

## Occurrence of the King Nase, *Chondrostoma regium* (Heckel, 1843) in the Shatt Al-Arab River, Iraq

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**Abstract:** The occurrence of the King nase, *Chondrostoma regium* (Heckel, 1843) is reported for the first time from the Shatt Al-Arab River, Iraq. Four specimens of *C. regium* were caught by gill nets in 12<sup>th</sup> July 2016. 25 morphometric and 16 meristic measurements were applied to describe the species. The results showed that the morphometric and meristic data were successful in identifying of *C. regium* and confirm the presence of the species in the Shatt Al-Arab River.

**Keywords:** King nase, morphometric and meristic characters, Shatt Al-Arab River, Iraq.

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### I. Introduction

The nases, genus *Chondrostoma* Agassiz, 1832 belong to the family Cyprinidae, subfamily Leuciscinae distributed from the Iberian Peninsula and France to the Caspian Sea, Esfahan and Tigris-Euphrates basins (Durand *et al.* 2003; Nelson, 2006; Coad, 2016). There are about 35 species of which 11 species in Turkish waters (Çiçek *et al.*, 2015), three in Iran (Roudbar *et al.*, 2015a, b) and one species, *Chondrostoma regium* in Syria and Iraq (Beckman, 1962; Jawad *et al.*, 2015; Coad, 2010).

The King nase, *C. regium* (Heckel, 1843), [*C. regius* (Heckel, 1843), in Al-Daham (1977); *Chondochilus regius* Heckel, 1843, in Coad (1991)], is a subtropical fresh water fish native to Tigris-Euphrates basin in Turkey, Syria and Iraq, and their adjacent basins in Iran (Coad, 2010).

While examining the fish specimens collected from the Shatt Al-Arab River on 12th July 2016, we found four specimens of *C. regium* (Heckel, 1843), a species which has not been recorded previously from southern waters of Iraq (Khalaf, 1961; Al-Nasiri and Hoda, 1975; Al-Daham, 1977; Al-Hassan *et al.*, 1989; Coad, 2010; Mohamed *et al.*, 2012, 2015). Subsequently literature search has further revealed that the species has been reported from Diyala River, Iraq (Allouse *et al.*, 1986; Khalaf *et al.*, 1986) Tigris River at Baghdad, Iraq (Daoud and Qasim, 1999; Al-Jawda and Asmar, 2014), Dukan and Darbandikhan Reservoirs (Bachmann *et al.*, 2008) and Tigris River, Salah Al-Deen (Wahab and Al-Ani, 2103).

Our purpose in this paper is to describe the morphometric and meristic characters of *C. regium* for the first time in the Shatt Al-Arab River, Iraq.

### II. Materials and Methods

The confluence of the Tigris and Euphrates rivers at Qurna town, north of Basra city forms the Shatt Al-Arab River, and flows to the south east towards the Arabian Gulf. Shatt Al-Arab River has a length of 204 km, a width range between 400 m at Basrah city and up to more than 1500 m at the estuary, and hundreds outlets in the form of small rivers and canals are found on both its sides (Al-Lami, 2009). Three tributaries flow into the river, Al-Swab River which flows from Huwaza marsh, then to the Shatt Al-Arab River at 15km south of Qurna, Garmat Ali River that drains Al-Hammar marsh, and Karun River which flow through the Iranian territory and discharge into Shatt Al-Arab River, about 15km south of Basrah city. The River is affected by the high and low tides of the Gulf.

On 12<sup>th</sup> July 2016, four specimens of *C. regium* were caught by gill nets (100 m to 500 m with 1.5cm to 15cm mesh size) from the north part of Shatt Al-Arab River, near the Al-Dair bridge (Fig. 1), about 30km south of Qurna confluence. The specimens were transported to the laboratory in University of Basrah, where they were measured and weighed.



Fig. 1. Map showing the collection site of the specimens of *C. regium*

In the laboratory, the specimens were identified according to Beckman (1962) and Coad (2010). Twenty five morphometric and seventeen meristic characters were recorded according to Hubbs and Lagler (1964). Total, standard and fork lengths of the specimens were measured to the nearest 1.0 mm using a measuring board. The other morphometric variables were determined using digital caliper to the nearest 0.1mm. Names of morphometric and meristic characters are shown in Tables 1 and 2. The specimens were deposited in the fish collection of the Department of Fisheries and Marine Resources, College of Agriculture, University of Basrah, Iraq.

