

DEVELOPMENT OF FISH FARMING AND ITS PRESERVATION

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ABSTRACT

The articles were shows however, using fish as the most important food product, we should not forget about its protection. The formation of stocks of commercial fish species is influenced not only by climatic conditions (changes in seasonal temperatures and illumination, habitat depth, hydrological and hydro chemical regime of the reservoir), but also by the influence of anthropogenic factors. By polluting water bodies, a person violates the conditions for reproduction and metabolism in fish, and food organisms die. Creating grandiose structures on the rivers, subordinating their rapid run to his will, a person forgets that without his help it is difficult for river inhabitants to cope with the onslaught of dams, water intakes and other hydraulic structures.

KEYWORDS: *Fish, Water, Dynamics, Creating, Organisms, Hydroulic Structures.*

1. INTRODUCTION:

The purpose of our research was to analyze the dynamics of catches in the lake-commodity fisheries of the republic, fisheries regulation (limiting the catch of valuable commercial fish; catching low-value fish species), scientific approaches to substantiating the available biological resources, summing up demand and maintaining the productivity and reproduction of fish resources at the proper level.

The main objectives of the study;

- Determine the dynamics of catches;
- Influence without quota catch on the fish productivity of reservoirs.
- The ineffectiveness of the introduction of the terms of the ban on the spawning company for all types of fish (Soviet terms) over the past 35-45 years.
- Climatic changes that have taken place in recent decades (aridity, low and high water levels, etc.);
- The need to assess the stocks of valuable commercial fish species, their demographic state and living conditions;
- Establishment of new terms of the ban, taking into account local climatic conditions and species of fish;
- Carrying out land reclamation measures to maintain or create conditions for the natural

reproduction of commercial fish species, artificial fish farming of an intensive type, acclimatization of commercial fish and food organisms.

2. LITERATURE REVIEW

The studies were carried out from 1917-2021 in the republic. The object of the study was the fishery, as well as the fish breeding and biological indicators of the commercial fish caught. The collection and processing of materials on the growth and nutrition of fish was carried out according to the methods described in the literature (Ivanov, 1963; Lebedev and Usovich, 1976). The place of commercial fish farming in the system of the agricultural industry is determined by its importance as a supplier of especially valuable fish products from freshwater reservoirs. In connection with the growth of the population of Uzbekistan, which has exceeded 35 million people, much attention is paid to the problem of increasing protein resources and increasing the biological value of various foods. Therefore, it is no coincidence that the importance of fish farming increases every year. The increase in the need for protein food makes it necessary to better and more fully use water areas, in particular the internal water bodies of the republic.

3. METHODS

The importance of fish as a human food product will continue to grow. In such varieties of fish as trout, pike perch, carp, roach, silver carp, Aral asp, snakehead, catfish, silver carp, there are a lot of protein substances that are absorbed by the human body 2-3 times better than cattle meat. Fish meat contains carbohydrates, fats, vitamins, microelements. One kilogram of this product contains 1200-1400 calories.

However, using fish as the most important food product, we should not forget about its protection. The formation of stocks of commercial fish species is influenced not only by climatic conditions (changes in seasonal temperatures and illumination, habitat depth, hydrological and hydrochemical regime of the reservoir), but also by the influence of anthropogenic factors. By polluting water bodies, a person violates the conditions for reproduction and metabolism in fish, and food organisms die. Creating grandiose structures on the rivers, subordinating their rapid run to his will, a person forgets that without his help it is difficult for river inhabitants to cope with the onslaught of dams, water intakes and other hydraulic structures.

Careful attitude to the fish resources of the native land, carrying out measures to increase them - this is the leading principle in all activities of economic organizations operating reservoirs. Fish stocks are the national wealth of our native land, requiring caring attitude towards ourselves, reasonable use, and master's care for their reproduction.

