REPRODUCTIVE BIOLOGY INDICATORS OF THE FIRST TIME MATURED RAINBOW TROUT FEMALES IN THE CONDITIONS OF THE FOOTHILL ZONE OF UZBEKISTAN

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Summary: The parameters of the reproductive biology of rainbow trout female (Oncorhynchus mykiss), grown from imported fertilized eggs in the conditions of the Tashkent region of Uzbekistan were studied. Females of the studied generation reached their first sexual maturity at the age of 3 when they reached a total body length of 40-66 (55.2) cm, a total body weight of 1370 - 5450 (2963.6) g. Mass of gonads at stage IV in fish sampled for incubation campaign was 300 - 900 (532.4) g. The absolute fecundity was 2520 - 15660 (5981.4) eggs. The sizes of individual eggs varied in the females of the herd 3.6 - 6.0 mm, the average individual sizes of mature eggs were on average 4.43 - 5 (4.86) mm in the herd.

Keywords: Rainbow trout, Oncorhynchus mykiss, oocytes, absolute fecundity, Uzbekistan

In the conditions of Uzbekistan (south of the temperate zone), cold-water fish farming has the prospects for significant development in the mountainous and foothill zones, which will allow the rational use of the basin's water resources. In recent years, the development of the cultivation of rainbow trout (*Oncorhynchus mykiss*) has begun, which is constrained by the lack of large-scale artificial reproduction. Established fish farms import fertilized eggs from different sources, different batches of which can vary greatly in quality. The need to establish their own breeding business in the country is obvious; one of the main criteria, clearly underestimated in many countries of the transition period from a planned economy to a market economy, is the study of the object and the availability of a developed technology for its cultivation in local conditions. An important indicator is the size of mature eggs. The fish farm "Golden fish group" (Tashkent region) brought in in the winter of 2016 fertilized eggs of the rainbow trout company "Aquasearch" (same-sex offspring), finished incubation and raised to fry in an incubation workshop with water supply from a well, planting material was transported to a cage farm, where part of the offspring was raised to sexual maturity. The trout were fed Coppens appropriate for each age-size group. Females of this generation reached their first maturity at the age of 3 years. the planting material was transported to the cage farm, where part of the offspring was raised to a sexually mature state. The trout were fed Coppens appropriate for each age-size group. Females of this generation reached their first maturity at the age of 3 years. the planting material was transported to the cage farm, where part of the offspring was raised to a sexually mature state. The trout were fed Coppens appropriate for each age-size group. Females of this generation reached their first maturity at the age of 3 years.

The material was collected from December 10, 2020 to January 10, 2021 in the cage farm of the Golden fish group. The amount of dissolved oxygen (mg / L with an accuracy of 0.1) and temperature (oC, with an accuracy of 0.1) were measured using a "HANNAHI 9147" thermooximeter, pH (with an accuracy of 0.01) using a portable pH meter "pHscan 30S", also used traditional methods to determine other indicators of water quality.

Rice. 1 - Khodjikent reservoir (above) and cage fish farm "Golden Fish" (below). Water quality analysis stations are shown.

The cage farm is located in the Khodjikent reservoir (in fact, a hydroelectric complex) in the upper reaches of the Chirchik River within line of sight below the dam of the Charvak reservoir. The cages are set along the right bank, in fact, in a straight line (Fig. 1).

Throughout the year, the total hardness of water was 2.0 mg-eq / l (MPC 1.5-7.0), mineralization was 110 mg / l (MPC 1000-1500), hydrocarbons were 17.5 mg-eq / l (MPC 60-120), the chloride concentration was 0.709 mg / l (MPC 25-40), color - 540 nm. The most limiting for trout breeding is the water temperature (MPC for trout is up to 18 ° C). In February - March, the water temperature is very cold (4.9 - 5.2 ° C.), In April - an average of 7 ° C, from mid-May, the water in the reservoir warmed up to a level at which the growth of rainbow trout is noticeable - above 11 ° C, in summer - up to 13oC, and from October it decreased to 10oC. In the cages of the fish farm, intensive aquaculture is used (they contain trout at high stocking densities), which affects the amount of dissolved oxygen (MPC 6 mg / l). During the fall-spring, the amount of dissolved oxygen did not fall below 10.1 mg / l, even in summer, when the water warmed up, the indicator did not fall below 8.2 mg / l, i.e. the oxygen regime is favorable. The hydrogen potential (pH) varied from 7.4 to 7.68 throughout the year at all stations. The concentration of ammonium ion in autumn and spring was 0.00, only in summer it rose to 0.00-0.08 at stations. In some individuals, the minimum egg diameters varied from 3.6 to 4.7 (4.20 + 0.03) mm; the coefficient of variation in the sample was 3.1. At the same time, the maximum individual sizes of individual eggs in females were 4.8 - 6.0 (5.36 + 0.03) mm; the coefficient of variation was 8.61. The average individual sizes of eggs in females varied within the range of 4.43 - 5.50 (4.86 + 0.03) mm; the coefficient of variation in the sample was 5.08. Thus, mature oocytes with the smallest size were more homogeneous in the sample of females,

The data presented show a noticeable variability in the size of matured eggs in the sample of the reared flock of first maturing female trout.

It has been noted that individual mature eggs in rainbow trout range from 3.8 mm to 6.2 mm. The average diameter of mature oocytes in different populations and in different nurseries varies from 4 to 6 mm (Murza and Khristoforov, 1991; Emelyanova et al., 2000; Scott and Sumpter, 1983, Tyler et al., 1990; Estay et al, 2012 and etc.).

In general, it can be assumed that the broodstock of rainbow trout, raised from imported fertilized eggs in the conditions of the Tashkent region, matures normally. Females of the studied generation reached their first sexual maturity at the age of 3 when they reached a total body length of 40-66 (55.2) cm, a total body weight of 1370 - 5450 (2963.6) g. Mass of gonads at stage IV in fish sampled for incubation the campaign was 300 - 900 (532.4) g. The absolute fecundity was 2520 - 15660 (5981,, 4) eggs. The sizes of individual eggs varied in the females of the herd 3.6 - 6.0 mm, the average individual sizes of mature eggs were on average 4.43 - 5 (4.86) mm in the herd.

Literature

1. Zelennikov O.V.2003. Comparative analysis of the state of the ovaries in juvenile Pacific salmon in connection with the problem of the formation of monocyclia. - Issues of ichthyology, 2003, 43, 4. - p. 490-498.
2. Zelennikov O.V., Golod V.M. Gametogenesis of Parasalmo rainbow trout raised from hatching to puberty at about 20° C. - Issues of ichthyology, 2019, 59, 1.- p. 68-79;
3. Emelyanova N.G., Makeeva A.P., Zelenkov V.M. and etc.2000. Development of the gonads in the rainbow trout Parasalmo under the conditions of mariculture in the White Sea - Issues of ichthyology, 2000, 40, 3. - p. 370-378.
4. Kamilov B.G., Khalilov I.I. Trout breeding in the conditions of Uzbekistan. Practical advice for farmers. - Tashkent: Baktria press, 2014 .--96 p.
5. Murza I.G., Khristoforov O.L. Determining the degree of maturity of the gonads and predicting the age of attainment of sexual maturity in Atlantic salmon and brown trout. Methodical instructions. Leningrad, GosNIORKh, 1991, 102 p.
6. Persov G.M.Differentiation of sex in fish. Leningrad, LSU Publishing House, 1975, 148 p.
7. From, J., Rasmussen, G. Growth of rainbow trout, Oncorhynchus my (Walbaum, 1792) related to egg size and temperature. - Dana, 1991, 9.- p. 3l-38.