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# ЭКСПЕРИМЕНТАЛ ТАДҚИҚОТЛАР ЖУРНАЛИ

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# ЭКСПЕРИМЕНТАЛ ТАДҚИҚОТЛАР ЖУРНАЛИ

ЖУРНАЛ ЭКСПЕРИМЕНТАЛЬНЫХ ИССЛЕДОВАНИЙ | JOURNAL OF EXPERIMENTAL STUDIES

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## **BIO-ECOLOGICAL FEATURES OF BLACKFISH (*SCHIZOTHORAX INTERMEDIUS*) IN CHERVOK RESERVOIR**

### **ANNOTATION**

In our scientific research on the blackfish (*Schizothorax intermedius*) species in the Chervok reservoir, we will study its bio-ecological characteristics, nutritional composition, age and growth rates, analyze the current ichthyofauna of the reservoirs in the Chervok reservoir; Studying the bio-ecological characteristics of blackfish in Chervok reservoir; to study the nutritional composition and growth rates of blackfish; For the first time in the study, the population, structure, including size and growth, reproductive biological indicators, changes in external environmental factors on the growth and development of blackfish (*Schizothorax intermedius*) in Chervok Reservoir were investigated. observed, explained on the basis of experiments. Currently, 51 reservoirs are operating in our republic, they are mainly important for irrigation. Their total project volume is 18.8 km<sup>3</sup>, useful - 14.8 km<sup>3</sup>. The largest reservoirs are: Tuyamoyin, Chorvok, Tudakol, Kattakorgan. They were built to control river flows throughout the year, to use them during crop irrigation, and to prevent floods in emergencies.

**Key words:** Chervok reservoir, black fish, species composition, morphology, growth, reproduction indicators, systematics, taxonomy, biology, distribution, Microfort po-5 apparatus, body, ecological, biological characteristics.

## **QORA BALIQNING BIOEKOLOGIK XUSUSIYATLARI (*SHIZOTORAKS INTERMEDIUS*) CHARVAK SUV OMBORIDA**

### **ANNOTATSIYA**

Chervok suv omboridagi qora baliq (*Schizothorax intermedius*) turlarini ilmiy tadqiq qilishda uning bioekologik xususiyatlarini, ozuqaviy tarkibini, yoshi va o'sish sur'atlarini o'rganamiz, Chervok suv ombori suv havzalarining zamonaviy ixtiofaunasini tahlil qilamiz; Chervok suv omboridagi qora baliqlarning bioekologik xususiyatlarini o'rganish; qora baliqning ozuqaviy tarkibi va o'sish tezligini o'rganish; Ishda birinchi marta Chervok suv omborida qora baliq (*Schizothorax intermedius*)ning soni, tuzilishi, jumladan hajmi va o'sishi, reproduktiv va biologik ko'rsatkichlari, tashqi muhit omillarining o'sishi va rivojlanishi o'rganildi. kuzatilgan, tajribalar asosida tushuntirilgan. Hozirgi kunda respublikamizda 51 ta suv ombori mavjud bo'lib, ular birinchi navbatda sug'orish ahamiyatiga ega. Ularning umumiy loyihaviy hajmi 18,8 km<sup>3</sup>, foydali hajmi 14,8 km<sup>3</sup>. Eng yirik suv omborlari: Tuyamo'yin, Chorvoq, To'dako'l, Kattaqo'rg'on. Ular yil davomida daryolar oqimini tartibga solish, ulardan ekinlarni sug'orish va favqulodda vaziyatlarda suv toshqini oldini olish uchun qurilgan.

**Kalit so'zlar:** Chorvoq suv ombori, qora baliq, tur tarkibi, morfologiyasi, o'sishi, ko'payish ko'rsatkichlari, sistematikasi, taksonomiyasi, biologiyasi, tarqalishi, Microfort po-5 apparati, tanasi, ekologik, biologik xususiyatlari.

