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Hydrobionts of Devkhona and Ayakagitma Lakes in Bukhara Region

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Abstract: ***In this article, we have identified the types, quantities and biomass of organisms from the devhouse and foot lake kidrobions in Buxoro region: phytoplankton, macrophytes (Devkhona), zoobentos (Ayakagitma), meeting in seasons. These organisms are widely used as fish food and contain information about their importance in fishery.***

Keywords: Phytoplankton, macrophytes, zoobentos, litoral, pelagial, nectobentos, phytophilic, mesotrophic, bentofag, phytofag

1. Introduction

In the Bukhara region there are more than 9 lakes. Professor Abdullaev M.A In 60-80 years of the last century on the work of gidrobiological and ichtiological research of these lakes and studied by his students [1,2]. " Devkhona " lake is located on the territory of the Karavulbazar district and the area is up to 1700 ha. The water reserve is 765 million m^3. Average depth 17 m maximum depth 30 m. The Central collektor against the source of water Karshi, the central channel of the Karavulbazar.

Ayakagitma fishery lake appeared on the account of the thrown waters, like other lakes in the Kyzylkum Desert. But partially the atmosphere, groundwater, is also collected. Therefore, the fate of the Standing Lake is closely connected with the activities of agriculture.

In 2005, the area of the lake was 12,1 thousand/ha, 2006 year 10,2 thousand/ha, 2007 year 9,5 thousand/ha, 2008 year 9,1 thousand/ha (Kozlov, Abramov, 1980). Based on this, the total volume of water also varies. Since 2010 year, water access to the lake has increased, and the total area of the lake is more than 12,5 thousand/ha.

Such changes in the lake area indicate its effect on the amount and biomass of high water plants contained in it. A decrease in the volume of water leads to the loss of the litoral (coastal) part of the lake. As a result, the coastal vegetation dries up and its area decreases. If the arrival of water increases in March, April, may, in June - August the water is sharply reduced, causing trench water through the pumps to be used for irrigation of agricultural crops. As a result, the water flow reaches 0,5-0,6 m^3/sec. It is known to us that in the hot days of summer 1 hectare of water evaporates 10 l/sec from the surface.

A distinctive feature of the Ayakagitma lake is that the water enters it, but the water does not come out. The difference in the compensated by evaporation, especially the water entering the foot lake, by strong evaporation. The Ayakagitma lake consists mainly of the pelagial part. The litoral part of the lake appears from December to January and lasts until may. This feature is not only characteristic of the Ayakagitma lake, but also refers to the waters of the South-Western Kyzylkum.

2. Material and Methods

The object of the study is the phytoplankton, macrophytes and benthos organisms of the Devkhona and Ayakagitma lakes in Bukhara region. During the 2017-2018 years, samples were collected from various points of these lakes using phytoplankton, macrophyte and benthos organisms methods used in gidrobiology. In the studies, first of all, the temperature, transparency, pH and oxygen content of water were measured. Gidrobiological observations were carried out mainly in the spring and summer, since during this period the flora and fauna of water bodies developed, and the reproduction of organisms occurs at an intensive rate. Phytoplankton organisms were sailed with the help of various swimmers. Samples were fixed by adding 40% formalin solution to 1 liter in an amount of 20-40 ml. Phytoplankton used a batometer instrument to collect organisms. The resulting sample was stored in the laboratory in a dark place for 15 days. Then, by means of sediment deposition, which was sucked into the bottom of the container until 100 ml of water was left with a special hose, the species was determined using gaskets[1,2,3,4,5].

Macrophytes play a key role in determining water quality and environmental changes. The number of species, biomass, productivity and dominant species of macrophytes as a result of anthropogenic effects on the water basin are three to changes. Therefore, when studying the quality of raw water, attention was paid to the number of species, their abundance, phytomassage and ecological form of the plant. When carrying out gidroibological studies in the water basin, it is necessary first of all to pay attention to aquatic plants. The reason is that they are located on the surface part of the water or in the case of immersion in water.

