelle, Paris, France (Frickle *et al.*, 2023).

Its posterior lacrimal spine hooked forward. Its colour is usually brownish, mottled with blackish poorly defined blotches. It is known from eastern Indian Ocean and western Pacific including Sri Lanka and Myanmar, Philippines and Fiji and northern Australia. There is no authentic record of this species from Arabian Sea. It seems that this species has erroneously being reported from Pakistan. No specimen of this species was examined during present study.

*Scorpaenodes guamensis* (Quoy and Gaimard, 1824)

This species is commonly known as Guam scorpionfish. It was reported from Pakistan by Ahmad and Qureshi (1970), Hoda (1985, 1988), Hussain (2003) and Jalil and Khalil (1972, 1981). It was originally described as *Scorpaena guamensis* from Guam, Mariana Islands, west Pacific by Quoy and Gaimard (1824). No holotype is known, however, syntypes are housed in Museum National d'Historie Naturelle, Paris, France (Frickle *et al.*, 2023). This species has a large dark blotch on opercle and lack a dark blotch on subopercle or spinous portion of dorsal fin. Its body is more or less darkly marbled or streaked and post-ocular spine usually slightly larger than tympanic spine.

This species is reported to Indo-West Pacific area including Red Sea, South Africa, eastern African coast, Seychelles, Comoros, Madagascar, La Réunion, Mauritius, Rodrigues Islands, French Polynesia, southern Japan, northwestern Australia, New South Wales (Australia), New Caledonia, Kermadec Islands and Tonga (Frickle *et al.*, 2023). No specimen of this species was examined during present study.

*Scorpaenodes investigatoris* Eschmeyer and Rama Rao, 1972  
(Fig. 12)



Fig. 12. *Scorpaenodes investigatoris* collected from Karachi Fish Harbour

This species is commonly known as Investigator scorpionfish and it was reported from Pakistan by Eschmeyer and Rama Rao (1972), Frickle *et al.*, (2023), Froese and Pauly (2023), Poss and Motomura (2022) and Psomadakis *et al.* (2015). This species was originally described from Pakistan (24°13'N, 65°52'E) by Eschmeyer and Rama Rao (1972). Its holotype (CAS 24264) is housed in California Academy of Sciences, San Francisco, California, U. S. A. (Eschmeyer and Rama Rao, 1972; Frickle *et al.*, 2023). This specimens was wrongly identified by Eschmeyer (1969) as *S. muciparus* (Alcock) were designated as types of *S. investigatoris*. Holotype (CAS 24264) and paratype ((CAS 24265) were figured as Fig. 1a and b by Eschmeyer (1969). The photograph of the specimen given in this paper (Fig. 12) is almost similar to photograph of the holotype.

Its head and body rosy dorsally, pinkish or cream ventrally; wide, dark but diffuse bars above lateral line and radiating from eyes; dorsal-fin base with irregular dark brownish red or nearly black spots, smaller dark brown or black spots on soft-rayed dorsal, anal, pelvic and caudal fins and a large dark spot at rear of spinous dorsal fin.

Material Examined

- One specimen collected from Karachi Fish Harbour on 11 October 2015 (11.0 cm TL).
- One specimen collected from Karachi Fish Harbour on 23 December 2018 (10.1 cm TL).

*Scorpaenodes muciparus* (Alcock, 1889)  
(Fig. 13)



Fig. 13. *Scorpaenodes muciparus* collected from Karachi Fish Harbour

It is commonly known as cave-headed Scorpionfish and reported from Pakistan by Anonymous (1993), Eschmeyer (1969), Froese and Pauly (2023), Poss and Motomura (2022) and Psomadakis *et al.* (2015). It was originally described as *Sebastes muciparus* from 26 miles north by east of Golpalpur (R/V Investigator station 42) by Alcock (1889). Its holotype (ZSI F12432) is housed in Zoological Survey of India, Kolkata (Frickle *et al.*, 2023).

This species has a pronounced notch between maxillary bones, into which fits a prominent knob on lower jaw symphysis. Suborbital ridge with 6 spines. Body bright red, with dark mottling forming several saddles; dark, nearly black blotch at almost end of dorsal fin; caudal fin with red spots. A number of specimens of this species were examined that have dark saddles are obscure, however, other black and red blotches are quite visible.

#### Material Examined

- One specimen collected from Karachi Fish Harbour on 24 November 2015 (17.0 cm TL).
- One specimen collected from Karachi Fish Harbour on 02 December 2015 (16.2 cm TL).