## БИОЭКОЛОГИЧЕСКИЕ ОСОБЕННОСТИ ЧЕРНОЙ РЫБЫ (SCHIZOTHORAX INTERMEDIUS) В ЧАРВАКСКОМ ВОДОХРАНИЛИЩЕ

### АННОТАЦИЯ

В наших научных исследованиях вида черного рыбы (*Schizothorax intermedius*) в Червокском водохранилище мы изучим его биоэкологические особенности, пищевой состав, возраст и темпы роста, проанализируем современную ихтиофауну водоемов Червокского водохранилища; Изучение биоэкологических особенностей черного рыбы Червокского водохранилища; изучить пищевой состав и скорость роста черной рыбы; Впервые в работе изучены численность, структура, в том числе размерно-ростовая, репродуктивно-биологические показатели, изменения внешних факторов среды на рост и развитие черного рыбы (*Schizothorax intermedius*) в Червокском водохранилище. наблюдалось, объяснялось на основе экспериментов. В настоящее время в нашей республике действует 51 водохранилище, они имеют преимущественно ирригационное значение. Их общий проектный объем составляет 18,8 км<sup>3</sup>, полезный – 14,8 км<sup>3</sup>. Крупнейшие водоемы: Туямойн, Чорвок, Тудаколь, Каттакорган. Они были построены для регулирования речных стоков в течение всего года, использования их при орошении сельскохозяйственных культур и предотвращения наводнений в чрезвычайных ситуациях.

**Ключевые слова:** Червокское водохранилище, черная рыба, видовой состав, морфология, рост, показатели размножения, систематика, систематика, биология, распространение, аппарат Микрофорт по-5, организм, экологические, биологические характеристики.

Rational use of fish stocks in the lakes and reservoirs of our republic and increasing fish productivity is one of the urgent problems in the economic development of the national economy of our country. Fish are considered a source of food for humans; they are animals that live in the rivers and reservoirs of our country and have the ability to live and reproduce in natural conditions. Studying the biology and ecological characteristics of fish is of great importance nowadays. It is appropriate to carry out research in this direction, to conduct extensive studies of the ichthyofauna of our country's water bodies and the current state of their food base, ecological characteristics of fish.

Currently, 51 reservoirs are operating in our republic, they are mainly important for irrigation. Their total project volume is 18.8 km<sup>3</sup>, useful - 14.8 km<sup>3</sup>. The largest reservoirs are: Tuyamoyin, Chorvok, Tudakol, Kattakorgan. They were built to control river flows throughout the year, to use them during crop irrigation, and to prevent floods in emergencies. Covering an area of 180,000 hectares, it consists of more than 200 lakes, rivers, ponds, special fish ponds and many irrigation networks. Our republic, which has such water resources, can provide fish and fish products to its inhabitants. For this purpose, it is necessary to use full and effective reservoirs. Reservoirs are more important than artificial reservoirs in fishing. Reservoirs mean natural lakes. However, the necessary conditions for the normal life of fish in it are not as desired, therefore it is very difficult to breed fish, in addition, it is necessary to choose fish species that are suitable for the ecological conditions of reservoirs [1].

Carp - fish species belonging to the Cyprinidae family are widely distributed in the reservoirs of our country. The body (from 2 cm to 1.5 meters in length) is covered with cycloid scales or naked. There are no teeth in the jaws, the food is crushed with the help of swallowing teeth in the throat [2].

Distributed in fresh and low-salinity waters of Eurasia, Africa, North and Central America; Carps are about 200 seeds. There are about 1500 species. 19 species belonging to 17 families are distributed in Uzbekistan. Lives in various water bodies: rivers, lakes and reservoirs in mountain oases. It feeds on plankton and benthic small invertebrates; some species (carp carp, white carp, red wing) mainly feed on plants; ordinary white-tailed beast. Carps usually spawn in spring, the spawning period lasts 1-3 months. They deposit their spores (from a few hundred to 1 million or more) on plants, stones and sand in the water or throw them directly into the water itself. Many species of carp, including carp, moybalik, tavonbalik, carp, white carp, white carp, amur khumboshi, etc., are caught from the water bodies of Uzbekistan. A number of species (carp, carp, white carp, Amur carp) are bred in water bodies. Below is a summary of the distribution areas of some representatives of the carp family based on the table. G. K. Kamilov 1973 (Table 2.2.1).