Samples of macrophytes were fixed on alcohol and formalin, from which gerbars were made. When assembling quality samples, it uses special frames while assembling quantity samples from anchors and grabels. Most of the macrophytes

are specially bred as nutrients of herbivorous fish [6]. In determining the composition of species "Opredelitel rasteny Sredney Azii" [.....] and route to assemble samples of herbarium [....] the method was used. Scientific names of categories and species "Opredelitel rasteniy Sredney Azii [...[...].International indices International Plants Names Index [...], The Plant List [...] and the authors of taxis Brummit R.K., Powell C.E.listed on the basis of the manual.

Bentos was collected using quality and quantity collection methods. The quality method was collected mainly in sachets, on bankers (draga). In collecting quantitative samples from deep areas of the lake, equipment for collecting organisms in underwater sand and mud was used Peterson dnocherpatel (equipment for collecting organisms in underwater sand and mud). Benthos, collected with the help of the above-mentioned founders, were harvested in a living State before fixation of organisms. The organisms collected from the samples were divided into large systematic groups. Then 10% was fixed on the formalin.

Specimens of Ayakagitma lake zoobentos were collected separately for each zone. Zoobentos samples were collected with Peterson D/ch, which consisted of a surface of 1/40 m^2 or 0,025 m^2.

3. Result and Discussion

In the lake of "Devkhona " there was a development of gidrobiont organisms mainly in the spring and summer months. Phytoplankton consists of 134 species of organisms, consisting of representatives of the blue – green, diatom, green and group of evglenasimons. The most common among them are diatom and blue – green algae, which belong to the group of algae.

In the study of phytoplankton species, initially preparations from spring "bullfrogs"and plyonks were prepared and analyzed. According to a large number of blue – green algae in the lake: *Anabaena variabilis f.crassa, A.bergii f. minor,Oscillatoria limosa, O.ornata, O.okenii,*, as well as *Spirogira* generation *Cladofora glomerata*, also suffered many. When examining the"frogs and their remains", Krotula spikula from the weeds of the thread, *Navikula spikula, N.cryptosephala, N.placentula, Cymbella affinis, C.cymbiformis, Gyrosigma kutzingii, G.acuminatum, Diatoma elongatum var.tenue,Cyclotella comta* has been found to have encountered a large amount of.

When phytoplankton in the samples was studied, it was found in them that some parts of the higher plants, and in very rare cases, in particular *Arctodiaptomus salinus*, came from crustaceans.

As part of phytoplankton, *Merismopedia tenuissima*, one of the representatives of the blue-green algae department, while representatives of the Gloeocaps generation *G.minute, G.punctata, G.tenax* vs found a lot of parts of the water at a depth of up to ten meters. The most common generation of representatives of this department is Representatives of this oscillator generation, including 17 species of them: *O.amphibia* Ag, *O.brevis* (Kutz).Com, *O.geminata*(Menegh).Com, *O. cholybea* (Mert).Gom, *O.geminata* (Menegh).Gom, *O. formosa* Bory, *O.irrigua* (Kiitz). Gom, *O. laetevirens* (Crouan).Gom, *O. limosa* Ag, *O. major* Vauch, *O. ornate* (Kiitz). Gom., *O. princeps* Vauch, *O. saneta* (Kiitz). Gom, *O. simplicissima* Gom, *O. tenius* Ag, *O. terebriformis* Ag., *O. woronochinii* Anissim, *O. willi* Gardn, *Oscillatorias spirulina labyrinthiformis, S. major* Kiitz, *S. subtilissima* Kiitz, it was observed that almost all layers of lake water meet. Also three types of spirulina from the representatives of the Department . *S.labyrinth*, *S. majar* Kiitz, *S. subtilissima* Kiitz. if met in the spring, *Lyngbya aestuarii* Leibm from lingbiya, *Lyngbya confervoides* Ag, Gom. as of 2 species was recorded.

