

NEW RECORDS OF YELLOW BOXFISH *OSTRACION CUBICUS* LINNAEUS, 1758 FROM GWADAR AND CHURNA ISLAND (BALOCHISTAN), PAKISTAN

Muhammad Moazzam^{1*} and Abdul Rahim²

¹WWF-Pakistan, B-35, Block 6, PECHS, Karachi 75400, Pakistan

²Gwadar Development Authority, Gwadar, Balochistan, Pakistan

*Corresponding author: mmoazzamkhan@gmail.com

ABSTRACT

Yellow boxfish (*Ostracion cubicus* Linnaeus, 1758) which belongs to Family Ostraciidae is reported for the first time from Gwadar and Churna Island, Balochistan coast. There were previous report from Sindh but no recent record was available. Present specimens have unique dark yellowish body colour with scattered pale blue spots edged with a dark margin indicating that these are subadult females.

Key word: Yellow boxfish, *Ostracion cubicus*, Family Ostraciidae, Gwadar, Churna Island, aquarium

INTRODUCTION

Boxfishes, sometimes called trunkfishes, constitute a family of bony fish characterized by having a body encased in a bony carapace which is made up of bony hexagonal plates covering most of the head and body, with gaps only for the mouth, nostrils, gill opening, anus, caudal peduncle, and fins (Bariche, 2011). Boxfishes have one single dorsal fin located on the posterior side of the body and no pelvic fins (Smith 1986; Randall 1983). Their bodies are covered by mucus that contains defensive ichthyotoxins (Kalmanzon and Zlotkin 2000). Boxfishes are known to be protogynous hermaphrodites that form harems of 2-4 females for each male (Moyer, 1979).

Ostracion cubicus Linnaeus, 1758 was reported from Sindh coast by Murray (1880) as *Ostracion trigonus*. It was reported from Pakistan coast without mentioning any specific location by Bano and Qureshi (1973) as *Ostracion tuberculatus*. These seem to confirmed records made by Bano and Qureshi (1973). While reviewing Family Ostraciidae, Moazzam and Osmany (2014) reported this species from Pakistan coast mentioning that there is no recent record of its occurrence in Pakistan.

While fishing behind the Koh-e-Batil, Gwadar, a fishermen caught a subadult female specimen of yellow boxfish which was photographed. Considering it to be a rare find, the fishermen safely released it in the sea. Present paper describes the details of the specimen. In addition a specimen was previously photographed by Diver Reef, Karachi on November 15, 2013 at Churna Island.



Fig. 1 Map of Pakistan. Inset Map of Gwadar and Churna Island showing sites of collection of *Ostracion cubicus*.

MATERIALS AND METHODS

Gwadar is one of the important coastal town along Balochistan coast (Fig. 1) which is characterized by narrow continental shelf and is dominated by rocky shores. There are two bays (East and West bays) on the tombolo of Gwadar which are predominantly sandy in nature whereas tied island is in form of a headland which is known as

Koh-e-Batil. Mr. Dad Karim, a senior fishermen of the area, has deployed monofilament gillnet on 19th November, 2020 for catching Indian oil sardinellas. The depth of area of operation was 3.5 m. Upon retrieval of the net, a live specimen of yellow boxfish was found entangled in the net. It was photographed with the help of android mobile and considering it to be a rare find, the fish was released safely in the sea. Another specimen was previously photographed by ammeter diver of Diver Reef, Karachi on November 15, 2013 at Churna Island, located on Balochistan coast

RESULTS AND DISCUSSION

The specimens collected from Koh-e-Batil, Gwadar and photographed at Churna Island are identified as yellow boxfish *Ostracion cubicus*.

Ostracion cubicus Linnaeus, 1758

(Fig. 2-3)

Description:

No dorsal spine; dorsal rays 8-9; no anal spine; anal rays 9; pectoral rays 11; caudal rays 10. Carapace quadrangular in cross-section, the side concave, broader at base than top, without spines, and without a median dorsal ridges; body; adults with a bump anteriorly on snout; caudal fin rounded; small juveniles yellow with round black spots nearly as large as pupil; with growth, black spots more numerous and relatively smaller; still larger fish with one black-edged white or pale blue spot on each polygon plate; large adult purplish brown, the spots on carapace faint or absent, the groove between polygonal plates yellow; fins with small black spots. Present specimens have dark yellowish body colour with scattered pale blue spots edged with a dark margin.

This species is commonly known as yellow boxfish and is reported from to be widely distributed in the Indo-Pacific area extending from Red Sea and East Africa to the Hawaiian and Tuamoto Islands, North to Ryukyu Islands, South to Lord Howe Island (Froese and Pauly, 2019). This is benthopelagic species which is solitary in nature and feed primarily on algae with a compliment of microorganisms, invertebrates, mollusks, sponges, polychaetes, crustaceans, foraminiferans, and fishes (Cronic, 1987; Myers, 1999). This species forms harems consisting of single males and 2-4 females (Moyers, 1979). Although this species can attain a length of 45 cm but present specimen was adjudged to be 39 cm.

