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THE FISH FAUNA OF RICE FIELDS AND RESERVOIRS OF SOUTHERN ARAL SEA REGION

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ABSTRACT

The article deals with the issues of the species structure of fish living in rice fields and their formation, the intensification of fish farming in the modern conditions of the water regime in the southern Aral Sea, the rational use of young fish in rice fields for further breeding.

KEYWORDS: *Fish Fauna, Fish, Southern Aral Sea Region, Rice Fields, Reservoir, Rational Use.*

INTRODUCTION

Currently, rice fields with internal irrigation channels, collector and drainage systems in the southern Aral Sea region occupy a huge water mirror, and it has a great impact on both the life and distribution of fish. In this regard, the problem of rational use of these valuable fish is very important. Therefore, it is necessary to use different types of reservoirs of the agricultural zone of the Republic for fish farming with the greatest efficiency. Fish enter rice systems annually during the irrigation period from the Amu Darya riverbed (including the Karakum canal systems) and the fish fauna of rice, collector and drainage systems of the lower reaches of the Amu Darya is formed by these. In our discharges of rice systems, almost all the main commercial fish species that live in the Amu Darya riverbed, the Karakum canal and their reservoirs (Tuyamuyun, Kurtlin, Kopetdag, and Sauskhan) are noted [1, 1218-1221; 2, pp. 227-229; 6, pp. 75-76].

Material and methodology

Materials were collected from rice fields and reservoirs during the summer periods of 2017-2020. The fishing gear is a 15.0 m long fry drag with a cell size of 0.2 mm, a 20.0-meter long dragnet (2.0 m high, 1.5 m long ball bag, 0.6 mm cell size) sheathed with gauze inside. The captured young fish were fixed with 4-6% formalin solution, then the species composition was measured, weighed and determined in the laboratory. [3, pp. 107.]

Purpose and objectives of the study

The aim of the study is to determine the species composition of fish and to develop ways of rational use of bio resources in the southern Aral Sea region. They can serve for the development of fisheries in these reservoirs, along with local farms to provide the population with fresh fish products and preserve them in changing habitat conditions.

RESULTS AND DISCUSSION

The rice fields and the KS-1 reservoir are home to 19 species belonging to seven families. Of these, 9 species are representatives of native fish fauna, 10 species are acclimatizers. The largest number of species, as in natural reservoirs, belong to the cyprinidae family (13 species, Rutilus rutilus aralensis Berg, Aspius aspius iblioides Kessler, Ctenofaringodon idella (Valenciennes), Pseudorasbora parva (Temminik & Schlegel), Chalcalburnus chalcoides aralensis Berg, Alburnoides taenitus Kessler, Abramis brama orientalis Berg, Parabramis pekinensis (Basilewsky), Hemiculter leucisculus (Basilewsky), Carassius auratus gibilio (Bloch.), Cyprinus carpio Linnaeus, Hypopthalmichthys molitrix (Valenciennes), Aristichthys nobilis (Richardson.), and the rest of the family – Siluridae, Ophiocephalidae, Percidae, Adrianichthyidae, Poeciliidae, Gobiidae contain only one species (Table 1).

TABLE – 1 SPECIES COMPOSITION OF FISH IN RICE FIELDS AND RESERVOIRS IN THE SOUTHERN ARAL SEA REGION

Fish species and families	**KS-1 Reservoir**	**Rice fields**	**Aboriginal**	**Imported**
CYPRINIDAE				
Rutilus rutilus aralensis Berg	+	+	+	-
Aspius aspius iblioides Kessler	+	-	+	-
Ctenofaringodon idella (Valenciennes)	+	+	-	+
Pseudorasbora parva (Temminik & Schlegel)	+	+	-	+
Chalcalburnus chalcoides aralensis Berg	+	-	+	-
Alburnoides taenitus Kessler	+	+	+	-
Abramis brama orientalis Berg	+	+	+	-
Parabramis peкinensis (Basilewsky)	+	+	-	+
Hemiculter leucisculus (Basilewsky)	+	-	-	+
Carassius auratus gibilio (Bloch.)	+	+	+	-
Cyprinus carpio Linnaeus	+	+	+	-
Hypopthalmichthys molitrix (Valenciennes)	+	+	-	+
Aristichthys nobilis (Richardson.)	+	+	-	+
SILURIDAE				
Siluris glanis Linnaeus	+	+	+	-
OPHIOCEPHALIDAE				
Ophiocephalus argus warpachowskii Berg	+	+	-	+
PERCIDAE				
Stizostedion lucioperca Linnaeus	+	-	+	-
ADRIANICHTHYIDAE				
Oryzias latipes (Temminik & Schlegel)	+	-	-	+
POECILIIDAE				
Gambusia affinis (Baird & Girard.)	+	-	-	+
GOBIIDAE				
Rhinogobius similis Berg	+	+	-	+

The data about the fish fauna of rice fields and reservoirs given below is mainly related to the Kizketken canal, feeding from the Amu Darya river, often rolling larvae from the Tuyamuyun reservoir end up in irrigation channels.

In rice fields, there are mainly larvae, fingerlings and yearlings, and even mature ones are also found in reservoirs, and they are unevenly distributed in terms of species and quantitative composition.

