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NEW RECORD OF DOGTOOTH TUNA *GYMNOSARDA UNICOLOR*, RUPPELL (FAMILY: SCOMBRIDAE), FROM PAKISTANI WATER

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ABSTRACT

The paper firstly record *Gymnosarda unicolor (*Ruppell) recognized as dogtooth tuna from Pakistani water. A sample was obtained from the west coast of Baluchistan near Astola Island of Pakistan on 6th June 2016. This paper provides a short account with photographs of the sample and distribution.

Key words: Dogtooth tuna, *Gymnosarda unicolor*, Scombridae, Astola island, Pakistan.

INTRODUCTION

Gymnosarda unicolor (Ruppell) was described with the name of *Thynnus (Pelamys) unicolor* by Ruppell in 1836 for the first time recorded from Jeddah, Saudi Arabia, Red sea, also known as *Pelamys nuda* (*Gymnosarda nuda*) by Gunther in 1860, *Gymnosarda unicolor* by Gill in 1862 and Kishinouye in 1923 and *Scomber vau* by Curtiss in 1938. Its popular name is Dog tooth tuna but other uncommon names are also in use which are white tuna and scaleless tuna. *Gymnosarda unicolor* (Ruppell) is the only alone living species which has placed in genus *Gymnosarda*. Another species of this genus is *Gymnosarda prisca* found in fossil record discovered in 2000 (Monsch, 2000) which differ with *G.unicolor* on the bases of hypural bones near the caudal section.

Munro (1955) described twelve species of tuna from neighbouring Sri Lanka. Several authors contributed to the taxonomy of tunas from the Indian seas during the past (Kishinouye, 1923).

Family Scombridae (Albacores, Bonitos, Mackerals, Seer fishes,Tunas, and Wahoos) comprise 8 genera and 15 species in Pakistan including 8 tuna species (Psomadakis *et al.,* 2015) which were found in coastal, nerictic and offshore waters. *Gymnosarda unicolor* has the typical features having villiformes teeth on tongue and large conical teeth in both jaws.

MATERIALS AND METHODS

Sample of this species was obtained from Karachi fish harbor on June 9, 2016. Related information regarding capturing of the area, net used, and depth was collected. Measurement of different body parts and helpful photographs for identification were taken and sent to taxonomical experts. After verification of new species, specimen was fixed in 10 % formalin solution of the museum of Marine Fisheries Department, Karachi, Government of Pakistan.

DESCRIPTION

Specimen showed features of streamline semi rounded or fusiform scaleless body, large mouth, separated, but closed two dorsal fin, first dorsal fin with straight margin with 13 spine third is longest, distance of two dorsal fins almost half of the diameter of eye, eye large, lateral line on the rear half of the body is curvy (Fig.**1**) Lower jaw is somewhat deeper and prominent, upper jaw approaching to centre of eye. 7 finlet on upper surface and 6 on lower part of body, pectoral fin having 25 rays whose length is not more than head length. Distance between pectoral origin and pelvic fin is larger. Inter orbit distance is larger (Fig.**2**) . Postorbital distance is shorter, opercular bones are much elongate. Like dog large well developed slightly curved and conspicuous conical teeth were found in both jaws, upper jaw have 26 teeth, lower jaw has 23 teeth (Fig.**3**) patches of villiformes teeth on surface of tongue (Fig.**4**) and palatines, vomer edentulous, 13 gillraker on first gill arch (Fig.**5**) Interpelvic process single and long (Fig.**6**) Forked tail, caudal lobe is comparatively vertical, posterior edge is broad curved, caudal peduncle keels are well developed lateral keel is between two small keels on both sides (Fig.**7**). Upper color is dark blue black (Fig.**8**) Its side is silvery and lower is whitish (Fig.**9**). No marking on the body either spot or lining. Edge of anterior part of first dorsal fin is dark other fins are grayish. Tip of the second and anal fin is white. (Fig.**1**)

These morphometric and meristic characters of this specimen are reconciled by Jones and Silas (1960), Collette and Chao.(1975), Collette and Nauen (1983), Fischer and Bianchi (1984), Sivadas and Balasubramanian (1991), Collette (2003), Joshi *et al.* (2012), Sivadas *et al.* (2012) and therefore it is assigned to the species *Gymnosarda unicolor* with detail description below with measurements.

