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BIOTECHNOLOGY OF PHYTOPLANKTON AND ZOOPLANKTON IN URBAN OPEN WATER BASINS, THEIR REPRODUCTION AND APPLICATION IN FISHERIES

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Abstract: *Bukhara is a city surrounding the phyto-zooplankton basin, the head of the biotechnology service, as well as a specialist in phyto-zooplankton on the basis of: during the meeting, a number of studies are conducted on natural science, phyto-aquaculture, zooplankton populations, animal zooplankton; in this regard, currently, there is a significant increase in the population. The recommendations developed for effective breeding of Chlorella vulgaris and Lemna minor were introduced into the practice of specialized farming in fisheries, as a result of which all species in the fish pond were given as information on the types and norms of fish that should be regularly carried out in the fisheries of the pond, allowing to obtain the necessary amount of biomass.*

Key words: *Hydrobiological status of pools, mineralization of water, Bacteriological Analysis, phytoplankton in lakes, physico-chemical composition of waters, biomass of zooplankton, biological meliators.*

Introduction. Particular attention is paid to the monitoring of the state of water bodies prone to anthropogenic pressure in the world, the identification of forms that affects the state of their hydrobions and the introduction of prospective species into productive development. According to the FAO organization, although 87000 tons of microscopic algae biomass have been registered in Australia, Czech Republic, France, Iceland, India, Israel, Italy, Japan, Malaysia, Myanmar and the United States, 86600 tons of biomass have been identified in research that it belongs to the Chinese state. Spirulina spp from microscopic algae., Chlorella

spp., the technology of cultivation of Haematococcus pluvialis and Nannochloropsis spp species from Pool conditions to large industrial production is used in many countries as food products. Therefore, it is important to determine the hydrochemical state of natural and artificial water reservoirs and develop effective biotechnological methods of their use.

The study of phyto-zooplankton in the watersheds around the city from foreign scientists in the field of increasing the dominant species rich in physiologically active substances in its composition, its application as feed to fish. P. Matos, W. B. Ferreira, L. R. I. Morioka, Bilos Lukasz (2016); Pittman

(2011) and many others dedicated to the study by scientists. Today, in the Brazilian state of Parabia, Chlorellators and strains resistant to changes in the environment are increasing. The average growth rate of microscopic algae, population variability was studied in depth from Thorvald Sorensen(1948)roof. The R.The P. Trenkenshu (1999); M.The L. Tarbeev (2011); S.No, Gorbunova (2013); Spirulina Platensis (nordst) by Lenka Blinova (2015) research work on reproduction of species, production of nutrient products from phytoplankton, reproduction of phyto-zooplankton in open water bodies.

Phytoplanktons, zooplanktons and their useful properties, which are distributed in water bodies in Uzbekistan, a number of studies have been carried out on the reproduction of species rich in physiologically active substances, obtaining biomass, the use of biomass in various branches of agriculture and the results obtained by I.A. Kiselev (1930); A.Ergashev (1969); T.T. Taubaev (1971); S. Keldibekov (1981); A.A. Akhunav (1992); M.A. Abdullaev (2003); N.Rashidov (2007); S.Wolf (2014); D.S. Niyazov (2017); A. Kuzmetov (2020). It is illuminated in the works of other scientists.

However, these data presented can not serve as a basis for a complete study of the current state of open water bodies of Bukhara city - Hydrobiology, the chemical composition of water. Because, as a result of external environmental factors, as well as climate change and water pollution, the situation of Lakes has changed. The above information is based on the relevance of the work. Moreover, based on the results carried out in this direction, as a result of the study of the Hydrobiology of the Labi-Khavuz, Bolo-pond, Mokhi Khosa pond, Somoni Garden Lake and pond water, the biotechnology of separation and reproduction of the algological clean cell of phytoplankton, the determination of the dominant species of zooplankton and their application in the lake and pond.