Table I  
Types of fish in water reservoirs of Uzbekistan

	Type and category	Sirdar yo	Zarafsh on	Sanz ar	Qashqadar yo	Amuda ryo	Surxond aryo
<b>Cyprinidae family</b>							
1	White amur- <i>Ctenopharyngodon idella(Val)</i>	++	++	-	++	++	++
2	Silverfish- <i>Crassius auratus gibelio (Bloch)</i>	+	++	-	++	+	-
3	Carp (small fish)- <i>Cyprinus carpio Linnaeus</i>	+	+	+	+	+	+
4	Common blackfish- <i>Schizothorax intermedius Mc Clelland</i>	+	+	+	+	+	+
5	Chipor xumbosh- <i>Aristichthys nobilis Richarddson</i>	++	++	-	++	++	++
6	<b>Araliskiy usach-<i>Barbus brachycyphalus Kessler</i></b>	+	(+)	-	-	+	+

Note: ++ acclimatized; + type lives; - type is not found; (+) entered Zarafshan from Amudarya; (++) was brought by accident

Blackfish (*Schizothorax intermedius*) can be found in other reservoirs besides Charvoq reservoir. According to G. K. Komilov, blackbirds are found in Kattakurgan, Kuyimozor, Todakol, Chimkurgan, South Surkhan, Tuyabogiz, Chordara, Kamashi, Degrez, Qairakumsoy, Ortataikai. The distribution of fish species in the Three Red reservoirs is justified on the basis of the table. According to this information, reservoirs where blackfish are distributed are also indicated (Table II) [3].

Table II

Specie	Kattaqo' rg' o	Quyimozor	To' dako' l	Chimqo' rg' o	Janubiy surxon	Tuyabo' g' iz	Chordara	Qamashi	Degrez	Qayraqumsoy,	O' rtato' qay	Uchqizi
Common Blackfish ( <i>Schizothorax intermedius</i> )	-	-	-	MO	MO	MO	-	MO	MO	MO	MO	-

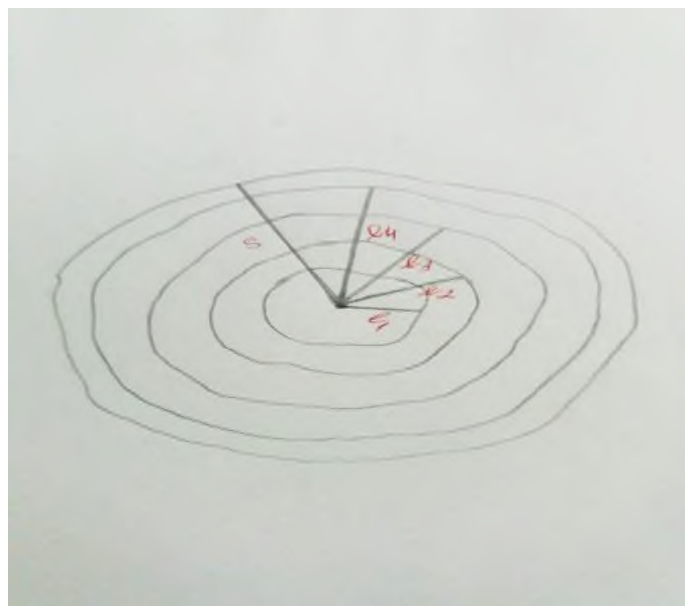
Note: (-) means absence of type; MO-locally hunted species Blackfish (*Schizothorax intermedius*) can be found in Uzbekistan with a length of up to 30-50 cm (usually 20-35 cm), weight up to 2-3 kg (usually much less). The dorsal fin has spines with small teeth; the scales near the rear exit hole are slightly larger. It is widespread in water basins of the Asian continent, as well as in Amudarya and Syrdarya.

From the fish samples taken from the Chervo reservoir, the fish belonging to the carp species were separated and their age was determined. Growth rates were determined using the measurements used to determine the age of blackfish. The crucian carp (*Schizothorax intermedius*) is a type of fish that occupies a wide area, and it is a locally hunted species in Uzbekistan. Carp is distributed in the mountain and sub-mountain basins of the Amudarya, Syrdarya and Zarafshan mountains (Nikolsky, 1938; L.S. Berg 1949; Turdakov, 1963; Amanov, 1985). It is known that the growth of fish largely determines their viability. This relationship is observed throughout the entire life cycle of the fish. The blackfish samples we studied consisted of 19 fish samples with a body length of 9-28 cm, and a body weight of 72-264 grams.

