

Morphological Characteristics of the Turkestan Catfish *Glyptosternum Reticulatum* (Siluriformes, Sisoridae) Water Reserves Surkhan Nature Reserve

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Abstract: The article tells about the morphology, sexual and age related variability of Turkestan catfish (*Glyptosternum reticulatum*) in the reservoirs of the Surkhan nature reserve. Real time differences between males and females are found only on the results of morphometry.

Keywords: spawning, morphology, fecundity, gonad

1. Introduction

Turkestan catfish (*Glyptosternum reticulatum* McClelland, 1842) is a poorly studied species, included in the Red book of the Republic of Uzbekistan [10] as “a vulnerable, shrinking, mosaic-like Mountain-Asian endemic species”. The area of its distribution encompasses reservoirs in the upper reaches of the Amu Darya, Syr Darya, Tarim and Inda [1,4,7]. In Surkhandarya, it lives in its tributaries rivers Sangardak and Tupalang, inhabits mountain and foothill sections of the river Sherabad [1, 2, 9].

The aim of this work is the completion of information about foreign pestilence fologii, sex and age variability Turkestan catfish ponds reserve Surkhan.

2. Material and methods

The material for this work was the collection of fish carried out in the spring-summer periods 2014-2015. On the reservoirs of the reserve Surkhan. Catching of fish was carried out mainly by the networks “Tor”, “Kamon tour” and using a net. Morphometric measurements were carried out according to the generally accepted method using fresh material [8]. During statistical processing of the material, mean values and their errors ($M \pm m$), mean square deviation (σ), and coefficient of variation ($Cv\%$) were determined. The significance of differences (t_{st}) of the mean values was evaluated by the Student criterion for a 5% significance level ($P < 0.05$) (Lakin, 1990) [5]. All computational work was carried out using the MS Excel computer data analysis system. A total of 4 specimens were investigated fish body length 95-160 mm.

The following notation of morphometric features is accepted in the article: SL - standard body length; C is the length of the head; ao is the length of the snout; o - horizontal diameter of the eye; ro is the postorbital distance; hc - head height; io - the width of the interorbital space; $b1$ is the length of the first top of the pair of antennae; $b2$ is the length of the first lower pair of antennae; $b3$ - the length of the second lower pair of antennae; H is the highest body height; - height of the

caudal stem; aD is the antedorsal distance; pD is the post - dorsal distance; ica - caudal stem length; ID is the length of the base of the dorsal fin; hD is the height of the dorsal fin; lA is the length of the anal fin; hA is the height of the anal fin; IP - pectoral fin length; IV - the length of the ventral fin; PV is the pectoventral distance; VA - ventroanal distance; id is the length of the base of the adipose fin; hd is the height of the fat fin.

3. Results and discussion

The rays in the dorsal fin of the Turkestan catfish from the reservoirs of the reserve Surkhan I 6, in the anal II - III 5, in the pectoral I 10 and in the abdominal I 5. The number of branchial stamens on the first branchial arch-10, vertebrae-33.

The catfish's body is naked, not high, its highest height is 6.8-7.6 times in body length, and the smallest is 2.7-3.3 times in the length of the caudal stem. Antedorsal distance 1.4 times less than post-dorsal. The pectoral and ventral fins are set horizontally. The head is flat; its length is 4.5-6.3 times in body length. The eyes are small, 3.2-4.3 times the width of the forehead. The mouth is lower. Snout length reaches 56% of head length; on snout 4 pairs of antennae.

Body color from dark brown to tan, light belly. In most sexually mature fish, the body is completely covered with a spotty, vague color. Morphometric characteristics of the Turkestan catfish from the reservoirs of the Surkhan reserve are given in table 1.