Materials and methods Currently, the problem of intensive cultivation of microscopic algae is widely studied not only in the former CIS countries, but also in the USA, Japan, France, Italy, Czech Republic, Slovakia, Bulgaria, Russia and other countries. This is due to the wide range of applications of microscopic algae: the use of microscopic algae harvest, the use of biomass as a raw material for obtaining any valuable substances, as well as the use of microscopic algae for melioration from the assimilation properties is important for open water bodies. The effectiveness of the development of these areas is determined by the optimization of the processes of controlled cultivation of algae cells, respectively, ensuring their potentially high production characteristics.

Particular attention should be paid to the spectral composition of 10-15 cm when using fluorescent lamps 3-5 cm, DRL, DRI, DRV, LDG, DNAT lamps, etc., the optimal illuminated layer, which ensures the highest efficiency of microscopic algae. For the most popular microscopic algae (Chlorella vulgaris, Scenedesmus bijugatus, Spirulina platensis, etc.), the spectrum of emitted light should be as close as possible to the spectrum of sunlight.

Carp fish segolettes do not eat mackerel until they reach 1,2 cm, as soon as they fall into this aquatic habitat. Because dafnies are considered to be relatively large organisms for them. Therefore, the segoletks Eat Shredded shellfish, colovrates and Cyclops, getting rid of a

certain amount of the cartilaginous organisms of the larynx. And the Daphne, which has such convenience, has the maximum indication in terms of biomass, becoming the dominant organism of the pond. As a result, the segolets of the fern first eat natural nutrients, and then artificially grown berries, creating the basis for their easy ripening.

In water bodies, which multiply almost all tiny organisms by their shells, the amount of oxygen decreases, and the amount of oxidation increases. According to data, the Jabra feet feel good when the oxygen content in the water is 1-2 mg/L of O2 and the oxidation level is 22-23 mg/l. There are data that Daphnia magna and Moina restirostris are much more adapted to the low amount of oxygen in the water. They may not even die when the amount of oxygen in the water drops to zero. Their such property is associated with the ability to synthesize hemoglobin, even in an environment where oxygen is very low. But all the same, in an environment with low oxygen, a sharp decrease in their fertilitytirib sends and ultimately leads to the victimization of the population. Therefore, it will be necessary to try to create as favorable an oxygen environment as possible in order to multiply these organisms into their shells.

All organisms that need to multiply into the above-mentioned Yappa usually sympathize with a neutral or alkaline environment. But among them, Daphnia has also been observed to live comfortably in a polex acidic environment (rn 5-6). Organisms that multiply in the majority of shells show resistance to salinity to the limits of great vibration. For Example I.V. According to Ivleva (1969), Enchytraeus albidus can live comfortably in soil with 3-10% salinity.And Artemia solina is able to grow comfortably even at the limits of the water content of which the amount of salt is from 10-20 to 180-220%.At the same time, in laboratory conditions, it was observed that freshwater lives comfortably.

Kolovratka for the cultivation of Jappa among small animals has great prospects (mainly Brachionus calififlorus ni), Vasileva G. for the cultivation of Jappa. L. and Okuneva G.L. (1961); Maksimova L.P. (1968); Ovinikova V.V. (1970) widely covered in the works of the Lars. According to the information presented, Brachionus calyciflorus is considered to be one of the most promising organisms, despite a number of its difficulties in its cultivation, and it can be said to have found its place in production.

G.A. Galkovskaya (1965) saw the population of Brachionus calyciflorus grow in Scenedesmus obliquus algae. Having increased the biomass of algae as a nutrient base from 50 to 350 g/m3, it was determined that the biomass of colovrates can also increase from 100 to 400 g/m3. To achieve a satisfactory result, the concentration of algae was 270-350 g/m3, calculated by turning it into a biomass. Algae are thrown into the water every day. As a result of the nutrition of colovrates, by the end of the day, the concentration of algae decreased to 1,5-1,0 g/m3.

