

Comparative Survey of Morphometric-meristic Male and Female Anjak Fish (*Schizocypris brucei*, Annandale and Hora, 1920) of Hamoun Wetland in South East Iran

Rohollah Abbaspour, Mina Rahbar and Javad Mesgaran Karimi

Young Researchers Club, Islamic Azad University,
Lahijan Branch, Iran, P.O. Box: 1616

Abstract: The species named *schizocypris brucei* belongs to the cyprinidae family and of fish that has native economic value to the southeastern regions of Iran. Surveying specifications of morphometric-meristic fish in Hamoun wetland and Chahnimes Iran was done in breeding season (April 2010) and after fishing with a spring net 11 mm, a total of 36 specimens of this species transferred to the laboratory. The results of morphometric-meristic survey showed that these fish have an average total of 18.5 ± 1.99 cm length, 55.5 ± 14.45 g weight and 1.4 ± 2.42 year. The mean number of lateral line scales is 92.1 ± 8.95 and the number of vertebrate is assigned 42 ± 5.38 . Mean head length is 3.2 ± 0.40 cm, length of caudal fin is 2.6 ± 0.36 cm, the distance pre-anal is 11.3 ± 1.40 cm, diameter of eye is 0.5 ± 0.11 cm, the distance between the eye is 1.0 ± 0.16 cm, mean standard length is 15.4 ± 1.70 cm, the mean fork length is 16.9 ± 1.73 cm, maximum height body is 2.9 ± 0.42 , height and length of dorsal fin is 3.1 ± 0.50 , 1.7 ± 0.32 cm respectively, height and length of the anal fine is 1.00 ± 0.24 , 2.6 ± 0.62 cm respectively, the length pectoral fins is 2.2 ± 0.31 cm, fins abdominal is 1.8 ± 0.31 cm, distance of the fine pectoral-abdominal is 4.1 ± 0.52 cm and abdominal-anal is 3.5 ± 0.5 cm were calculated. Also sex and morphometric-meristic specifications of the type of each male and female was compared and it was found that male and female are different in 20 morphometric factors and 2 meristic factors. Overall, little difference between the minimum and maximum total length and total weight, very low growth in the life of this fish and the low reproductive age is shown.

Key word: Morphometric-Meristic • *Schizocypris brucei* • Hamoun Wetland • Iran

INTRODUCTION

Morphometric and meristic study are vigorous tools for measuring discreteness of the same species [1]. Meristic characters are the countable structures occurring in series (myomeres, vertebrae, fin rays... etc) in fish. These characters are among the characters most commonly used for differentiation of species and populations [2]. Hamoun wetlands in the Ramsar convention (1971) one of the Wetlands International is reported the world. Despite being the animal fauna isn't rich but has a particular environmental importance. There are two native rare species of the genus *Schizothorax* and a species of the genus *Schizocypris* belong subfamily *Schizothoracinae* which the fishes fauna Iran with Central Asia and China, India, Pakistan,

Afghanistan countries binds. Anjak (*Schizocypris brucei*) is belongs to the Cyprinidae family and to economic endemic fishes East Iranian waters which Hamoun wetlands three fold and continuously water resources (rivers, wetlands and wells leading to the middle of Sistan) habit, which has long body (Figure 1), with pharyngeal teeth row three: 2, 3, 4 - 4, 3, 2, body color in the back is bluish and the flanks and belly are silvery [3]. Hence, morphometric-meristic characteristics in Anjak were studied in April 2009 in the Hamoun wetland of Iran. In Iranian waters (freshwater and sea water), fish have been poorly studied and little biological information is available [4, 5]. The present study describes the comparative of morphometric-meristic male and female anjak fish in Hamoun wetland in South East Iran.



Fig. 1: *Schizocypris brucei* in Hamoun wetland



Fig. 2: Sampling sites of Hamoun wetland in Southeast Iran

MATERIALS AND METHODS

For this study, 36 specimens of Anjak were captured from net launcher cooperatives in the range between orbit 30° and $18''$ to 31° and $20''$ Latitude and 60° and $10''$ to 61° and $50''$ east in the Hamoun wetland in Iran (Figure 2). The specimens were transferred to the Department of Fisheries, University of Agricultural Sciences and Natural Resources, Zabol (Iran), where all morphometric and meristic characteristics were examined according to Froese and Pauly [6]. Specimens were measured with digital slide calipers up to the nearest 0.1 cm and weighed with an electric balance up to the nearest 0.1 g [2]. In this

study, 22 morphometric-meristic characteristic include: Total length, Total weight, Snout length, Eye diameter, Distance between abdominal and anal fin, Average head length, Dorsal fin length, Length of caudal peduncle, Distance between eye, Pre-dorsal length, Distance of pre anal, standard length, fork length, maximum of body height, Height of dorsal fin, Distance between pectoral and abdominal fin, Height of anal fin, Length of anal fin, Length of pectoral fin, Length of pectoral fin, Vertebrate, lateral line scales evaluate and sexuality, morphometric-meristic characteristic female and male compared. Information received by the software Excel and SPSS were analyzed.

