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MORPHOMETRIC AND MERISTIC CHARACTERISTICS OF SOHAL SURGEONFISH *ACANTHURUS SOHAL* (FORSSKÅL, 1775) IN IRAQI MARINE WATER

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SUMMARY

A total of (13) specimens of *Acanthurus sohal* were managed to be collected from Iraqi marine water during winter 2007 and 2008. Biometry characteristics were conducted including morphometric measurement total length, standard length and total weight ranging between 310-365 mm, 222-258 mm and 307.74- 670.42 g. respectively, and meristic characteristics which include number of fin spines and rays, where dorsal fin spines number were IX, and 29 - 31 rays, anal fin had III spines and 27 - 29 rays, pectoral fin had I spine and 14 rays, pelvic fin had I spine and 5 rays, and caudal fin had 14 rays. Total number of vertebrae were 22-23. Samples were classified as sohal surgeonfish *Acanthurus sohal* (Forsskål, 1775), some species were distributed in the Iraqi water, therefore occurrences of this species is new to Iraqi marine water.

Introduction

Taxonomic studies indicate that there are many systematic problems for identification of fish genus and species (6). So there is a need to involve the biochemical techniques. However proteins electrophoresis as one of important techniques applied for fish identifications to resolve fish misidentifications (6 and 11). Most references (5; 7; 17 and 19) agree on the existence of seventy two species within Acanthuridae family while the number of genera was six (5 and 17) . 8 mentioned that *Acanthurus sohal* was distributed in Western Indian Ocean, Red Sea and Arabian Gulf.

12 and 13 were listed the marine fishes of Iraq and Kuwait, but there was no hint to the occurrence of this species, 1 showed existence of two species of Acanthuridae family in Iraqi marine waters of Arabian Gulf but 14 listed four species belong to Acanthuridae in the Gulf, However, 7 confirmed the existence of this species in the Gulf water. Several studies (2; 3; 4; 9; 10; 15 and 16) were executed on fish composition in Iraqi marine waters, Northwest Arabian Gulf, but none of which recorded this species. It is

therefore the occurrence of this species is considered as a new attendance to Iraqi marine water.

Materials and Methods

Fish samples were collected from the study area by traps and line and hooks. Fishes were stored in cool box with crushed ice. In the laboratory different characters of morphometric and meristic were measured, total and standard lengths of fishes were determine to the nearest mm by measurement board, weight was taken to nearest 0.01g by Mettler balance type P2010 and lengths of the different regions of fishes using electronic vernaia. Number of vertebrae was calculated after removal of the skin and muscles. Count of vertebrae of the basal dorsal and anal fins, pre and post dorsal, pelvic and anal fins, abdominal vertebrae were executed. Then the sample was boiled to calculate the total vertebrae.

Results

Morphometric and meristic characteristics of *A. sohal* were measured, plate (1). Fish body is elongated moderately and compressed. Mouth is small. Body have 14 -16 stripes below lateral line and two stripes through eyes, lines absent on belly region. Dorsal and anal fins dark with bluish white margins, pectoral fin yellowish with dark margin, a spot of orange in pectoral region, caudal fin lunate with bluish white margin, the lower lobe longer than upper. Caudal peduncle spine is orange which folds into a deep horizontal groove. Total length, standard length and weight ranging between 310-365 mm, 222-258 mm and 307.74- 670.42 g. The spine length ranging 27.83-33.32 mm (29.816 mm ± 0.9277 S.E).

Plate (1). Specimen of *Acanthurus sohal* (Forsskål, 1775) collected from Iraqi water and measuring (324)mm in total length.

Table (1) shows morphometric measurements and the ratio of standard length to these measurements, seventeen morphometric characters were

measured, higher ratio detected was between standard length and eye diameter and the lowest between standard length and total length.

Table(1):Ratio of standard length to morphometric measurement of *Acanthurus sohal*.