Colovrates were grown for 20 days, on average at 230 C, in two different polyethylene bags (sadki). The initial concentration of Brachionus calififlorus in both polyethylene bags amounted to 3 million rubles. ekz./ M3 is. Cultivated colovrates in the first were not taken (not used), and in the second one were taken and used without interruption.On the 6th day

of the experiment, the amount of colovrates in both bags quickly increased, the concentration of which amounted to 149 million rubles. ekz./m3, the amount of biomass was around 538 g/m3. But in a non-kolovratka polyethylene bag, both the concentration and the biomass began to decrease sharply in the following days. And in the bag in which the colovrates were taken, in the following days the quantitative indicators were kept almost at the same level (V.V. Ovinnikova, 1970). As a result of the analysis of the results obtained, the author comes to the conclusions in tone: after a certain degree of increase in the biomass of Colovrates, the products of metabolism go out into the water, increasing the concentration of toxic substances. As a result, the colovrates gradually begin to die. And in bags, in which colovrates are taken and used, there is a possibility of stability between the decay of the formed toxic residues and the increase in colovrates, their quantitative indicators are at a level of low variability. Such an indication of the concentration of the highest colovrates is V.V. In the experiments of ovinnikova (1970), it was estimated that it amounted to 140-150 million. ekz./m3, the amount of biomass was around 500-540 g/m3.

L.P. Maksimova (1968) raised 1-3 million dollars. the cross./ ML. brachionus calififlorus, which is fed by concentrated algae, has a density of 50-60 ECZ./ML and biomass 100-250 ML / L. raised up to.

G.A. Galkovskaya in her experimental work managed to raise the maximum biomass of Brachionus calyciflorus to 1600 mg/m3.

When the temperature was 16-180 C in the herds, the partenogenetic female Shrimp began to multiply. At this time, in the analysis from the release chamber, eggs from one to 22 soles were observed. One night-time production in polyethylene bags amounted to 9,9-35,6 g/m3, and in capsule bags-15-113 g/m3.

Shpet G.I. and Pidgayko m.The L. (1967) calculated the potentsial pedigree of representatives of dafnia and other zooplankton and bentos. According to their data, there are data that one female Daphnia magna's 36-day potential reproduction product can reach 142 kg.

