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Research Article

## IDENTIFICATION AND INVESTIGATION OF MORPHOLOGICAL CHARACTERISTICS (WEIGHT AND LENGTH) OF FISHES IN FAHLIYAN RIVER

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### ABSTRACT

Aquatics have had an important or even vital role in nutrition of world's humans, and they have always sought to maintain the produce these creatures. The aim of this study is to identify the different species of fish that live in Fahliyan River and to investigate morphological –meristic and anatomical characteristics of fishes for obtaining information. Methodology: Sampling was conducted in the summer and autumn in 2013. Fishes were caught by throwing net and transmitted to laboratory of Kazeroon University. Then the fishes were identified and then biometry and autopsy operations were conducted on fishes.

Results: The results obtained in this study showed that the prevalence of six species of fish caught in the Fahliyan River were as follows: tenuiradius Cyprinion (79.28 percent),

Capoeta barroisi persica (21.21 percent), Barbus barbulus (21 . 21%), Barbus luteus (15.15 percent), Garra rufa (58.7%) and Cyprinion macrostomum (06.6 percent). Also, investigation of the percent of fishes' frequency of fish in the summer season showed the following: tenuiradius Cyprinion (43.23 percent), Capoeta barroisi persica (32.24 percent), Barbus luteus (92.18 percent), Barbus barbulus (51.13%) and Cyprinion macrostomum (81 . 10%). Frequency percent in autumn included: Barbus barbulus (03.31%), tenuiradius Cyprinion (14.24 percent), Capoeta barroisi persica (24.17 percent), Garra rufa (24.17%) and Barbus luteus (34.10 percent).

Discussion and Conclusions: In this study, considering factors such as fields toxins' entering Fahliyan river, river erosion due to abuse of the lands around the river, entering the waste, illegal fishing, lack of attention of officials of environment organization and not giving environmental awareness to people in low land population and lack of rain in recent years has caused species like Abuhanj, chalcalburnus chalcoides, Scomberomorus commerson, Capoeta and Chalcalburnus to be lacked. Also, because such Chalcalburnus species in Fahliyan River is reported for the first time, the absence of these species in the history of Fahliyan's ecosystem it is concluded that irreversible impacts regarding endangered species has been imposed.

**Keywords:** Fish Identification, Fields Toxins, Morphologic, Fahliyan River

### INTRODUCTION

Investigation of fishes in aquatic ecosystems is of great importance for assessing evolution, ecology, behavior, conservation, water resources management, resource utilization and fish farming. And in the fisheries studies of waters, before anything else, fishes are studied, in other words fishes identification in aquatic ecosystems is the first step.

Knowing and investigating biological and ecological of different fish species in an aquatic ecosystem, maintain and rebuild their reserves. In this respect, all of them and economically or non-economically due to their role in aquatic systems are of great value<sup>1</sup>.

Since long time ago aquatics have always had important or even vital role in nutrition of world's people and human beings have always sought to maintain and produce these creatures