Of particular importance is the role of diatom algae among the spring and summer phytoplankton of lake of Devkhona. The most common of them are the following species: *Melosira ambigua* (Grun), *Cyclotella bodanica*, *C. comta* (Ehr)Kiitz, *C. varglabriuscula*, *C. meneghinina* Kiitz, *C. stelligera* Cl et Grun, *Diatoma elongatum* (Lyngb) Ag, *Diatoma elongatum* (Lyngb) *var. Cyclotella bodanica, C. comta* (Ehr)Kiitz, *C. var.glabriuscula, C. meneghinina* Kiitz, *C. stelligera* Cl. et Grun, *Cocconeis pediculus, C. placentula, C. var.euglipta, C. var.intermedia, Phoicosphenia curvata, Mastogloia baltica, M. braunii, M. elipptica, M. smihii, M. smihii var.amphicephala, M. smihii var.lacustriso, Oiplonies elliptica, O. smithii, O. parma, O.sp ,Navicula ajajensis, N. cari, N. cryptocephala, N. cryptocephala var.lata, N. exigua, N. radrosa,N. spicula, N.sp, Punnilaria microstauron var.brebissonii, P. sp, Calonies amphisbaena, Gyrosigma acuminatum, Pleurosigma elongatum W. S.m, Amphiproraalata, Amphora coffeaeformis, A. coffeaeformis var.acutiuscula, Amphora coffeaeformis var. transcaspica, Amphora commutate, Amphora sp, Cymbella affinis, Epithemiaargus, Rhapalodiagibba, Bacillariaparadoxa, Nitzschi afrustulum,N. hungarica, N. microcephala, N. obtuse, Cymatopleurasolea, Surirella ovata* are representatives of diatom algae.

Among the evglenasimons in the spring season the following species are *Euglena deses, E. polymorpha, E. proxima, E. sparthirhyncha, E. variabilis, , Euglena sp, chlamydomonas sp, chlorella ellipsoidea, Scenedesmus acuminatus, S. bijugatus, S. quadricauda var., Phacus acuminatus, Ph. caudatus, Ph. Pecuronectes, Ulothrix tennerimma, microspore stagnorum, M. sp, Oedoganium sp, Cladophora glomerata, Vaucheria sp, Cosmarium sp, Mougeotia nummuloides, Mougeotia sp, Spirogira crassa, S. longata, S. sp, Merismopedia tenuissima, Gloeocapsa minuta, Gloeocapsa punctata, Gloeocapsa tenax, Anabaena bergii, A. bergii minor, A. variabilis, A. f. crassa* suffered a lot of algae.

It can be seen that in the area of the Devkhana lake to a depth of 3-5 meters, and in the study of aquatic high vegetation, mainly Reed and lamb species dominated. These species are used by the local population as building material and fodder for livestock. We divided the vascular plants collected as a result of the research into groups that grow in water and along the water.

As a result of the research, 45 species of vascular water plants belonging to 21 families were found in Devkhona lake (Table-1).