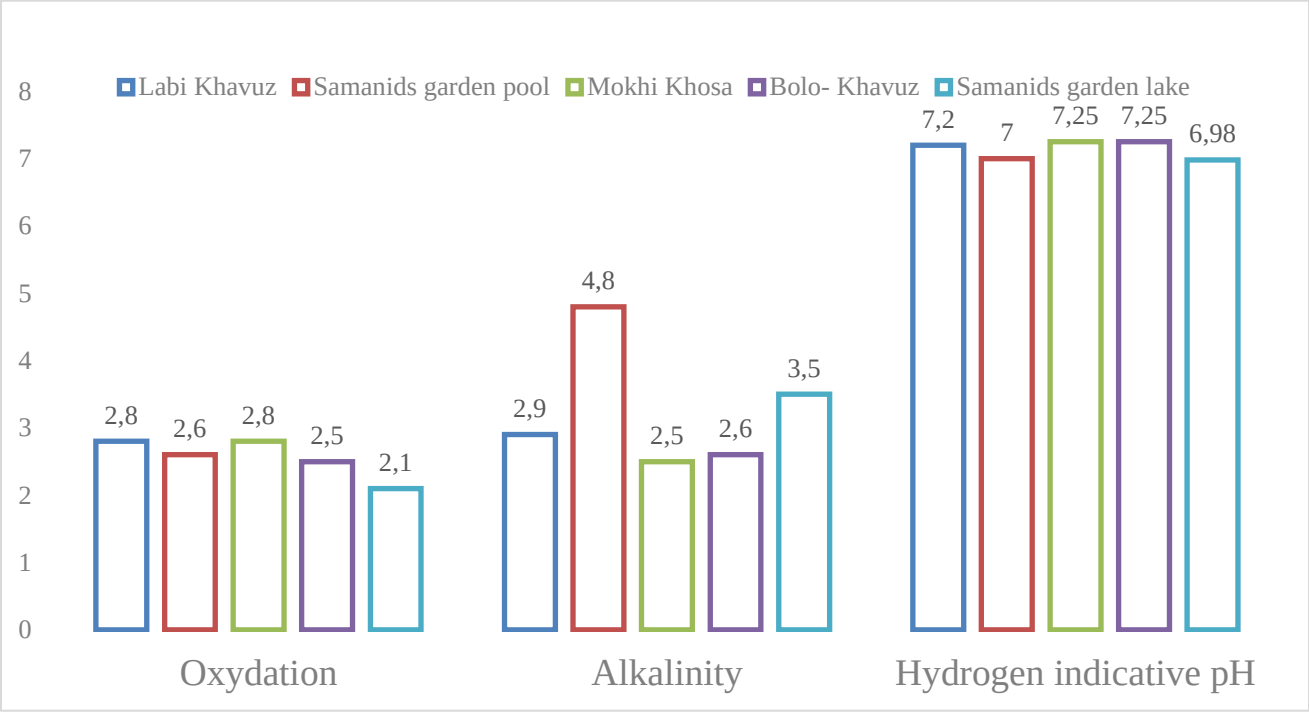
Discussion. The level of water consumption in Central Asia and Uzbekistan is increasing year by year, while the level of Water Resources per capita (SR) is steadily decreasing and is closely linked with the increasing population and development in this region and Country. An increase in the needs of the population leads to a sharp increase in the volume of water consumption. Proceeding from this, it can be said that establishing the use of secondary water cuffs, the rational use of small ponds is an important solution to the saving of drinking water today.






In assessing the seasonal variation of phyto-zooplankton quantity and biomass, the status of the waters (chemical composition analysis, water clearness, oxygen supply level, water color, pH indicator, water temperature, water smell, pollution level, saproblicity level, water density) plays an important role in determining the Phyto-zooplankton species, quantity and productivity of the pools, analyzing the composition of the species,

determining the dominant species, The amount of some of these processes - indicated in the diagram.



By state standards, the norm of indicators affecting the orgapoloptic properties of water is adopted. Hydrogen indicative pH 6,0-9,0 ; iron (GE) 0,30 mg/l; total hardness of water 7,0 mg ECV/L; manganese (Mn) 0,1 mg/l; copper (Cu) 1,0 mg/l; residual polyphosphates (RO3-4)- 3,5 mg/l; sulphates (S04) 500,0 mg/l; chlorides (Cl-1) 350,0 mg/l; dry residue 1000,0 mg/l; zinc (Zn) should constitute 5,0 mg/l. But different changes are observed in the waterways under the influence of different environmental factors in the Bukhoro urban water bodies. Some of these are indicated in the table.

Environmental reaction in lakes and ponds (pH), oxidation (mg O_2/L) and Biogen substances (mg/L) in water. **Graph-**

