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Taxonomic Analysis of the Hydrophilic Flora of the Samarkand Region (Uzbekistan)

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Abstract:
Aquatic and coastal aquatic plants are one of the most important components of aquatic ecosystems. Therefore, much attention is currently being paid to the issues of rational use and development of the country's inland water bodies. Together with phytoplankton, this group of plants participates in the trophic cycle of the biocenosis, providing the corresponding products with different stages of the links of the food chain. For example, pond plants serve as food for representatives of different systematic groups of animals, mollusks, crustaceans, insects, fish, birds and mammals. The article presents the results of studies on the study of water and coastal plants of water bodies in the Samarkand region. It was revealed that in the water bodies of various types in the territory of Samarkand region 72 species of aquatic and coastal plants grow, which belong to 51 genera, 32 families and 5 classes. Representatives of the families Potamogetonaceae, Poaceae, Cyperaceae and Polygonaceae make up 43% of the total number of plants of this group growing in the studied region. According to life forms, about 12.5% (9 species) are annuals, and 77.8% (56 species) are perennials. It has been established that 7 species of water mosses grow in the studied reservoirs.

Keywords: Higher Wetland Plants, Cryptophytes, Helophytes, Hydrophytes, Perennial Plants, Rhizomatous Plants, Hydrochores.

INTRODUCTION

When studying the flora, special attention is paid to aquatic and coastal plants; they are one of the most important sources of technical, food, fodder, medicinal, vitamin and other plant resources. Certain types of aquatic plants are widely and variedly used in various industries, agriculture and forestry, fish farming, medicine, and breeding.

Together with phytoplankton, this group of plants participates in the trophic cycle of biocenosis, providing various stages of the food chain links with appropriate products. They serve as food for representatives of different taxonomic groups of animals; with moderate overgrowth of water bodies, they form favorable conditions for the development of the phytophilic fauna of invertebrates (Kirilyuk et al., 2012). Most aquatic plants are biological indicators of eutrophication processes in water basins (Kirichenko, 2015). Thickets of aquatic plants contribute to the strengthening of the soil and the depression of wave movements of water, serve as a barrier that protects the coast from erosion and significantly affects the temperature regime and hydrodynamics of water bodies.

In this regard, at present, the issues of rational use and development of inland water bodies of various countries are being comprehensively studied (Gopal, 2009). New reservoirs of various types of aquatic plants appear every year. There is also an increase in the level of water pollution, an increase in its mineralization, causing changes in the composition and structure of vegetation in water bodies. The need to conduct floristic, taxonomic and ecological studies of different water bodies, as well as to determine the indicators of their productivity (Sherbakov, 2015).

Information about aquatic and coastal plants of the studied region is given in some works. The study area is part of the Zarafshan valley, where the growth of 2588 species of higher plants was established, among which there were aquatic and coastal plants growing in river beds and tugai (Zakirov, 1955; 1961). Some information about the distribution of aquatic plants in this region is given in the works of T. Taubaev (1970).

Data on the floristic composition and life forms of higher aquatic and coastal plants distributed in individual canals, drainage waters and reservoirs of the Taylak and Samarkand districts of the Samarkand region are presented in the work of E.S. Sulaymanov and F.Kh. Zhumaeva (2009). According to the authors, 54 plant species belonging to 19 families and 24 genera are found on the territory of these regions, and it is noted that 41 species are perennial grasses, 13 species are annuals, and most of them have taproots.

Recent studies of the water bodies of the investigated area have shown the presence of 50 species of aquatic and coastal plants belonging to 33 genera and 27 families (Mustafaeva, 2017).

In the study area, 7 species of mosses were found, common in water bodies and habitats of the river. (Zhalov, 2018).

Taspulatov Y.Sh., Khamdamov I.Kh. and Nurniyozov A.A. (2019) studied the main vegetation and dominant species of the region. They first identified about 25 aquatic and coastal plant associations.

In addition, the anatomical structure of the vegetative organs of the rare, valuable medicinal plant *Acorus calamus* L., which is found in water bodies, has been studied (Tashpulatov, 2020).

The analysis of the above works showed that not all water bodies of the Samarkand region were covered in the study of aquatic and coastal plants, therefore, the study of this group of plants in the studied area is relevant. The vegetation of water bodies in this region remains poorly studied, both in terms of the number of species and their distribution, biological characteristics, ecological groups and useful for economic use. Among aquatic plants, there are species that are of multifaceted importance, their study is of great scientific and practical importance, and some of them require the development of special measures for their protection.