Remarks:

Family Ostraciidae is represented in Pakistan by six species including *Lactoria cornuta* (Linnaeus, 1758), *Ostracion meleagris* Shaw, 1796, *O. rhinorhynchos* Bleeker, 1852, *Rhynchostracion nasus* (Bloch, 1785), *T. gibbosus* (Linnaeus, 1758) and now confirmed report of *O. cubicus*. Psomadakis, *et al.* (2015) reported only three species of Family Ostraciidae from Pakistan including *L. cornuta* (Linnaeus, 1758), *O. rhinorhynchos* Bleeker, 1852 and *T. gibbosus* (Linnaeus, 1758), however, *O. cubicus* was not included among the reported species. This species was originally described by Linnaeus (1758), however, no holotype of *O. cubicus* is known (Eschmeyer, 2014; Froese and Pauly, 2019).



Fig. 2. *Ostracion cubicus* Linnaeus, 1758 collected from Koh-e-Batil, Gwadar, Balochistan.

The dark yellowish body colour with scattered pale blue spots edged with a dark margin is characteristic of a subadult female (Smith 1986; Taquet and Diringer, 2007). Therefore, present specimen seems to be subadult female. Although this species is considered as an important aquarium fish but it is a very difficult to keep it in the aquarium as this fish when stressed, releases a poisonous substance, called ostracitoxin, from its mucous glands which quickly kills other fish in the aquarium. There is little success in the breeding these fish in aquarium, therefore, only fish collected from natural habitat can be kept in aquarium.



Fig.3. *Ostracion cubicus* Photographed at Churna Island, Balochistan by Diver Reef Karachi.

ACKNOWLEDGMENT

The authors are thankful to fishermen Dad Karim who collected, photographed and provided information about the specimen collected from Gwadar. The authors are also indebted to Diver Reef Karachi for the photograph. Their effort to photograph underwater marine life along Pakistan coast is highly appreciated.

REFERENCES

- Bano, A. and M. R. Qureshi (1973). Fishes of the order Plectognathi, family Ostracionidae found in Pakistan waters. *Agriculture Pakistan*, 24: 291-295.
- Bariche, M. (2011). First record of the cube boxfish *Ostracion cubicus* (Ostraciidae) and additional records of *Champsodon vorax* (Champsodontidae) from the Mediterranean. *Aqua*, 17: 181-184.
- Bleeker, P. (1852). Bijdrage tot de kennis der Balistini en Ostraciones van den Indischen Archipel. *Verhandelingen van het Bataviaasch Genootschap van Kunsten en Wetenschappen*, 24: 37-38.
- Bloch, M. E. (1785). *Naturgeschichte der ausländischen Fische*. Berlin
- Cornic, A. (1987). *Poissons de l'Île Maurice*. Editions de l'Océan Indien, Stanley Rose Hill, Ile Maurice.
- Eschmeyer, W.N. (Editor). (2014). *Catalog of fishes*. Updated internet version, 18 June 2014. Catalog databases of CAS cited in FishBase (website).
- Froese, R. and D. Pauly. (Editors). (2019). *FishBase*. World Wide Web electronic Publication. www.fishbase.org, version (12/2019)
- Kalmanzon, E. and E. Zlotkin (2000). An ichthyotoxic protein in the defensive skin secretion of the Red Sea trunkfish *Ostracion cubicus*. *Marine Biology*, 136: 471-476.
- 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.
- Moazzam, M., and H. B. Osmany (2014). Fishes of family Diodontidae, Ostraciidae and Molidae from Pakistan Coast. *International Journal of Biology and Biotechnology*. 11:505-515.
- Moyer, J. T. (1979). Mating strategies and reproductive behavior of ostraciid fishes at Miyake-jima, Japan. *Japanese Journal of Ichthyology* 26:148-160.
- Murray, J. A. (1880). *A Hand-book to the Geology, Botany and Zoology of Sind*. Beacon Press, Kurruchee.

- Myers, R. F. (1999). *Micronesian reef fishes: a comprehensive guide to the coral reef fishes of Micronesia*, 3rd revised and expanded edition. Coral Graphics, Barrigada.
- 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*. FAO, Rome, 386 p.
- Randall, J. E. (1983). *Red Sea Reef Fishes*. IMMEL publishing, London.
- Shaw, G. (1796). *The Naturalist's Miscellany, or coloured figures of natural objects; drawn and described from nature*. J. Cooper, London. 24 vols. unnumbered pages.
- Smith, M. M. (1986). Ostraciidae. In: *Smiths' Sea Fishes* (Eds M. M. Smith & P. C. Heemstra): pp. 890-893. Springer-Verlag, Berlin.
- Taquet, M. and A, Diringer (2007). *Poissons de l'Océan Indien et de la Mer Rouge*. Editions Quæ, Versailles, 528p.

(Accepted for publication September 2021)