#### *Scorpaenopsis cirrosa* (Thunberg, 1793)

This species is commonly known as weedy stingfish and reported from Hoda (1985, 1988), Hussain (2003), Jalil and Khalil (1972, 1981) as *Scorpaenopsis leonina*. It was originally described as *Perca cirrosa* from Japan by Thunberg (1793), however, no type is known (Frickle *et al.*, 2023). *Scorpaena leonina* was described from Canton, China by Richardson (1846) is considered to be synonym of this species (Frickle *et al.*, 2023; Randall and Eschmeyer, 2002).

This species is projecting about one-fourth of eye of above dorsal profile of head; interorbital space hemispherical when viewed from front, and not deep; fourth or fifth dorsal spines usually longest; first dorsal spine 1.7-2.1 in second spine; snout length 2.8-3.05 in head length (Froese and Pauly, 2023; Randall and Eschmeyer, 2002).

This species is known from Northwest Pacific including Vietnam, China Hong Kong, Taiwan South Korea to southern Japan (Frickle *et al.*, 2023; Froese and Pauly, 2023; Randall and Eschmeyer, 2002). Its occurrence in Pakistan is considered doubtful till some authentic specimens are collected. During the present study, no specimen of this species was examined.

#### *Scorpaenopsis lactomaculata* (Herre, 1945)

(Fig. 14-15)

This species is commonly known as white-blotched scorpionfish. It was reported from Karachi by Randall and Eschmeyer (2002), from Astola Island by Anonymous (1993). It was also reported from Pakistan coast without mentioning any specific location by Psomadakis *et al.* (2015). Originally described as *Scorpaena lactomaculata* from shallow waters near Bombay, India by Herre (1945). Its holotype is housed in Zoological Survey of India, Kolkata (Frickle *et al.*, 2023).

This species is characterized to have 4<sup>th</sup> or 5<sup>th</sup> spine of dorsal fin longest; occipital pit moderately deep; snout relatively short; supraocular and post-ocular spines not broadly joined and pectoral fins with 18 or 19 (usually 18) rays. Its body is mottled brown or reddish brown, with irregular, broad, dark saddles beneath spinous dorsal fin, and another more or less continuous saddle with dark bars over soft-rayed part of dorsal and anal fins; white spot below eyes; crescent-shaped white markings near base of spinous dorsal-fin membranes, most prominent anteriorly; a hemispherical whitish specks on rear of spinous and soft-rayed parts of dorsal fin.

This species known from northern Arabian Sea including Pakistan and Persian Gulf countries to India (Randall and Eschmeyer, 2002; Froese and Pauly, 2023; Poss and Motomura, 2022). A number of specimens of this species was examined during the present study. It is among one of the commonly occurring scorpionfish which is found on rocky ledges along the coastline, within the coral assemblages and in shallow coastal waters.



Fig. 14. *Scorpaenopsis lactomaculata*. collected on board R/V Firdous on 02 September, 2009



Fig. 15. *Scorpaenopsis lactomaculata*; head showing occipital pit

Material Examined:

- One specimen collected on board R/V Firdous on 02 September, 2009 (22.0 cm TL)
- One specimen collected on board R/V Firdous on 17 October 2009 (23.0 cm TL).
- One specimen collected from Karachi Fish Harbour on 31 August 2010 (24.0 cm TL)
- One specimen collected from Karachi Fish Harbour on 10 March 2017 (26.0 cm TL)

*Scorpaenopsis ramaraoi* Randall and Eschmeyer, 2002  
(Fig. 16-17)



Fig. 16. *Scorpaenopsis ramaraoi* collected from Karachi Fish Harbour

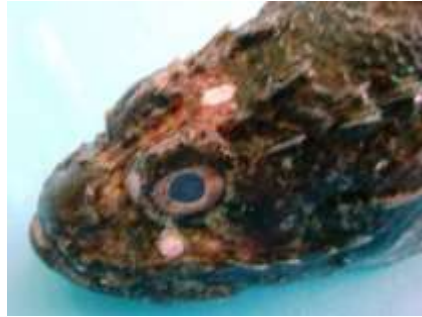


Fig. 18. *Scorpaenopsis ramaraoi*; head showing occipital pit

This species is commonly known as Rama Rao's scorpionfish. It was reported from Astola Island (Randall and Eschmeyer, 2002). It was also reported by Froese and Pauly (2023), Poss and Motomura (2022) and Psomadakis *et al.* (2015) from Pakistan without mentioning any specific location. This species was originally described from Off Hikkaduwa (1/2 mile offshore, Sri Lanka, depth 10-12 meters) by Randall and Eschmeyer (2002). Its holotype (BPBM 27202) is housed in Bernice P. Bishop Museum, Honolulu, Hawaii, U.S.A. (Frickle *et al.*, 2023).