Table 1: Results of morphometric-meristic 36 specimens of Anjak in Hamoun wetlands (2010)

Parameters	Female (n=17)	Male (n=19)	Total average	Parameters	Female (n=17)	Male (n=19)	Total average
Standard length	1.72±16.3	1.34±14.7	1.70±15.4	Total length	2.12±19.4	1.55±17.7	1.99± 18.5
Fork lengths	1.77±17.7	1.30±16.1	1.73±16.9	Total weight	15.25±62.8	2.8±48.93	14.45±55.5
Maximum of body height	0.29±3.1	0.46±2.7	0.42±2.9	Snout length	1.1±0.2	0.21±0.9	1.1±0.22
Height of dorsal fin	0.61±3.2	0.36±2.9	0.50±3.1	Eye diameter	0.12±0.5	0.10±0.4	0.11±0.5
Distance between pectoral and abdominal fin	0.61±4.2	0.41±4.0	0.52±4.1	Distance between abdominal and anal fin	0.60±3.7	0.42±3.3	0.53±3.5
Height of anal fin	38.60±3.0	0.57±2.3	0.62±2.6	Head length	0.37±3.4	0.40±3.1	0.40±3.2
Length of anal fin	2.89±1.1	0.17±0.8	0.24±1.0	Dorsal fin length	0.33±1.8	0.25±1.5	0.32±1.7
Length of pectoral fin	0.36±2.3	0.20±2.1	0.30±2.2	Length of caudal peduncle	0.35±2.7	0.36±2.5	0.36±2.6
Length of abdominal fin	0.30±1.9	0.30±1.6	0.31±1.8	Distance between eye	0.16±1.1	0.12±0.9	0.16±1.0
Vertebrate	2.45±4.1	4.57±4.3	5.38±4.2	Pre-dorsal length	0.80±7.7	0.68±7.0	0.79±7.4
The number of lateral line scales	8.4±93.1	9.58±91.2	8.95±92.1	Pre-anal distance	1.60±11.9	0.94±10.7	1.40±11.3

RESULTS

Evaluate results and comparison of morphometric-meristic 36 specimens of Anjak (*Schizocypris brucei*) with an average age 1.8±2.42 in Hamoun wetlands shown in Table 1. In this study to determine the sexuality, number 17 female and 19 male numbers which males were in that age range 2.0±3.6 and females in the age range of 1.6±13.6.

DISCUSSION

Occurrence of prolonged droughts and Sistan region diminished spawning fish and uncontrolled fishing in this area Anjak the fear that goes with this species of value and that regional endemic economy fish disposable component of is considered at risk should be destroyed. During the evaluation of one of Hamoun wetland fishes of genus *Schizothorax*, it was showed that this fish has a mouth terminal or half the terminal, the jaws of the lower thick, scales abdominal available, two pairs barbell [7] while in sex *Schizocypris* mouth abdominal or lower, the lower jaw hard, abdominal scales and barbells do not exist. During previous evaluation that made by some researchers on 56 number *Schizocypris brucei*, the average lateral line scales was 79.6, standard length 10.2 – 17.0 cm and marked on the fish *Schizocypris altidorsalis* standard length was 73.7 mm, large dorsal fin, with a strong barb toothed, serrated dorsal spine strong, vertebrate 43-45, standard length 17.5 cm, average lateral line scales was 82-96 [3]. In this study, mean the length total fish Anjak female was (19.4±2.12) was more than male (17.7±1.55). Difference between the minimum and maximum total weight and total length showed very low growth in this lifetime is fish and the other low reproductive age shows. Researchers relying on morphometric and meristic factors had expressed which male and female reproductive black fish (*Vimba vimba persa*) migrant to the White River

in 16 morphometric characteristics (particularly body height, length dorsal fin, pectoral, abdominal and denominator) were different [8]. Evaluation on the Russian and Iranian *Acipenser*, it was found that morphometric and meristic factors between male and female genus are different [9]. In this study it was found that male and female fish reproduction Anjak in 20 morphometric factors and two meristic factors were different. So that means of the 20 morphometric reproductive factors male in the table was more than female reproductive factors and in the meristic factors, the average number of lateral line scales female was more than male and male vertebrate was more than female.

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