

REPRESENTATIVES OF THE FAMILY AMARANTHACEAE JUSS.
DISTRIBUTED IN THE KATTA AND KICHIK URADARIA BASINS

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Kalit soʻzlar: *Katta Oʻradaryo, Kichik Oʻradaryo, Amaranthaceae oilasi, turkum, tur, gerbariy namuna, ekspeditsiyalar.*

Annotatsiya. *Maqolada Katta va Kichik Oʻradaryo havzalarida tarqalgan Amaranthaceae Juss. oilasi vakillarining turkum, tur, gerbariy namunalari tahlillari keltirilgan. Olib borilgan tadqiqotlar avvalgi tadqiqotlarni toʻldirgan holda hudud florasini yanada yaxshiroq oʻrganish va floristik tarkibini shakllantirish va maʼlumotlarni toʻplash imkoniyatini yaxshilaydi.*

Ключевые слова: *Катта Урадарья, Кичик Урадарья, семейство Амарантовые, род, вид, гербарный образец, экспедиции.*

Аннотация. *В статье представлен анализ родов, видов и гербарных образцов представителей семейства Amaranthaceae Juss., распространенных в бассейнах рек Катта и Кичик Урадарьи. Проведенные исследования дополняют предыдущие и расширяют возможности более глубокого изучения флоры региона, формирования ее флористического состава и сбора данных.*



Key words: *Katta Uradaria, Kichik Uradaria, Amaranthaceae family, genus, species, herbarium specimen, expeditions.*

Annotation. *This article presents an analysis of the genera, species, and herbarium specimens of representatives of the Amaranthaceae Juss. family, distributed in the basins of Katta and Kichik O' Radarya. These studies complement previous studies and improve our ability to better study the flora of the region, form its floristic composition, and collect data.*

LOGIN

Digitization of herbarium materials has greatly contributed to expanding and facilitating access to valuable resources in the world's herbarium collections for scientific research. Digitization is the process of converting analog resources such as images into digital formats such as jpeg files. Digital copies are convenient for the distribution and study of floral diversity. More than 390 million herbarium specimens collected and classified by thousands of botanists are stored in more than 3,000 official herbarium collections worldwide [1,2,3,4].

Digitization of the world's flora is crucial for modern scientific research for two main reasons: first, it allows for the safe storage and retrieval of data in the event of destruction or loss of specimens, and second, it speeds up data exchange and increases accessibility [5]. The importance of herbarium collections, their historical and scientific significance, and the role of plant biodiversity in botanical knowledge have been noted [6].

Herbaria play a crucial role in the conservation of rare and endangered plant diversity. This study briefly describes the use of this herbarium and its importance in the conservation of plant biodiversity. The herbarium is a collection of specimens consisting of plant specimens from different ecologies. It provides a description and information about the flora of a particular area. It is a tool for practical research and activities, scientific studies, and teaching in biodiversity conservation.

The National Herbarium of Uzbekistan (NHU), the second largest in Asia (after the Beijing National Herbarium), houses more than 1.5 million herbarium specimens [6].

This study aimed to analyze the representatives of the *Amaranthaceae* family distributed in the flora of the region based on the available herbarium materials collected during our field research and stored in the National Herbarium of Uzbekistan (NHU) during the inventory of the flora of the Katta and Kichik Uradarya basins. In this study, we analyzed this family using genera, species, and herbarium specimens.



RESEARCH METHODOLOGY

Research area

The basins of the Katta Uradarya and Kichik Uradarya Rivers are included in the Kashkadarya botanical-geographical region of the West Hissar district, according to the botanical-geographical zoning scheme of Uzbekistan [7]. According to the analysis of the literature, although many studies have been conducted in the areas near this area, the flora composition of these river basins has not been purposefully studied. The flora composition of the Katta and Kichik Uradarya Rivers was not formed (Figure 1).