This species has a distinct median interorbital ridge. Ridge above anterior lacrimal spine with a pointed tip. Upper opercular spine single, narrow and without a median ridge. Space between opercular spines without ridges. Supraocular tentacle well-developed. Its body is mottled brown or reddish brown on tan background, with numerous scattered white markings over head and fins; darker markings on head and on sides forming weak bars; pinkish ventrally and on distal and ventral parts of pectoralfins and pelvic-fin bases.

This species can be distinguished from *Scorpaenopsis lactomaculata* in having longitudinal scale series 42–61 (59-67 *S. lactomaculata*) and having 17–21 pectoral fins rays (18-20 in *S. lactomaculata*). In addition this species has ridge above anterior lachrymal spine with sharp edge that angles slightly dorsally, and ends in spine.

This species is widely distributed in the Indo-Pacific area including South Africa, Pakistan, India and Sri Lanka, Thailand, Vietnam, Malaysia, Indonesia, Philippines, Taiwan, Palau and Papua New Guinea, Japan and New Caledonia (Frickle *et al.*, 2023).

#### Material Examined:

- One specimen collected from Karachi Fish Harbour on 21 October 2005 (18.3 cm TL)
- One specimen collected from Karachi Fish Harbour on 11 January 2009 (19.9 cm TL)
- One specimen collected from Karachi Fish Harbour on 25 April 2013 (22.0 cm TL)
- One specimen collected from Karachi Fish Harbour on 30 April 2013 (21.0 cm TL)

#### *Scorpaenopsis venosa* (Cuvier, 1829b)

(Fig. 19-20)



(Fig. 19) *Scorpaenopsis venosa* collected from Karachi Fish Harbour





Fig. 20. *Scorpaenopsis venosa*; head showing occipital pit

This species is commonly known as raggy scorpionfish. It was reported from Pakistan by Hoda (1985, 1988), Hussain (2003), Jalil and Khalil (1972, 1981), Murray (1880) and Randall (1995). Originally it was described as *Scorpaena venosa* from Red Sea by Cuvier (1829b). No holotype of this species is known (Frickle *et al.*, 2023). Murray (1880) listed it as *Scorpaena venosa*.

Its body variably relatively uniformly coloured to strongly mottled, usually with much red, reddish pink or predominantly brown, and darker on dorsum, particularly in post-occipital region and beneath spinous dorsal fin; its skin often taking on colouration of algae growing on it. Its ventrum is pale pinkish or pinkish orange.

Unlike *Scorpaenopsis ramaraoi* this species has deep and quadrangular occipital pit (neither deep or quadrangular in *S. ramaraoi*; moderately deep in *S. lactomaculata*), low ridge on each side of occipital pit between tympanic and parietal spines curves inwards towards pit, no ridge between sides of occipital pit between post-ocular and tympanic spines in *S. ramaraoi*; pectoral fins usually 17 rays. (17 to 19 in *S. ramaraoi*; 18-20 in *S. lactomaculata*).

This species is known from Indo-Pacific area including Gulf of Oman, Persian Gulf, Kenya to South Africa, Madagascar, Comoros, Seychelles, Saya de Malha Bank, India and Sri Lanka, Indonesia, Philippines, Taiwan, Japan, New Guinea, Australia and Vanuatu (Frickle *et al.*, 2023; Poss and Motomura, 2022).

#### Material Examined:

- One specimen collected from Karachi Fish Harbour on 11 May 2006 (15.0 cm TL)
- One specimen collected from Karachi Fish Harbour on 28 March 2007 (20.6 cm TL)

#### Family Tetrarogidae (Waspfishes) *Ablabys taenianotus* (Cuvier, 1829b)

This species is commonly known as cockatoo waspfish. It was reported from Pakistan as *Amblyapistus taenianotus* by Ahmad and Qureshi (1970), Hoda (1988), Hussain (2003), Jalil and Khalil (1972, 1981) and Lieske and Myers (1994). Originally, this species was described from Mauritius by Cuvier (1829b) as *Apistus taenianotus*. Its holotype which used to be housed in Museum National d'Historie Naturelle, Paris, France is apparently lost (Frickle *et al.*, 2023).

Frickle, *et al.* (2023) reported this species from Indo-West Pacific area including Seychelles, Madagascar, La Réunion, Mauritius, Rodrigues extending east to Philippines and Fiji, southern Japan, Australia, however, according to them and Lieske and Myers (1994) it is replaced by *A. binotatus* (commonly known as redskinfish) in the western Indian Ocean. It is known from Oman, Tanzania, Mozambique, South Africa, Madagascar, Reunion and Mauritius. No specimen of this species was

examined during present study, therefore, it is not possible to ascertain whether it is *A. binotatus* or *A. taenianotus*.