MATERIALS AND METHODS

The research was carried out on the territory of the Samarkand region. Samarkand region is located in the upper part of the Zarafshan river valley, occupies an area of 16.77 thousand km2, which is 3.8% of the total territory of the Republic of Uzbekistan. The climate of the region's territory is sharply continental. The Zarafshan river flows through the region, which begins in Tajikistan from the Zarafshan glacier, in the Koksu mountain knot, lying at the junction of the Turkestan and Zarafshan ranges, at an altitude of about 2800 m. The length of the river is more than 870 km.

The study of the flora of the reservoirs of the Samarkand region was carried out by the route method (Sherbakov, 2015) in combination with a detailed survey of the flora of individual areas, many of which were visited repeatedly in different seasons of the year. Collection and study of herbarium materials of higher plants was carried out within various water systems, canals, drainage networks, ponds for growing fish, sais, reservoirs, river beds, etc. was carried out according to the methods of V.M. Katanskaya (1981) and L.I. Lisitsina (2003). Plants that grew in the water or at the bottom of the water basin were selected by hand, while plants growing in the depths of the water were selected

using hooks of different lengths. When determining the species composition, the Flora of Uzbekistan (1941-1963), Keys to plants of Central Asia (1968-1993), Flora of hygrophytes (Rychin, 1948), The modern system of higher plants in Uzbekistan (Pratov, Nabiev, 2007). The Latin names of plants and the surnames of the authors of taxa were refined using the *International Plant Names Index* (IPNI) and *The Plant List*. The current flowering plant system is based on APG IV (2016). The distribution, life forms, ecological characteristics of aquatic plants were studied using the methods of A.P. Belavskaya (1979, 1994), K.A. Kokin (1982), A.G. Lapirova (2003), V.G. Papchenkova (2003), Chambers et.al. (2008). The geographical area of the plant was analyzed according to R.V. Kamelin (1973).

RESULTS

During 2016-2019, we carried out research on the study of floristic, taxonomic, ecological features, geographical area and economic values of higher aquatic and coastal plants of various types of water bodies, common in Taylak, Urgut, Dzhambay, Bulungur, Samarkand, Payaryk, Ishtyhan, Pastdargom Pakhtachi and Kattakurgan districts of Samarkand region. Collected and analyzed more than 500 specimens of herbarium material.

Taxonomic analysis revealed that 72 plant species belonging to 5 classes, 32 families and 51 genera are distributed in the surveyed territories. Their taxonomic composition is distributed as follows:

1. Class: MARCHANTIOPSIDA Cronquist, Takht. et W. Zimm., (Hepaticopsida)

1. Family*:* Ricciaceae Reichenb*.*

1. Genus*: Riccia* Micheli.
1. *R. fluitans L.* Hydrophyte. A cosmopolitan look. It is often found in Kara-Su, Siab, Pastdargom region.

2. Genus: ***Ricciocarpus* Corda.**
2. *R. natans* (L) Corda. Hydrophyte. A cosmopolitan species. It is often found in Kara-Su, Chumushly, Siab, Amankutansai, Ettiuylisai in stagnant reservoirs, rice fields, Samarkand region.

2. Family: Pelliaceae Klinggr.

3. Genus: *Pellia* Raddi.
3. *P. epiphylla* (L.) Lindb. Gigrofit. Nemoral species. It is often found along the banks of streams in Sevarzsai, in Kshtut, in mountainous areas.

2. Class: BRYOPSIDA

3. Family: Fissidentaceae Schimp.

4. Genus: *Fissidens* Hedw.
4. *F. grandifrons* (Brid.) Limpr. Hydrophyte. Ancient Mediterranean species. It is often found on underwater rocks, in streams and springs, on wet rocks irrigated with water, near the springs of the northern part of the Zarafshan ridge, Karatepe mountains: Dushanlisay, Amankutansay, Siab, Zarafshan. Sevarzsay.

4. Family: Amblystegiaceae Kindb.

5. Genus: *Cratoneuron* (Sull.) Spruce
5. *C. filicinum* (Hedw.) Spruce. Gigrofit. Montane species. It is often found on the banks of rivers, reservoirs and canals, the exit of springs; on damp stones and soil of the Karatepe Mountains: Takhtakaracha pass, Zarafshan, Amankutansay.

6. Genus: *Palustriella* Ochyra.
6. *P. commutata* (Hedw.) Ochyra. Hydrophyte. Montane species. It is often found along the banks of rivers, often submerged in water in the Karatepa mountains: Takhtakaracha pass; the southern part of the Nurata ridge; Pangatsay, Amankutansai.