Over the past 5-6 years, the Head of State, putting forward a broad program for the development of the fish farming industry and improving the welfare of the people, puts the task of improving the supply of food to the population in the first place. One of the resolutions of the President of the Republic of Uzbekistan dated May 1, 2017 N PP-2939 "On measures to improve the management system of the fish industry" radically changed the attitude towards the fish industry. Every year, taking into account the results achieved and the tasks set for the industry, a program for the development of the agricultural industry is developed and approved, which is the most important main part of the economic strategy for the near future.

To date, economic activities on the lakes, reservoirs and natural reservoirs of the Republic are carried out by Uzbekbaliksanoat and the State Unitary Enterprise Directorate of the Aydar-Arnasai system of lakes of the Tax Committee of the Republic. The total area of the AASO is 369.8 thousand hectares (3.698 sq. km).

"Uzbekbaliksanoat" includes 216 economic entities that operate on lakes, reservoirs and natural

reservoirs of the Republic with a total area of about 15 thousand 756 hectares, according to the Decree of the Cabinet of Ministers of the Republic of Uzbekistan dated 07.08.2017 N 593 “On measures for leasing fisheries of natural reservoirs and the creation of a fund for the development of fish farming”

Based on a lease agreement study of the natural resources of the reservoir, the issues of the ecological state of the reservoir are also considered. This is how economic entities define their rights and obligations:

It is noted that the use of a land plot in a natural reservoir should be in accordance with the contract; Annual increase in the productivity of natural reservoirs when using fish resources; Fulfillment of the terms of the contract, including the business plan submitted when applying for participation in the tender; Sanitary protection of coastal areas of natural reservoirs in the prescribed manner;

Take measures to increase the number of fish every year, improve the amelioration of fishery waters, ensure the conservation of future small fish, as well as fish resources; So for the period 2018-2020, farmers and fish breeding brigades of Uzbekbaliksanoat caught 45 thousand 238 tons of fish products (Table 1).

**TABLE 1 DYNAMICS OF FISH CATCH ANALYSIS ACCORDING TO
“UZBEKBALIKSANOAT”**

Year	Total	fish species											
		Silvercarp	carpzanderroach	Whitecarp	breamcruciancarp	Whitecarp	carpbream	cruciancarp	Snakehead	shemaya	catfish	sabrefish	other
2018 y.	14370	2903	1462	186	1811	373	2573	3986	294	299	9	0	475
2019 y	15756	2713	1407	108	2597	430	3557	3865	521	5	56	0	502
2020 y.	15713	2828	1492	42	1740	648	3807	3250	1503	1	165	0	234
Total	45838	8444	4361	335	6148	1451	9930	11101	2318	305	230	0	1211

Table 2 and Figure 1 show the percentage of fish catches from 2018 to 2020.

TABLE 2. PERCENTAGE OF FISH CATCHES BY UZBEKBALIKSANOAT FROM 2018-2020Y

Typeoffish	Tons	Ratiosin %
	8444	18,42
whitethick	4361	9,51
Carp	335	0,73
zander	6148	13,41
roach	1451	3,17
Whiteamur	9930	21,67
bream	11101	24,22
crucian carp	2318	5,06
snakehead	305	0,67
shemaya	230	0,50
catfish	1211	2,64
Total:	45834	100

