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# DEVELOPMENT OF PROPERTY FEATURES OF PISCES IN TUDAKUL WATER RESERVOIR

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**ABSTRACT**

*In the Tudakul reservoir, in recent years, a large number of white and cypress squirrels have been formed from fish farms due to the regular transfer of grass carp into the reservoir.*

At present, special attention is paid to the development of the fishing industry, efficient use of fish resources, development of innovative aquaculture and integrated water use. As a result of the measures taken in this regard, a program of regular fishing with carp fry, located in the upper reaches of the food chain, has been developed to achieve certain results, including lakes and reservoirs in the lowland zone. Intensive methods of fish farming have been introduced to increase the number of fish species and increase their processing, taking into account local climatic conditions.

The organization of fish farming in the water basins of our country is of great importance today. In the implementation of the state program for the development of fisheries in the country, herring is the most widely grown fish. Their productivity has increased from 5-6 quintals per hectare to 16 quintals over the last five years. About 90% of the fish raised by farms are herbivores.

It is also practically difficult to imagine human health without fish and fish products. Therefore, it is important to pay attention to the reproductive properties of fish.

In recent years, the Tudakul Reservoir has formed a large number of white and cypress squirrels from the fish hatchery, due to the regular transfer of white grass carp to the water basin. Industrial hunting does not allow to catch all the fish, so from year to year a group of parent fish is formed in the water basin from the fish that are not caught from year to year. From a genetic point of view, these fish are a generation of fish brought from fish farms in the Tashkent region, as since 2003 their young have been reared in summer in large quantities in fish farms

brought from here. From 2009-2010, the farm began to use another method, i.e., fish caught in the spring and summer (during off-peak times) with the help of nets are collected in the summer pond of the parent fish in the fish hatchery and cared for until the breeding season in the spring of next year. Thus, this generation of fish is also a close generation of fish brought directly from the ponds of Tashkent region.

A distinctive feature of the Tudakul Reservoir is that it does not have large rivers that can migrate to the upper reaches of the stream for parent fish to reproduce. The reservoir will be supplied with water from the Zarafshan River and the Amu-Bukhara canal. More precisely, the Amu-Bukhara canal reaches the main water distributor, called the "flange", and part of it is directed directly to the reservoir along the canal, so it is through this channel that the parent flock of herbivorous fish tries to exit through sluices that open in mid-autumn.

In the studies we conducted, we conducted research on this channel in April 2016-2017 to study the status of parent fish. Unfortunately, the fish only ascend through this canal to the nearest (30-40 km) pumping station, which is not long enough for them to hatch. Fishing will be banned in April, as the farm is a herd of juveniles transferred to the pond by pasture aquaculture, so they cannot reproduce naturally, so the fishery will not catch these fish even if there is a need to use them in the formation of the parent fish flock. As a result, the fishery does not catch these fish. From a biological point of view, there are no conditions for the reproduction of these fish species in this canal and in the Tudakul reservoir itself.

The developmental state of the gonads of whitefish in the Tudakul reservoir. In the first year, the gonads of whitefish develop very slowly. We studied one-year-old chicks raised in fish pond ponds. In all fish, the development of gonads was in stage I (Table 1). It is not possible to visually determine the sex of the fish. The gonads weighed a few milligrams, and they were in the form of a colorless, semi-transparent passage on the posterior wall of the abdominal cavity.

**Table 1.**

**A white-tailed deer of various ages in the Tudakul Reservoir the condition of the fish gonad in March**

| Age, year | Standard length of body, cm | Total body weight, g | The stage of sexual maturation of the gonad | N, pieces |
|---|---|---|---|---|
| 1 | 14 – 22 | 26 – 180 | I | 25 |
| 2 | 33 – 39 | 460 – 901 | II | 25 |
| 3 | 39 – 55 | 1050 – 2500 | IV | 12 |
| 4 | 65 – 75 | 3950 - 5100 | IV | 10 |
| 5 – 7 | 70 – 81 | 4950 - 13520 | IV | 4 |

In the second year, the white-tailed deer were transferred to the free, natural conditions of the Tudakul Reservoir. We caught fish aged 2 years and older during

the research hunts and took samples from the fish caught by the industrial method. In the second year, the gonads of female fish develop very rapidly. In the spring, the gonad of 2-year old female fish was in the advanced state of stage II. It is possible to visually detect the difference between the gonads of female and male fish when the fish rupture. Even when the gonads were compressed and constructed under a microscope, the large germ cells were in an advanced state of previtellogenesis, and the number of such cells was much higher. The size of oocytes at the stage of previtellogenesis is 99 - 232 μm. The gonads of female fish weigh 1.9 to 4.9 grams.

All females studied in the Tudakul Reservoir were 2+ years old and had passed to Phase III. All females in this age group have increased gonad size in whitefish, ranging from green to brown without clarity. The caviar looks good. When the gonads are crushed and seen under a microscope, the developed oocytes enter the stage of vitellogenesis, and their size is also enlarged to 160-423 microns. The gonads are completely separable and weigh 51 to 85 g.

In March, the gonads of all 3-year old female fish were in stage IV of sexual development. The size of the gonads is strongly enlarged and occupies a large part of the abdominal cavity. The size of the most developed caviar reached 0.8-1 mm, and their yellow sac is well visible, they can be seen with the naked eye.

Comparisons of whitefish in the Tudakul Reservoir and fish farms in the Tashkent region (Syrdarya Basin) showed that both flocks were genetically close to each other [1; C.49-51].

In summary, all offspring of the female whitefish reach sexual maturity for the first time in the 3rd year of life. In the spring, relatively large whitefish are in stage IV of puberty.

At this point, if we focus on the age dynamics of the gonado-somatic index of white-tailed deer. In the first year, GSI in fish developed very slowly, reaching 0.003–0.05% in all one-year-old fry in the fall. In March, the GSI of 1 +-year-old female fish increases and reaches 0.8–1.2%. In the third year, gonadal growth accelerates, so the GSI accelerates somewhat, reaching 1.36-2.1% in March. At this age, the female whitefish also reaches sexual maturity for the first time in the basin being studied. In subsequent years, re-breeding females have higher GSI rates, ranging from 11.9 to 35% in 4–7-year old female fish.

In conclusion, it should be noted that the GSI indicator explains that the reproductive trait of fish increases before spawning depending on the conditions of development and puberty, depending on the level of the indicator it is possible to draw conclusions about the environment in the watershed.

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