5. Family: Bartramiaceae Schimp.

7. Genus: *Philonotis* Brid.
7. *Ph. seriata* Mitt. Гигрофит. Arctic species. It is often found on wet soil, along the banks of rivers and streams, on lawns, at the outlets of groundwater, near springs or stones and rocks flooded with water in the Karatepe Mountains: Amankutansai, Sevarzsay.

3. Class: EQUISETOPSIDA

6. Family*:* Equisetaceae Michx. ex DC.

8. Genus: *Equisetum* L.
8. *E. arvense* L. Perennial long-rhizome herb. Gygrophyte, cryptophyte. Holarctic species. The height of summer stems is from 0.25-0.40 m. It is often found on wet soils and in almost all water bodies throughout the Samarkand region. Medicinal.

4. Class: POLYPODIOPSIDA

7. Family: Salviniaceae Martinov

9. Genus: *Azolla* Lam.
9. *A. caroliniana* Willd. An annual herb, no root. Hydrophyte. Holarctic species. It is often found in stagnant water bodies, discharges of the Samarkand, Dzhambay, Payaryk regions. Fodder.

5. Class: LILIOPSIDA

8. Family*:* Acoraceae Martinov

10. Genus: *Acorus* L.
10. *A. calamus* L. Perennial horizontal rhizome plant. Cryptophyte, entomophile, epizoochor, helophyte. Asian species. Height from 0.40-0.65 m. It is rarely found in canals, ponds, drainage ditches and waste waters of the Taylak region. Special security required. Medicinal, aromatic plant.

9. Family*:* Araceae Juss.

11. Genus: *Lemna* L.
11. *L. trisulca* L. Perennial. Cryptophyte, hydrophyte, hydrochlor. Holarctic species.
12. *L. minor* L. Perennial. Cryptophyte, hydrophyte, hydrochlor. Holarctic species.
Both types of plants are perennial herbaceous plants that grow by floating on the surface of the water. They are often found in fresh, sometimes slightly saline waters, in polluted quietly flowing or non-flowing (stagnant) reservoirs, ponds of Samarkand, Dzhambay and Taylak districts. Fodder.

10. Family*:* Alismataceae Vent.

12. Genus: *Alisma* L.
13. *A. plantago – aquatica* L. Perennial nodule plant. Cryptophyte, entomophile, helophyte; anemochora and zoochore. Palaearctic species. Height from 0.10-0.60 m. It is rarely found in low-water reservoirs, ditches, on the banks of canals, in waste waters and ponds of the Taylak, Samarkand and Payaryk regions. Medicinal and ornamental plant. special security is required. Medicinal, decorative.

14. *A. lanceolatum* L. Perennial nodule plant. Cryptophyte; entomophile, helophyte; anemochora and zoochore. West Paleacrithic species. Height from 0.30-0.50 m. It is rarely found on the banks of low-water reservoirs, ditches, ponds, canals, in waste ponds of the Taylyak, Samarkand and Payaryk regions. Special security required. Decorative.

13. Genus: *Sagittaria* L.
15. *S. trifolia* L. Perennial short-rhizome perennial herb. Cryptophyte, helophyte, hydrochlor. Iranian species. Height from 0.50-1.0 m. It is rarely found in slow-flowing says, reservoirs, canals, in waste waters, ponds of the Taylyak, Samarkand and Payaryk regions, as well as in fish ponds of the Kattakurgan and Dzhambay regions. Special security required. Fodder, decorative.

11. Family*:* Butomaceae Mirb.

14. Genus: *Butomus* L.
16. *B. umbellatus* L. A perennial plant with short rhizomes that grows immersed in water. Cryptophyte; entomophile, hydrochorus, zoochor, helophyte. Palaearctic species. Height from 0.20-0.40 m. It is rarely found in reservoirs, ponds, in clayey water basins, in waste waters and ponds of the Taylyak region. Special security required. Medicinal, decorative, fodder, honey plant.

12. Family*:* Juncaginaceae Juss.

15. Genus: *Triglochin* Riv. ex L.
17. *T. palustris* L. Perennial short-rhizome plant. Height from 0.15-0.40 m. Gigrofit, cryptophyte. Palaearctic species. It is often found in quiet-flowing aisles, canals, waste waters, fish ponds of Dzhambay, Pastdargom and Samarkand regions. Food for herbivorous fish, water birds and animals. Fodder.