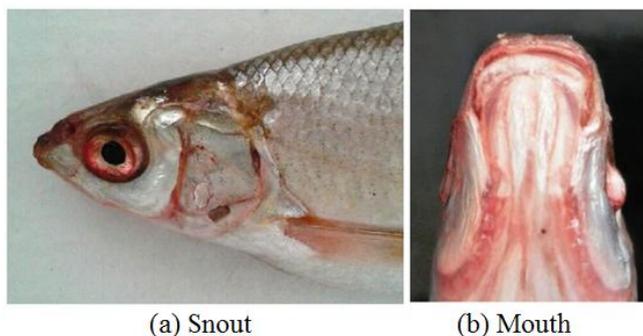
### III. Results

#### Description:

*C. regium* is characterized by the following features. Body fusiform with a somewhat compressed (Fig. 2). The back is olive-brown with bluish reflection, silvery-white on sides and belly. Small head size compared to the body. Snout thick, round, projecting beyond the mouth (Fig. 3a). The mouth is transverse with a thick horny layer on the lower jaw (Fig. 3b). No barbels. Scale cycloid and small-sized. Dorsal fin origin is equaled distant from the tip of the mouth to the origin of the caudal, its rays are composed of spines and unbranched and branched rays. Pectoral fin is orange with unbranched and branched rays. Pelvic fin arises under the original of the dorsal fin with spine and unbranched and branched rays. Anal fin with spines followed by unbranched and branched rays. Caudal fin forked orange with black margin. Lateral line is closer to the belly than the back, but median in caudal peduncle.



Fig. 2. *C. regium* captured from Shatt Al-Arab River, 225 mm total length



**Fig. 3.** Snout and mouth in *C. regium*, 184 mm TL

**Morphometric characters:**

All specimens of *C. regium* were ranging from 170 to 225mm in total length (TL) and 23.7 to 43.2 g in total weight using for the studies of the morphometric characters. Different morphometric characters which are expressed in the percentage of standard fish length and head length have been taken for statistical analysis like range, mean and standard deviation, and presented in the Table 1. The mean indices characters varied from 3.7 %

**Table 1.** Biometric characteristic (%) of *Chondrostoma regium* from Shatt Al-Arab River, Iraq

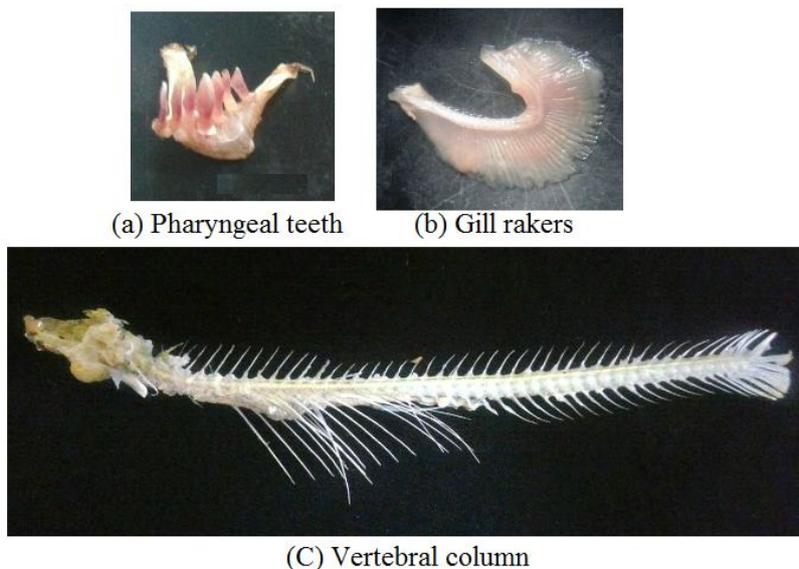
Morphometric characteristics (n= 4)	Range	Mean ( $\pm$ SD)
Related characters in % of SL		
Total length	119.7-132.4	124.7 (5.43)
Forked length	107.7-112.2	110.1 (2.13)
Head length (HL)	18.7-20.1	19.6 (0.61)
Body depth	23.8-24.7	24.3 (0.37)
Body width	12.1-13.5	12.7 (0.62)
Head depth	12.9-13.9	13.3 (0.45)
Head width	10.6-11.0	10.7 (0.16)
Snout length	4.5-5.2	4.7 (0.31)
Interorbital distance	7.2-7.7	7.5 (0.20)
Eye diameter	5.3-5.5	5.4 (0.10)
Upper jaw length	3.1-4.2	3.7 (0.46)
Mouth width	4.7-5.1	4.85 (0.14)
Predorsal length	47.2-48.3	47.9 (0.52)
Dorsal-fin base length	11.9-13.5	12.7 (0.70)
Dorsal fin length	17.8-21.1	19.7 (1.39)
Anal fin length	14.9-17.3	16.6 (1.13)
Preanal length	67.6-72.1	69.8 (2.54)
Prepelvic length	47.5-51.8	50.0 (1.94)
Prepectoral length	19.4-20.8	20.4 (0.69)
Anal-fin base length	12.5-13.6	13.1 (0.44)
Pectoral fin length	16.1-17.9	17.4 (0.88)
Pelvic fin length	13.8-16.7	15.5 (1.23)
Caudal peduncle length	19.7-21.6	20.6 (0.79)
Caudal peduncle depth	9.5-10.1	9.9 (0.31)
Related characters in % of HL		
Head depth	64.3-74.3	67.9 (4.45)
Head width	53.7-56.8	54.7 (1.47)
Snout length	22.1-27.5	24.1 (2.40)
Interorbital distance	35.8-39.8	38.2 (1.71)
Eye diameter	27.2-28.0	27.6 (0.34)
Upper jaw length	15.6-21.3	19.1 (2.71)

of upper jaw length to 124.7 % of total length. The mean ratio of head length was 19.6% in standard length. However, the ratio of body depth (19.6%) was greater than the ratio of body width (10.7%). The indices characters of different parts of head with head length ranged from 19.1% of upper jaw length to 67.9% of head depth (Table 1).