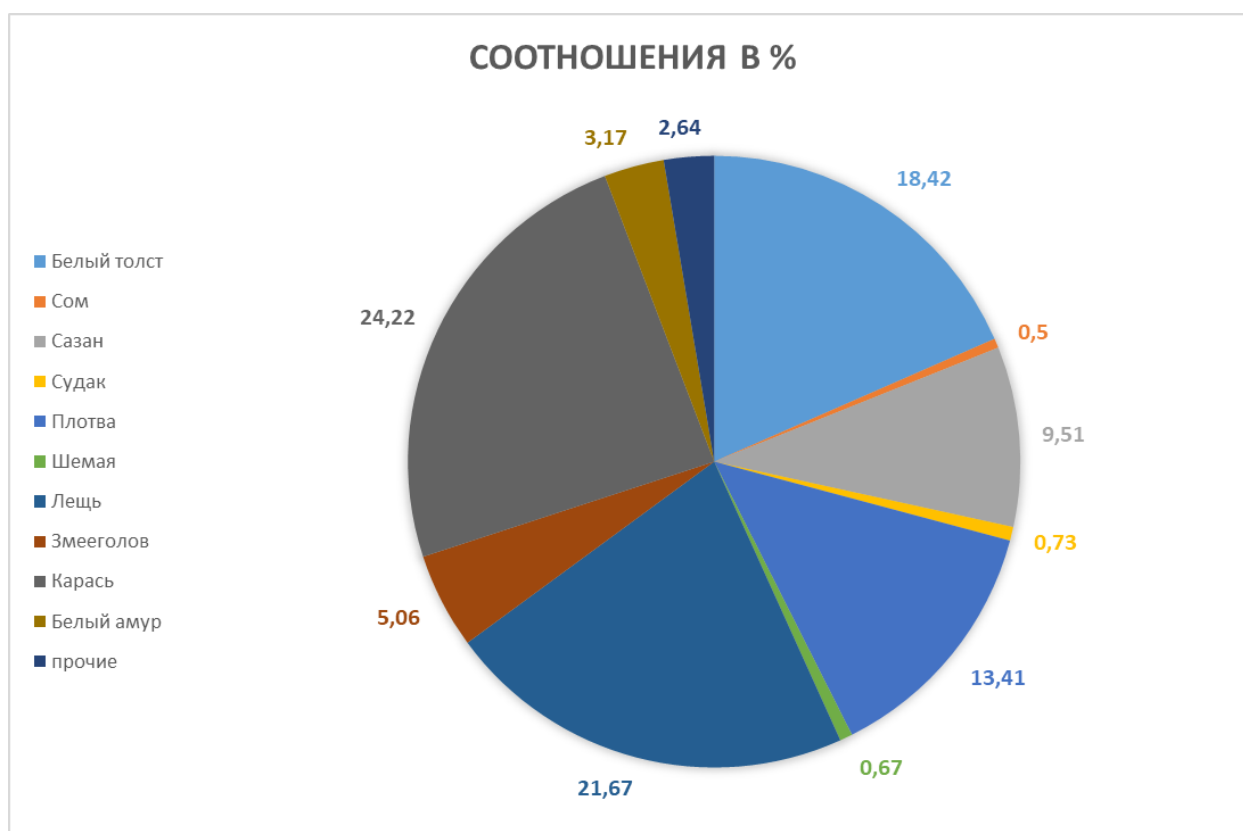


Fig.1 Diagram of the percentage of fish catches

As can be seen from the diagram in the catches from 2018-2020, the main species in the fishery were crucian carp (24.22%), bream (21.67%), silver carp (18.42%), this is an indicator of the annual stocking of fish seed material carried out by business entities, roach (13.41%). Roach is a low-value fish, bony, small, cheap., carp (9.51%). Snakeheads (5.06%), grass carp (3.17%), others (2.64%) are caught in a much smaller number, least of all: pike perch (0.73%), shemaya (0.67%), catfish (0.50%).

These data show that the fishery reservoir of the republic may in the near future be an important supplier of fish through fishing, and therefore an important supplier of protein products. There is a question about the development of fishery methods for a more rational use of water bodies. One of such directions in domestic fishery science is the development of ways to improve the natural food supply of water bodies.