***Paracentropogon longispinis*** (Cuvier, 1829a)

This species is commonly known as wispy waspfish. It was reported from Pakistan by Ahmad and Qureshi (1970), and Hoda (198, 1988). It was originally described as *Apistus longispinis* from Ambon Island, Moluccas Islands, Indonesia by Cuvier (1829a). Its holotype is not known, however, syntypes are housed in Museum National d'Historie Naturelle, Paris, France and Zoologisches Museum, Humboldt Universitat, Berlin (Frickle *et al.*, 2023).

This species is known from Indo-West Pacific area including southern India and Sri Lanka east to Philippines, Taiwan and southern China, northern Australia (Frickle *et al.*, 2023). No specimen of this species was examined during the present study.

***Snyderina guentheri*** (Boulenger, 1889)  
(Fig. 21)

This species is commonly known as Gunther's waspfish. It was reported from Pakistan by Psomadakis *et al.* (2015). It was originally described as *Tetraroge guentheri* from Muscat, Oman by Boulenger (1899). Its holotype (BMNH 1888.12.29.145) is housed in British Natural History Museum, London, U. K. (Frickle *et al.*, 2023).



Fig. 21. *Snyderina guentheri* collected from Karachi Fish Harbour

Its body is relatively compressed anteriorly, more strongly compressed posteriorly; caudal fin rounded, elongate.

Lachrymal moveable, with 2 prominent spines: anterior spine smaller, points mostly ventrally but slightly posteriorly, and posterior spine much larger, extends to rear half of pupil, points mostly posteriorly and slightly ventrally. Body as well as median fins pale have many small round orange-red spots; pectoral and pelvic fins grey, with similar spots.

This species is known from western Indian Ocean including Somalia, Gulf of Aden, Gulf of Oman, India (Kerala) and Myanmar (Frickle *et al.*, 2023; Poss and Motomura, 2022).

Material Examined:

- One specimen collected from Karachi Fish Harbour on 26 April, 2014 (20.0 cm TL)

- One specimen collected from offshore waters (24°26.500' N; 65°55.900' E) on 16 April, 2015 (21.5 cm TL)
- One specimen collected from Karachi Fish Harbour on 03 September, 2016 (16.0 cm TL)

***Tetraroge niger*** (Cuvier, 1829a)

This species is commonly known as black scorpionfish. It was reported from Pakistan by Hoda (1985, 1988), Hussain (2003), Jalil and Khalil (1972, 1981). Hoda (1985) and Hussain (2003) reported this species as *Gymnapistes niger*. It was originally described as *Apistus niger* from Arian Coupang River mouth, Pondicherry, India by Cuvier (1829a). Its holotype is not known, however, syntypes are housed in Museum National d'Historie Naturelle, Paris, France (Frickle *et al.*, 2023).

This species is known from Indo-West Pacific area including southwest coast of India, Sri Lanka and Bangladesh east to Philippines, New Guinea and southern Japan (Frickle *et al.*, 2023). No specimen of this species was examined during the present study.

***Richardsonichthys leucogaster*** (Richardson, 1848)

It is commonly known as whiteface waspfish. It was reported from Pakistan by de Beaufort and Briggs (1962). It was originally described as *Apistes leucogaster* from seas of China by Richardson (1848). Holotype is housed in British Museum of Natural History, London, U. K. (Frickle *et al.*, 2023).

This species has a large rounded head and deeply incised membranes of the spinous part of the dorsal fin. Its lower body and dorsal-fin tips is red-orange, dorsum with reddish brown blotches (Poss and Motomura, 2022).

This species is known from Indo-Pacific area including South Africa, East Africa, Somalia, India and Seychelles Thailand, Vietnam, Philippines, north to southern China, Western Australia, Queensland (Australia) and New Caledonia (de Beaufort and Webber, 1962; Frickle *et al.*, 2023). No specimen of this species was examined during the present study.

***Pseudovespacula dracaena*** (Cuvier, 1829a)

It is commonly known as draco waspfish. It was reported as Ahmad and Qureshi (1970), Anonymous (1999); Hoda (1985, 1988), Hussain (2003) and Jalil and Khalil (1972, 1981). Ahmad and Qureshi (1970), Hoda (1985, 1988), Hussain (2003) and Jalil and Khalil (1972, 1981) reported this specie as *Gymnapistus dracaena* whereas Anonymous (1999) listed it as *Prosopodasys dracaena*. It was originally described as *Apistus dracaene* from Malabar Coast, India by Cuvier (1829a). Its holotype is not known, however, syntypes are housed in MNHG, Museum National d'Historie Naturelle, Paris, France and Zoologisches Museum, Humboldt Universitat, Berlin (Frickle *et al.*, 2023).

