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NEW RECORD OF ARABIC WHIPRAY, *MACULABATIS ARABICA* (ELASMOBRANCHII: MYLIOBATIFORMES: DASYATIDAE), FROM THE PERSIAN GULF* OFF IRAQ

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Abstract. The first occurrence of Arabic whipray, *Maculabatis arabica* Manjaji-Matsumoto et Last, 2016, is reported from the Persian Gulf off Iraq. The sample was collected using a trawl net in March 2018. Molecular analysis and morphological characters were used for identification. Disc width of specimen 370 mm and disc length 357 mm. The disk is relatively short and broadly rhomboidal. There are narrow spaces between the paired structures on the head. The snout is moderately elongate with a small apical lobe. Pectoral-fin apices are narrowly rounded, pelvic fins moderately large 16.26% DW. Tail very long 825 mm, with two spines. The dorsal disc is uniformly brownish, while the ventral disc is pale.

Keywords: new occurrence, *Maculabatis arabica*, Persian Gulf, Iraq

INTRODUCTION

The shores of the Persian Gulf, are literally rocky in the southern part and are characterized by marked bathymetric undulation (20–100 m). The contour distribution in the north becomes much smoother, probably being modified by the sediment discharges from the Shatt al-Arab River (Elshorbagy et al. 2006). The Iraqi marine waters represent the estuarine part of the Persian Gulf and are considered the most productive part of the Gulf (Mohamed et al. 2001). Annual total landings of the Iraqi marine waters reached to 22901 t in 2002 (Mohamed and Qasim 2014).

The stingrays (Dasyatidae) include four subfamilies Dasyatinae, Neotrygoninae, Urogymninae, and Hypolophinae, these subgroups have 19 genera and 102 species, are distributed in the Atlantic, Indian, and Pacific Oceans, chiefly marine, also in brackish and freshwater (Last et al. 2016a, Froese and Pauly 2019). The stingrays are batoids of moderate to very large size, body strongly depressed, with head, trunk, and broadly expanded pectoral fins forming rhomboid or oval-shaped disc, tail distinctly demarcated from the disc, no dorsal fins or caudal fin (McEachran and de Carvalho 2002).

The genus *Himantura* Müller et Henle, 1837 was recently divided into seven genus-level taxa: *Brevitrygon*, *Fluvitrygon*, *Fontitrygon*, *Himantura*, *Maculabatis*, *Pateobatis*, and *Urogymnus* (see Last et al. 2016b). *Maculabatis* contains nine valid nominal species: *Maculabatis ambigua* Last, Bogorodsky et Alpermann, 2016, *Maculabatis arabica* Manjaji-Matsumoto et Last, 2016, *Maculabatis astra* (Last, Manjaji-Matsumoto et Pogonoski, 2008), *Maculabatis bineeshi* Manjaji-Matsumoto et Last, 2016, *Maculabatis gerrardi* (Gray, 1851), *Maculabatis macrura* (Bleeker, 1852), *Maculabatis pastinacoides* (Bleeker, 1852), *Maculabatis randalli* (Last, Manjaji-Matsumoto et Moore, 2012), and *Maculabatis toshi* (Whitley, 1939), the previous studies were reported two of them (*M. gerrardi and M. randalli*) are found in the Persian Gulf and the Iraqi marine waters (Hussain et al. 1988, Hussain and Naama 1989, Carpenter et al. 1997, Mohamed et al. 2001, Bishop 2003, Al-Lammy et al. 2016).

The Arabic whipray, *M. arabica*, was first described from specimens collected in coastal habitats of the northern Indian Ocean, off India and Pakistan, by Manjaji-Matsumoto and Last (2016). The Arabic whipray was also recorded from Sri Lanka (Fernando et al. 2019). This study described *M. arabica* as a new distributional record from the Persian Gulf off Iraq.

MATERIAL AND METHODS

One adult specimen (female) of Arabic whipray *Maculabatis arabica* was caught in March 2018 by trawl net, from Khor Abdullah, Iraqi marine waters, the northwest Persian Gulf, 29°46′20.06″N, 48°33′21.39″E. The Khor Abdullah is a shallow, funnel shape body of water with a wide intertidal zone, the substratum is mainly muddy at the southern entrance and sandy-silt at the northern tip (Mohamed et al. 2001). A total of 13 morphometric characters of Arabic whipray were measured to the nearest mm by fish measuring board and digital caliper following Carpenter et al. (1997) and Manjaji-Matsumoto and Last

* The Persian Gulf is otherwise known as the Arabian Gulf.

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(2016). Small pieces of muscle and liver tissues preserved in ethanol 95% of the specimen were sent to the Florida Museum of Natural History, the University of Florida, USA for obtaining DNA sequence of NADH2 gene using the Kimura 2-parameter model, the code of specimen tissues: GN 19185. The specimen was deposited in the Department of Marine Vertebrates, Marine Science Center, University of Basrah.