13. Family*:* Potamogetonaceae Dumort

16. Genus: *Potamogeton* L.
18*. P. pectinatus* L. Perennial, horizontal rhizome herb, hydrophyte, cryptophyte. Holarctic species. Height up to 1.0 m. It is often found in Samarkand, Dzhambay, Kattakurgan and Taylyak regions. Fodder.
19. *P. crispus* L. Perennial, horizontal rhizome herb, hydrophyte, cryptophyte. Holarctic species. Height from 0.40-0.90 m. It is often found in Samarkand, Djambay, Kattakurgan and Taylyak regions. Fodder.
20. *P. natans* L. Perennial horizontal rhizome herb, hydrophyte, cryptophyte. Holarctic species. Height from 0.40-0.50 m. It is often found in Dzhambay and Taylak regions. Fodder.
21. *P. perfoliatus* L. Perennial, horizontal rhizome herb, hydrophyte, cryptophyte. Pluriregional species. Height from 2.5-6.0 m. It is often found in Akdarya, Kattakurgan, Ishtykhan and Taylyak districts. Fodder.
All these plant species are anemophilous; hydro-epizoo-endozohores; grow in quiet-flowing, standing water basins, ponds, reservoirs, sometimes slowly flowing places of rivers; common in sandy-clay soils, the height reaches from 0.25-0.60 m. They are food for herbivorous fish, waterfowl and animals.

17. Genus: *Zannichellia* L.
22. *Z. palustris* L. A perennial herb that forms roots in water. Hydrochorus, hydrophyte, cryptophyte. Palaearctic species. The height reaches 0.10 m. It is often found in ponds, on the banks of slowly flowing canals and along the edges of reservoirs and reservoirs of the Akdarya, Karasu and Kattakurgan regions. Fodder.

14. Family*:* Orchidaceae Juss.

18. Genus: *Orchis* L.
23. *O. umbrosa* Kar. Et Kir. Perennial root nodule herbaceous plant. Cryptophyte, hygrophyte. Mountain Central Asian species. Height from 0.25-0.35 m. It occurs singly on the marshy shores of the sais, in the middle parts of the mountains in Amankutan, Kuzichi, Sevarsay, Agalyk and Mekhnatkash. Special security required. Decorative, medicinal.

15. Family*:* Typhaceae Juss.

19. Genus: *Typha* L.
24. *T. laxmannii* Lepech. Perennial long-rhizome herb. Cryptophyte, helophyte. Paleoarctic species. Height up to 1.5 m. It is rare in the Kattakurgan, Dzhambay and Taylyak regions. Technical.
25. *T. minima* Funck. Perennial long-rhizome herb, cryptophyte, helophyte. Paleoarctic species. Height from 0.25-0.40 m. It is rarely found in the tugai of the Zarafshan River, in the Akdarya region. Fodder.
26. *T. angustata* Bory & Chaub. Perennial long-rhizome herb, cryptophyte, helophyte. A cosmopolitan species. Height up to 2.0 m. It is found very often in all water bodies of the Samarkand region. Technical.
It grows in almost all quiet-flowing riverbeds of sais, canals, riverbeds, ponds where fish are grown, on the banks of reservoirs, plunging into water. It is found in reservoirs with a depth of 0.5-1.5 m with clay-sandy soils, very demanding on nutrients, sometimes found in salt waters. These species are food for some herbivorous fish, waterfowl and animals.

20. Genus: *Sparganium* L.
27. *S. microcarpum* Celak. Perennial long-rhizome herb, helophyte, hydrochorus, cryptophyte. Holarctic species. Height up to 0.50 m. It is rarely found in quiet-flowing says, reservoirs, river beds, deep horizontal drainage waters, on the banks of the ponds of the Taylak, Ishtykhan, Pastdargom and Dzhambay regions. Fodder.

17. Family*:* Cyperaceae Juss.

21. Genus: *Cyperus* L.
28. *C. flavidus* Retz. An annual or biennial herb. Terophyte, hygrophyte. Pluregional species. Height from 0.10-0.25 m. It is often found in Taylak and Dzhambay regions. Fodder.
29. *C. sanguinolentus* Vahl. Perennial herb with long rhizomes. Cryptophyte, hygrophyte. Pluregional species. Height from 0.20-0.50 m. It is often found near rivers, irrigation ditches and canals, submerging stems in water, in Samarkand, Taylak and Dzhambay regions. Fodder.
30. *C. serotinus* Rottb. Perennial herbaceous rhizome plant. Cryptophyte, hygrophyte. South Palaearctic species. Height from 0.30-0.90 m. It is often found on swampy places, banks of ditches and canals, rice fields of Dzhambay, Samarkand and Kattakurgan regions. Fodder.
31. *C. difformis* L. An annual herb. Terophyte, hygrophyte. South Palaearctic species. Height from 0.20-0.40 m. It is often found in rice fields, near canals and along the banks of the rivers of the Taylak, Payaryk and Dzhambay regions. Decorative.
32. *C. longus* L. Perennial herb with long rhizomes. Cryptophyte, helophyte. Western Mediterranean species. The height reaches up to 1.0 m. It is found very often near ditches and canals, along wet banks of rivers, near springs, in all reservoirs of the Samarkand region. Fodder, decorative.