Its body light brown, irregularly blotched with darker brown; a broad dark band across interorbital, continuing as a bar below eye and another band from origin of dorsal fin to eye. Dorsal fin pale with a large dark brown blotch, usually between 6th and 9th spines; other irregular blotches especially posteriorly. Caudal fin whitish with faint and small dark spots (Froese and Pauly, 2023).

This species is known to be distributed in the Western Indian Ocean including Persian Gulf east to India and Sri Lanka (Frickle *et al.*, 2023). No specimen of this species was examined during the present study.

***Vespacula trachinoides*** (Cuvier, 1829a)

It is commonly known as mangrove waspfish. It was reported as *Prosopodasys trachinoides* from Sindh coast by Murray (1880). It was originally described as *Apistus trachinoides* from Java, Indonesia by Cuvier (1829a). No holotype is known, however, syntypes are housed in MNHN, Rijksmuseum van Natuulijke Histoire, Leiden and Forshungs Institut und Natur Museum Senckenberg, Frankfurt, Germany (Frickle *et al.*, 2023).

This species is known from Eastern Indian Ocean and Western Pacific including Mergui Archipelago (Myanmar) Indonesia, Vietnam, Philippines, Sulawesi and China. Considering its distribution east of Myanmar, it seems that its report from Pakistan is based on misidentification. Its presence in Pakistan, therefore, may remain uncertain till some authentic species are collected, however, no specimen of this species was examined during the present study.

## CONCLUSION

Scorpionfishes including stone fishes belong to Order Scorpaeniformes and represented by four families including Families Apistidae, Scorpionenidae, Synanceidae and Tetrarogidae in Pakistan. A total of 41 species belonging to these families are reported from Pakistan. These fishes are occasional caught in fishing operations along coastal waters but since most of the species are of small size, therefore, are not considered to be commercial importance, thus discarded. In Pakistan coral assemblages are restricted to only a few locations including Churna and Astola Islands (Ali *et al.*, 2014; Moazzam and Sharif, 2020). These assemblages are known to have a number of species of families Scorpionenidae (Ali *et al.*, 2021). Although diving is a recent activities in these coral areas but generally amateur avoid encounters with the scorpionfishes to avoid any injury, however, in any case, these fisheries are of rare occurrence in coral habitats (Ali *et al.*, 2021).

White-blotched scorpionfish (*Scorpaenopsis lactomaculata*) seems to be the most common scorpionfishes found along the coastline. It is commonly encountered in the infralittoral areas along rocky shores, in the coral habitats as well as along the nearshore continental shelf waters of Sindh and Balochistan. It is frequently caught by handlines on rocky shores as well as by trawlers that operate in coastal waters. In shallow rocky shore and reef habitat, this species is difficult to locate, as these are camouflaged in the habitat. It congeners Rama-Rao's scorpionfish (*S. ramaraoi*) and raggy scorpionfish (*S. venosa*) are also found in nearshore continental shelf waters but observed to be not present in shallow infralittoral waters.

Genus *Pterois* was observed to be most diversified group of scorpionfishes observed during the present study and represented by 6 species including broadbarred firefish (*Pterois antennata*), devil firefish (*P. miles*), Mombasa or frillfin turkeyfish (*P. mombasae*), radial firefish (*P. radiata*) and plintail turkeyfish (*P. russellii*) and red lionfish (*P. volitans*). Of these, *P. antennata* and *P. russellii* seem to be commonly occurring, however, *P. antennata* seems to be of common occurrence in coral habitat whereas *P. russellii* seems to be more common in nearshore waters on the continental shelf, therefore, frequently caught by trawlers and bottom set gillnetters that operate in coastal waters.