In the Republics of Central Asia, the development of irrigated agriculture is associated with the consumption of a large volume of fresh water, which led to the shallowing and salinization of the Aral Sea and the formation of a new type of water bodies - collector-drainage waste lakes. One of these lakes is the Aidar-Arnasay system, whose area is currently about 350 thousand hectares. The system of lakes arose in 1969 on the basis of three ephemeral lakes (Aydarkul, Tuzkan and East Arnasay) of the Arnasay depression as a result of an emergency discharge of water from the Chardarya reservoir. Like all lowland lakes, under the conditions of irrigated agriculture in Uzbekistan, the Aidar-Arnasai system of lakes, according to the type of nutrition, gradually transformed into an irrigation-discharge reservoir [1, 2]

By the Decree of the Cabinet of Ministers of the Republic of Uzbekistan No. 124 dated March 7, 2017 "On the measures and rational use of biological resources of the Aidar-Arnasay system of lakes, as well as to streamline commercial fishing, the Directorate (AASO) was created.

According to the above Decree in the Jizzakh and Navoi regions of the territorial location of the AASO, in the prescribed manner, the right of permanent separate use of the Directorate for the development of fish farming was transferred. At the same time, the requirement of the Decree of the Cabinet of Ministers of the Republic of Uzbekistan dated 07.08.2017 N 593 "On measures to lease areas of natural reservoirs to fisheries and create a fund for the development of fish farming" of the current Regulation does not apply to the procedure for classifying sections of the lake system of the Aidar-Arnasay system of lakes as fish farms, industrial fishing in them, calculation and collection of rent for their use.

The Aidaro-Arnasai system of lakes (AASO) is the largest fishery reservoir in the basin of the river. Syr Darya, formed as a result of anthropogenic impact. The total area of the Aidar-Arnasay system of lakes is 369.8 thousand hectares (3.698 sq. km). Its length is 180 km, and its average width is 21 meters; the deepest point is 35 meters. The Aidar-Arnasay system of lakes includes Aydarkul, Tuszkan and East Arnasay. Research work on AASO has been going on for a long time.

This article provides an analysis of catches over the past 5 years and the reason for the decline in fish productivity in this reservoir. In commercial catches, there are 12 species of fish: carp, pike perch, oriental bream, catfish, silver carp, snakehead, pike, grass carp, Aral roach and sabrefish, as well as the Turkestan barbel listed in the Red Book.

The dynamics of the analysis of the fish catch and the yield of fish products in the AASO for 2019-2021 are shown in Table 4. Most of the fish species living on the lake are early maturing, maturing at 2-3 years (bream, carp, roach, crucian carp). This should also include many non-commercial fish species that spawn at the age of 1-2 years. In most fish species, males become sexually mature at a smaller size and weight than females. The main spawning in fish in lakes is spring-summer. Some of them spawn in a short time (roach, pike perch), others within 2-3 months.

Fish productivity of the lake. Aydarkul equals 2.5 kg/ha.

Of the predatory fish, only zander is currently numerous in the fishery. Rarely seen snakehead. Asp, catfish and pike completely fell out of the composition of commercial catches due to their small numbers. A negative point in the commercial development of the Aidar-Arnasai system of lakes is the increased fishing in winter in wintering areas of valuable fish species and on pre-spawning migration routes. In the spring period, the highest catches are also observed compared to the rest of the seasons of the year.

Currently, in the ichthyofauna of the Aidar-Arnasai system of lakes, there are 14 species of fish belonging to 7 families, of which 7 species are commercial fish. The commercial fauna of the Aidar-Arnasai lake system consists of 9 species of fish, of which 6 species (carp, Aral asp, pike perch, snakehead, catfish, pike) are the main commercial species, 3 species (Aral roach, silver carp, rudd) are of low value. species from a commercial point of view. At this time. Fishing in the lake system is based on four species of fish (Aral roach, silver carp, carp, pike perch), which account for up to 96.2% of the total catch.