22. Genus: ***Schoenoplectus* (Rchb.) Palla**
33. *Sch. lacustris* (L.) Palla. Perennial herb with horizontal rhizomes. Cryptophyte, helophyte, anemophilus, anemochor-hydrochlor. Palaearctic species. Height reaches from 1.0-1.5 m. It is often found in riverbeds, on the banks of reservoirs, fishing ponds, Samarkand region. Fodder. Technical.

23. Genus: *Bolboschoenus* (Asch.) Palla
34. *B. martimus* (L.) Palla. Perennial nodule plant. Cryptophyte, helophyte, anemophilus, hydro-anemochor. Holarctic species. Height up to 0.80 m. It is often found on the banks of reservoirs, canals, ponds, in slightly saline reservoirs of the Samarkand region. Medicinal, fodder, technical, weed.

18. Family*:* Poaceae Barnhart

24. Genus: *Artraxon* Beauv.
35. *A. langsdorffi* Hochst. An annual herb. Terophyte, hygrophyte. Mountain-Central Asian species. Height from 0.20-0.35 m. It is rarely found in the Karasuv, Siab canals, river beds of the Samarkand region. Fodder, decorative.

25. Genus*: Echinochloa* Beauv.
36. *E. crus-galli* (L.) P.Beauv. An annual herb. Terophyte, hygrophyte. Holartic species. Height from 0.40-0.60 m. It is often found in Dzhambai, Ishtykhan and Kattakurgan regions. Fodder, weed.
37. *E. oryziocola* Vasing. An annual herb. Mountain Central Asian species. Terophyte, hygrophyte. Height from 0.30-0.45 m. It is rare in Dzhambai and Kattakurgan regions. Fodder, weed.
The species grow on the banks of ditches and ponds, like weeds in rice fields.

26. Genus: *Polypogon* Desf.
38. *P. demissus* Steud. Perennial herb, forms additional roots at the nodes of creeping stems. Cryptophyte, hygrophyte. Central Asian species. Height from 0.20-0.60 m; It is rarely found on the banks of ditches, canals, river beds and on wet soils of the Dzhambay, Akdarya and Ishtikhan regions. Fodder.

27. Genus: *Calamagrostis* Adans.
39. *C. preudophragmites* Koeler. Perennial long-rhizome herb. Cryptophyte, hygrophyte. Eurasian species. Height from 0.50-0.80 m; It is often found in river beds, ditches, canals and sais of Dzhambay, Ishtykhan, Kattakurgan and Pakhtachi regions. Fodder.

28. Genus: *Cynodon* Rich.
40. *C. dactylon* Pers. Perennial long-rhizome herb. Cryptophyte, hygrophyte. Holarctic species. Height from 0.10-0.30 m. It is found very often in river beds, irrigation ditches, canals and sais, on wet lands, like a weed in fields planted with cultivated plants and rice fields of the Samarkand region. Fodder, medicinal, technical.

29. Genus: *Phragmites* Adans.
41. *Ph. australis* (Cav) Trin. Perennial herb with horizontal rhizomes. Cryptophyte, helophyte. Holarctic species. Height exceeds 2.5 m, mainly reproduces using rhizomes. It is found very often in all reservoirs with a low flow of water in the Samarkand region. Fodder, food, technical, medicinal, decorative.

30. Genus: *Poa* L.
42. *P. trivialis* L. Perennial rhizome herb. Hemicryptophyte, hygrophyte. Palaearctic species. Forms a porous sod. Height from 0.20-0.60 m. It is often found on lawns, marshy water bodies, near irrigation ditches and canals, on the banks of water bodies and reservoirs of the Samarkand region. Fodder.

31. Genus: *Glyceria* R.Br.
43. *G. plicata* Fries. Perennial herb with horizontal rhizomes. Cryptophyte, hygrophyte. Boreal species. Height from 0.20-045 m. It is rarely found near ditches, canals, reservoirs, on the banks of low-water reservoirs and reservoirs, up to 0.50-0.70 m deep and clayey soils at the bottom, everywhere in the Samarkand region. Food for herbivorous fish, water birds and animals. Fodder.