Table 1: Vascular plants Devkhona lake of Bukhara region

№	Species of plants	Growing in water	Growing along the water
	Salviniaceae		
1	*Salvinia natans* (L.) All.	+	
	Equisetaceae		
2	*Equisetum ramosissimum* Desf.		+
	Ceratophyllaceae		
3	*Ceratophylum demersum* L.	+	
	Ranunculaceae		
4	*Batrachium divaricatum* (Schrank.) Wimm	+	
5	*Batrachium rionii* (Lagger) Nym	+	
	Chenopodiaceae		
6	*Atriplex tatarica* L.		+
7	*Chenopodium album* L.		+
	Polygonaceae		
8	*Polygonum persicaria* L.	+	
9	*Polygonum aviculari* L.		+
	Plumbaginaceae		
10	*Limonium otolepis* (Schrenk.) Kuntze		+
11	*Limonium meyeri* (Boiss.) Kuntze.		+
	Tamaricaceae		
12	*Tamarix hispida* Willd.		+
13	*Tamarix ramosissima* Lab.		+
	Brassicaceae		
14	*Arabidopsis pumila* (Steph.) N.Busch		+
	Fabaceae		
15	*Alhagipseudo alhagi* (M.B.) Desv.		+
16	*Glycyrrhyza glabra* L.		+
	Haloragaceae		
17	*Myriophyllum spicatum* L.	+	
18	*Myriophyllum verticilatum* L.	+	
	Asteraceae		
19	*Acroptilon repens* (L.) D.C.		+
20	*Cichorium intybus* L.		+
21	*Karelinia caspia* (Pall.) Less.		+
22	*Lactuca tatarica* (L.) Cam.		+
23	*Paramicrorhynchus procumbens* (Roxb.) Kirp		+
	Apocynaceae		
24	*Cynanchum sibiricum* Willd.		+
	Plantaginaceae		
25	*Plantiago major* L.		+
26	*Plantiago lanceolata* L.		+
	Juncaceae		
27	*Juncus articulates* L.	+	
28	*Juncus gerardii* Loisel.	+	
	Butomaceae		
29	*Butomus umbellatus* L.	+	
	Cyperaceae		
30	*Bolboschoenus popovii* T.V. Egorova	+	
31	*Cyperus rotundus* L.		+
32	*Scirpus mucronatus* L.	+	
33	*Scirpus triqueter* L.	+	
	Poaceae		+
34	*Cynodon dactylon* (L.) Pers.		+
35	*Aeluropus litoralis* (Gouan) Parl.		+
36	*Calamagrostis dubia* Bunge.		+
37	*Echinochloa crus galli* R. et. Sch.	+	
38	*Phragmites australis* (Cav.) Trin. Ex Steud.	+	
39	*Erianthus ravennae* (L) P.Beauv.		+
	Potamogetonaceae		
40	*Potamogeton crispus* L	+	
41	*Potamogeton perfoliatus* L	+	
	Lemnaceae		
42	*Lemna minor*L.	+	
	Typhaceae		
43	*Typha angustifolia* L.	+	
44	*Typha laxmannii* Lepech.	+	
45	*Typha minima* Funck	+	

The results of the study of the vascular plants of Devkhona lake were found that 21 species were found in water and 24 species were found on the water banks of the plant. These species studied serve as an important basis in the study of phytoplankton and zooplankton of the lake, in the study of hydrobiological research on the lake. List of plant species listed the researchers have a scientific significance in carrying out the hydrobiological research.

Organisms of the Ayakagitma lake bentos. Ayakagitma lake has been studied as the following biotopes: 1. Dark-gray mud (litoral). 2. Gray mud (mainly III zone). 3. Black mud (pelagial). 4. Vascular algae. The organisms that fly in these biotopes are called pelophilic, peloresfil biosenoses. The following are the types of foot lake zoobentos:**Oligocheata:** *Stylaria lacustria* L., *Stylaria fussularis* Leidy, *Nais obtuse*, *Tubifex tubifx* Mull., *Iliodrilus bedoti* Michals, *Dero asiatica* Cernosvitov; **Gastropoda:** *Simmaca sp., Radix lagotis, Radix lateralis, Physa acuta* Drop.; **Bivalvia:** *Anodonta signea;* **Ostrocoda:** *Cypris subglosa* Jurine,*Cypridopsis vidua* (O.F.M.), *Cypridopsis sp.;* **Odonata:** *Anax imperator* Leach., Agrion virgo (L), Құңғизлар – **Coleoptera:** Гладыш – Natonecta *glauca* Men, Гладыш – *N. clavicornis* (Deg), **Chironomidae:** *Tanytarsus mancus* Wulp., *T.gregarious* K., Cryptochironomus burganadzeae Tschern., *C.defektus* K., *C.conjgens* K.,*C.pararastratus* I., *Chironomus fhummi* K., *Ch.plumosus* L., *Ch.reductus* Lipina., *Limmochironomus nervosus* (Staeg), *Polypedilum aberrans* Tschern., *Coricotopus silvestris* Kieff., *Pelopia villipenus* Kieff., *P.punetipennis* Mg., *Procladius skuze* Kieff., *Ablobesmia monilis* L., *A.villipenus* Kieff.

Zoobentos organisms at the bottom of the Ayakagitma lake consist of 31 species, in terms of variety of species, hyronomic larvae predominate and account for 62,9%. Shrimp on the nectar of the Ayakagitma lake *Macrobrobrachiorum nipronense* and long paws of the river shrimp -*Astacus leptodactylus* occurs. The river shrimp with long paws comes fromShurkul water reserve.