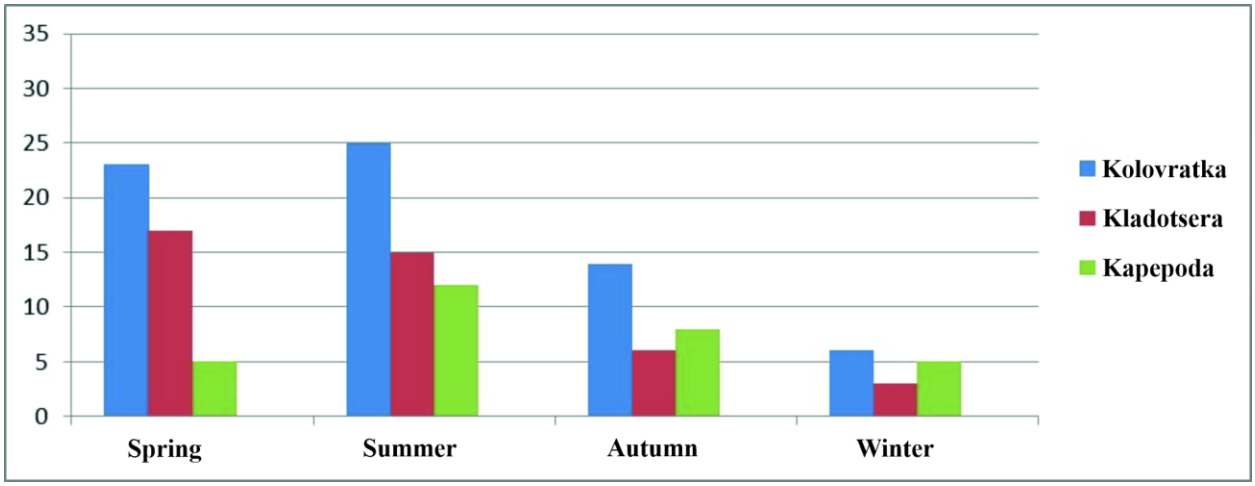
Research places	July		August		September		Biogen elements	
	pH	oxydation	pH	oxydation	pH	oxydation	N	P
Samanids Garden Lake	7,5	3,35	7,0	5,5	7,0	4,8	1,5	0,070
Mokhi Khosa pond	8,0	5,5	7,5	6,0	7,8	5,5	1,3	0,040
Labi-hovuz	7,8	5,52	7,8	7,35	7,4	5,2	2,0	0,075
Bolo-hovuz	6,8	10,20	6,8	10,0	6,6	15,6	2,5	0,080
Samanids Garden Lake	7,8	2,35	8,0	2,25	7,8	6,0	1,5	0,075

Result. Experiments were conducted to purify Result Chlorella vulgaris from Organo-mineral substances in water bodies.The physico-chemical composition of Labi-pool, Bolo-pool, Moxi-Khosa pool, Somoni Garden Lake and pond water was determined up to experience. Labi-oxygen dissolved in the water contained in the pool water 6,5 mg/l, KBS5 – 8 mgo2/L, ammonium salts 0,191 mg/l, nitrites 0,043 mg/l, nitrates 13,2 mg/l; Bolo-oxygen in the pool water 5,7 mg/l, KBS5 – 18 mgo2/L, ammonium salts 0,290 mg/l, nitrites 0,022 mg/l, nitrates 19,8 mg/l, magnesium 8,5 mg/l, magnesium 11,5 mg/l. In the water of the garden pond of the Samanids, oxygen is 6,8 mg/l, OBS_5 – 16 mgO_2/L, ammonium salts 0,395 mg/l, nitrites 0,048 mg/l, nitrates 16,5 mg/l, magnesium 4,3 mg/l, sodium 6,1 mg / l.

The composition of lake water in the garden of the oynids included oxygen 7,3 mg/l, OBS_5 – 1 mgo2/L, ammonium salts 0,585 mg/l, nitrites 0,012 mg/l, nitrates 26,5 mg/l, magnesium 4,2 mg/l, calsium 6,3 mg/l. The amount of oxygen contained in the pool water of Moxi-Khosa was 5,9 mg/L, the indication of OBS_5 was 0, ammonium 0,1 mg/l, nitrites 0,01 mg/l, nitrates 6,6 mg/l, magnesium 11,0 mg/l, kaltsiy 10 mg/l. In the conducted experiment, it was found out that chlorella cells develop with activity for 5-6 days, which can exceed the waters by 90-95% of organo-mineral substances. Labi-Khavuz was determined that the oxygen content in the pool water increased to 12,4 mg/l, $OBS_5$2 indicator 1,0 mgo2/L, ammonium, nitrite, complete assimilation of nitrates, magnesium decreased to 1,3 mg/l, kaltsium 2,5 mg/l.