The most numerous species both in the reservoir and in the rice fields is the white silver carp and it makes up more than 60% of the total catch. The abundance of white carp in rice and collector-drainage systems persists until the end of the growing season. The size of fingerlings in rice fields by the end of the growing season ranged from 6.5 to 9 cm, and in the KS-1 reservoir near checks ranged from 7.8 to 47 cm. In deep water places far from the checks there are large sizes of white carp (from 20 to 70cm). It should be noted that in the rice fields, as a rule, there are more flickering white young silver carp than in the main reservoir.

This is probably due to the fact that the larger young white carp, getting to the rice fields, still comes out when discharged to the collector, while the younger part of the population, which does not have the strength to overcome the obstacles encountered in significant numbers, remains in the fields until the end of the growing season.

During the water discharge from the fields, some numbers of young fish go out into the discharge channels and fall into the main collectors, and in the main collectors the depth reaches 1.5-2 m and in such places they winter until the next year, when all the checks after the growing season dry out. The white amur in the rice fields of the lower reaches of the Amu Darya river was 18.6%, and this is the second largest indicator after the white carp. The size of the white amur caught in rice fields ranged from 7 to 10.1 cm, and in the collector of the KS-1 near the checks ranged from 12.8 to 40.1 cm. In deep-water areas, there are large sizes, both white carp and white amur. Crucian carp in rice fields and reservoirs is one of the most common species. In our catches, they occupy the third place in number, and make up 15% of the total catch. The size of crucian carp in rice fields ranged from 5 to 13.1 cm. At the end of the growing season, compared to the total catch in July, there is a slight increase in the number of crucian carp in rice fields, apparently due to its ecological plasticity. The size of common carp in rice fields and reservoirs ranged from 6 to 30.6 cm. in terms of the number of total catch, they occupy the fourth place, and is about 10%. At the beginning of the growing season, feeding on rice fields, without leaving the outlet furrows, they are kept in the checks themselves. At the end of the growing season, when water is discharged from the checks, young carp gradually leaves them in the outlet furrows, through it to the collector, and most of them remain in the rice fields. Roach, amur bream, eastern bream and gobies are less numerous than the above-mentioned representatives of rice fields and reservoirs, but they are common. In the rice fields fastfish, asp, amur chebachok, catfish, bighead carp and snakehead are found in single copies. Other types of chalalburnus chalcoides, hemiculter, pike perch, mosquito fish, and copper fish in rice fields are not noted, and in the KS-1 all collector other 19 species are found everywhere. When compare these data obtained with the literature, about the stingray of young fish and larvae in irrigation channels, you can see a sharp change in the species composition and quantitative ratio of fish living in rice fields and the KS-1 collector.

In the Amu Darya river, larvae mostly rolled up to 80% of fish representatives of the Aral-Amu Darya fish fauna, while the Amur-Chinese complexes accounted for less than 1% [4, p. 47-57; 5, p.36-41]. Currently, the Amur-Chinese complexes account for up to 60% of the total catch. This indicator is not only typical for rice checks and reservoirs, but can also be seen in the Amu Darya riverbed and irrigation channels [2, p. 227-229]. Thus, the species structure of fish living in irrigation channels, rice fields and reservoirs continues to degrade regarding the whole Republic.

In the Republic of Karakalpakstan, rice checks cover 36,116 ha, and collector and drainage networks cover 20,454.7 km, which allows only 50% of checks and main collectors to grow 100-150 kg/ha of fish annually. The use of rice checks for fish farming allows to get a double harvest of rice and fish from one area.

Rice checks fully meet the basic requirements for reservoirs that are intended for growing fish. The water temperature in the receipts did not exceed 35^0. The content of dissolved oxygen throughout the entire period remained within the limits of fisheries standards (6.2 mg / l-10.7 mg/l), the pH of water changed from 6.2-9.3 [1, p.1218-1221].

Checks should be arranged so that the sprinklers and discharges are parallel to the slope. Before filling with water along the perimeter of each check, fish-breeding grooves should be made in which the fish would find shelter in low water, and secondly, during fishing, the grooves will serve to collect fish. Fish collecting ditches, in the third place, will play the role of drainage ditches, contributing to the rapid drainage of checks, which is very important when harvesting rice.

The existing checks and checks currently under construction are not suitable for fish breeding, and therefore every year in rice checks, the young of valuable fish that have been fed die irrevocably at the end of the growing season.

For effective application of the biological method in large permanent reservoirs of the southern Aral Sea region, it is necessary to stock herbivorous fish of two or three years of age, and for small reservoirs, it is necessary to launch fingerlings and yearlings of the white amur and silver carp. Preliminary preparation of an overgrown and silted reservoir, or drains for the application of the biological method, consists in sinking strictly in the center with the obligatory leaving on both sides of the passage a narrow, reed-covered coastal strip of 50-60 cm. With this preparation, almost all categories of reservoirs are made suitable for fish to live in, especially for the white amur fish, which controls the development of aquatic vegetation and provides shelter in low water.

Therefore, in order to make rational use of water resources and resilient young fish in Karakalpakstan, where the pond economy is not widely developed, the potential reserve for obtaining fresh fish or planting material without high costs is rice fields and reservoirs.

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