Table 1: Morphometric features of Turkestan catfish in reservoirs of Surkhan reserve

Sign	Indicator			
	the limits	$M \pm t$	a	$Cv, \%$
SL mm	95-160	128.9 ± 2.60	17.29	13.3
	In % of body length			
from	21.1-25.2	23.5 ± 0.16	1.09	4.6
ao	9.1-12.5	10.9 ± 0.11	0.75	6.8
about	1.4-2.5	$1.8 \pm 0, 0-4$	0.27	14.8
ro	9.8-13.4	11.7 ± 0.12	0.84	7.2
hc	10.0-14.9	12.4 ± 0.14	0.97	7.8

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<i>io</i>	5.9-7.9	6.6 ± 0.07	0.46	7.0
<i>b1</i>	7.9-10.7	9.0 ± 0.10	0.66	7.3
<i>b2</i>	7.9-10.5	9.0 ± 0.08	0.56	6.2
<i>b3</i>	4.0-5.7	4.8 ± 0.05	0.36	7.4
<i>H</i>	13.8-20.9	17.3 ± 0.23	1.52	8.8
<i>h</i>	6.5-9.3	8.0 ± 0.09	0.65	8.1
<i>aD</i>	36.0-42.1	38.5 ± 0.19	1.31	3.4
<i>pD</i>	51.8-60.9	55.3 ± 0.27	1.82	3.3
<i>aa</i>	62.5-69.5	65.9 ± 0.14	0.97	1.4
<i>lca</i>	21.7-26.0	24.4 ± 0.15	1.01	4.1
<i>ID</i>	8.9-11.4	9.9 ± 0.09	0.64	6.4
<i>hD</i>	15.6-20.4	17.8 ± 0.15	1.00	5.6
<i>IA</i>	5.9-9.1	7.1 ± 0.09	0.64	9.0
<i>hA</i>	14.1-18.8	16.0 ± 0.13	0.88	5.5
<i>IP</i>	20.7-26.6	24.2 ± 0.17	1.13	4.6
<i>IV</i>	15.9-20.5	17.8 ± 0.13	0.88	4.9
<i>PV</i>	25.9-37.1	33.0 ± 0.34	2.29	6.9
<i>VA</i>	17.9-25.3	20.4 ± 0.22	1.48	7.2
<i>Id</i>	30.1-36.7	33.3 ± 0.13	0.90	2.7
<i>hd</i>	3.7-7.5	5.0 ± 0.09	0.61	12.2
In % of head length				
<i>ao/c</i>	38.6-56.3	46.6 ± 0.56	3.75	8.0
<i>o/s</i>	5.5-11.2	7.8 ± 0.19	1.30	16.6
<i>po/c</i>	40.0-60.0	50.0 ± 0.61	4.10	8.2
<i>he/s</i>	40.8-68.5	52.9 ± 0.78	5.22	9.8
<i>io/c</i>	24.0-36.2	28.2 ± 0.36	2.39	8.4

Judging by table 1, most plastic features are subject to significant variability. The most variable are the following signs: *H*, *h*, *IA*, *hd*, *o/s*, *po/s*, *he/s*, *io/c*. The remaining symptoms are less variable.

There is very little data on sexual dimorphism of Turkestan catfish in the literature. According to G.V. Nikolsky, there are no changes in plastic signs with sex, males are significantly larger than females, and differ only in some changes in the anus and size [7].

According to V.A. Maksunov, sexual dimorphism in Turkestan catfish p. Khojabakirgan is absent [6].

Some scientists for catfish p. Sangardak indicate 10 signs of differences between the sexes of the 25 studied [1,3].

According to our data, the females of the Turkestan catfish do not actually differ from the males of the same age in appearance. Real differences are found only by morphometry. Females from males differ in the plastic signs that defined lately associated with a significant amount of their sexual products. In females, significantly higher values of *H*, *PV*, and *VA* (Table 2).

Table 2: Comparison of morphometric characteristics of females and males of Turkestan catfish in reservoirs of Surkhan reserve

Sign	Indicator				
	females (n = 20)		males (n = 24)		
	the limits	<i>M</i> ± <i>t</i>	the limits	<i>M</i> ± <i>t</i>	
<i>SL mm</i>	112-160	131.3 ± 3.61	95-155	126.9 ± 3.72	
In % of body length					
<i>H</i>	15.5-20.9	18.0 ± 0.31	13.8-19.9	16.7 ± 0.27	3.26
<i>PV</i>	26.8-37.1	34.0 ± 0.51	25.9-35.6	32.2 ± 0.40	2.83
<i>VA</i>	19.1-25.3	21.1 ± 0.33	17.9-24.1	19.7 ± 0.23	3.41

Note: here and on the following table, only those signs are shown for which significant differences are found.