It is possible to observe the seasonal variation of zooplankton species in the waters of thenni Garden Lake, Labi-pond, Bolo-pond, Somoni garden pond, Moxi Khosa pond. All species of zooplankton are Cosmopolitan, that is, common species, typical for the Labi-pond are Bosmina longupoctris, Polycerthra vulgaris, Ceriodaphinia reticulata, Arctodioptomus Salinus species, for example. All zooplanktoni of Bukhara city pools are Lake-pondeksieksi, and the species specific to the lake has a predominant property. Zooplankton variety is observed in summer. Relatively few zooplankton species are noticeable in autumn and winter.

Bolo-ponds in the pool 16 species, cladosera 5, copepoda 5, total 26 species encountered, Bolo - ponds 7 species, cladosera-3, kopepoda – 3 ,niyniy Park in the pool-ponds-16 units, cladosera-4 units, kopepoda – 4 . Bala-a total of 12 tours in the pool of the garden of comniy-24 species. In the spring of 2014 year in the pools began to appear warm – loving species with the rise in water temperature to 17-180s in the triple pool. This diversity is much higher in the summer months in the Labi-pool. From the colovrates: Polyarthra vulgaris, P.luminosa, Asplanchna priodonta, A. Sieboldii, Filina longiseta; from the cladosera: Bosmina longirostris, Ceriodaphinia wellrangula, Simocephalus vetulus; from copepods: Arctodiptomus salinus, Eucyclops serullatus, Harpacticoida, multi-number Nanplii and Copepodit threeraydi.



The productivity of aquatic animals is determined by their growth, the intensity of reproduction and the duration of their survival under different conditions. As a rule, objects that are multiplied by the top are distinguished by their fertility. Among the species belonging to the seeds of Daphne, Daphne magna is characterized by the most abundant fertility. Each breed of this shrimp occurs in more than 100 breeds in the process of giving. The period of procreation lasts 2-3 days. Zooplankton also increases in terms when the water temperature is 26 – 280s. From the dominant species in the Labi Khavuz pond: Bosmina longirostris, Arctodiptomus, harpacticoida sp dominates at a depth of 2,5 – 3,5 meters of water. In the pond of the garden of the Samanids, water often enters. The perimeter of the pool is open, and the wind blows a lot. From the air, oxygen invasion and evasion occur oxygen aeration. The process of photosynthesis also occurs. But the water does not come out. In the spring mainly Ceriodapima reticylata, Simoceplus, copopodit can be met. In autumn, the water decreases, and in winter it dries up altogether. In winter, Labi-pool, Bolo-pools are mainly three types of Keratella power, Nauplii and Copepodit, there are also low-end Cyclops Vicinus.

Zooplankton organisms, which spread in the pools of the city of Bukhara in the winter season, are first studied. Zooplankton biomass in the winter months to be very low compared to the summer, but it was noticed that some copepods were much higher on account. Zooplankton organisms in winter are in particular in the case of the range of crustaceans. But even in the winter, it was determined that the state of traffic should be maintained as it was in the summer. This can be due to the relatively warmness of the temperature of the pool water bodies. The results of the research conducted were compared with the previous years. Samples collected from the waters of lakenni were used from samples taken in December 2019 and January 2020, February.

Bukhara pools are distinguished not only by the richness of zooplankton species, but also by their large size, biomass and biological productivity, with a high degree of maturity compared to natural lakes, reservoirs, fisheries pools. The main types of these pools are carp, White Amur, feed for white hump Queen. Because it is from these pools that zooplanktons are taken away and the pool is multiplied in special burial trenches in the presence of fish farms.

Labi-Khavuz pool zooplankton can be met all year-round, the total amount of zooplankton as a result of observation in 11 months 39,8 thousand. EKZ / M3. Biomass 0,7 g/ m3, the maximum indicator 677 thousand ECS/M3 - biomass in July – 1,2 g/m3 , the minimum indicator is in January 10,4 thousand / m3 – biomass – 0,05 g / m3.