## REFERENCES

- 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.
- Ahmad, M., and M. R. Qureshi (1970). Fishes of the Order Sclerparei Part. I. Family Scorpaenidae. *Pakistan Journal of Science* 22: 125-132.
- Ahmed, N. (1996). *Extraction, exploration and demand forecasting for aquarium fishes from Pakistan*. Ph. D. Dissertation, Department of Economics, University of Karachi.
- Ahmed, N. and S. Wazarat (1993). Seawater aquarium fishes of Pakistan. In: *Proceedings of a National Seminar on Study and Management in Coastal Zones in Pakistan* Marine Reference Collection and Resource Centre, University of Karachi, Karachi. (N. M. Tirmizi and Q. B. Kazmi eds.) pp. 73-119.
- Ajina, S. M., Y. Gladston, M. SriHari, M. R. Kiruba-Sankar, A. Pavan-Kumar, S. D. Roy and A. K. Jaiswar (2022).. New Distributional Record of Blacklash scorpionfish, *Pontinus nigerimum* Eschmeyer, 1983 from Andaman Waters, Eastern Indian Ocean. *Thalassas: An International Journal of Marine Sciences* 38: 29–33.
- Allen, G. R. and M. V. Erdmann (2008). *Pterois andover*, a new species of scorpionfish (Pisces: Scorpaenidae) from Indonesia and Papua New Guinea. *Aqua, International Journal of Ichthyology* 13:127-138.
- Alcock, A. W. (1889). Natural history notes from H. M.'s Indian marine survey steamer 'Investigator,' No. 12. Descriptions of some new and rare species of fishes from the Bay of Bengal, obtained during the season of 1888-89. *Journal of the Asiatic Society of Bengal* 58: 296-305.
- Alcock, A. W. (1896). Natural history notes from H. M. Indian marine survey steamer 'Investigator,' Commander C. F. Oldham, R. N., commanding. Series II. No. 23. A supplementary list of the marine fishes of India, with descriptions of two new genera and eight new species. *Journal of the Asiatic Society of Bengal* 65: 301-338.
- Ali, A., R. Ormond, W. Leujak and P. J. A. Siddiqui (2014). Distribution, diversity and abundance of coral communities in the coastal waters of Pakistan. *Journal of Marine Biological Association of United Kingdom*, 94: 75-64.

- Ali, A., P. J. A. Siddiqui, N. Ahmad, S. A. Amir, R. Masroor, S. Shafique and Z. Burhan (2021). Ecology of fish communities in coral habitats along the coast of Pakistan: Potential threats and conservation strategies. *Pakistan Journal of Zoology* 53:1343-1351.
- 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)).
- Bennett, J. W. (1828). *A selection from the most remarkable and interesting fishes found on the coast of Ceylon*. London. First Edition 30 unnumbered pp.
- Bennett, E. T. (1831). Exhibition of the several species of *Pterois* contained in the Mauritius collection ... [*Pterois russellii*]. *Proceedings of the Committee of Science and Correspondence of the Zoological Society of London 1830-31*: 128.
- Bloch, M. E. (1787). *Naturgeschichte der ausländischen Fische*. Berlin. 3: 1-146.
- Bloch, M. E. and J. G. Schneider (1801). E. Blochii, Systema Ichthyologiae Iconibus cx Illustratum. *Impressum et Bibliopolio Sanderiano Commisum*. 1-584.
- Boulenger, G. A. (1889). Second account of the fishes obtained by Surgeon-Major A. S. G. Jayakar at Muscat, east coast of Arabia. *Proceedings of the Zoological Society of London* 1889: 236-246.
- Cuvier, G. (Cuvier, G. and A. Valenciennes) (1829a). *Histoire naturelle des poissons. Tome quatrième. Livre quatrième. Des acanthoptérygiens à joue cuirassée*. F. G. Levrault, Paris. v. 4: 1-518.
- Cuvier, G. (1829b). *Le Règne Animal, distribué d'après son organisation, pour servir de base à l'histoire naturelle des animaux et d'introduction à l'anatomie comparée*. Edition 2. 2: 1-406.
- Day, F. (1870). Remarks on some of the Fishes in the Calcutta Museum.--Part I. *Proceedings of the Zoological Society of London* 1869: 511-527.
- Day, F. (1875). *The fishes of India; being a natural history of the fishes known to inhabit the seas and fresh waters of India, Burma, and Ceylon*. London. Part 1: 1-168.
- de Beaufort, L. F., and J. C. Briggs (1962). In: *The fishes of the Indo-Australian Archipelago. XI. Scleroparei, Hypostomides, Pediculati, Plectognathi, Opisthomi, Discocephali, Xenopterygii*. (M. Weber, M. and L. F. de Beaufort eds.) J. Brill, Leiden
- Diaz, J. H. (2015). Marine Scorpaenidae envenomation in travelers: epidemiology, management, and prevention. *Journal of Travel Medicine* 22:251-258.
- Eschmeyer, W. N. (1969). A new scorpionfish of the genus *Scorpaenodes* and *S. muciparus* (Alcock) from the Indian Ocean, with comments on the limits of the genus. *Occasional Paper of California Academy of Sciences*. 76: 1-11.
- Eschmeyer, W. N. (1983). A new species of the fish genus *Pontinus* (Scorpaeniformes: Scorpaenidae) from off Natal, South Africa. *The J.L.B Smith Institute of Ichthyology Special Publication No. 28*: 1-4.
- Eschmeyer, W. N. and K. V. Rama-Rao (1972). Two new scorpionfishes (genus *Scorpaenodes*) from the Indo-west Pacific, with comments on *Scorpaenodes muciparus* (Alcock). *Proceedings of the California Academy of Sciences* 39: 55-64.
- Eschmeyer, W. N. and K. V. Rama-Rao (1978). A new scorpionfish, *Ebosia falcata* (Scorpaenidae, Pteroinae), from the western Indian Ocean, with comments on the genus. *Matsya* 3: 64-71.
- Fowler, H. W. (1938). Descriptions of new fishes obtained by the United States Bureau of Fisheries steamer "Albatross", chiefly in Philippine seas and adjacent waters. *Proceedings of the United States National Museum*. 85: 31-135.
- Fricke, R., Eschmeyer, W. N. and R. Van der Laan (eds). (2023). ECoF. Eschmeyer's Catalog of Fishes: Genera, Species, References. *California Academy of Sciences*. San Francisco. Electronic version accessed 28 January 2023.
- Froese, R. and D. Pauly. Editors (2023). *FishBase. World Wide Web electronic publication*. www.fishbase.org, version (1/2023)
- Gray, J. E. (1831). Description of a new genus of percoid fish, discovered by Mr. Samuel Stutchbury, in the Pacific sea, and now in the British Museum. *Zoological Miscellany* 1: 20.
- Halstead, B. W., P.S. Auerbach and D. R. Campbell (1990). *A colour atlas of dangerous marine animals*. Wolfe Medical Publications Ltd, W. S. Cowell Ltd, Ipswich, England.
- Herre, A. W. C. T. (1945). Notes on fishes in the Zoological Museum of Stanford University: XX, New fishes from China and India, a new genus, and a new Indian record. *Journal of the Washington Academy of Sciences* 35: 399-404.