Across 3 zones of study of the zoobentos biomass of the Ayakagitma lake and its amount, materials were collected (Fig.1).

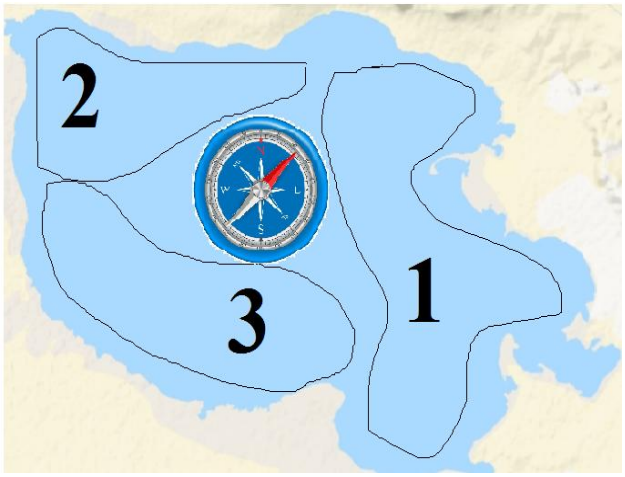

Figure 1: Zoobentos samples collected zones from the Ayakagitma lake
Note: 1-North-East, 2-South-West, 3-South-East.

The north-eastern part of the 1-zone *Ayakagitma* lake includes an area of 9200 hectares. Maximum depth (1989 - 2000 y) 40-45 m, average 15-20 m. Because in this zone, nevod and coastal bredens are used. The water tube was checked with the help of exolot. 1-zone reservoir zoobentos gathered mainly with Peterson D/ch - 1/40 m^2. Information on the seasons of the foot lake zoobentos can be found in table 2.

The bottom of the 1-zone water of the *Ayakagitma* lake consists mainly of 3 units of biotopes a) pelophil, b) phytophil, argilophil. But the main part is pelophilic, and the larvae of the hironomid are located exactly on this biosenosis, about 70-80% of the zoobentos belong to the larvae of the hironomid.

Table 2: Information on the amount and biomass of the 1-zone zoobentos of the *Ayakagitma* lake ($\frac{1000\,per/м^2}{g/м^2}$) 2018 year

Biotopes	May		Gross productivity, kg\ha	July		Gross productivity, kg\ha	September		Gross productivity, kg\ha
	per/м^2	g/м^2		per/м^2	g/м^2		per/м^2	g/м^2	
Pelofil	160	0,5	48	80	0,2	24	120	0,4	36
Phytofil	20	0,06	6,0	28	0,08	10,8	25	0,07	7,5
Argilofil	15	0,04	4,0	20	0,06	6,0	10	0,03	3,0
Total	**195**	**0,6**	**58**	**128**	**0,3**	**40,8**	**155**	**0,5**	**46,5**

The average number of hironomide larvae is 159,3 per/m^2, while the biomass is 0,4 g/m^2, the yield per hectare is 36,8 kg/ha. Gross productivity in 1-Zone is 338560 kg. From the larvae of hironomid, cryptochironomus, Chironomus, Limmochironomus, Ablobesmia predominate.

The south-western part of the 2-zone Ayakagitma lake includes an area of 3020 hectares. This zone is located at the bottom of the lake, relatively shallow, the maximum depth is 16 m, on average 6-8 m. The 2-th part of the 71-80% of the zone is mainly the litoral zone. The Pelagial part is relatively rare. Basically 2 biotopes: A) from dark-gray sputum, b) from a biotope covered with high algae, the phrase is given in Table 3. Phytophilic biosenosis, in which hyronomide larvae are located, occupies about 80-90%. From larvae, mainly *Cryptochironomus burganadzeal*, *Polypedilum aberrans*.

Table 3: Information on the amount and biomass of the 2-zone zoobentos of the Ayakagitma lake ($\frac{1000\,per/м^2}{g/м^2}$) 2018 year.