**Meristics characters:**

The meristic characters data of *C. regium* with length range of 170 to 225mm in TL are presented in Table 2. The results were pharyngeal teeth 6-6, 7-7 and 6-6 (Fig. 4a), gill rakers 34-36 (Fig. 4b), vertebrae 46-48 (Fig. 4c), lateral line scales 65-71, scales above the lateral line 9-12 and scales below the lateral line 5-6. Dorsal fin with 2 spines, 1 unbranched and 9 branched rays. Pectoral fin with 1 unbranched and 15-17 branched rays.

Pelvic fin with 1 spine, 1 unbranched and 8 branched rays. Anal fin with 3 spines, 10-11 unbranched and 8 branched rays.



**Fig.4.** Pharyngeal teeth, gill rakers and vertebral column bone in *C. regium*, 184 mm TL

**Table 2.** Comparison of biometric characteristics of *C. regium* from Shatt Al-Arab River with other studies.

Biometric characteristics	Present study	Khalaf (1961)	Beckman (1962)	Al-Daham (1977)	Coad (2010)
Body depth in % of SL	24-25	23-25	23-25	23-25	
Head length in % of SL	19-20	20-22	21-22	22-23	
Eye diameter in % of HL	27-28	20-25	20-25		
Lateral line scales	65-71		64-68	64-68	56-72
Scales above the lateral line	9-12			11	9-13
Scales below the lateral line	5-6	5 or 6	5	5	5-6
Branched rays of dorsal fin	9-9		9	9	8-11 (9)
Branched rays of pectoral fin	15-17			16-17	14-18(15-17)
Branched rays of pelvic fin	8-8			9	6-9 (8)
Branched rays of anal fin	10-11		10-11	10-11	9-12 (11)
Unbranched rays of anal fin	1-1				
Anal fin spine	3-3		3		
Gill rakers	34-36				18-36
Vertebrae	46-48				46-49
Pharyngeal teeth	6-6, 7-7	6 or 7	7-7, 7-6, 6-6	7-7, 6-7, 6-6	6-5, 6-6, 6-7, 7-5, 7-6, 7-7

#### IV. Discussion

Previous studies on the ichthyofauna in the Shatt Al-Arab River did not indicate the presence of *C. regium* in this river (Al-Nasiri and Hoda, 1975; Al-Hassan *et al.*, 1989; Mohamed *et al.*, 2012, 2015), while the fish taxonomy references affirmed that *C. regium* is found in the Tigris upstream and tributaries (Khalaf, 1961; Al-Daham, 1977; Coad, 2010). Some other researchers reported this species in Diyala River (Allouse *et al.*, 1986; Khalaf *et al.*, 1986) and in Tigris River (Daoud and Qasim, 1999; Wahab and Al-Ani, 2013). Also, this species is relatively widespread in Tigris River basin of Iran includes the Karkheh River and the Al-Azim marsh, which connects to Huwaza marsh to drain into the Tigris River and the Shatt al Arab River, and the Karun River, which drains into the Shatt Al-Arab River (Roudbar *et al.*, 2015a; Coad, 2016).

Thus, from a mere geographical point of view, its presence was to be expected in the Shatt Al-Arab River, particularly this year which characterized by heavy floods, either from Tigris River from the north or from Iranian rivers from the east. Hence, the capture of *C. regium* reported herein is the first from the Shatt Al-Arab River.

The biometrical study of *C. regium* has not been investigated in Iraq, therefore the morphometric and meristic characteristics of *C. regium* in the Shatt Al-Arab River were compared with data obtained from some taxonomy references (Table 2). The results showed that meristic features of *C. regium* agree with the description of this species given by Khalaf (1961), Beckman (1962), Al-Daham (1977) and Coad (2010). The only exceptions were slight differences in some morphometric characteristics, such as head length and eye diameter. Roudbar *et al.* (2014) found highly significant morphological variations among eight *C. regium* populations in

different aquatic ecosystems from western Iran, due to different environmental and habitat conditions, such as temperature, turbidity, food availability, and water depth. Peres-Neto and Magnan (2004) stated that morphometric characters varied according to the changing environmental conditions of the habitat throughout their life and the phenotypic plasticity have been shown in many freshwater fish species.

## V. Conclusions

The results showed that the morphometric and meristic data were successful in identifying of *C. regium* and confirm the presence of the species in the Shatt Al-Arab River.

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