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GROWTH RATE OF ARAL ROACH IN THE AIDAR-ARNASAY SYSTEM OF LAKES

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Abstract
The studies were carried out from February 2021 to March 2023 in Aydar-Arnasay system of lakes. The scales are cycloid with smooth edges. 417 individuals of roach were collected with a total length of 8,6-34,1 cm, weighing 23 - 320 g at the age of 1+ - 6+ years. The restored growth rate by years of life (body length): l_1 – 7,4 cm, l_2 – 13,6 cm, l_3 – 21,3 cm, l_4 – 26,5 cm, l_5 – 30,8 cm, l_6 – 34,0 cm.

Introduction

Today, the rapid increase in the world population inevitably leads to an increase in the consumption of agricultural products, including fish and fishery products.

The most important ichthyological task for the rational use of fish resources is the correct determination of the age and growth of fish. To do this, it is necessary to study the recording structures of individuals of a specific population. The most popular recording structure of temperate fish is scales. To study the life of a fish, you need to know its age and growth rate. Age and growth characterize the lifespan of a fish, the conditions of its existence, the time of puberty and first spawning (Chugunova, 1959).

The largest body of water in Uzbekistan is the Aydar-Arnasay system of lakes (AASL). AASL is one of the large reservoirs of the Syrdarya River basin, providing more than 60% of the republic's fisheries production. The lake system receives water from the middle reaches of the river. Syrdarya, and in high-water years, partly through the Kly River (lower reaches of the Sangzar River) and the Akbulak, Pogranichny and other collectors. The fish fauna is represented mainly by the same species of fish that live on the flat course of the Syrdarya and Sangzar rivers (Report, 2020) .

AASL is located in a saline depression in the east of the Kyzyl-Kum desert and currently has a total area of about 350 thousand hectares (Fig. 1). The system of interconnected lakes (Aydarkul, Tuzkan, Eastern Arnasay channel of lakes) is, in general, the largest body of water in terms of area in the republic.

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Picture 1. Aidar-Arnasay lake system: marks of fish collection places.

The main fish species of the AASL in different years are carp (Cyprinus carpio Linnaeus), pike perch (Sander lucioperca Linnaeus), silver crucian carp (Carassius auratus Bloch) and Aral roach (Rutilus aralensis Berg). Of these species, in recent years the Aral roach has predominated in our control catches. At the same time, the volume of roach in catches is 70–80% (Namozov et al., 2020).

The Aral roach is the main commercial fish in the reservoir. The growth and other biological features of this subspecies were studied in a number of reservoirs in the republic (Kamilov, 1973). The purpose of this work was to study the scales and determine the age and growth of the Aral roach AASL in modern conditions.

The Aral roach is the most widespread and most abundant fish in the waters of Uzbekistan (Kamilov, 1973). Found in large quantities in AASL. This small fish is the most numerous fish species, and often represents the main biomass of the entire ichthyofauna of a reservoir. However, due to their small size and short life cycle, roach is one of the low-value fish, although it makes up a significant part of the catch. For these reasons, and also for the importance that the roach has in our natural bodies of water, it deserves much more attention than many other, more valuable fish.

The material was collected from February 2021 to March 2023. in lakes Aydarkul, Tuzkan and V. Arnasay using fixed nets with mesh sizes of 24, 32, 36, 40 and 50 mm.

In fish, total length (TL) was measured with an accuracy of 1 mm and total body weight (W) with an accuracy of 1 g. Many ichthyologists used the standard length (the distance from the beginning of the snout to the end of the scale cover) as the main parameter of body length, so we We also measured this indicator (SL) with an accuracy of 1 mm for each individual. Age was determined from scales collected from the middle of the body above the lateral line under the base of the dorsal fin, and the growth rate was also restored from the scales using the Lea-Fraser method (Pravdin, 1966).

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The studied material included 417 individuals of the Aral roach. The Aral roach has cycloid scales with smooth edges and the annual zone can be identified by zones with widely spaced and narrowly spaced sclerites.

Relationship between length and total mass. In roach, there was also no difference in the relationship between body length and total body weight between the sexes. Calculations were made for the combined group (males + females) (Table 1).