in humans' life has been and many research achievements have been looking for it <sup>2</sup>. In general, fishes have had the most species among vertebrates and so far, about 28,900 species have been identified that about 11,500 species of them live in freshwater. Ichthyology study on inland waters has less than 150 years history but these studies have been started in the Caspian Sea area since the 1777 by Soviet ichthyologists. Unfortunately, in our country, ichthyology have been scattered and without plan and there are still a lot of puzzles and unknowns in terms of systematic, biological and ecological specially economically unique endangered species that needs systematic researches <sup>1</sup>. Fahliyan in the local dialect is the name of one of the five villages of Mamasani that is located in approximately west of the region and the river Fahliyan and springs cross it. This area is made up of eleven villages whose center is Fahliyan village. Fish identified in the river Fahliyan include: Mastacembelus these fishes spread into in fresh water and brackish of tropical Africa and Southeast Asia and live in the mud layer of the river bed. Their dorsal fin is dark with grayish yellow spots and body with dark brown spots <sup>3</sup> Cyprinidae: Cyprinidae is of the largest fish families with about 2010 species of freshwater fishes that subfamily of this family named Cyprinidae includes 700 species, and most of them are having Sbylkdar mouth called Sbylkdar And Barbus is placed in this subfamily <sup>4</sup>. Barbus grypus: catching this fish nowadays unlike past has greatly reduced and is seldom to be caught. In the wetsheds of Hormuz, kazerun Gulf is the dominant fish place of this fishes' living place <sup>5</sup>. Barbus luteus: this fish has large scales and a pair of sybilak on it and the number of squamous on its lateral line is about 27. The dorsal fin has a radius of about 12 <sup>6</sup>. Garra rufa obtusa has two pairs of short sybilk and lobes are well developed and frizzy. Body color varies in different environments is dark brown to light brown <sup>3</sup>. Capoeta barroisi persica is of carpedae members that are in need of further investigation in Iran. It has elongated and spindle-shaped body and its back is black. Place the fish lives is the streams, rivers and wetlands with aquatic plants or roots of trees as shelter or accumulate in sand beds <sup>5</sup>. Chalcalburnus has elongated body, it has bottom mouth and horseshoe-shaped and has a pair of Sbylk <sup>5</sup>. basically people of Mamasani region call the fishes that are wide-body as

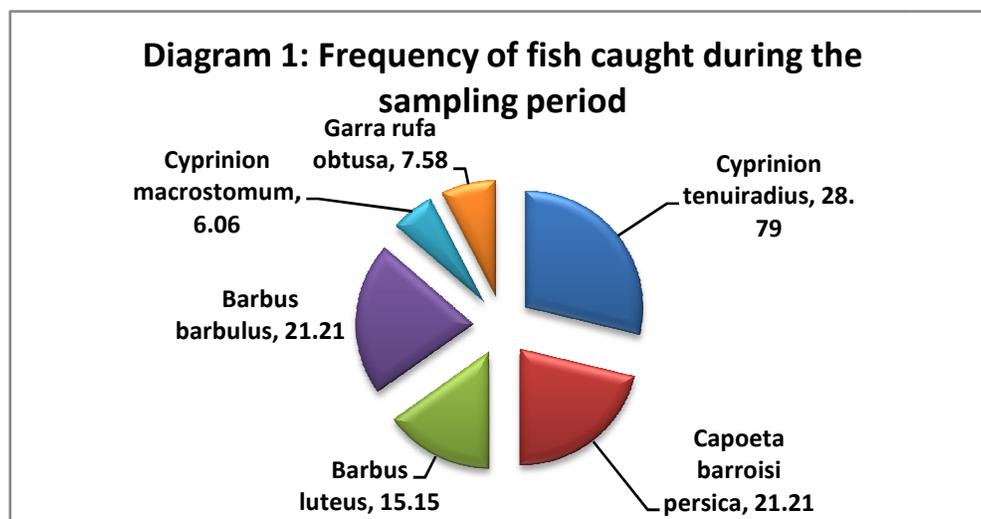
Chalcalburnus. Barbus barbulus: body elongated from the sides slightly compressed, a long head, long and protruding snout, large and bottom mouth and thick and fleshy lips. They have two pairs of Sbylk, Sbylkha are long and thick, last radius of dorsal fin is bony and serrated. This fish has been observed for the first time in Mamasani region <sup>5</sup>. Cyprinion macrostomum: its body is compact and high. The maximum height of body is 6.3 the length of the head four times the whole body length. Head length is less than the height of the body <sup>5</sup>. Barbus kosswigi: Have two pairs of Sbylk. The mouth is end and upper lip is fleshy and more ahead. Body is Compact with large scales whose number on lateral line is 27 to 30 <sup>7</sup>. Tenuiradius Cyprinion. This fish has three-row pharyngeal teeth. Scales on lateral line is from 34 to 40. Number of thorns of initial gills of gill arch on the exterior part is 10-12 and in interior 16-17, <sup>7</sup>. And several other fish species such as Carassius carassius Capoeta damascina, Capoeta trutta and Chalcalburnus mossulensis.