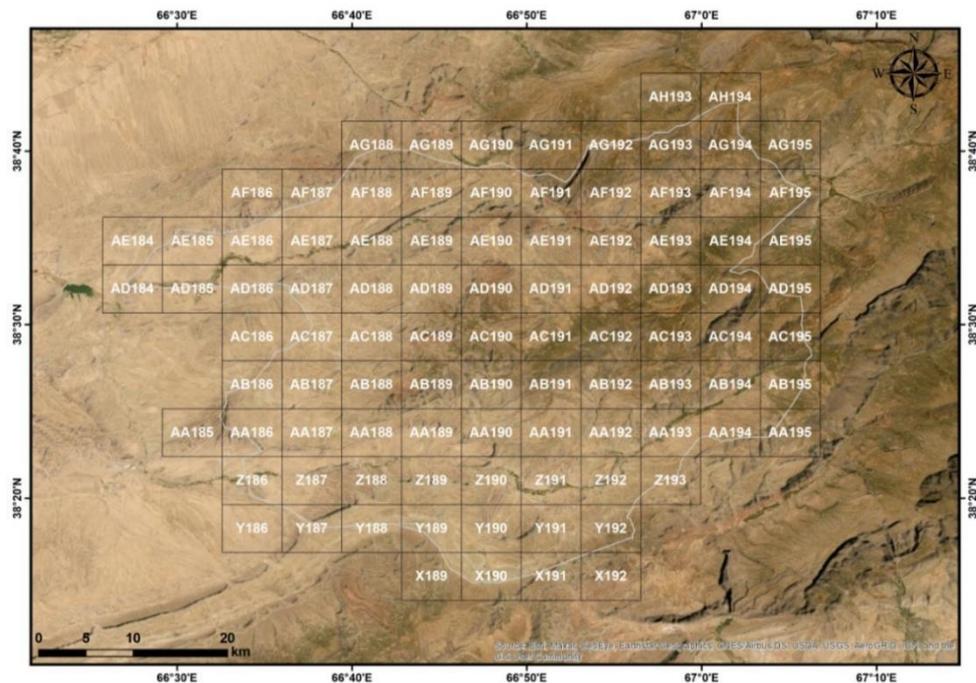


Figure 1. Grid-system map of the flora of the Katta and Kichik Uradarya basins

In the formation of a modern synopsis of flora and the implementation of their analysis, the analysis of materials collected by collectors is of great importance. Samples stored in the National Herbarium of Uzbekistan (NHU) have shown that a number of geobotanical studies have been conducted in the Katta and Kichik Uradarya regions. Considering the above, targeted studies aimed at inventorying flora are being conducted [8].

Sample collections – Expeditions carried out

In forming a modern synopsis of flora and conducting their analysis, the analysis of materials collected by collectors is of great importance. The samples stored in the TASH fund indicate that several geobotanical studies have been conducted in the Katta and Kichik Uradarya regions. From herbarium data, it can be said that studies in the research area cover a period of more than 125 years [8].

RESULTS AND DISCUSSION

Digitization of biological diversity allows the exchange and analysis of various types of information regarding living organisms. The flora of the Katta and Kichik Uradarya basins currently includes 9850 herbarium specimens of 1460 species belonging to 82 families and 478 genera. All plant species identified in this area in the Katta and Kichik Uradarya basins are listed below. The accepted names (according to IPNI) and herbarium numbers of at least one labeled specimen for each plant species are included. The leadership of the polymorphic genera was occupied by species belonging to the genera *Atriplex* (6) and *Amaranthus* (4) (Table 3).

Table 3

**REPRESENTATIVES OF THE FAMILY AMARANTHACEAE JUSS.
DISTRIBUTED IN THE KATTA AND KICHIK ORADARY BASINS**

No	Category	Type	% in total flora	Sample	% in total flora
1	<i>Amaranthus</i> L.	4	0,27	13	0,32
2	<i>Anabasis</i> L.	2	0,13	4	0,04
3	<i>Atriplex</i> L.	6	0,41	30	0,3
4	<i>Blitum</i> L.	1	0,07	1	0,01
5	<i>Camphorosma</i> L.	1	0,07	5	0,05
6	<i>Ceratocarpus</i> L.	1	0,07	2	0,02
7	<i>Chenopodium</i> L.	2	0,13	24	0,24
8	<i>Dysphania</i> R.Br.	1	0,07	2	0,02
9	<i>Girgensohnia</i> Bunge ex Fenzl	1	0,07	4	0,04
10	<i>Halimocnemis</i> C.A.Mey.	2	0,13	13	0,32
11	<i>Halocharis</i> Moq.	2	0,13	2	0,02



