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Nasima Kabir
Department of Zoology, Jagannath University, Dhaka, Bangladesh

Shamsunnahar
Department of Zoology, Jagannath University, Dhaka, Bangladesh

Mohammad Abdul Baki
Department of Zoology, Jagannath University, Dhaka, Bangladesh

Sumaiya Ahmed
Department of Zoology, Jagannath University, Dhaka, Bangladesh

Md. Sagir Ahmed
Avanced Fisheries and DNA Barcoding Lab, Department of Zoology, University of Dhaka, Dhaka, Bangladesh

Correspondence
MD Sagir Ahmed
Avanced Fisheries and DNA Barcoding Lab, Department of Zoology, University of Dhaka, Dhaka, Bangladesh

New record of the squaretail kob, *Argyrosomus thorpei* Smith, 1977 (Perciformes: Sciaenidae) from the coast of Bay of Bengal, Bangladesh

Nasima Kabir, Shamsunnahar, Mohammad Abdul Baki, Sumaiya Ahmed and Md. Sagir Ahmed

Abstract
We report the first record of Squaretail kob, *Argyrosomus thorpei* from the coast of the Bay of Bengal, Bangladesh. The sample specimens were collected from Cox's Bazar, Bangladesh on 22 January 2016. Morphometric and meristic studies were performed for taxonomic identification. Genomic DNA was extracted from tissue samples and mitochondrial Cytochrome Oxidase Subunit I (COI) gene was amplified for molecular characterization of this species. The morphometric and meristic data and DNA barcoding confirm the presence of A. *thorpei* in Bangladesh. This report updates the geographical distribution for this species confirming its presence in the coastal region of Bangladesh.

Keywords: New records, *Argyrosomus thorpei*, COI, Bay of Bengal, Bangladesh

1. Introduction
The Sciaenid is the seventh largest family among the 150 families of Perciformes order [1]. It comprises approximately 78 genera and 300 species that are distributed in the Western Indian Ocean: Mozambique to Port Elizabeth, South Africa; also from the west coast of Madagascar [2, 3]. There are only about 11 genera and 17 species of croakers that inhabit in marine, estuaries and freshwater of Bangladesh [4, 5]. As croakers are commercially important they are exploiting from the estuarine and marine habitats of the country. Morph taxonomic identification of croakers sometimes becomes very confusing for the researchers. DNA barcoding, the sequencing of an approximately 650 base pair (bp) region of the cytochrome c oxidase I (COI) gene has gained widespread support in the scientific literature as a rapid, cost effective and standardized method for the identification of a diverse range of animal lineages, including fish species [6-9]. We attempt to genetic characterization of coastal and marine croakers of Bangladesh through COI gene. In this course we were able to identify a new record of the family Sciaenidae from the sea of Bangladesh. This paper deals with the occurrence of the Squaretail kob, *Argyrosomus thorpei* in the coastal waters of Bangladesh.

2. Materials and methods
The specimens were caught by long line at 45 m depth over sandy-muddy bottom off the coast of Cox's Bazar on 22 January 2016 and preserved in ice soon after collection and then kept frozen in the laboratory at -18 °C until further use. The mopho taxonomy and molecular study was performed from January to April 2016 at the Advanced Fisheries and DNA Barcoding Lab, Department of Zoology, University of Dhaka. Morphometric and meristic characteristics were recorded following Talwar and Jhingran [5]; Rahman *et al.*, (2009) [4]. Length was measured in cm scale. A portion of tissue was taken from the sample fish for genomic DNA extraction. DNA was extracted using the standard method [9] with a little modification [10]. Universal fish primer FishF1-5′-TCAACCAACCACAAAGACATTGGCAC-3′ and FishR1-5′-TAGACTTCTGGGTGGCCAAAGAATCA-3′ were used [9] for amplification of the COI gene. Amplified DNA was sequenced and BLAST for confirmation of the species.

3. Results and discussion

A total of 30 specimens were collected from the coast of Bay of Bengal, (21.4395° N, 92.0077° E) on 22 January 2016, and examined for this study.