Biotope (biocenosis)	May		Gross productivity, kg\ha	July		Gross productivity, kg\ha	September		Gross productivity, kg\ha
	per/м^2	g/м^2		per/м^2	g/м^2		per/м^2	g/м^2	
Pelofil	38	0,1	11,4	69	0,2	20,7	29	0,1	8,7
Pytofil	23	0,07	6,9	44	0,1	13,2	28	0,09	8,4
Total	**61**	**0,17**	**18,3**	**113**	**0,3**	**33,9**	**57**	**0,19**	**17,1**

The average amount of 2-zone hironomid larvae is 77 per/m^2, biomass-0,22 g/m^2. Productivity per hectare is up to 22 kg / ha. The total productivity of the 2-zone is 66440 kg.

The 3-zone is the south-eastern part of the Ayakagitma lake, the area is 2480 hectares, begins from the place of pouring water into the lake, the maximum depth is 12-14 meters, on average 5-6 meters. The area of 60-70% of the zone bottom is covered with gidrotophytes. The Pelagial part is 80-90 %, the litoral part is much less.

In the 3-zone of the foot lake, 3 biotopes are three organisms characteristic of pelophilic, phytophilic, argilophilic biosenosis. The main part of this zone is formed by pelophilic and phytophilic biosenosis. In this zone, *Tubefex tubifx*, *Pelopia sp*, *Polypedilum sp*, *Cryptochironomus burganadzeal*, *Chironomus plumus* are common.

Data on the amount and biomass of hyronomic larvae in the 3-zone are presented in Table 4.

Table 4: Information on the amount and biomass of the -zone zoobentos of the Ayakagitma lake ($\frac{1000 per/м^2}{g/м^2}$) 2018 year

Biotope (biocenosis)	May		Gross productivity, kg\ha	July		Gross productivity, kg\ha	September		Gross productivity, kg\ha
	per/м^2	g/м^2		per/м^2	g/м^2		per/м^2	g/м^2	
Pelofil	18	0,05	5,4	44	0,1	13,2	29	0,09	8,7
Phytofil	15	0,04	4,5	31	0,04	9,3	18	0,05	5,4
Argilofil	7	-	-	3	-	-	5	-	-
Total	**40**	**0,09**	**9,9**	**78**	**0,14**	**22,5**	**52**	**0,14**	**14,1**

The average amount of hyronomic larvae of the 3-zone is 56,6 per/m^2, biomass-0,012 g/m^2. Productivity per hectare is up to 12,0 kg/ha. The total productivity of the 3-zone is 29760 kg.

The average amount of hironomid larvae in the 1-zone of the foot lake is 159,3 per/m2, biomass-0,5 g/m^2, the average amount of hironomid larvae in the 2-zone is 77,3 per/m^2, biomass-0,22 g/m^2, the average amount of hironomid larvae in the 3-zone is 56,6 per/m^2, biomass-0,12 per/m^2.

The total amount and biomass of Ayakagitma lake zoobentos is shown in Table 5.

Table 5: Information seasons on the amount and biomass of the Ayakagitma lake zoobentos ($\frac{1000 per/м^2}{g/м^2}$) 2018 year

Zones	May		Gross productivity, kg\ha	July		Gross productivity, kg\ha	September		Gross productivity, kg\ha	Average kg / ha
	per/м^2	g/м^2		per/м^2	g/м^2		per/м^2	g/м^2		
I	195	0,6	58	128	0,3	40,8	155	0,5	46,5	48,4
II	61	0,17	18,3	113	0,3	33,9	57	0,19	17,1	23,1
III	40	0,09	9,9	78	0,14	22,5	52	0,14	14,1	18,8
Average	98,6	0,3	28,7	106,3	0,2	32,4	88	0,3	26	30,1

An annual analysis of the bioresourse of the foot lake or the nutrient base shows that the Ayakagitma lake A. Teniman and E. Depending on the biological classification of naumans (Konstantinov,1986) belong to the class of mesotrophs and are considered to be relatively low-nutrient lakes. The number of hironomide larvae is 97,6 per/m^2, biomass - 0,3 g/m^2 such a low indicator of the number and biomass of zoobentos is a characteristic feature of the South-West Kyzylkum waters.