Morphometric characteristic	Standard length(mm) / morphometric measurement(mm)	
	Range	Mean ± S.E.
Total length	0.685 – 0.789	0.694 ± 0.0139
Head length	3.923 – 4.321	4.1538 ± 0.0805
Body depth	2.312 - 2.408	2.3752 ± 0.0342
Mouth width	14.021 – 18.486	15.8033 ± 1.3252
Mouth height	12.78 – 14.958	13.8258 ± 0.6239
Pre orbital length	5.634 – 7.412	6.8118 ± 0.2577
Post orbital length	12.802 – 18.886	15.9763 ± 1.2934
Eye diameter	20.87 – 24.84	23.2 ± 0.6832
Dorsal fin base length	1.535 – 1.659	1.5983 ± 0.0199
Anal fin base length	2.236 – 2.403	2.321 ± 0.0298
Caudal peduncle length	5.593 – 6.328	5.91 ± 0.1821
Pre dorsal fin length	3.584 – 3.829	3.73 ± 0.0745
Post dorsal fin length	5.446 – 6.382	5.8893 ± 0.2713
Pre anal fin length	2.361 – 2.566	2.4497 ± 0.0608
Post anal fin length	5.592 – 5.848	5.7523 ± 0.0807
Spine length	6.993 – 8.719	7.9825 ± 0.2451

Table (2) shows number of spine and soft rays of fins for *A. sohal*, dorsal fin has 9 spine, anal fine 3 spine, pectoral and pelvic one spine, more soft ray were in both dorsal and anal fins.

Table(2): Numbers of spines and soft rays of *Acanthurus sohal*.

Fins	Spine	Soft rays
Dorsal fin	9	29 -31
Anal fin	3	27 – 29
Pectoral fin	1	14
Pelvic fine	1	5
Caudal fine		14

Table (3) illustrates number of vertebrae of various regions of this species. There were 17 - 18 vertebrae in dorsal fin base. 14 – 16 vertebrae post pelvic fin and total vertebrae were 22- 23.

Plate (2) indicates internal skeleton and total number of vertebrae of this species. The number of vertebrae were 9 abdominal and 13 caudal.

Table(3): Numbers of vertebrae of different region of *Acanthurus sohal*.

The parts	Number of vertebrae
Vertebrae basal dorsal fin	17 -18
Vertebrae basal anal fin	9 - 10
Vertebrae pre dorsal fin	2 -3
Vertebrae post dorsal fin	4 -5
Vertebrae pre anal fin	8 - 10
Vertebrae post anal fin	3 - 4
Vertebrae pre pelvic fin	4 - 5
Vertebrae post pelvic fin	14 - 16
Abdominal vertebrae	9
Total vertebrae	22 -23