19. Family: Ceratophyllaceae Gray

32. Genus: *Ceratophyllum* L.
44. *C. demersum* L. Perennial rootless plant. Cryptophyte, hydrophyte. Pluregional species. Height from 0.25-0.50 m. It is often found in stagnant reservoirs, fish ponds of Dzhambay, Taylak, Samarkand, Kattakurgan and Ishtykhan regions. Fodder.

6. Class: MAGNOLIOPSIDA

20. Family*:* Ranunculaceae Juss.

33. Genus: *Ranunculus* L.

45. *R. pachycaulon* (Nevski) Luferov. Perennial herb with taproots. Cryptophyte, entomophile, hydrochorus, hydrophyte. Boreal-Eurasian species. Height from 0.60-1.3 m. It is rarely found submerged in water, in slow-flowing canals, reservoirs, ditches, on clay soils 0.5 m deep in Urgut, Samarkand, Dzhambai, Payaryk and Ishtykhan regions. Poisonous.

46. *R. sceleratus* L. Perennial herb with a horizontal rhizome. Cryptophyte, entomophile; hydrochorus and anemochore, helophyte. Holarctic species. Height from 0.60-0.85 m. It is often found in a submerged form and very humid places in Urgut, Samarkand, Dzhambay, Payaryk, Ishtykhan regions. Poisonous.

47. *R. baldshuanicus* Regel & Kom. Perennial herb with a horizontal rhizome. Cryptophyte, entomophile, hydrochorus and anemochore, helophyte. Boreal-Eurasian species. Height from 0.80-1.20 m. It is often found in a submerged form and in very humid places in Urgut, Samarkand and Dzhambay districts. Poisonous.

21. Family*:* Haloragaceae R.Br.

34. Genus: *Myriophyllum* Ponted.ex L.

48. *M spicatum* L. Perennial herb with taproots. Halophyte, Cryptophyte, Hydrophyte and Hydrochlor. Holarctic species. Height from 0.50-1.20 m. It is often found in quiet-flowing waters, rich in calcium, in water basins with clay on the bottom, reservoirs and reservoirs of the Akdarya region, Kattakurgan reservoir. Fodder.

22. Family*:* Urticaceae Juss.

35. Genus: *Urtica* L.

49. *U. dioica* L. Perennial herb with long rhizomes. Hemicryptophyte, hygrophyte. Holarctic species. Height from 1.50-1.80 m. It is often found in river beds, along the banks of canals, irrigation ditches and in wet places, mainly in the mountainous regions of the Samarkand region (Amankutan, Kuzichi, Agalyk). Medicinal plant.

23. Family: Datiscaceae Dumort.

36. Genus*: Datisca* L.

50. *D. cannabina* L. Perennial herb with taproots. Cryptophyte, hygrophyte. Central Asian species. Height from 1.5-2.0 m. It is often found along river banks, in mountainous and foothill areas of the Urgut region (Amankutansay, Mekhnatkash, Sevarsay, Kuzichisay). Medicinal, dyeing, decorative.

24. Family: Salicaceae Mirb.

37. Genus: *Salix* L.

51. *S. wilhelmsiana* M.Bieb. A shrub or small tree. Fanerophyte, hygrophyte. Boreal-Eurasian species. Height from 1.50-2.50 m. It is often found on the banks of the plain and mountain rivers of the Urgut, Samarkand and Dzhambay regions. Technical, decorative, forest reclamation, tanning, honey plant.

25. Family: Onagraceae Juss.

38. Genus*: Epilobium* Dill. ex L.

52. *E. hirsutum* L. Perennial herb with taproots. Cryptophyte, hygrophyte. Mediterranean species. Height from 1.60-2.10 m. It is often found along the banks of rivers, ponds, flat, mountainous and foothill areas of the Urgut, Samarkand, Dzhambay and Kattakurgan regions. Medicinal, decorative, fodder, honey plant.

26. Family*:* Brassicaceae Burnett

39. Genus: *Rorippa* Scop.
53. *R. palustris* (L.) Besser. Perennial herb with horizontal rhizomes. Hemicryptophyte; entomophile, autogam, hydrochorus and epizochore; helophyte. Plurizonal species. Height from 0.30-0.90 m. It is often found in ponds and ditches of Dzhambay, Samarkand and Akdarya regions. Fodder.
54. *R. silvestris* (L.) Besser. Perennial plant with horizontal rhizomes. Hemicryptophyte, entomophilus, autogam, hydrochorus, epizochore and helophyte. Palaearctic species. Height from 0.40-0.90 m. It is often found in small reservoirs and ditches of Dzhambay, Samarkand and Akdarya regions. Fodder.