Total length measured 382 mm, forked length 361 mm, standard length 321 mm head 86 mm, snout 35 mm, eye 20 mm, distance from snout to first dorsal fin 95 mm, snout to second dorsal fin 180 mm, snout to ventral 95 mm, snout to anus 205 mm, length of pectoral 48 mm.

Fig. 1. *Gymnosarda unicolor*.

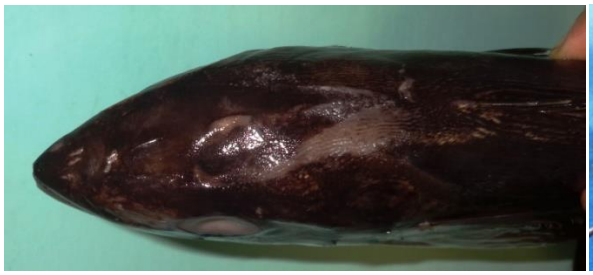

Fig. 2. Inter orbit length.

Fig. 3. Teeths.

Fig. 4. Teeth on tongue.

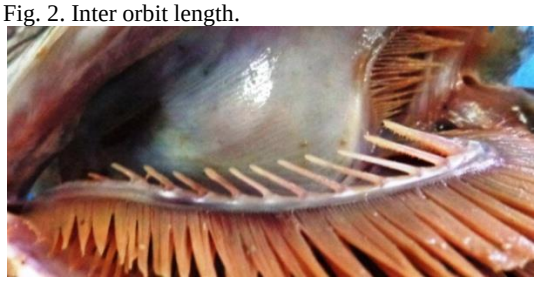

Fig. 5. 13 gillrakers.

Fig. 6. Interpelvic process.

Fig. 7 Strong keel.

Fig. 8. Dorsal surface.

Fig. 9. Side and lower body.

Few scientists describe some anatomical features of the species. Species has well developed swim bladder as compared to other Bonitos; Intramuscular bones on the back of the skull absent. This is the only bonito which have 19 precaudal and 19 caudal total 38 vertebrate. Right and left lobe of the liver is much longer than middle lobe. Species has globssohyal tooth plates, intestine makes a loop close to anus, otolith is distinctive and petal shaped (Collette and Labbish,1975).

Strong gill membrane free, operculum faintly undulating at hind edge (Silas 1963).

Spleen is visible on the right side of the body in ventral view, laminae in olfactory rosette 48 to 56, interorbital width ranging 32.1 to 40 % of head length (Collette and Nauen, 1983).

Sarda orentalis closest member of this family (scomeridae) is found in Pakistani waters which is dissimilar having teeth less than 10 in both jaws and 5 to 11 dark slightly slanting lining from snout to along the upper body to the end of caudal fins and no teeth on tongue (Collette and Nauen, 1983).