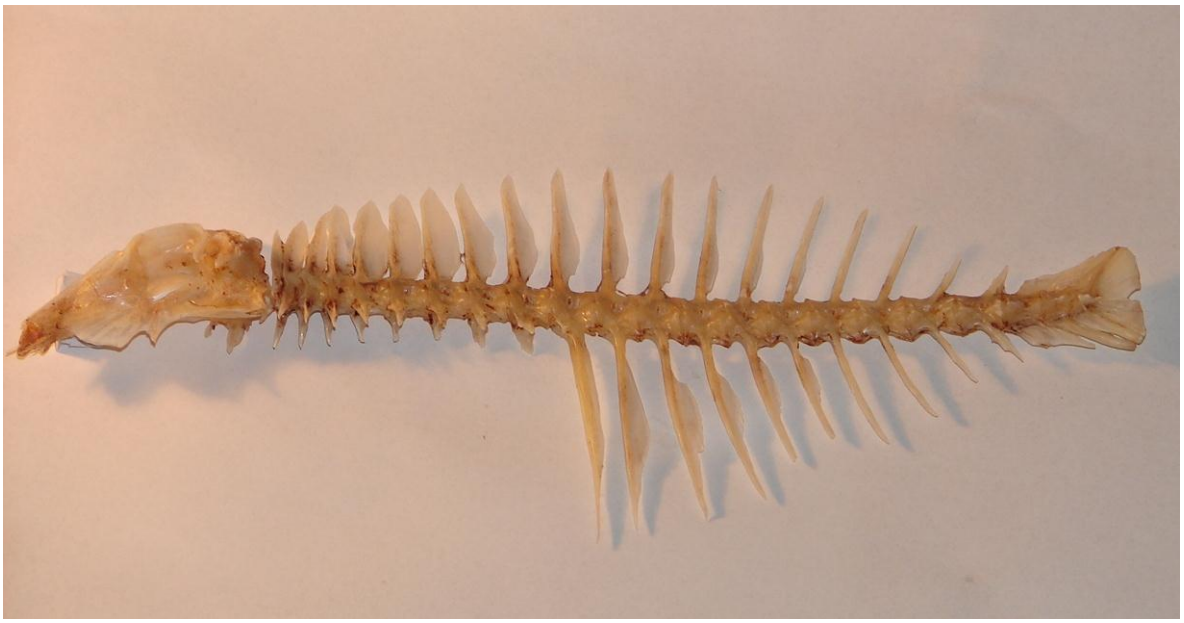

Plate (2). Internal skeleton shows total number of vertebrae of *Acanthurus sohal* collected from Iraqi water during Jan. 2008 .

Discussion

Acanthurids commonly known as surgeonfish are characterized by the existence of the scalpel, a distinctive spine on both side of the tail base (5 and 17). The spine length of *A. sohal* was (29.816 mm ± 0.9277 S.E**).**

Total and standard lengths of *A. sohal* recorded in this study were 365 and 258 mm respectively, 19 were showed that maximum size of this species 400 mm. Number of vertebrae count of *A. sohal* was 22-23. This agrees with 8 who showed that total vertebrae of Acanthuridae is 22-23.

A related species was (*A. lineatus*), upper three – fourths and head with alternating black – edged blue and yellow stripes, those on the head diagonal, lower fourth pale lavender to bluish. (19), while in *A. sohal* body with 14 -16 stripes below lateral line and two stripes through eye, lines absent on belly region. Number of spine and soft rays of dorsal and anal fins of *A. sohal* were **9** spine , 29 -31 soft rays and 3 spine, 27 – 29 soft rays respectively, while in *A. lineatus* was 9 spine, 27 - 30 soft rays and 3 spine, 25 - 28 soft rays respectively (19). Several surveys (2; 3; 4; 9; 10; 15 and 16) were carried on the Iraqi marine fishes in Northwest Arabian Gulf do not mention the existence of *A. sohal*. While 18 were misidentified *A. sohal* of Qatar fishes as *A. lineatus*, but 1 listed two species in Iraqi marine waters (*Acanthurus triostegus* and *Zebrasoma xanthurum*) belong to Acanthuridae, and 14 were listed four species (*A. triostegus*, *A. lineatus*, *A. sohal* and *Z. xanthurum*) belong to Acanthuridae in Arabian Gulf.

From the previous studies on fishes of Arabian Gulf and Iraqi marine waters, Northwest Arabian Gulf, indicated absence of *A. sohal* from the list of Iraqi marine fishes. Therefore our work a sign the first occurrence of *A. sohal* in Northwest Arabian Gulf and it is additional species to Iraqi marine fishes.

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دراسة الصفات المظهرية والعددية للنوع *Acanthurus sohal* (Forsskål, 1775) في المياه البحرية العراقية

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الخلاصة

جمعت (13) فرد من النوع *Acanthurus sohal* من المياه البحرية العراقية، شمال غرب الخليج العربي، باستخدام الخيط والسنارة والفخاخ خلال شتاء عامي 2007 و2008 وبعد إجراء القياسات المظهرية والعددية والتي شملت الطول الكلي والقياسي والوزن الكلي وكانت المديات 310 – 365 ملم و 222 – 258 ملم، و 307.74 – 670.42 غم على التوالي. وشملت الصفات العددية أعداد الأشواك والأشعة للزعانف وكانت عدد الأشواك في الزعنفة الظهرية IX شوكة و29 – 31 شعاع والزعنفة المخرجية III شوكة و27 – 29 شعاع والزعنفة الكتفية I شوكة و14 شعاع والزعنفة الحوضية I شوكة و5 أشعة، والزعنفة الذنبية 14 شعاع. عدد الفقرات 22 – 23 فقرة. صنفت النماذج سمك الجراح *Acanthurus sohal*، إذ تنتشر بعض أنواع هذه العائلة في المياه الإقليمية العراقية لذا يعتبر تواجد هذا النوع تسجيل جديد للبيئة البحرية العراقية.