The ratio of males and females in the samples was 1:1, and no statistical differences were found between the sexes in all age groups. The number of blackfish brought for sampling is 19 in total, and they are of different sizes. To determine the age and growth rates of each, 5-6 coins were taken from the near part of the upper (back) fin using special tweezers. A drug is prepared from the coins, and the windows are fixed to each other with medical glue so that the coins do not slip. Magnified on a Microfort po-5 device (Chugunova method, 1959).

This device magnifies coins and displays them on the screen. Cover the screen with white paper and trace the lines of the coin rings on the screen. The age of the fish is determined by the number of rings on the gills of the blackfish. The central points of the rings are determined, a straight line is drawn from it to the outermost ring, and the distance from the central point to the first ring is determined and it is  $l_1$ , and the distance from the central point to the second ring is  $l_2$ , and the rest are written in the same order. Only after the end of the rings from the center point it is measured up to the ring and it is designated as S in Latin. For example, we will consider this in the case of a 4-year-old blackfish.  $l_1=7,6$  sm,  $l_2=12,4$  sm,  $l_3=17,1$  sm,  $l_4=19,4$  sm,  $W= 200$  gr,  $l=24,2$  sm,  $S=19,9$  sm,

Using these measurements, we determine the growth rate of the fish, and in this case, another measurement is 8.195, which is the ocular measurement of the Microfort po-5 device (Fig. 1).



Picture 1. Extract from the drawing of a four-year-old blackbird on the Microfort po-5 device and the procedure for measuring rings.

When determining the growth rate, we determine the length of the fish, weight measurements, and the distances measured from the center of the body rings.  $l$  - the length of the fish;  $W$  - weight of fish;  $l_1$  - the distance from the center of the ring to the end of the first ring;  $S$  - the distance from the center of the ring to the edge of the ring; 8.195 is the eyepiece size in this measurement.

1. Calculation: we increase the length of the fish  $l$  by the distance  $l_1$  from the center of the ring on the coin to the end of the first ring.

2. Calculation: we divide the obtained result by the distance from the center of the ring to the edge of the ring.

3. Calculation: we divide the result obtained from the 2nd work by 8,195 (this is the eyepiece measurement). Then the number obtained is the growth rate of the first age of the fish. The growth rates of the remaining 2, 3 and 4 years are determined in the same order.

Table III

Growth rates of carp of Chervok reservoir (cm)

t	$l_1$	$l_2$	$l_3$	$l_4$	$l_5$	n
1+	8,3					7
2+	8,5	12,4				2
3+	7,1	11,5	15,7			3
4+	7,6	12,4	17,1	19,4		5
5+	8,0	12,7	17,5	20,1	22,4	2
Average	7,9	12,2	16,7	19,7	22,4	
Increase in growth	7,8	4,4	4,5	2,9	2,8	19

Note: t- fish soup; l-the distance from the center of the ring on the coin to the end of each ring; n is the number of samples.

In the Chervok reservoir, carp reach sexual maturity at the age of 2 years, and most of the fishes reach sexual maturity at the age of 3 years. 3-4-year-old individuals of fish prevail in the flying flocks. Caviar spawning in crucian carp is partial, spawning occurs in early April-May when the water temperature is 8-9 C.

Spawning takes place mainly in the sandy and stony areas of the water bottom in the upper parts of the reservoir. Caviar is large, up to 3 mm in diameter. Before spawning, the level of maturity of blackfish sexual products is 9.0-15.3 percent. The individual absolute fertility of the fish varies from 924 to 6390 eggs when the body of the female is 16.5-25.0 cm.

Determining the age of blackfish (*Schizothorax intermedius*) in the Chervo reservoir. Individual relative fecundity of female carp in Chervok Reservoir is also one of the variables. However, the increase in female body length and mass was not observed. The analysis of the growth capacity of blackfish in the Chervok reservoir shows that the fastest growth rate of the body of the blackfish corresponds to the first year of the fish's life. In the third and subsequent years of the fish's life, a significant decrease in growth rates was noted.

Thus, the fastest growth of blackfish in the Charvoq reservoir corresponds to the first year of the fish's life, and the growth rate slows down significantly from the second year. First, this slowdown is apparently related to habitat conditions and food availability. Secondly, blackfish reach sexual maturity at the age of 2, which may be related to reproduction. Thus, the individual absolute abundance of blackfish in Chervok reservoir increases with the increase in age, body length and mass of the fish. There is no increase in relative humidity.

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