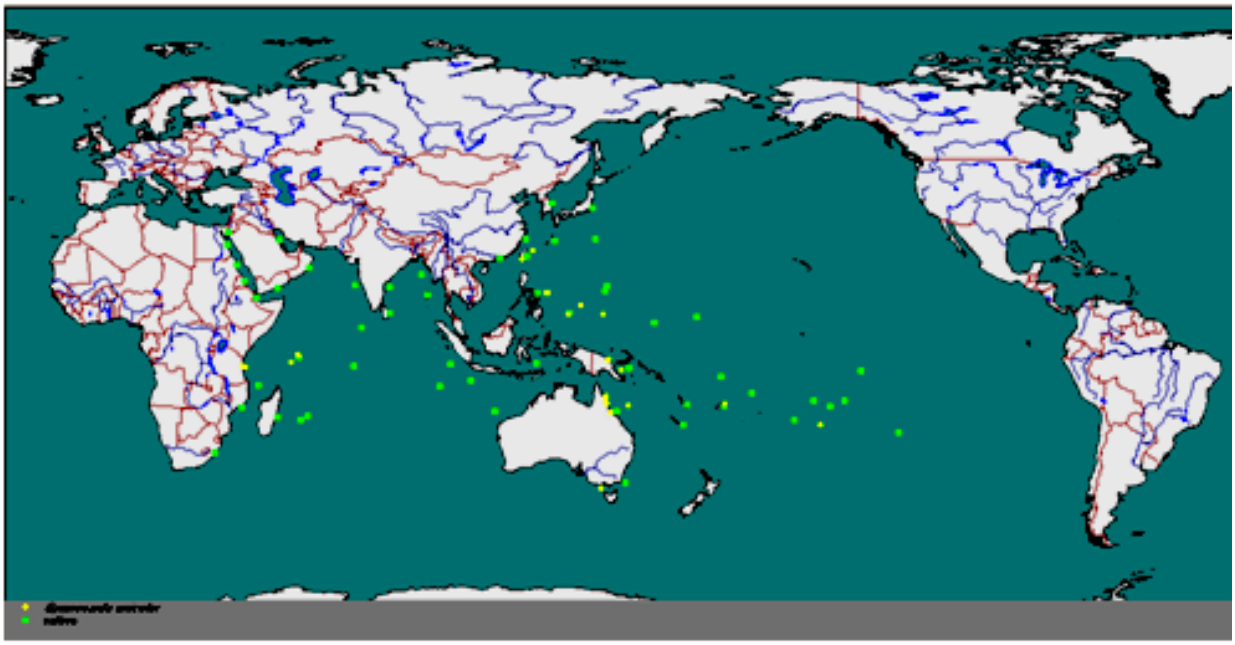

Fig. 10. Distribution map of *Gymnosarda unicolor*. Green spot shows the location of the species where it has been found before finding this species in Pakistan. (http://peskador.org/species/distribution/Gymnosarda%20unicolor_map.gif).

DISRTIBUTION

Gymnosarda unicolor is widely spread in tropical and sub tropical waters of Indo west Pacific from Red sea to East Africa to French Polynesia to Japan and Australia including island of Oceania the Marquesas, Tahiti, Tuamotus and Oeno islands most abounded in the eastern area of Taiwan. (http://peskador.org/ species/ distribution/ Gymnosarda % 20unicolor_map.gif)

Geographical range is from longitude 40 ° E to about 155 ° E and from latitude 30 ° N to about 35 ° N (Fig.10).

Prior to this there was no record which showed occurrence of this species from Pakistani waters. This document provides the first recorded evidence of its availability from Pakistani waters.

DISCUSSION

Day (1878) reports 3 tuna species of family scombridae from Indian ocean *Thynnus thunnina* (Kawa kawa), *Thynnus pelamys* (Skip jack) *Thynnus macropterus*, (Yellow fin tuna). Munro (1955) reported 5 tuna species in family thunnidae from adjacent country, *Auxis thazard* (Frigate tuna), *Katsuwonus pelamis* (Striped tuna). *Euthynnus affinis* (Mackeral tuna), *Neothunnus macropterus* (Yellow fin tuna), *Kishinoelia tonggol* (Blue fin tuna). Six tuna species were described from Pakistan by Bianchi (1985) *Auxis thazard* (Frigate tuna)), *Euthynnus affinis* (Kawakawa), *Katsuwonus pelamis* (Skipjack tuna), *Thunnus albacores* (Yellowfin tuna), *Thunnus obesus* (Bigeye tuna) and *Thunnus tonggol* (Longtail tuna). Moazzam (2009) and Psomadakis *et al.* (2015) added two more species which are *Auxis rochei* (Bullet tuna), and *Sarda orentalis* (Stripped bonito). *Gynosarda unicolor* is the 9th tuna species described from Pakistani water.