Let's look at the cultivation of fish crop on zoobentos yield of Ayakagitma lake.

The productivity of 1-zone zoobentos is on average 36,8 kg/ha. The gross productivity of zoobentos is 338560 kg. The nutritional coefficient of zoobentos is equal to 7. Benthofag fish also consume 50% of zoobentos, just like phytophagic fish.
338560 kg:2 =169280 kg.
169280 kg:7 = 24182,8 kg.

In order to make rational use of the zoobentos productivity of zone 1, 25-35 g of incoming carp fish segolettes per leg of lake 1, 24183 pieces of carp fish per zone. It was recommended to fish with 2-3 pieces of carp per hectare.

The productivity of the 2-zone zoobentos was 22 kg/ha.

The gross productivity of zoobentos is 66440 kg/ha. 50% of zoobentos is consumed by bentophages.
66440kg:2 =33220 kg
The nutrient coefficient of zoobentos is equal to 7.
33220 кг : 7 = 4745,7.

In order to make rational use of the zoobentos productivity of the 2-zone, 25-35 pieces of carp fish were found to fit into the 2-zone of the foot lake from the segolettes of the carp fish that came in 4746 g. It was recommended to fish with 1-2 pieces of carp per hectare.

The productivity of the 3-zone zoobentos is 12 kg/ha, the gross productivity of this zone is 29760 kg. 50% of zoobentos is consumed by bentophages.
29760 kg:2 = 14880 kg
The nutrient coefficient of zoobentos is equal to 7.
14880 kg:7 = 2125,7 kg product of fish.

In order to make rational use of the productivity of the 3-zone zoobentos, 25 -35 pieces of carp fish were found to fit into the 3-zone of the foot lake from the segolettes of the carp fish that came to 2126 g. It was recommended to fish with 1 carp per hectare of fish.

4. Conclusions

Devkhana and Ayakagitma lakes are considered to be mesotrophic lakes, that is, they have an average nutrient base, like lower Zarafshan lakes. But the fact that the Devkhana Lake is less covered with high vegetation indicates that it is possible to expand the activity of fishery.

The natural mating of carp fish in the southern part of the lake increases the chances of Lake Fishing by artificially reaping the places where it is convenient and multiplying up to 30-50 soles per hectare through gardens made of lamb.

High plants such as ryaska, which is rich in relatively low-flying protein in Devkhana Lake, are given as food to special offspringtirib young fish, they grow very well, acquire full-fledged obesity and are able to get out of the winter freely.

Devkhana lake is a high water plant, in the basin it manifests a number of its features. In particular, they determine the microclimate in the water and determine the bioindication of the environment not only in the water, but also in the appropriate landscape. It also serves as a source of nutrients for gidrobions, a hiding place for non-predators from enemies, a substrate for fish (phytophilic), which directly places its uvildir on plants, heavy metals that are harmful to excess and living organisms in water and a depot for their ions. Rdest, whose body is slightly softer (*Potomogeton crispus* L.), hornbeam (*Ceratophylum demersum* L.), ryaska (Lemna minorL. plants as vascular as white Amur serve as a direct food for herbivorous fish.

Taking into account the natural environment of the devkhana Lake(average depth 15-16 m), the reproduction of natural mating sites (mainly in the southern part with a depth of up to 3m) for phytophilic fish from it (mainly in carp) also carries out the norms of Lake Fishing in natural conditions.
Total carp segolettes, which will be needed for fish breeding of Ayakagitma lake.
1-zone to -24183 per or 2.6 per/ ha per hectare
2-zone to -4745,7 per or 1,5 per / ha per hectare
3-zone to -2125,7 per or 0,8 per / ha per hectare

The number of carp segments that need to be held in total is 31054,4 pcs.

In total, it was recommended to fish with a segoletka of 31054,4 per carp fish per Ayakagitma Lake.

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In total, it was recommended to fish with a segoletka of 31054,4 per carp fish per Ayakagitma Lake. Phytoplankton, high water plants and benthos organisms in these lakes are sufficient, which makes it possible to increase fish productivity.

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