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A new record of two croaker fish (family: Sciaenidae) from the Iraqi marine waters

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Abstract:

The first record of two Sciaenid fish *Johnius amblycephalus* (Bleeker, 1855) and *Nibea maculata* (Bloch & Schneider, 1801) is reported from the Iraqi marine waters, northwest of the Arabian Gulf. Total length of *J. amblycephalus* ranged between 216 to 230 mm, whilst the length of *N. maculate* ranged from 200 to 210 mm. The bearded croaker (*J. amblycephalus*) could be distinguished by blunt barbel on chin, second and third spine in first dorsal fin is elongate and gill rakers eight on lower limb of first gill arch. While The blotched croaker (*N. maculate*) characterized by five dark bars extending obliquely on the body, gill rakers 10 on lower limb of first gill arch and the second part of dorsal fin contains 22-23 rays.

Key words: new record, Sciaenidae, *J. amblycephalus*, *N. maculate* Arabian Gulf.

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Introduction

The family Sciaenidae is commercially important fishes, contains approximately 66 genera and 283 species, that are distributed in Indian, Pacific and Atlantic Oceans [1]. The English names of croakers refer to the characteristic vocalization of the family, related to sound production [2]. The characterization of Sciaenidae: moderately elongate and compressed body, a barbel sometimes present on the chin, dorsal fin continuous with deep notch between anterior (spinous) and posterior (soft) portions, base of posterior portion elongate, much longer than anal fin base, swimbladder well developed with thick wall shaped as carrot, or hammer shaped, with arborescent appendages [3].

The genus *Johnius* Bloch, 1793 contains 34 species and the genus *Nibea* Jordan and Thompson, 1911 contains 10 species [4]. The genus *Johnius* was divided into two subgenera, *Johnius* and *Johnieops*, the first differs from the second mostly in the absence of enlarged teeth in a single row on the lower jaw [5].

Many studies have been published to identify the sciaenid fish species of the Iraqi marine waters and the Arabian Gulf [6], [7], [8], [9], [10], [11], [12], [13]. The aim of study is to describe *J. amblycephalus* and *N. maculate* as new record in the Iraqi marine waters.

Material and Methods

Eight specimens of croaker fish (three of *J. amblycephalus* and one of *N. maculate*) were collected, during November 2017 from the Iraqi marine waters, northwestern Arabian Gulf (fig. 1), depending on commercial fishery, by using trawl net. The specimens are deposited in the Marine Science Centre, University of Basrah, Iraq. Seven meristic characters were counted employing dissection microscope and 19 morphometric characters were measured to the nearest mm by using fish measuring board and digital vernier following [10].

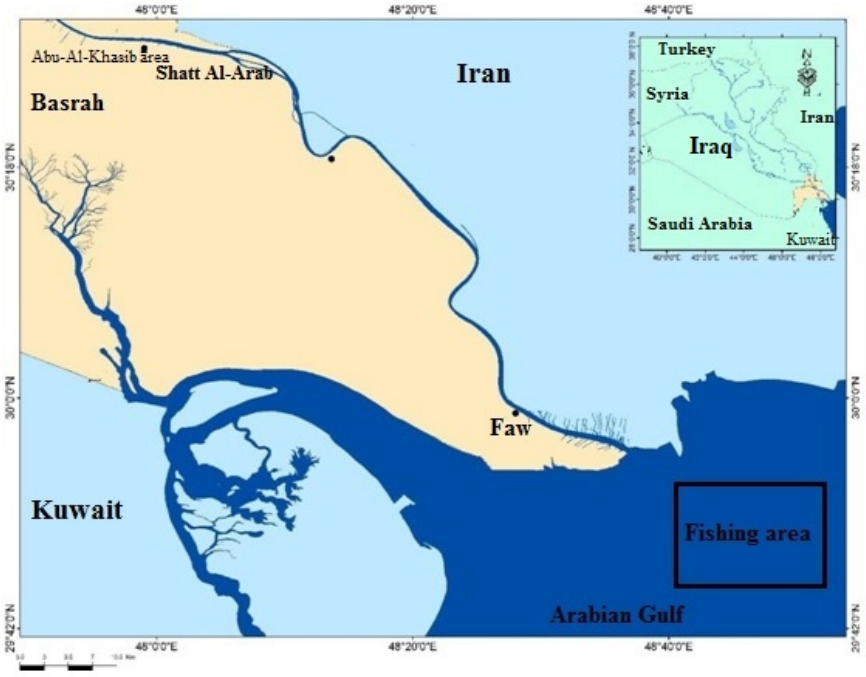

Fig. 1: A map showing fishing area in the Iraqi marine waters.

