

# New Information on the Ecological Groups of High Water Plants of Khadycha Lake, Bukhara Region

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**Abstract** The article analyzes materials collected during 2018-2023. New information is presented about the ecological groups of aquatic plants of Lake Khadichkha in the Bukhara region. In particular, the importance of dominant species in fisheries has been determined. When monitoring the ecological condition of water bodies in our republic, special attention is paid to continuous monitoring of the biodiversity of hydrobionts in it, especially to the study of the flora of water bodies, and to the use of its useful species in the leading sectors of the national economy.

**Keywords** Uzbekistan, Bukhara Higher aquatic plants, Kyzylkum, Southwestern, Hygrophytes, Hydrophytes, Hydatophytes, Flora of the area, Reservoirs

## 1. Introduction

In this regard, among other things, important results are being achieved in terms of studying biological properties of useful and medicinal plants growing in water bodies, species used in animal husbandry, poultry farming, fisheries and pharmaceuticals, reproduction and supply of raw materials for industry. The latest information about the flora of Bukhara region can be found in the information of H.K. Esanov and others. These articles provide information on the distribution and importance of 59 families, 294 genera, and 529 species of plants found in the research areas. The main part of the South-Western Kyzylkum region is the Bukhara region. Among the flora of this region, it is possible to note high water plants found in the waters of reservoirs. These aquatic plants play an important role in maintaining the biodiversity of water bodies. High water plants There are 70 types of high plants belonging to 24 families in South-Western Kyzylkum water bodies [2]. T.N. According to Kholmuradova, a preliminary list of high-water and waterside plants distributed in the Kashkadarya water basin was given, and it was determined that 77 species of high-water and waterside plants belonging to 24 families and 44 genera are distributed [1]. Lake Khadichha is one of the abandoned lakes in the Bukhara region, located in the south-east of the region. This lake is the largest lake in the Qarovulbazar oasis. Lake Khadija is located on the right bank of the Amu-Bukhara Motor Canal (ABMK) near the Havana bridge (Havana most). Khadichhalake was created in the place of ancient valleys (deep depressions) of the Kashkadarya basin. Lake Khadicha is separated from

ABMK by a 50-100 m wide road.

## 2. Materials and Methods

But the water of ABMK does not fall into Khadicha Lake. The water source of Lake Khadichha is mainly the Karshi collector (flowing from the territory of Kashkadarya region). Water comes through 5 pipes with a diameter of 1 meter. However, the amount of water poured into the lake from this collector is not evenly distributed throughout the year. Oil and gas drilling is carried out 10-15 km from the Khadicha Lake area, and a collector formed from waste water of an oil refinery at a distance of 50-65 km also discharges its water into a separate ditch. As a result of our scientific work carried out in 2018-2023, a list of 53 species of high water plants belonging to 22 families was compiled for the first time in Khadicha Lake, located in Bukhara region. (1 table)

## 3. Results and Discussions

Until now, the aquatic and wetland vegetation of water bodies in Uzbekistan has not been fully studied. Therefore, during our research, we studied the high-water and waterside plants of Lake Khadichha, Bukhara region. 25 types of hygrophytes, 11 types of hydrophytes, and 17 types of hydatophytes were found for Lake Khadicha. (Figure 1)

Dominant macrophytes in Khadicha Lake are 7 species. Dominant species are notable for serving as the main food base of herbivorous fish. These types include:

1. *Ceratophyllum demersum*
2. *Myriophyllum spicatum* L
3. *Phragmites australis*
4. *Potamogeton perfoliatus*

5. *Potamogeton pectinatus* L.

6. *Typha angustifolia*

7. *Typhalatifolia* L.

Upland and wetland plants differ from other forage plants in their nutritional value and productivity. For example, reed gives 250 t of wet or 100-110 t of dry mass per 1 ha of water during the growing season, and sorghum gives 50-100 t of wet or 10-12 t of dry mass, and sedge gives 60-300 t of wet or 6-25 dry mass up to t, reeds give up to 20-40 wet or 2.5-3.5t dry biomass. Ryaska biomass contains 21.9-30.4% protein, 45% fat, 20-35% starch, 263.4-612.1mg/kg carotene, B1, B2, B6, E, PP and other vitamins, calcium-1, 1-6%, phosphorus-0.48-2.25%, magnesium-0.35-2.11% and other mineral elements are found. [1].