40. Genus: *Nasturtium* W.T. Aitson
55. *N. officinale* W.T. Aitson. Perennial herb with long rhizomes. cryptophyte, helophyte. Varzob species. Height from 0.10-0.50 m. It is often found in drainage canals, quietly flowing says, canals, riverbeds of Dzhambay, Samarkand, Urgut, Taylyak and Ishtykhan regions. Medicinal plant.

27. Family*:* Polygonaceae Juss.

41. Genus: *Persicaria* Mill.
56. *P. amphibia* (L.) Delarbre. Perennial herb with long rhizomes. Cryptophyte, helophyte. Holarctic species. Height from 0.40-0.80 m. It is often found in Urgut, Samarkand, Dzhambay, Kattakurgan and Ishtykhan regions. Medicinal, tanning.
57. *P. hydropiper* (L.) Delarbre. An annual taproot herb. Terophyte, helophyte. Palaearctic species. Height from 0.60-1.20 m. It is often found in Urgut, Taylyak, Dzhambay and Ishtykhan districts. Medicinal, tanning.
58. *P. lapathifolia* (L.) Delarbre. An annual taproot herb. Terophyte, helophyte. Palaearctic species. Height from 0.30-0.80 m. It is often found in Urgut, Samarkand, Dzhambay, Kattakurgan and Ishtikhan regions. Medicinal, tanning.
All these plant species are entomophiles, hydrochores and anemochorae. They are found along the banks of irrigation ditches and in river beds.

42. Genus: *Rumex* L.
59. *R. syriacus* Meisn. Perennial herb with short rhizomes. Cryptophyte, helophyte. Arctoalp-circumboreal species. Height from 0.50-0.70 m. It is rare in Samarkand, Dzhambay, Kattakurgan, Payaryk and Ishtykhan regions. Medicinal, tanning.
60. *R. conglomeratus* Murray. Perennial herb with short rhizomes; cryptophyte, helophyte. Arctoalp-circumboreal species. Height from 0.70-1.0 m. It is often found in Samarkand, Dzhambay, Kattakurgan, Payaryk and Ishtykhan regions. Medicinal, tanning.
61. *R. crispus* L. Perennial herb with short rhizomes. Cryptophyte, helophyte. Palaearctic species. Height from 0.80-0.90 m. It is often found in Samarkand, Payaryk and Ishtykhan regions. Medicinal, tanning.
All species grow in damp places, along the banks of irrigation ditches and canals, in swampy meadows, sometimes found in reservoirs and sai, in a form submerged in water.

28. Family*:* Hydrocharitaceae Juss.

43. Genus: *Nayas* L.
62. *N. marina* L. An annual herb with a stalk root. Hydrophyte, therophyte; hydro- and zoochore. Holarctic species. Height from 0.50-0.60 m. It is often found in shallow water bodies, fish ponds of Dzhambay, Pastdargom and Samarkand regions, as well as in Akdarya, Karasuk and Kattakurgan reservoirs. Calcephil. It is food for fish, waterfowl and animals. Fodder.

29. Family*:* Apocynaceae Juss.

44. Genus: *Trachomitum* Woodson
63. *T. scabrum* (Russanov) Pobed. Perennial herb with taproots. Cryptophyte, hygrophyte. Mediterranean species. Height from 1.30-1.80 m. It is often found along the valleys, banks of rivers

and ponds of Dzhambay, Akdarya, Ishtykhan, Kattakurgan, Payaryk and Pakhtachi regions. Medicinal, poisonous, technical, decorative, melliferous.

30. Family*:* Plantaginaceae Juss.

45. Genus: *Plantago* L.
64. *P. major* L. Perennial herb with short rhizomes. Hemicryptophyte, hygrophyte. Holarctic-boreal species. Height from 0.15-0.35 m. It occurs very often on wet soils, irrigation ditches, canals, sai and river beds in all reservoirs of the Samarkand region. Medicinal, feed.
65. *P. lanceolata* L. Perennial herb with short rhizomes. Hemicryptophyte, hygrophyte. Holarctic-boreal species. Height from 0.20-0.30 m. It is found very often on wet soils, along irrigation ditches, canals, sais and riverbeds of the Samarkand region. Medicinal, feed.