- Hoda, S. M. S., 1985. Identification of coastal fish varieties of Pakistan. *Pakistan Agriculture* 7:38-44.
- Hoda, S. M. S., 1988. Fishes from the coast of Pakistan. *Biologia (Lahore)* 34: 1-38.
- Hussain, S. M. (2003). *Brief Report on Biodiversity in the Coastal Areas of Pakistan*. Regional Technical Assistance. (RETA) ADB/IUCN.113p (Draft).
- 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.
- Kotthaus, A. (1979). Fische des Indischen Ozeans. Ergebnisse der ichthyologischen Untersuchungen während der Expedition des Forschungsschiffes 'Meteor' in den Indischen Ozean, Oktober 1964 bis Mai 1965. A. systematischer Teil, XXI. Diverse Ordnungen. *Meteor Forschungsergebnisse. Reihe D, Biologie* No. 28: 6-54.
- Kuiter, R.H. and T. Tonzuka (2001). *Pictorial guide to Indonesian reef fishes. Part 1. Eels- Snappers, Muraenidae - Lutjanidae*. Zoonetics, Australia.
- Lieske, E. and R. Myers (1994). *Collins Pocket Guide. Coral reef fishes. Indo-Pacific & Caribbean including the Red Sea*. Haper Collins Publishers.
- Linnaeus, C. (1758). Systema Naturae, Ed. X. (Systema naturae per regna tria naturae, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis. *Tomus I. Editio decima, reformata.*) *Holmiae*. 1: 1-824
- Matsunuma, M. and H. Motomura (2014). A new species of scorpionfish, *Ebosia saya* (Scorpaenidae: Pteroinae), from the western Indian Ocean and notes on fresh coloration of *Ebosia falcata*. *Ichthyological Research* 62: 293-312.
- Matsunuma, M. and H. Motomura (2015). Redescriptions of *Pterois radiata* and *Pterois cincta* (Scorpaenidae: Pteroinae) with notes on geographic morphological variations in *P. radiata*. *Ichthyological Research*. 63:145-172.
- Matsunuma, M., L.A. Jawad and H. Motomura, 2013. New records of a scorpionfish, *Parapterois macrura* (Scorpaenidae: Pteroinae), from Oman and Somalia, Western Arabian Sea. *Biogeography* 15:49-54.
- Matsunuma, M., M. Sakurai and H. Motomura (2013). Revision of the Indo-West Pacific genus *Brachypterois* (Scorpaenidae: Pteroinae), with description of a new species from northeastern Australia. *Zootaxa* 3693:401-440.
- Moazzam, M. and K. Sharif (2020). Coral bleaching around Churna Island: An emerging threat to corals in the area. *Wildlife and Environment* 27: 10-15.
- Motomura, H., 2004. Morphological comparison of a poorly known scorpionfish, *Parapterois macrura*, with a related species, *P. heterura* (Scorpaenidae: Pteroinae). *Zoological Studies* 43:1-7.
- Motomura, H., R. Causse, P. Béarez and S. S. Mishra (2015). Redescription of the Indo-West Pacific scorpionfish (Scorpaenidae), *Neomerinthe erostris* (Alcock 1896), a senior synonym of *Scorpaena gibbifrons* Fowler 1938, *N. rotunda* Chen 1981, and *N. bathyperimensis* Zajonz & Klauswitz 2002. *Zootaxa* 4021 (no. 4): 529.
- Murray, J. A. (1880). *A Hand-book to the Geology, Botany and Zoology of Sind*. Beacon Press, Kurruchee.
- Niazi, R. M. (2001). A trawl study of benthic marine macro-organisms found in the near shore waters of Karachi, Pakistan. *Pakistan Journal of Fisheries* 2: 13-23.
- Osmany, H. B. and M. Moazzam (2018). Review of stonefishes of Family Synanceidae from Pakistan with a new record of *Synanceia nana* Eschmeyer and Rama-Rao, 1973. *International Journal of Biology and Biotechnology* 15: 173-184.
- Osmany, H. B. and M. Moazzam (2022). Range extension of round scorpionfish *Neomerinthe erostris* (Alcock, 1896) into waters of Pakistan (Northern Arabian Sea). *International Journal of Biology and Biotechnology* 19: 545-547.
- Poss, S. G. and H. Motomura (2022). Family Scorpaenidae, Scorpionfishes and lionfishes. In: *Coastal fishes of the western Indian Ocean* (P. C. Heemstra, P. C. E. Heemstra, D. A. Ebert, W. Holleman and J. E. Randall eds.). Volume 2. South African Institute for Aquatic Biodiversity, Makhanda, South Africa. pp. 506-549.
- Poss, S. G. and K. V. Rama Rao (1984). Scorpaenidae. In: *FAO species identification sheets for fishery purposes. Western Indian Ocean (Fishing Area 51)*. (W. Fischer and G. Bianchi eds.) Vol. 4. FAO, Rome. pag. var.
- Psomadakis, P. N., H. B. Osmany and M. Moazzam (2015). *Field identification guide to the living marine resources of Pakistan. FAO species identification guide for fishery purposes*. Food and Agriculture Organization of the United Nations, Rome.