## METHODOLOGY

To begin the study in the summer in August 1392, first the permit was taken from Environmental organization of Mamasani city and with full equipment for fishing we went to Brdngan area and attempted to capture the different species. Fishing was through throwing net both in summer and autumn that the caught fishes were brought out of fishing net and aqueous solvent were put in a strong nylon and among ice powders inside the Yonolit chamber and then taking the time, they were transferred to the laboratory of university and after identification, biometric operations were performed on each segment separately. For biometric evaluation each component was placed separately autopsy tray, and using a ruler and a digital scale, their body length and weight were measured and recorded, respectively,.

## RESULTS

Diagram (1) shows the results obtained from species frequency during the term showed that Cyprinion tenuiradius had highest frequency (28.79) and Cyprinion macrostomum tenuiraisius had the lowest frequency (6.06).



During Fishing conducted in summer, 37 fish from five different species were collected, including 7 *Barbus luteus*, 4 *Cyprinion macrostomum*, 12 *Cyprinion tenuiradius*, 5 *Barbus barbulus* and 9 *Capoeta barroisi persica*. During fishing in conducted during the autumn, 29 fishes were collected from five different species, including *tilapia* 7 *Cyprinion*

*tenuiradius*, 5 piece fish *Capoeta barroisi persica*, 8 *Barbus barbulus*, 3 *Barbus luteus* and 6 *Garra rufa obtusa*. In summer, the most numbered fish was *Cyprinion tenuiradius* with 12 numbers and the least was *Garra rufa* with 0 numbers. And in autumn highest number of fish was *Barbus barbulus* with 9 and *Barbus tenuiradius* was the least with 3 (diagram 2).

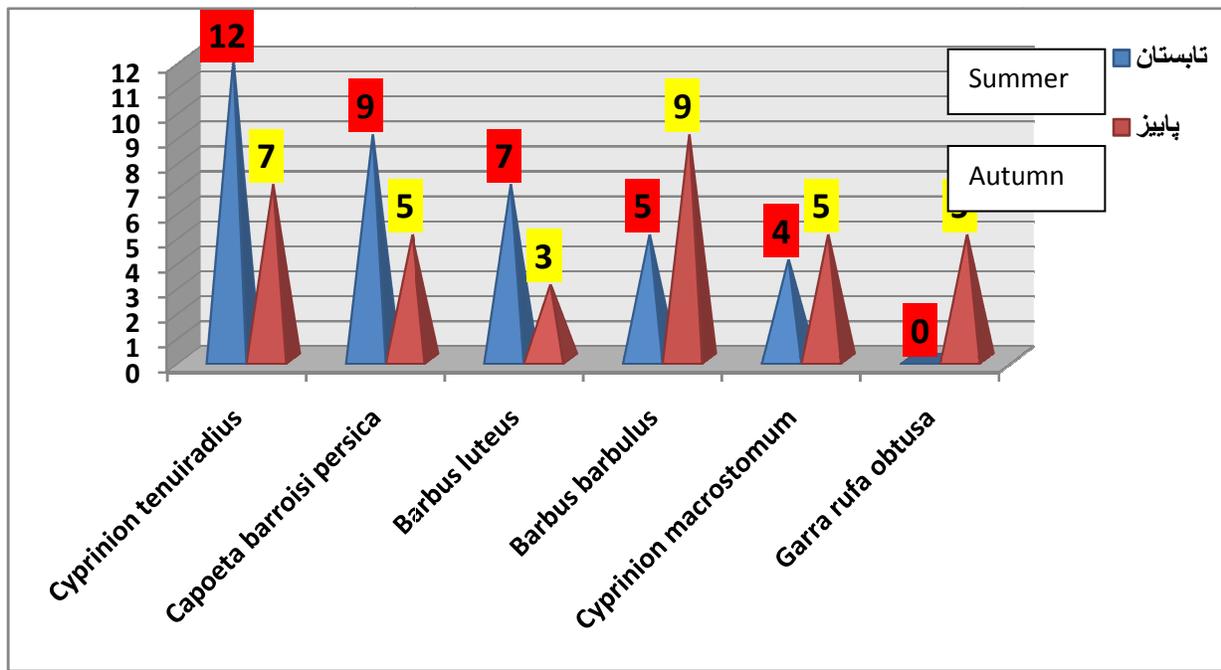


Diagram (2) number of fishes caught in the Fahliyan River in summer and autumn.