3.1. Description

The *Argyrosomus thorpei* specimen (Fig. 1) has the following characteristics. Body elongated, slightly compressed, dorsal and ventral side concave. The head is large and depressed. Mouth is large and terminal in position. Upper rostral pores 3, marginal rostral pores 5 and mental pores 3 pairs. Jaws were large and equal in size. Villiform teeth present on upper and lower jaw, differentiated teeth on upper jaw only. Opercular opening large with flap. Lateral line single, complete and curved. Scales are large and rhomboidal in shape and arrangement is overlapping. Scales cycloid on snout, below eye and anterior part of breast, ctenoid scale on whole body. Dorsal fin double, large, moderately notched, and located the base of pectoral fin and reaches up to caudal peduncle, dorsal spines weak. Pectoral fin large, elongated, and ventro-lateral. Pelvic fin large, present and position is forward. Anal fin small, reaches far distance from caudal fin. Two spines in front of anal fin, second one small and weak. Caudal fin rhomboidal. Dorsal side silvery and greyish, ventral side whitish, head color silvery and greyish, Spiny part of dorsal fin black margin, pectoral fin whitish, pelvic, anal and caudal fins are blackish. Morphometric and meristic measurements are given in Table-1.

Fig 1: *Argyrosomus thorpei* (lateral view)

Table 1: Morphometric and meristic characteristics of *Argyrosomus thorpei* collected from Cox's Bazar, Bay of Bengal, Bangladesh. (TL=total length, SL=standard length, HL=head length, Kg=kilogram)

Morphometric characters	Present study N= 30	Smith, 1977 N= 11
Weight (Kg)	5-7	1-2
Total length	21-40	38
Standard length (%in TL)	19-37	32
Head length (% in SL)	28.58-29.54	28.8-30.5
Eye diameter (% in HL)	14.85-18.15	15.5-18.25
Upper jaw length (% in HL)	40.2-46.34	40.4-42.1
Meristic characters		
Dorsal fin rays	D_1.XI;D_2.I/27-28	D_1 XI, D_2.I/26-28
Pectoral fin rays	P. 17- P.18	
Anal fin rays	A.II/6-7	A.II/6-7
Pelvic fin rays	V.I/5	-

Morphomeristic characteristics of the specimens from the Bay of Bengal fall within the range limit of other specimens reported from the Natal, South Africa [11]. Meristic counts also fall within the range of previous work [11] (Table 1). The framework for this method was developed by FAO (2001) [12] where they used phenotypes for determining the species. In this study, more specified identification of species was used based on fin rays of the spine, lips, teeth and lateral line scales. In addition, the amplified COI gene was sequenced and BLAST (Basic Local Alignment Search Tool) with sequence deposited in the GenBank showed 99% matching with sequences in GenBank. The submitted sequences were assigned GenBank accession number KY024210 and MG969524
(https://www.ncbi.nlm.nih.gov/nuccore/KY024210).

4. Conclusions

This report updates the geographical distribution for this species confirming its presence in the coastal region of Bangladesh and extends the number of marine fish known from the area. DNA barcoding had been confirmed as an extremely powerful and widely applicable technique for fish identification purposes. The utilization of such a method could offer a superior level of precision to fish authentication monitoring by both regulators and the industry, whilst also providing an important tool to justify the issuing of penalties and the prosecution of unlawful practices. In this area, the species will have been unknowingly commercially exploited along with other closely related species. This new taxonomic identification will be helpful for the proper management and conservation of this species in future.

5. List of abbreviations

COI- Cytochrome c oxidase subunit I gene
DNA- Deoxyribonucleic acid
BLAST- *Basic Local Alignment Search Tool*

6. Declarations

6.1. Ethics approval and consent to participate

Not applicable.

7. Availability of data and material

The original voucher specimen DUZM 256.1is kept at the Museum of Department of Zoology, University of Dhaka and have public access. The DNA barcoding data can be retrieved from the NCBI GenBank;
(https://www.ncbi.nlm.nih.gov/nuccore/KY024210).

8. Competing interests

The authors declare that they have no competing interests.

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