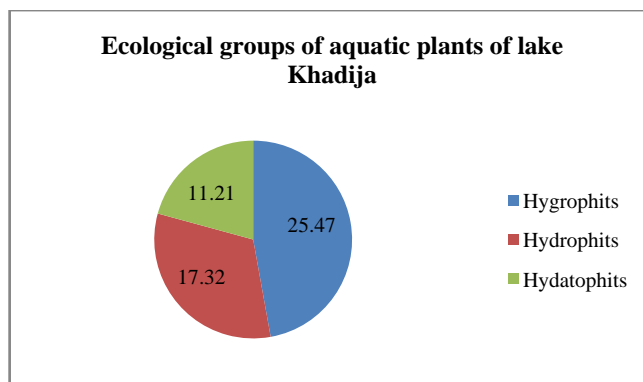


Figure 1. Ecological groups of aquatic plants of Lake Khadija

Table 1. Ecological groups of high water plants of Lake Khadycha, Bukhara region

№	Plant type	Hygrophytes	Hydrophytes	Hydatophytes
	<b>Equisetaceae</b>			
1	<i>Equisetum ramosissimum</i>	+		
	<b>Ceratophyllaceae</b>			
2	<i>Ceratophyllum demersum</i>			+
	<b>Ranunculaceae</b>			
3	<i>Batrachium rionii</i>			+
	<b>Chenopodiaceae</b>			
4	<i>Ampullax tatarica</i>	+		
5	<i>Chenopodium album</i>	+		
6	<i>Halocnemum strobilaceum</i> (Pall.) M. Bieb.	+		
7	<i>Kalidium caspicum</i> (L.) Ung. -Sternb.	+		
	<b>Polygonaceae</b>			
8	<i>Polygonum persicaria</i>			+
9	<i>Polygonum aviculare</i>		+	
	<b>Plumbaginaceae</b>			
10	<i>Limonium meyeri</i>	+		
11	<i>Limonium tolepis</i> *	+		
	<b>Tamaricaceae</b>			
12	<i>Tamarix xucnuda</i>	+		
13	<i>Tamarix ramosissima</i>	+		
	<b>Brassicaceae</b>			
14	<i>Arabidopsis pumila</i> *	+		
	<b>Fabaceae</b>			
15	<i>Alhagipseudalhagi</i>	+		
	<b>Haloragaceae</b>			
16	<i>Myriophyllum verticillatum</i>			+
17	<i>Myriophyllum spicatum</i> L.			+
	<b>Asteraceae</b>			
18	<i>Acrotilon repens</i> *	+		
19	<i>Sichorium intybus</i> *	+		
20	<i>Kareliniaca spia</i>	+		
21	<i>Lactuca tatarica</i>	+		
22	<i>Paramicrorhynchus procumbens</i>	+		
	<b>Apocynaceae</b>			
23	<i>Cynanchum sibiricum</i> *	+		

№	Plant type	Hygrophytes	Hydrophytes	Hydatophytes
	<b>Plantaginaceae</b>			
24	<i>Plantagolanceolata*</i>	+		
	<b>Juncaceae</b>			
25	<i>Juncus articulatus</i>		+	
26	<i>Juncus gerardii</i>		+	
	<b>Butomaceae</b>			
27	<i>Butomus umbellatus</i>			+
	<b>Cyperaceae</b>			
28	<i>Bolboschoenus popovii</i>			+
29	<i>Cyperus fuscus L</i>	+		
30	<i>Cyperus rotundus</i>	+		
31	<i>Scirpus mucronatus</i>		+	
32	<i>Scirpus triquetus</i>		+	
	<b>Poaceae</b>			
33	<i>Cynodon dactylon*</i>	+		
34	<i>Aeluropus litoralis</i>	+		
35	<i>Aeluropus intermedius Regel</i>	+		
36	<i>Calamagrostis dubia</i>	+		
37	<i>Echinochloa crusgalli</i>		+	
38	<i>Phragmites australis</i>		+	
39	<i>Erianthus ravennae</i>	+		
	<b>Potamogetonaceae</b>			
40	<i>Potamogeton crispus</i>			+
41	<i>Potamogeton perfoliatus</i>			+
42	<i>Potamogeton pectinatus L</i>			+
43	<i>Potamogeton filiformis Pers</i>			+
44	<i>Potamogeton lucens L</i>			+
	<b>Lemnaceae</b>			
45	<i>Lemna minor*</i>			+
46	<i>Lemna gibba L</i>			+
47	<i>Lemna brisulca L</i>			+
	<b>Salvinaceae</b>			
48	<i>Azolla caroliniana Willd.</i>			+
	<b>Araceae</b>			
49	<i>Pistia stratiotes L.</i>			+
	<b>Typhaceae</b>			
50	<i>Typha angustifolia</i>		+	
51	<i>Typha laxmannii</i>		+	
52	<i>Typha minima</i>		+	
53	<i>Typha latifolia L</i>		+	
	<b>Total</b>	<b>25</b>	<b>11</b>	<b>17</b>

## 4. Conclusions

In conclusion, we can say that it is of great importance to study biological resources, which are the main elements of the existing natural aquatic ecosystem, and to use them rationally in the field of fisheries, and to increase the groups that will be the objects of necessary fish food.

## REFERENCES

- [1] Esanov H.K., Aslonova K.A. (2021) On aquatic plants in South-Western Kyzylkum reservoirs // Proceedings of the international scientific conference on problems and prospects

- of fisheries development in the conditions of Uzbekistan - Bukhara July 9-10, 2021 p 78-80.
- [2] Esanov, H.K. (2017) Flora Analysis of the Bukhara Oasis. Doctor of Philosophy Biology Dissertation, Tashkent, 179.
- [3] Esanov H.K., Shodmonov F.Q. and Kobilov A.M. (2021) High Plant Species Distributed in and around Dengizkul, Bukhara Region. American Journal of Plant Sciences, 12, p 266-273.
- [4] Kholmuradova T.N., Shomurodova O.D. (2023) Preliminary list of high-water and waterside plants distributed in the Kashkadarya water basin // Bulletin of the Khorezm Ma'mun Academy -5, p-164-166.
- [5] Toshov H.M., (2021) Hydrobiological state of Lake Devkhona and its importance in fisheries. Dissertation for the degree of Doctor of Philosophy (PhD) in the field of biological sciences. Tashkent, pages 3-121.