Diagram (3) the results obtained from mean length of fish species during sampling showed that *Cyprinion tenuiradius*

with 30 cm and *Garra rufa* with 11 cm had the lowest average length.

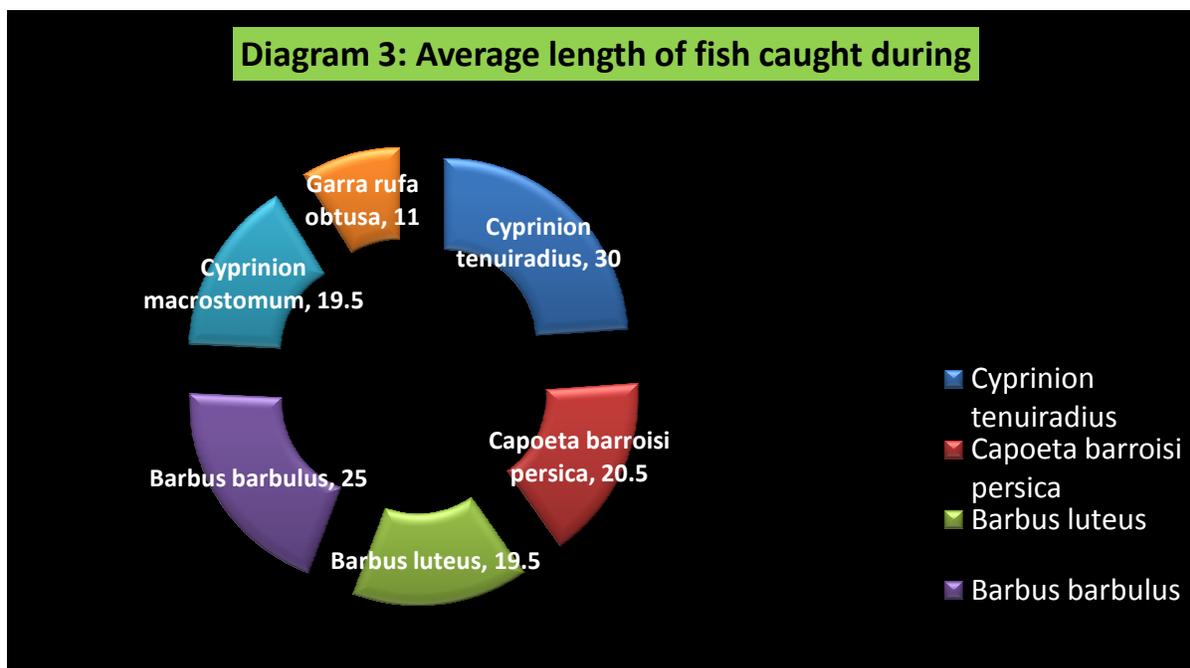
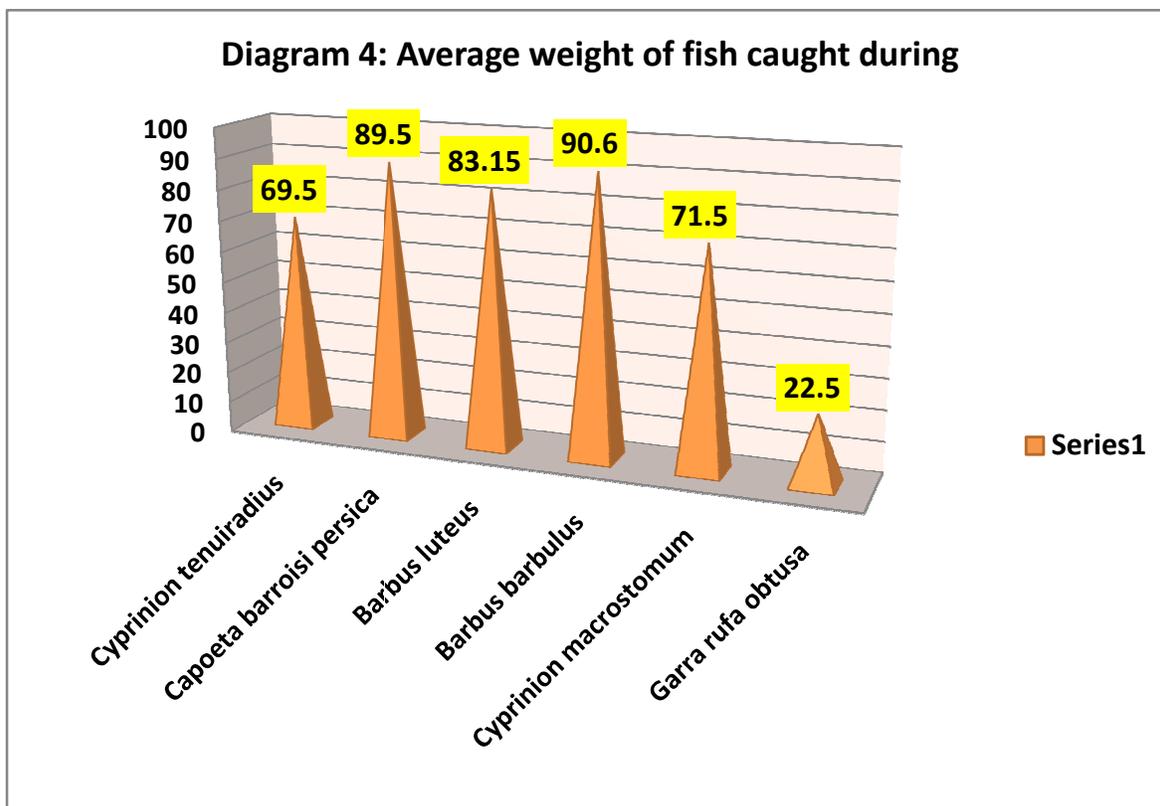