An analysis of long-term data shows that changes in water levels have a negative impact on the amount of fish caught. Due to the lack of stocking, species such as grass carp, white and motley silver carp gradually disappeared from commercial catches. In recent years, especially in the years when water salinity increased greatly, pike has ceased to be found in catches in the system of lakes - a fish very sensitive to mineralization. This fact is very important for the fishery classification of water bodies. The presence and good condition of the pike population in the reservoir in the past meant low mineralization of the water and good conditions for river fish. The process of formation and development of the fish population of the Aidar-Arnasai system of lakes, with all its diversity, is subject to certain general patterns. It is known that the ichthyofauna of the reservoir was formed, first of all, from the funds of the original water system - the Syrdarya River, and in high-water years from the Sanzar River, as well as as a result of fish breeding and reclamation activities. To date, a peculiar ichthyofauna has formed in the lake system, consisting mainly of representatives of the indigenous fauna and acclimatizers. One of the most effective ways to increase the fish productivity of water bodies is the creation of lake fish farms on their basis. Due to fish breeding (conducting lake fish farming by creating low-cost technologies for growing fish) and reclamation measures (forming fish stocks by artificially stocking a reservoir with offspring of valuable fish obtained from producers of the parent reservoir), the fish productivity of the Aidar-Arnasai system of lakes can be increased several times - up to 6 -10 thousand tons per year. It would be logical to more actively involve tenant farmers in the implementation of fish breeding and reclamation activities, since they are more interested in replenishing stocks than others. However, the alienation of fishing enterprises from participation in the reproduction of stocks has a negative effect on the development of the fish industry as a whole.

The main reasons for the reduction in fish productivity in lakes, reservoirs and natural reservoirs of the Republic, where economic activity is carried out by Uzbekbaliksanoat and the Directorate of the Aydar-Arnasai Lake System, have led to the failure of officials to comply with the requirements of legislative acts. So RCM No. 593 dated August 7, 2017, changes were made to the procedure for catching fish from natural lakes. And the current PKM No. 350 of August 13, where fishing without quotas was allowed and its implementation at its discretion, has undergone changes. However, after the release of the Decree of the Cabinet of Ministers No. 124 of March 7, 2017 "On the measures and rational use of ASSO biological resources, as well as streamlining commercial fishing, the prerogative without quota fishing was canceled. But, despite this, fishing continued by economic entities throughout the entire period we are considering.

3. CONCLUSION

In our opinion, the decline in fish production was a consequence of:

- Introduction of quota-free fishing with the release of the RCM of the Republic of Uzbekistan No. 350 dated August 13, 2003, where it was established that “fishing in natural reservoirs by fishing enterprises that entered into a lease agreement was carried out on a quota-free basis, and the caught fish products are sold at their discretion. Based on the available biological resources, adding demand and maintaining the productivity and reproduction of fish resources at the proper level.
- The introduction of the terms of the prohibition of the spawning company for all types of fish (Soviet terms) has not changed over the past 35-45 years from April 15 to May 15, i.e. with the established deadlines for the ban on the spawning company, climate changes that have occurred in recent decades (aridity, low and high water levels, etc.) were not taken into account.

At present, there is a need to assess the stocks of commercially valuable fish species, their demographic state and habitat conditions, including the establishment of new ban dates, taking into account local climatic conditions and the species of fish whose spawning begins in March, i.e. shift the timing of the spawning ban from March 15th to April 30th.

Given the above, it should be noted that the creation of the necessary conditions for the reproduction of fish stocks in inland waters is associated with a set of scientific measures, the most important of which are the regulation of fishing (limiting the catch of valuable commercial fish; or creation of conditions for the natural reproduction of commercial fish species, artificial fish breeding of an intensive type, acclimatization of commercial fish and food organisms.

The reasons that caused the decline in the biological productivity of natural water bodies, in our opinion, were:

- Long-term irrational fishing (not limited catch of fish products), for a long time from 2003 to 2017 and to the present. Strict regulation of fishing, including the period of the last ban on fishing, of the post-Soviet period turned out to be ineffective in the modern conditions of Uzbekistan.
- Unreasonable distribution of fish-breeding plots on lakes, reservoirs and natural reservoirs of the republic of the leaders of "Uzbekbaliksanoat" and the Directorate of the Aydar-Arnasay lake system between economic entities, not taking into account the food base of the reservoirs, their hydrochemical state, as well as returning to reservoirs in the form of timely stocking with fish material, etc.