- Quoy, J. R. C. and J. P. Gaimard (1824). *Description des Poissons. Chapter IX. In: Freycinet, L. de, Voyage autour du Monde...exécuté sur les corvettes de L. M. "L'Uranie" et "La Physicienne," pendant les années 1817, 1818, 1819 et 1820.* Paris: 1-328.
- Randall, J. E. (1995). *Coastal fishes of Oman.* Crawford House Publishing Pty Ltd, Bathurst, Australia
- Randall, J. E. and W. N. Eschmeyer (2002). Revision of the Indo-Pacific scorpionfish genus *Scorpaenopsis*, with descriptions of eight new species. *Indo-Pacific Fishes* No. 34: 1-79.
- Richardson, J. (1846). Report on the ichthyology of the seas of China and Japan. *Report of the British Association for the Advancement of Science 15th meeting* [1845]: 187-320.
- Richardson, J. (1848). Fishes. In: *The zoology of the voyage of H. M. S. Samarang; under the command of Captain Sir Edward Belcher, during the years 1843-1846* (A. Adams ed.). Reeve & Benham, London. Pp. 1-28.
- Smith, J. L. B. (1957). The fishes of the family Scorpaenidae in the western Indian Ocean. Pt. II. The subfamilies Pteroinae, Apistinae, Setarchinae and Sebastinae. *Ichthyological Bulletin, Department of Ichthyology, Rhodes University* No. 5: 75-87.
- Smith, W. L. and W. C. Wheeler (2006). Venom evolution widespread in fishes: a phylogenetic road map for the bioprospecting of piscine venoms. *Journal of Heredity* 97: 206-217.
- Sorley, H. T. (1932). *Marine Fisheries of the Bombay Presidency.* Govt. Press, Bombay.
- Thunberg, C. P. (1793). Beskrifning på nya fisk-arter utaf abbor-slägtet ifrån Japan. *Kongliga Vetenskaps-Academiens Handlingar, Stockholm.* 14: 198-200.
- Zugmayer, E. (1913). Die Fische von Balutschistan. *Abhandlungen der königlich Bayerischen Akademie der Wissenschaften (mathematisch-physikalische Klasse)* 26: 1-35.

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