Diagram (4) results of average weight during sampling period showed that *Barbus barbulus* with 90.6 grams had the highest

average weight and *Garra rufa* with 22.5 g had the lowest average weight.



The results obtained from mean length of fish species in summer showed that *Capoeta barroisi persica*, had the highest average length of 23 cm and fish *luteus Barbus* with 15.14 cm had the lowest average length of the Species....

The results obtained from mean weight of fish species in summer showed that *Capoeta barroisi persica* with 112.34 grams had the highest average weight and *Barbus luteus* with 41.76 mg had the lowest average weight species.

The results obtained from mean weight of fish species in autumn showed that *Barbus luteus* with 111.67 grams had the highest average weight and *macrostomum Cyprinion* with 24.7 had the lowest average weight. The results from the mean length of fish species in autumn showed that *Cyprinion tenuiradius* with 33.57 cm had maximum length and *Garra rufa* with 11.6 cm had the lowest length.

## DISCUSSION

In this study, the frequency of species during sampling, the highest frequency belonged to (28.79) *tenuiradius Cyprinion* and the lowest frequency to (6.06) *macrostomum Cyprinion* and mean length of species during sampling was *Cyprinion tenuiradius* with 30 cm and *Garra rufa* with 11 cm had lowest mean species, mean weight species during sampling was for *Barbus barbulus* with 90.6 grams and *Garra rufa* with 22.5 mg and lowest weight.

In the summer *Cyprinion tenuiradius* had highest frequency (32.43) and *Cyprinion macrostomum* had the lowest frequency (10.81) and the mean length of fish species in summer *Capoeta barroisi persica* had the highest average length of 23 cm and *Barbus luteus* with 15.14 cm had the lowest mean

weight of the species during the summer. And *Capoeta barroisi persica* with 112.34 grams had the highest average weight and *Barbus luteus* with 41.76 mg had lowest average weight of species. In autumn *Barbus barbulus* had highest frequency (31.03) and *Barbus luteus* the lowest frequency (10.34) and in the mean length of fish species in autumn *tenuiradius Cyprinion* with 33.57 cm had maximum length of and *Garra rufa* with 11.6 cm had the minimum length and the mean weight of fish species in autumn, *Barbus luteus* with 111.67 grams had highest average weight and *Cyprinion macrostomum* with 24.7 the lowest average weight. And results from number of caught fishes in both summer and autumn showed that in summer the highest number belonged to *Cyprinion tenuiradius* with 12 one and the lowest number to *Garra rufa* with 0 one. And in autumn the highest number was for *Barbus barbulus* with 9 fish and the lowest for *Barbus luteus* with 3.