RESULTS

Arabic whipray, *Maculabatis arabica* (Fig. 1), was first recorded the Persian Gulf off Iraq. The species was diagnosed by the morphometric characters (Table 1) and molecular analysis, shown in the neighbor-Joining tree of NADH2 sequence data (Fig. 2).

Class: Elasmobranchii
Order: Myliobatiformes
Family: Dasyatidae
Subfamily: Urogymninae
Genus: *Maculabatis* Last, Naylor et Manjaji-Matsumoto, 2016
Species: ***Maculabatis arabica* Manjaji-Matsumoto et Last, 2016**

Materials examined. MSCUB, 370 mm DW, female, northwest of the Persian Gulf, Iraq, 29°46′20.06″N, 48°33′21.39″E, trawl net, March 2018 (Fig. 1).

Morphological description. Broad rhomboidal disc (370 mm), relatively short, with its length 96.49% in disc width (DW). Narrow interspaces between paired structures on head. Snout moderately elongated with small apical lobe. Preorbital length 17.96% DW. Preoral length 19.35% DW. Head length 44.59% DW. Orbits small 4.48% DW. Width of first gill slit 2.86% DW and width of fifth gill slit 2.46% DW. Pectoral-fin apices narrowly rounded, pelvic fins moderately large 16.26% DW, and their base 11.98% DW. Tail very long 825 mm (222.97% DW), with two spines. Dorsal disc uniformly brownish (lacking white spots), ventral disc pale with broad, weakly defined, and slightly darker margins, anterior tail light brown on dorsal surface and without white lateral spots.

DISCUSSION

The Arabic whipray, *Maculabatis arabica*, appears to have been confused with *M. randalli*, which is also present in the Persian Gulf. Molecular data suggest that *M. arabica* is most closely related to *M. randalli*. *Maculabatis arabica* is diagnosed by a relatively short disc, narrow interspaces between paired structures on the head, plain dorsal disc coloration, and tail light brown, in addition to some other characteristics that some of them overlap with *M. randalli* according to Manjaji-Matsumoto and Last (2016) such as preorbital length (20.5%–21.2% DW vs. 20.1%–22.7% DW in *M. randalli*), preoral length (20.5%–22.0% DW vs. 21.9%–22.6% DW in *M. randalli*), head length (43.2%–45.6% DW vs. 44.5%–46.8% DW in *M. randalli*), orbit diameter (5.9%–6.5% DW vs. 4.6%–5.7% DW in *M. randalli*) and eye diameter (3.4%–3.7% DW vs. 2.6%–3.7% DW in *M. randalli*). The new record of *M. arabica* is described from an adult specimen collected in the Persian Gulf off Iraq, the most external characters of the specimen were found similar to Manjaji-Matsumoto and Last (2016), but the tail of our specimen with two spines. Fernando et al. (2019) described an immature specimen of *M. arabica* from the Pukulam landing site in the North Western Province in Sri Lanka, this specimen was somewhat inconsistent with the description of immatures of *M. arabica* presented by Manjaji-Matsumoto and Last (2016), the tail of the specimen from Sri Lanka (17.6 cm in disc width) had