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Results and Discussion

Two Sciaenid fish were recorded for the first time in the Iraqi marine waters, these species belong to the following classification section:

Class: Actinopterygii
Order: Perciformes
Family: Sciaenidae
Genus: Johnius
Species: *Johnius amblycephalus* (Bleeker, 1855)
Synonym: *Umbrina amblycephalus* Bleeker, 1855
Johnius amblycephala (Bleeker, 1855)
Genus: *Nibea*
Species: *Nibea maculata* (Bloch & Schneider, 1801)
Synonym: *Johnius maculatus* Bloch & Schneider, 1801
Otolithes maculate (Bloch & Schneider, 1801)
Sciaena maculate (Bloch & Schneider, 1801)

Johnius amblycephalus (Bleeker, 1855)

The bearded croaker (Fig. 2) is characterized by a moderately deep body (28.07 – 28.87 % in Standard length). Snout is steep, bluntly rounded, projecting in front of upper jaw, mouth inferior, a stiff and blunt barbel on chin. Total length ranged from 216 to 230 mm. Head length ranged from 30.23 to 32.29 % in Standard length and head depth 19.98 – 25.32 %. The second and third spines fairly elongate (20.09 – 22.66%). Dorsal fin with 10 spines followed by a notch, second part of fin with one spine and 24 rays. The anal fin has two spines followed by seven rays. Caudal fin slightly rhomboidal. Gill rakers ranged from three to four on upper limb and eight on lower limb of first gill arch (Table 1).

Fig. 2: *J. amblycephalus* from the Iraqi marine waters.

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Table 1. Morphometric and meristic characteristics of *Johnius amblycephalus* from the Iraqi marine waters.

Morphometric characters		Range	Mean	SD
Total length (mm)		216 - 230	222	5.89
Standard length [SL] (mm)		185 - 194	189	3.74
Body depth % in SL		28.07 – 28.87	28.42	0.33
Body width % in SL		14.37 – 15.66	15.15	0.56
Head length % in SL		30.23 – 32.29	31.02	0.91
Head depth % in SL		19.98 – 25.32	22.67	2.18
Head width % in SL		16.29 – 17.27	16.86	0.42
Snout length % in SL		5.48 – 10.18	8.41	2.09
Eye diameter % in SL		5.92 – 7.76	6.99	0.78
Interorbital distance % in SL		7.46 – 7.93	7.65	0.21
Predorsal length % in SL		32.85 – 35.28	33.98	1.00
Postdorsal length % in SL		11.67 – 12.78	12.19	0.45
fin length % in SL Dorsal		56.59 – 58.08	57.22	0.63
fin height % in SL Dorsal		20.09 – 22.66	20.97	1.19
Anal fin length % in SL		9.49 – 10.53	10.04	0.43
Pectoral fin length % in SL		23.90 – 27.34	26.15	1.59
Pelvic fin length % in SL		17.12 – 18.24	17.75	0.47
Caudal peduncle length % in SL		23.16 – 25.39	24.57	1.00
Caudal peduncle depth % in SL		8.50 – 9.19	8.84	0.28
Meristic characters				
	Dorsal fin spines	10		
	Dorsal fin rays	24		
Anal fin	spines	2		
	rays	7		
	Pectoral fin rays	16		
	Pelvic fin rays	5		
Gill rakers	upper raw	3-4		
	lower raw	8		

Nibea maculata (Bloch & Schneider, 1801)

The blotched croaker (Fig. 3) is distinguished by five dark bars extending obliquely from the back to the lower part of flanks. Snout projecting beyond the upper jaw (8.72-9.41 % in Standard length) . Mouth is inferior, without barbels. Total length ranged from 200 to 210 mm. Body depth 31.65-32.50 % in Standard length, body width 15.34-16.18 % and head length 30.70-33.77 %. The tail was broad, curved and ending in a sharp edge. Anterior part of dorsal fin with 10-11 spines, posterior part of dorsal fin contains one spine followed by 22-23 rays. Anal fin with two spines followed by seven rays. Gill rakers five to six on upper limb and 10 on lower limb of first gill arch (Table 2).