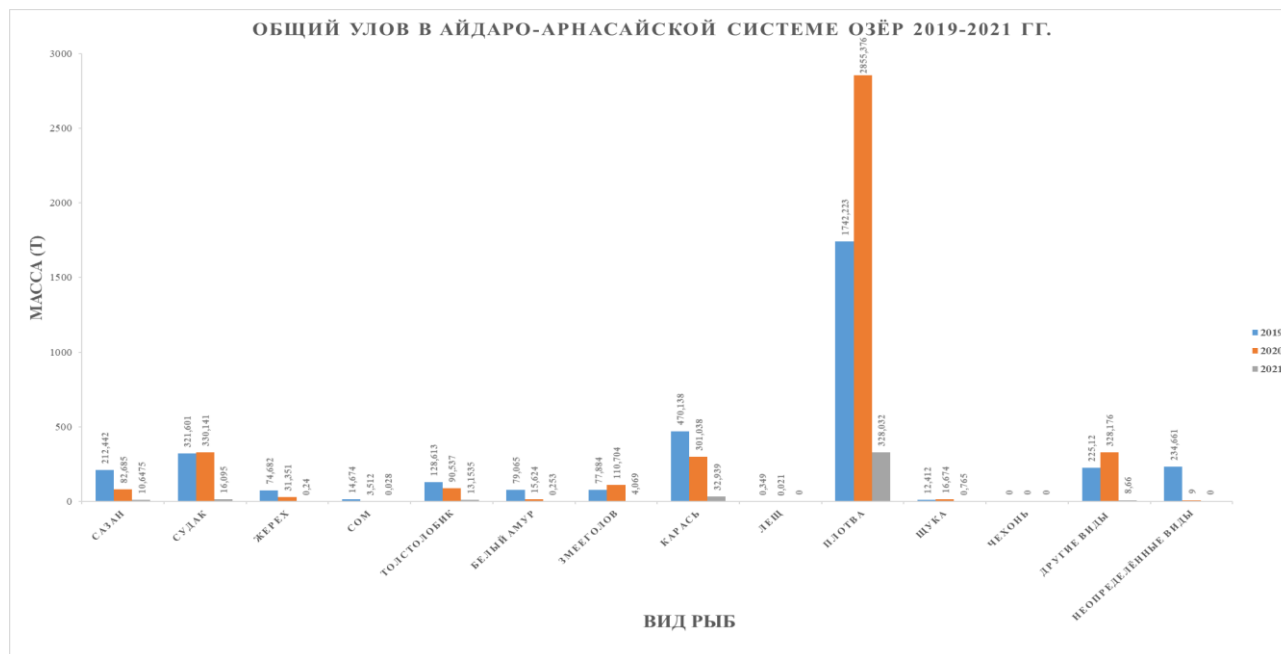
It should be noted that as a result of social transformations in the republic, instead of state-owned fishing enterprises, numerous structures of various forms of ownership have been created, which currently represent the fishing industry. A large number of fishing brigades leads to ownerless fishing, which leads to inconsistent actions with government agencies, undermining the resources of reservoirs, and the information they provide is biased, which is reflected in the accounting of caught fish.

Clogging and pollution of spawning areas of lakes, as well as intensive consumer fishing carried out by amateur fishermen and poachers (electrofishing and forest tangles).