It can grow up to 2.50 m long and 130 kg weight, common average size was observed between 65 to 150 cm. Dog tooth tuna can swim continually with open mouth takes water through its gills for need of high oxygen for body activity. An unusual vessel system in liver and tail provides counter current temperature raising the body temperature 6 to 12 ° C higher than the water temperature. They can speed up to 80 kmph (50 mph)

Species associated with non pelagic predators in its environment with Giant Trevally (Carngid), Napoleon Wrasse (Wrasses), large groupers (Serranid) , grey reef shark, bull shark and tiger sharks (Carcharhinid)

Silas (1963) studied on Marshal island that this species lives in surface and mid water. According to his study associated species on surface are *Manta alfreidae* (Mobulid), *Spratelloides delicatulus* (Clupeid) *Strongylura icisa*, *Strongylura gigantea* (Belonid) *Hemiramphus affinis*, *Hemiramphus laticeps* (Hemiramphid) *Atherinus ovaloua*, *Atherinus pinguis* (Atherinid) *Katsuwonus pelamis, Euthynnus affinis yaito* (Scombrid) *Sphyraena genie* (Sphyraenid) *Scomeroides sanctipetri* (Carangid).

Mid water associated species are *Carcharinus melanoptera, Carcharinus menisorrah* (Carcarhinid) *Myripristis berudti, Myripristis microphthalmus* (Holocentrid) *Aulostomus chinensis* (Aulostomid) *Fistularia petimba* (Fistulirid) Atherina *temmincki* (Atherinid) *Katsuwonus pelamis, Euthynnus affinis yaito* (Scombrid) *Sphyraena genie* (Sphyraenid) *Trachinotus bailonii Carangoides ferdau jordani, Carangoides melamphgus, Scomeroides sanctipetri, Elagatis bipinnulata* (Carangid) *Variola louti , Plectropomus leopardus, Plectropomus truncatus* (Serranidae) *Lutjanus monostigmus, Lutjanus bohar, Lutjanus vita, Lutjanus miniatus, Aprion virescene* (Lutjanid)

An aggressive predator species, this species feeds on small schooling species like Herrings (Clupea) Sprats (Sprattus) Mackerals (Scomerid) Whiting (Merlucciid) Decapterus, rainbow runners (Carangid) Caesio, Pterocaesio (Caesionid) , Naso (Acanthurid), Cirrhilabrus (Wrasses) Cuttle fish (Sepia) and Squids (Loligo)

Species is not caught in bulk quantity but is regularly caught during certain seasons. Commercially, usual method is used to capture this species through handling, pole and line fishing and in surface trolling. The dogtooth tuna is respected in most of its areas as a delicious and high price fish because of whiter flesh as compare to other tuna fishes and also as a game fish hunted by both rod and reel anglers with natural baits of black marlin. It is found mostly from the depth range of 15 to 45 m.

This migratory species depend on water temperature and feed found around coral reefs in water 20 to 28 ° C and is found individually or in small school of six or less. Species found in reef environment smaller fish is common in near shallow reef areas and is larger ones found in deeper offshore reef areas around seamounts and underwater walls.

This species was found near the Astola Island which was identified as the first ever coral reef ecosystem in 2006 by coral experts from Millport University, UK under field mission of the Pakistan Wetland Programme (PWP).

Possibility of ciguatoxic poisons found in specimen over 55 cm.

Conclusion

A gradual change in the ichthyologic fauna is observing in species composition, period of occurrence and size of fishes and landing which is consequent to changes in fishing pattern, expansion of fishing grounds and ecological effects. To observe these changes, a study in continuation for the last many year and new species are discovered regularly, in this connection during routine visit of Karachi fish harbor specimen of *Gymnosarda unicolor* (Dog tooth tuna) was found.

Acording to relavant fisherman, the sample was caught on 6th June 2016 from Astola island, Bulochistan west of Karachi in water at about 40 meters depth in bottom set gillnet. This is the first ever time has been recorded from Pakistani water.

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