ВОДНЫЕ БИОРЕСУРСЫ И ИХ РАЦИОНАЛЬНОЕ ИСПОЛЬЗОВАНИЕ

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CURRENT MORPHOMETRIC AND HEMATOLOGIC STATE OF PERCH OF THE VOLGA-CASPIAN POPULATIONS

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СОВРЕМЕННОЕ МОРФОМЕТРИЧЕСКОЕ И ГЕМАТОЛОГИЧЕСКОЕ СОСТОЯНИЕ ПРОИЗВОДИТЕЛЕЙ ОБЫКНОВЕННОГО СУДАКА ВОЛГО-КАСПИЙСКОЙ ПОПУЛЯЦИИ

The information on the morphometric parameters (mass, length by Smith, full scale length) of perch of the Volga-Caspian population is presented. The data on the content of hemoglobin and total serum protein in the blood of perch taken from spawning are given.

Key words: pikeperch, stocks, spawning, morphometric parameters, hemoglobin, total serum protein.

Представлены материалы по морфометрическим показателям (масса, длина по Смиту, длина до конца чешуйного покрова) производителей судака Волго-Каспийской популяции. Приведены данные по содержанию гемоглобина и общего сывороточного белка в крови судака, отобранного из нерестового стада.

Ключевые слова: судак, запасы, нерестовое стадо, морфометрические показатели, гемоглобин, общий сывороточный белок.

Introduction

Stocks of perch decreased three times over the last ten years. The production of valuable commercial fish is 0.4 thousands tons today (for example, in the period 1970–2000 the annual fishing was 3.9 thousands tons. Maximum catches occurred in the first half of the XXth century [1, 2]. It is also important to note that the number of juvenile perch in spawning grounds of the Volga-Caspian region in 2003 fell a thousand times [3].

Decrease in stocks of perch is conditioned by a number of factors. First there was a shift of timing, decrease in the spring floods, high press of poaching and decline in artificial reproduction.

In the present time, the completion of the natural spawning population of the Volga-Caspian perch is particularly acute. Particular attention should be focused on the state of the producers of this valuable species.

The purpose of the research is to determine morphological parameters of mature perch.

Objectives:

- to study the morphometric parameters of mature perch.
- to study physiological indicators of mature perch.

Materials and methods of research

Researches were carried out in November 2012 at water temperature 5 °C and 12 °C. The producers of the spawning Volga-Caspian perch are taken as a material of the study.

Methods of the research are the study of morphometric parameters, the definition of condition factor (by Fulton), hemoglobin (hemoglobin cyanide method) and total serum protein (biuret method). Determination of hematological parameters was performed with a biochemical photometer using conventional techniques.

The results of the research

Perch sampling was carried out in the place of its prey (Fig. 1). The results of morphometric studies are presented in Table 1.

Fig. 1. Extraction of water bioresources using beach seine

Table 1

Morphometric characteristics of producers of the Volga-Caspian perch population

N	*m*, kg	$L_{(scale)}$, cm	L_C, cm
1	2	3	4
1	2.7	58.5	65.5
2	1	44.5	48
3	11	48	51
4	0.7	37	41
5	0.9	43.5	48.5
6	0.9	37	40.5
7	0.9	42	45.5
8	1.5	44.5	49.5
9	1.2	43	46.5
10	1.4	45.5	50
11	0.79	42	45
12	0.9	44.5	48
13	0.78	42.2	46
14	0.88	45.2	46
15	1	46	50
16	1.1	46	46.5
17	1	45	49
18	0.85	41.5	46
19	0.73	40.5	44
1	2	3	4
20	0.82	41	45
21	1	43	47
22	0.94	44	48
23	0.9	43	47
24	1.4	45.5	50
25	1.1	41.5	45.5
26	1.3	43.5	46
27	1.46	45.5	48
28	1.3	46.5	51
29	1.1	43.5	51
30	1.2	45.5	50

Table 1 has shown that the fish weight ranged from 0.7 to 2.7 kg, the average weight was 1.1 ± 0.07 kg. The average length by Smith was 47.8 ± 0.78 cm, the full length to the end of the scaled cover – 44.0 ± 0.68 cm.

One of the important characteristics, demonstrating the feeding and diet of perch is a condition factor by Fulton (Fig. 2).

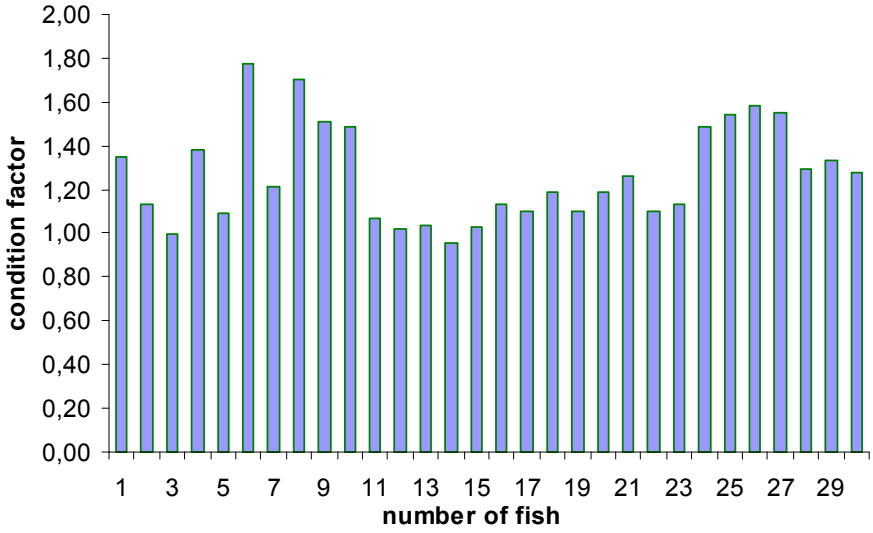

Fig. 2. Condition factor of spawning Volga-Caspian perch

Condition factor is in the range of 0.95 to 1.78, and the average is 1.27 ± 0.04. Data on the nutritional status of adult perch characterized as satisfactory.

Special attention in our research was given to the evaluation of hematological status of fish studied (Table 2).

Table 2

Hematology of adult Volga-Caspian perch

Species	Hemoglobin, g/l	Total serum protein, g/l
Pikeperch	67.2 ± 1.62	49.16 ± 1.08

Hemoglobin varied between 49–80 mg/L, total serum protein – 40–61 g/l.

Findings

1. The average weight of adult perch was 1.1 ± 0.07 kg. The coefficient of variation is 31.25 %, the standard deviation is 0.375. The average length by Smith was 47.8 ± 0.78 cm, with a coefficient of variation of 8.9% and the standard deviation of 4.26. The full length to the end of the scaled cover is 44.0 ± 0.68 cm with a coefficient of variation of 8.44 % and the standard deviation of 3.71. The average value of condition factor by Fulton was 1.27 ± 0.04.

2. The average hemoglobin index was 67.2 ± 1.62 g/l with a coefficient of variation of 13.25 %, the standard deviation of 8.9. The average index of total serum protein is 49.16 ± 1.08 g/l with a coefficient of variation 12.04 % and standard deviation of 5.92.

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