The studied sample included individuals with a length of 8.6 - 34.0 cm, a total weight of 23 - 341 g at the age of 1 - 6 years.

Table 1. Growth rate of the Aral roach AASL (according to reverse calculation) (females and males combined)

Eastern Arnasay						
Age	**Lenght, cm**					
	l_1	**l_2**	**l_3**	**l_4**	**l_5**	**l_6**
1+	11,4					
2+	9,7	16,1				
3+	9,5	17,1	24,2			
4+	9,1	13,1	21,9	28,3		
5+	9,9	12,93	22,7	27,8	30,1	
6+	10,2	14,2	23,8	27,6	31,3	34,0
Average body length, cm	9,9	14,7	23,2	27,9	30,7	34,0
Average growth, cm/year	9,9	4,8	8,5	4,7	2,8	3,3
N, pc.	36	87	45	25	6	1
Lake Aydarkul						
Age	**Length, см**					
	l_1	**l_2**	**l_3**	**l_4**	**l_5**	**l_6**
1+	11,5					
2+	8,9	15,7				
3+	8,3	16,1	24,2			
4+	6,9	14,1	20,9	25,3		
5+	6,4	14,9	20,7	26,8	30,7	-
Average body length, cm	8,4	15,2	21,9	26,1	30,7	-
Average growth, cm/year	8,4	6,8	6,7	4,2	4,6	-
N, pc.	34	60	26	7	4	-
Lake Tuzkan						
Age	**Length, см**					
	l_1	**l_2**	**l_3**	**l_4**	**l_5**	
1+	8,6					
2+	5,8	13				
3+	5,4	12,6	21			
4+	4,9	11,5	18,5	24,4		
5+	3,9	10,3	18,7	25,6	31	-
Average body length, cm	6,3	11,6	19,7	24,5	31,0	-
Average growth, cm/year	6,3	5,3	8,1	4,8	6,5	-
N, pc.	25	25	17	18	1	-

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Table 1 shows that in the lakes of V. Arnasay, the increase in Aral roach at the age of 1+, 2+, 3+ averaged 7.72 cm, and at the age of 4+, 5+, 6+ on average 3.67 cm per year , in Lake Aydarkul 1+, 2+, 3+, on average was 7.3 cm, and at the age of 4+, 5+ on average 4.4 cm per year, in Lake Tuzkan 1+, 2+, 3+ in the average was 6.57 cm, and at the age of 4+, 5+ the average was 5.65 cm per year. We believe the reason for this is that roaches reach sexual maturity at 2-3 years of their life, so in the first three years they grow well until sexual maturity, i.e. the main focus is on growth. It can be said that the decrease in growth rate after puberty is the main direction of the process of preparation for reproduction.

Thus, the AACO roach study showed that the correlation between body length and weight of the Aral roach is very strong. There is also a high growth rate in 1+, 2+, 3+, years and a decrease in 4+, 5+, 6+ years.

References

1. Камилов Г.К. Рыбы водохранилищ Узбекистана. - Ташкент: ФАН, 1973,- С.53-61.
2. Мирзаев У.Т. Сохранение промысловых видов рыб водоемов пустынной зоны Узбекистана (на примере Айдаро-Арнасайской системы озер) // Биологик, экологик ва агротупроқшунослик таълими муаммолари ва истиқболи. – Ташкент, 2001. – С.95-96.
3. Намозов С.М., Камилов Б.Г., Азизов Н.Я. Показатели возраста и роста аральской плотвы из оз. Тузкан Айдар-Арнасайской системе озёр. Modern science. Международный научный журнал. – Москва, №11. Vol.IV, 2020 – С.12-17
4. Отчет о научно-исследовательской работы Института зоологии АН РУз. Рук. Мирзаев У.Т. «Оценка современного состояния рыбных ресурсов водоемов северо-восточной зоны Узбекистана, и разработка научно-обоснованных рекомендаций по устойчивому их использованию», Ташкент, 2020, – С.90.
5. Правдин, И.Ф. Руководство по изучению рыб. -М.: «Пищевая промышленность», 1966. – С.193-194.
6. *Чугунова Н. И.* Руководство по изучению возраста и роста рыб. - М.: Изд-во АН СССР, 1959. – С.5.