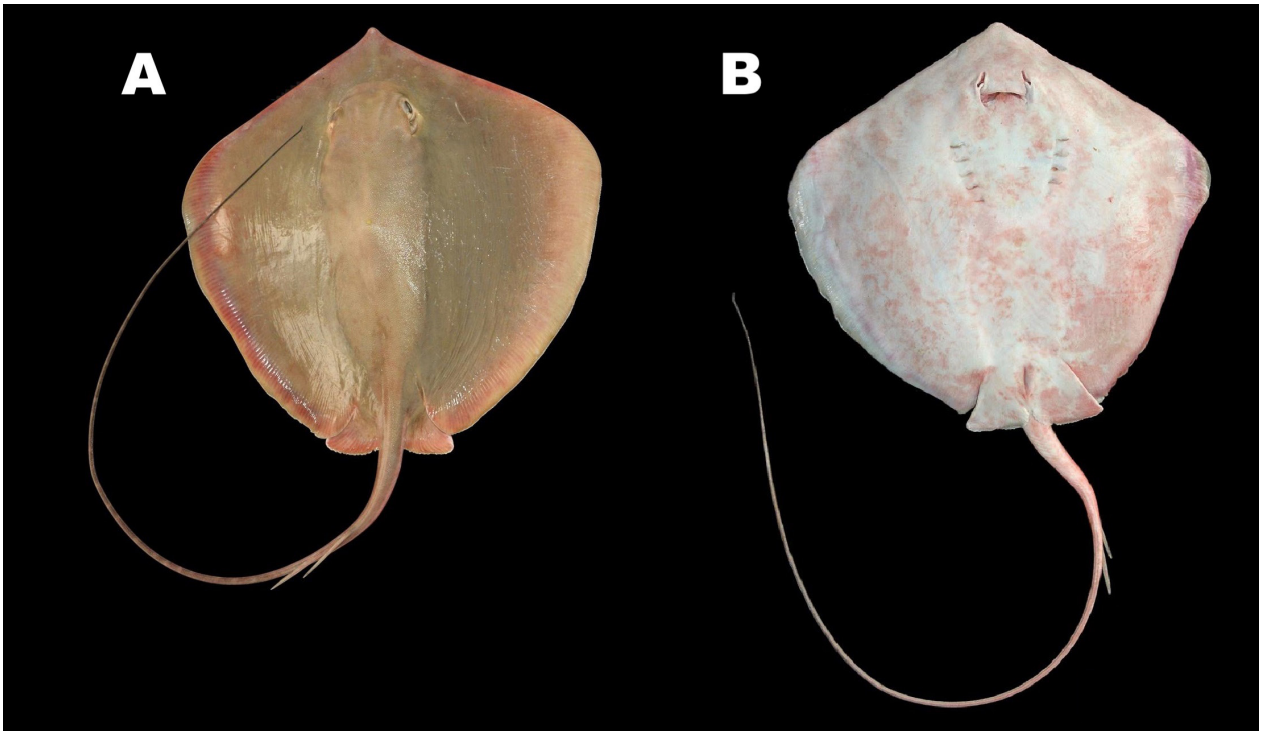

Fig. 1. A specimen of *Maculabatis arabica* (370 mm DW) from the Iraqi marine waters, (**A**) dorsal view, (**B**) ventral view

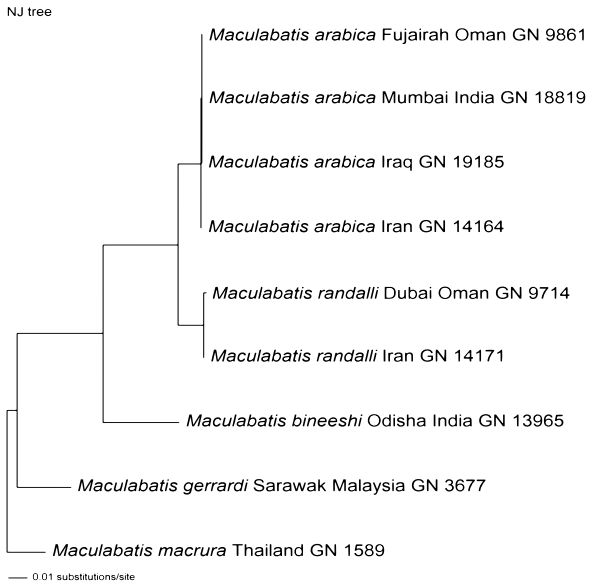

Fig. 2. Neighbor-Joining tree of a maximum likelihood analysis of 1053 aligned sites of NADH2 sequence data for *Maculabatis* using the Kimura 2-parameter model

Table 1

Morphometric characters of *Maculabatis arabica* from the Iraqi marine waters, compared with holotype and paratypes data according to Manjaji-Matsumoto and Last (2016)

Paratypes (range)	Holotype	Presently reported study		Morphometric characters
		% in disc width (DW)	[mm]	
234–268 mm	325 mm	—	370.00	Disc width
88.8%–92.5%	90.2%	96.49	357.00	Disc length
20.5%–21.2%	20.7%	17.96	66.45	Preorbital length
20.5%–22.0%	21.2%	19.35	71.60	Preoral length
43.2%–45.6%	43.8%	44.59	165.00	Head length (ventral)
5.9%–6.5%	5.3%	4.48	16.57	Orbit diameter
3.4%–3.7%	3.3%	2.97	10.98	Eye diameter
—	—	2.86	10.57	Width of first gill slit
—	—	3.16	11.71	Width of third gill slit
—	—	2.46	9.09	Width of fifth gill slit
18.6%–20.2%	18.5%	16.26	60.16	Pelvic fin length
—	—	11.98	44.31	Pelvic fin base
223%–262%	—	222.97	825.00	Tail length

inconspicuous white spots that were restricted to the region of the tail anterior and posterior to the tail spine, whereas the color of the tail in our specimen consistent with the description of adults of *M. arabica* reported by Manjaji-Matsumoto and Last (2016), it is light brown on the dorsal surface and without white lateral spots.

The range extension of the Arabic whipray, *M. arabica*, in the Persian Gulf and the Iraqi marine waters may due to climate change or any other environmental change such as seawater temperature lead to a recent natural distribution along the northern coast of the Indian Ocean. Estuaries have widely varying environmental characteristics and serve as nurseries for many productive and dependent marine species (Bompo et al. 2005). The quality of the Iraqi marine waters environments due to the discharge of fresh water from the Shatt al-Arab River. The new record of the Arabic whipray, presented in this paper, indicates that suitable habitat for these species occurs in Iraqi waters, and it is a new addition to the marine fish species list of Iraq. As this list reached 214 species representing 75 families in the survey of fish species in the Iraqi marine waters, according to Al-Faisal and Mutlak (2018) and 322 species (19 batoids) in the catalog of Ali et al. (2018), compared to 539 species representing 119 families in the Persian Gulf (Carpenter et al. 1997).

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