To determine the size-age variability, the fish under study were divided into two groups (Table 3). It can be seen from the data in Table 3 that larger fish have more antedorsal, post-dorsal, postorbital distances and head height, a longer caudal peduncle, base of the dorsal and anal fins, less than one sign, eye diameter.

Table 3: Dimensional age variability of morphic metric features of Turkestan catfish in reservoirs of Surkhan reserve

Sign	Indicator		
	95-130 mm (2 + 3 +)		131-160 mm (3 + 5)
	<i>M</i> ± <i>t</i> (n = 25)		<i>M</i> ± <i>t</i> (n = 19)
<i>SL mm</i>	115.9 ± 1.81		146.0 ± 1.79
In% of body length			
<i>aD</i>	38.0 ± 0.17	39.2 ± 0.33	3.45
<i>pD</i>	54.4 ± 0.23	56.6 ± 0.41	4.93
<i>lca</i>	23.8 ± 0.18	25.2 ± 0.11	5.88
<i>ID</i>	9.6 ± 0.09	10.2 ± 0.15	3.36
<i>IA</i>	6.9 ± 0.10	7.4 ± 0.16	2.67
In % of head length			
<i>o / s</i>	8.4 ± 0.24	7.1 ± 0.24	3.66
<i>ro / s</i>	48.4 ± 0.75	52.1 ± 0.83	3.26
<i>hc / c</i>	51.3 ± 0.72	55.0 ± 1.44	2.43

4. Conclusion

Thus, as a result of the work performed, data were obtained characterizing the signs of the external morphology of Turkestan comic. Significant differences between males and females were not detected. The differences on the results of morphometry scored connection are associated with the development of sexual products. With an increase in linear dimensions in the Turkestan catfish, 5 plastic signs of the body and 3 signs of the head change, while the relative level of variability of most signs remains unchanged.

References

- [1] Amanov A.A. Ecology of fish in water bodies of the south of Uzbekistan in the neighboring republics. - Tashkent: Fan, 1985. - 160 p.
- [2] Amanov AA, Mirzaev WT, Ergasheva M.T. Morphological feature turkestan catfish – *Glyptosternum reticulatum* McClelland and Tibetan goltsa-*Noemacheilus stoliczkai* (Steind.) Mountain rivers Southern Uzbekistan - Samarkand 1997. p. 99-103.
- [3] 3.Amanov A.A., Turdakov F.A., Devonov M.D. About Turkestan catfish *Glyptosternum reticulatum* McClelland tributaries of the Amu Darya river. Issues of Ichthyology - 1974. Volume 14, no. 6 (89). - S. 980-989.
- [4] Berg L.S. Freshwater fish of the USSR and neighboring countries. - M.- L.: Ed. USSR Academy of Sciences, 1949. Part 2. - S. 467-925.
- [5] Lakin G.F. Biometrics: A study guide for biol. specialist. universities. 4th ed. - M.: Higher. school, 1990. - 352 p.

- [6] Maksunov V.A. Morphology and ecology of Turkestan catfish *Glyptosternum reticulatum* McClelland in reservoirs of northern Tajikistan, Issues of ichthyology, 1970. Volume 10, no. 5. - S. 907-910.
- [7] None Kolsky GV Pisces of Tajikistan M.- D.: Ed. USSR Academy of Sciences, 1938-228 p.
- [8] Pravdin I.F. Guide to the study of fish. 4th ed. M.: Food industry. 1966-376 p.
- [9] Devonova N.M. Morphoecological characteristic of the Turkistan catfish (*Glyptosternum reticulatum*) of the Tupalang river. - T: Fan, 2012. 77-79 p.
- [10] Uzbekistan Republic of Red book. -Tashkent: Chinor ENK, 2006. II vein. Animal world. - 216 b.