TABLE 3. DYNAMICS OF FISH CATCH ANALYSIS IN AASO FOR 2019-2021

Territory	sazan	sudakh	gerekh	Som	Tostolbik	Whitecarp	Snake a head	Karas	Lesh	Plotva	Suka	Chekhon	others	Unfindablefish	Total
2019 y.															
Djizzakh	177,481	267,041	59,431	11,570	103,493	63,415	47,734	335,854	0,349	1215,133	9,262	0	144,626	173,159	2608,548
Navoiy	34,961	54,560	15,251	3,104	25,120	15,650	30,150	134,284	0	527,090	3,150	0	80,494	61,502	985,316
All	212,442	321,601	74,682	14,674	128,613	79,065	77,884	470,138	0,349	1742,223	12,412	0	225,120	234,661	3593,864
2020 y.															
Dizzakh	61,201	289,919	30,051	3,512	90,472	14,761	109,781	254,196	21	2376,227	16,674	0	207,495	0	3454,310
Navoiy	21,484	40,222	1,300	0	0,065	0,863	0,923	46,842	0	479,149	0	0	120,681	9,000	720,529
All	82,685	330,141	31,351	3,512	90,537	15,624	110,704	301,038	21	2855,376	16,674	0	328,176	9,000	4174,839
2021 y.															
Djizzakh	8,887	14,122	0,240	0,028	13,154	0,253	3,828	31,924	0	291,098	0,765	0	8,652	0	372,950
Navoiy	1,761	1,973	0	0	0	0	0,241	1,015	0	36,934	0	0	0,008	0	41,932

All	10,6475	16,095	0,240	0,028	13,1535	0,253	4,069	32,939	0	328,032	0,765	0	8,660	0	414,882
Total	305,7745	667,837	106,273	18,214	232,3035	94,942	192,657	804,115	0,370	4925,631	29,851	0	561,956	243,661	8183,585



In conclusion, it should be noted that the further development of the fishing industry in Uzbekistan in the new socio-economic conditions puts forward the requirements for more accurate and more specific quantitative assessments of biological resources. The same requirements are associated with the solution of both theoretical and applied problems of biological diversity conservation. All this will require a great joint systematic work of the scientific community and entrepreneurial fish farmers. However, the role of state bodies in this process should also be significant, primarily in the system of control over the correct and timely execution of legislative acts.

REFERENCES

1. Alikhanov B.B. On the state of the environment and the use of natural resources in the Republic of Uzbekistan (retrospective analysis for 1988-2007) National report of the State Committee for Nature Protection of the Republic of Uzbekistan, "Chinor ENK". Tashkent, 2008.
2. Kiyatkin A.K., Shaporenko S.I., Sanin M.V. The regime of water and salt on Lake Arnasai, energy technology and technology. 24(3). 1990. S.172-177.
2. Karimov N.A. Problems, solutions, prospects for pond fish farming in the Republic of Uzbekistan // Bulletin of science and practice. T. 7. No. 1. Russia.- 2021. P-107-112.
3. Mirzaev U.T., Golubenko Yu.A. Changes in the structure of commercial catches of fish in the Aydar-Arnasai system of lakes // Theoretical problems of preserving the biodiversity of animals in Uzbekistan: Proceedings of the republican scientific conference. - Tashkent, 2013. - S.76-78.

4. Mirzaev U.T., Urchinov D.U. Peculiarities of natural reproduction of the common pike in the lakes of East Arnasay // Actual problems of biology and its teaching: Proceedings of the republican scientific-practical conference, March 10, 2009, Tashkent - Tashkent, 2009. - P. 253-255.
5. Karimov.N.A., Atamuratova.M.Sh. Fish productivity of the Aidaro-Arnasay system of lakes // Proceedings of the international scientific conference - Bukhara, - P. 69 -71.
6. Mullabaev N.R. Influence of increased water mineralization on the reproduction of some commercial fish species in the Arnasay system of lakes // Bulletin of the Karakalpak branch of the Academy of Sciences of the Republic of Uzbekistan. - Nukus, 2007. Part 1. – C.27.
7. M.Z Temirkhanova -Problems in improving the approximation to international standards for reporting financial results in travel companies. Kaluga. EconomicBulletin, 2018.
8. T.M. Zhuraevna -Analysis of financial results tourism organization- World science, 2016
9. M Temirkhanova -Features of improving accounting policies in touristic companies and national economy- Bulletin of science and practice, 2018
10. M Temirkhanova Zh. Improvement of reporting forms according to international standards Bulletin of science and practice, 2017.