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Fig. 3: *N. maculate* from the Iraqi marine waters.

Table 2. Morphometric and meristic characteristics of *Nibea maculata* from the Iraqi marine waters.

Morphometric characters		Range	Mean	SD
Total length (mm)		200-210	204	4.32
Standard length [SL] (mm)		167-176	171	3.74
Body depth % in SL		31.65-32.50	32.02	0.35
Body width % in SL		15.34-16.18	15.82	0.35
Head length % in SL		30.70-33.77	32.69	1.41
Head depth % in SL		23.81-25.91	24.88	0.86
Head width % in SL		14.49-16.02	15.33	0.63
Snout length % in SL		8.72-9.41	9.13	0.29
Eye diameter % in SL		6.50-7.10	6.76	0.25
Interorbital distance % in SL		6.48-6.77	6.60	0.12
Predorsal length % in SL		31.77-35.41	33.45	1.50
Postdorsal length % in SL		12.41-13.48	12.98	0.44
fin length % in SL Dorsal		56.75-59.36	58.43	1.19
fin height % in SL Dorsal		13.47-13.66	13.57	0.10
Anal fin length % in SL		9.39-10.32	9.88	0.38
Pectoral fin length % in SL		23.41-26.19	24.39	1.28
Pelvic fin length % in SL		17.40-21.26	19.36	1.58
Caudal peduncle length % in SL		24.11-26.32	25.39	0.94
Caudal peduncle depth % in SL		9.15-9.68	9.33	0.25
Meristic characters				
	Dorsal fin spines	10-11		
	Dorsal fin rays	22-23		
Anal fin	spines	2		
	rays	7		
	Pectoral fin rays	18		
	Pelvic fin rays	6		
Gill rakers	upper raw	5-6		
	lower raw	10		

Numbers of sciaenid fish species ranged from four to 14 in the Iraqi marine waters and the Arabian Gulf according to the previous studies [7], [8], this study is considered the first in recording of *J. amblycephalus* and *N. maculate*. Carpenter and Niem [3] showed that the bearded croaker (*J. amblycephalus*) is distincted from other species of genus *Johnius* with mouth inferior, a stiff blunt barbel on chin, dorsal fin with 10 spines followed by a notch, second part of fin with one spine and 23 to 26 soft rays, the second and third spines prolonged, anal fin with two spines and seven soft rays, the second spine weak and gill rakers six to nine on lower limb of first gill arch. Psomadakis *et al*. [14] revealed that the blotched croaker (*N. maculate*) is distinguished with mouth inferior, teeth differentiated into large and small in both jaws, five dark bars extending obliquely on the body, anterior part of dorsal fin with 10 spines and posterior part contains 22 rays and gill rakers 10 on lower limb of first gill arch. Our results agree with these characteristics.

Environmental impacts may be the cause of range extension of *J. amblycephalus* and *N. maculate* in the Arabian Gulf and the Iraqi marine waters. The Arabian Gulf is a semi-enclosed shallow sea which located within subtropical climate, but the environments of Iraqi marine waters are quite different compared with other parts of the Arabian Gulf. The Shatt Al-Arab River is considered as a major fresh water discharge into the northwest Arabian Gulf, which present potential sources of nutrients and organics [15]. The discovery of *J. amblycephalus* and *N. maculate* in Iraqi marine waters indicates that a suitable habitat for these species occurs in Iraqi waters.

It can be concluded that our results proved the reliability based on morphological features to identify *J. amblycephalus* and *N. maculate* as new record. The present record is a new addition to the marine fish species list for Iraq.

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