In quantitative terms, the first place is copepods-29,2 ECZ/3– biomass - 0,7 g\m3 , in the next place clodocera – 22,7 thousand ECZ/M3 – biomass – 0,4 g/m3 , the amount of colovrates – 16,8 thousand ECZ/M3 , biomass – 0,01 g / m3 is equal to the indicator. Bolo-pool zooplanktoni much lower in quantity and biomass aspect. The average figure is 17,6 thousand ECZ / M3 . biomass-0,3 g/m3 , the maximum figure is 35,1 thousand ECZ/M3 biomass– 0,5 g / m3 . (July), the minimum indicator 5,3 thousand ECZ/M3, biomass – 0,01 g/m3 . Dominant copepoda-13,4 thousand ECZ/M3, biomass – 0,3 g / m3. Cladocera – 11,7 thousand ECZ/M3, biomass – 0,2 g/m3 , Rotatoria – 10,6 thousand ECZ/M3 biomass-0,01 g/m3. The zooplanktoni amount and biomass indicator of the idyllic garden pond is as follows: fertile, active indicator even if it is spring and summer is this fall. In winter there will be no water. The average annual rate is 38,9 thousand ECZ/M3, biomass – 0,7 g / m3. The maximum indicator is 64,2 thousand ECZ/M3, biomass – 1,0 g/m3, the minimum indicator is 12,8 thousand ECZ/M3 biomass – 0,2 g / m3. From the dominant copepods :ttodiaptonus salinus, Nauplii, Copepodit Clodocera: Simooefalus vetulus, Cerixdaphinia reticuata, Kolovratka: Asplanchna Priodonta, Bracnionus guadidentatus species can be cited as an example.

Labi-the average amount of zooplanktoni in the pool – 398 thousand ECZ/m3 biomass-0,7 g/m3. Dominant Bosmina longirostris, Ceriodaphnia quartrangula, C. an example of the types of reticulate, Arctodantonus Salinus, Thermocyclops crasus, Brachivnus quadridtntatus, Keratella quadrata can be considered. Bolo-pool zooplanktoni average-17,6 thousand. ekz / m3. Biomass – 0,3 g / m3. Among the Dominant species are Brachionus nilsoni, Mesocyclops lenckarti, Ceriodaphnia reticulate, Nauplii, Copepodit. The average indicator of zooplanktoni in the garden pond inniyniy is 38,9 thousand.made up ekz/m3. Biomass-equal to 0,7 g/m3. As the Dominant species, Arctodantonus Salinus, Brachionus can be defined. Depending on the reserve of nutrients, Thenni Garden Lake and four pools also belong to the type of Mesatrop (1,2 – 1,5 g/m3), according to the biological classification of Tenniman and Nauman (1920), while the Bolo-pool belongs to the type of partial distrop (0,5 g/m3). The reason is that the pool has not been completely cleaned in these near 25 – 30 years. The water environment (pH) is also close to 6,6 – 6,8.

Conclusion. Thus, the number and composition of species of phytoplankton and zooplankton differ in different factors (temperature, water clarity, the amount of minerals, the smell of water) and the effect on the water flowing by Origin. Seasonal formation and development of phyto-zooplanktones is under the influence of external environmental factors Complex. According to the results of the research conducted, such changes lead to Gene renewal. The quantity and quality samples obtained from the Labi- Khavuz pool area were examined and, based on the results of the analysis, the morphology of the species was noted above.

The existing pools in Bukhara have a long history. It served as a source of drinking water for a certain period of time. At the same time, the source of some (bond, malaria) diseases of their time is infected. All available pools (Labi Khavuz -pool, Bolo-pool, Samanids garden pool) are considered to be our national wealth.

We must keep these pools. Especially the Labi-Khavuz pool, Samanids garden pond has become a place of recreation of thousands of steamers. Pollution of pools, burying of them should be prevented.

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