46. Genus: *Veronica* L.
66. *V. anagallis – aquatica* L. Perennial herb with rhizomes. Hemicryptophyte, helophyte. Palaearctic species. Height from 0.70-1.00 m. It is often found in Urgut, Samarkand, Dzhambay, Kattakurgan and Urgut regions. Medicinal, honey plant.
67. *V. anagalloidis* Guss. Perennial herb with rhizomes. Hemicryptophyte, helophyte. Black Sea-Kazakh species. Height from 0.60-0.80 m. It is rarely found in Samarkand, Dzhambay and Urgut regions.
Both species grow in mountainous and foothill areas, in slowly flowing faults and ponds.

31. Family*:* Lamiaceae Martinov

47. Genus: *Mentha* L.
68. *M. longifoilia* (L.) L. Perennial herb with long and short rhizomes. Hemicryptophyte, hygrophyte. Palaearctic species. Height from 0.30-0.40 m. It occurs very often near ditches, canals, near sais and on wet soils in the Samarkand region. Food, medicinal, essential oil.

48. Genus: *Stachys* L.
69. *S. setifera* C.A. Mey. Perennial herb with short rhizomes. Cryptophyte, hygrophyte. Palaearctic species. Height from 0.30-0.60 m. It is rarely found in quiet-flowing canals, reservoirs, near irrigation canals, canals in Urgut, Samarkand, Dzhambay, Pastdargom and Ishtykhan districts. Medicinal, essential oil, honey plant.

32. Family*:* Asteraceae Bercht. & J. Presl

49. Genus: *Bidens* L.
70. *B. tripartite* L. An annual herb with tap roots. Height from 0.20-1.00 m. It is often found in ditches, sayas, riverbeds and on wet soils of Kattakurgan, Ishtykhan, Dzhambay and Urgut regions. Terophyte, hygrophyte. Medicinal.

33. Family*:* Apiaceae Lyndl.

50. Genus: *Sium* L.
71. *S. sisarum* L. Perennial herb with short rhizomes. Cryptophyte, hygrophyte. Pluregional species. Height from 0.40-0.80 m. It is rarely found on wet soils, in irrigation ditches, canals and along the edges of ponds in Samarkand, Dzhambay, Urgut regions. Medicinal, oilseed.

51. Genus. *Heracleum* L.
72. *H. lehmannianum* Bunge. Perennial herb with taproots. Cryptophyte, hygrophyte. Hissar-Darvaz species. Height from 1.60-2.0 m. It is often found along the banks of mountain and foothill rivers of the Urgut region (Amankutansay, Kuzichisay, Mekhnatkash). Medicinal, essential oil, fodder, honey plant.

DISCUSSION

From the analysis of the collected material it follows that 72 species of aquatic and coastal plants grow on the territory of Samarkand region, which belong to 5 classes, 32 families and 51 genera (Table 1). Of the 72 species identified, 6 species require special protection. These include: *Alisma plantago – aquatica* L., *A. lanceolatum* L., *Sagittaria trifolia* L., *Acorus calamus* L., *Butomus umbellatus* L., *Orchis umbrosa* Kar. et Kir.

Table 1: Taxonomic composition of the hydrophilic flora of the Samarkand region

No.	Division	Class	Family	Genus	Species	%
1	Bryophyta	2	5	7	7	9.72
2	Equisetophyta	1	1	1	1	1.39
3	Polipodiophyta	1	1	1	1	1.39
4	Magnoliophyta **Of them**:	2	25	42	63	87.5
	Liliopsida		11	23	36	50.0
	Magnoliopsida		14	19	27	37.5
	Total:	6	32	51	72	100

The most common are representatives of the families Potamogetonaceae (5 species), Poaceae (9 species), Cyperaceae (7 species), Polygonaceae (6 species), which make up about 56% of all plant species. The remaining 32 species (44%) of plants belong to 29 families, each of which is represented by 1-3 plant species. The leading plant genera are Typha (3), Potamogeton (4), Cyperus (5), Persicaria (3), Rumex (3), Ranunculus (3), these genera include 21 species (29.16%) of plants. The remaining 45 plant genera (70.84%) are represented by 1-2 species.

The results of the analysis showed that the hydrophilic flora of the Samarkand region was formed due to adventive species and has a migratory character. The climate of the Samarkand region is sharply continental, in the mountainous and foothill areas of the region in summer and late autumn, most water bodies dry out. The main flora is preserved in the river and tugai valleys. This is evident from the number of true hydrophytes (17 species, 23.61% of the total flora).

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