A study by Minab et al (2013) was conducted to investigate the biochemical changes of *Cyprinion macrostomum* and *Capoeta damascina* in the warm season (summer) and cold (autumn); in each season 9 sample of *Cyprinion macrostomum* with average total weight of 350 grams and total length of 16.5 cm, and *Cyprinion macrostomum* with an average weight of 345 grams and a total length of 15.8 cm were examined from Cesar river in Lorestan province.

In new research in Fahliyan river in autumn the highest mean weight was for *hemri* with 111.67 grams and the lowest weight was for *butak* with 24.7 grams<sup>8</sup>.

According to investigations conducted by Hashemi and Mortazavi (1999) on the population dynamics of *B. grypus*

and Brzm in the Karun River, more than two thousand fishes were examined. *B. grypus* had an average length of 37.94 in the range 20-76 cm, Brzm 43.62 in the range of 20-94 cm and a mean weight of *B. grypus* was 873.20 in the range of 52-1170 g and Brzm 778.59 in the range 52-4675 g. In a new study Brzm fish had the highest mean weight 90.6 during the sampling period in summer and autumn<sup>9,10</sup>.

Research carried out by burani and naninejad (1995) on Arjan plain Fish of Reservoir Lake of Maku Dam mean length of fish 23.9 cm and a mean weight was 162 g and its length ranges was between 3.5 to 39 cm and maximum frequency of fish was for fishes with length of 26 cm. in New Survey mean length and weight of Arjan plain fish in the Fahliyan river, highest average length was 23 cm and highest mean weight was 112.43 g<sup>11</sup>.

In researcher by Vosughi and colleagues fishes of parishan Lake, they managed to catch six fish species that their frequencies was as follows : Mud fish eater 9.6 percent , fish Arjan plain 25.8 percent , fish Hmry 3.2 per cent , fish *tradesantia* 6.4 percent , fish Bvbk 29.3 % of *B. grypus* 25.8 per cent.

New research conducted on fishes of Fahliyan river, six species were caught and frequency of Cyprinion tenuiradius (28.79 percent) , fish *Dshtarzhny* ( 21.21 percent ) , fish Brzm ( 21.21 percent ) , fish Hmry ( 15.15 percent ) , fish *Ljnkhar* ( 7.58 %) and fish Bvbk ( 6 . 06 %). and the highest prevalence in summer months was for Cyprinion tenuiradius 32.43 % , and lowest for Bvbk with 10.81 % and in autumn highest frequency was for barzam 31 . 03 % , and lowest in fish abundance was Hmry 10.34 percent<sup>5</sup>.

In a study by eskandari et al. on Dez Dam lake from January 1992 till December 1993 for Ichthyology; 12 species belonging to three families were identified. Carp family with 9 species was the most frequent. Fish abundance was highest in summer.

Among the fish species *Capoeta trutta* with 63.95 percent, *B. grypus* with 11.99 and *Barbus grypus* with 19.11% and *Barbus esocinus* with a 11.25 percent, highest incidence of other species respectively and other species had 5.96% of the total abundance<sup>11</sup>.

## CONCLUSION

according to the results of the study it can be stated that by preventing inappropriate use of the river water that cause the loss of some species and preventing illegal fishing and making some dikes for villages near Fahliyan River to prevent toxins entering the river, should prevent loss of fish. Also, since *tradesantia* is reported for the first time in Fahliyan River.

The absence of these species in the history of the river ecosystem of Fahliyan, we conclude that irreversible impacts of endangered species have been entered.

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