1	Halopeplis Bunge ex Ung.- Sternb.	1	0,07	1	0,01
2.					
1	Halothamnus Jaub. & Spach	2	0,13	4	0,04
3.					
1	Haloxylon Bunge ex Fenzl	1	0,07	7	0,07
4.					
1	Hammada Iljin	1	0,07	1	0,01
5.					
1	Kaviria Akhani & Roalson	1	0,07	3	0,03
6.					
1	Krascheninnikovia Guelde nst.	1	0,07	3	0,03
7.					
1	Salicornia L.	1	0,07	2	0,02
8.					
1	Salsola L.	1	0,07	1	0,01
9.					
2	Spinacia L.	1	0,07	35	0,35
0.					
T	0,42/478	3	2,26/	15	1,95/
total:		3	1460	7	9850

This analysis showed that in the analysis of this family by genera, *Atriplex* 6 species were leading for 0.41% of the total flora of the area, 30 specimens (0.3%), *Amaranthus* 4 species (0.27%) were leading with 13 specimens (0.32%), while representatives of the remaining genera recorded lower ranks with specimens belonging to one (0.07%) and two species (0.13%).

Of the above-mentioned genera, *Hammada eriantha* Botsch., belonging to the genus *Hammada*, is listed as an endemic species.

Below is a synopsis of the representatives of this family distributed in the flora of the region by species; the species introduced for the first time are marked with *. Here, the genera are listed in black with the serial number on the front, and the species belonging to these genera are listed in brackets with the number in the herbarium fund. Because there are many herbaria of some species, only one is listed here.

Synopsis of species of the Amaranthaceae family distributed in the Katta and Kichik River basins

1. *Amaranthus* L. – Gultojiroz



1. *Amaranthus retroflexus* L.- Sp. Pl.: 991 (1753). Wild Amaranthus, Amaranthus, and Amaranthus. Annual. Pluriregional. Settlements, fields, gardens. Forage, medicinal (O.Omonov, 1445, 2022, 2023).

2. *A. viridis* L.- Sp. Pl., ed. 2.: 1405 (1763). Green machine. Annual. Central Asia. Weed, forage, medicinal (O.Omonov, 1634, 2022).

3. *A. graecizans* subsp. *thellungianus* (Nevsky) Gusev (= *Amaranthus thellungianus* Nevsky) -Bot. Zhurn. (Moscow and Leningrad) 57:462 (1972). Tellungian Amaranthus. Annual. Turan. On fine soil. Not used. (O.Omonov, 557, 2022, 2023).

4. *A. blitum* L. Sp. Pl. 2: 990. 1753. Shiritsa jmindā: Wild machin, wild crown-cock. Therophyte. Holarctic. Between crops and abandoned land. Food and fodder (Omonov, 4095, 2024).

2. *Dysphania* R.Br. - Shura

5. *Dysphania botrys* (L). Mosyakin & Clemants = (*Chenopodium botrys* L). Ukrayins'k. Bot. Zhurn. 59: 383. 2002. Fragrant salt. Therophyte. Holarctic. Plains and lower mountains, rocky and gravelly near the water. Medicinal, fodder, dye, food (O.Omonov, 1782, 2024).

3. *Blitum* L.- Shura

6. *Blitum virgatum* L.=(*Chenopodium foliosum* (Moench) Aschers.).Spec. Plant. 219. 1753. Serbarg shora. Therophyte. Euro-Siberia-Central Asia. Plain, high mountains, rocky and gravelly limestone. Food, medicinal (S.Kudryashev, n0 82, 1935).

4. *Chenopodium* L. – Shura

7. *Chenopodium album*, sp.. Pl.: 219 (1753). White sedge. Annual. Pluriregional. In fine soil. Weed, fodder, medicinal, edible, dye, essential oil, and honey juice (A.Pyatayeva, 1346, 1955).

8. *Ch. album* var. *album* (*Chenopodium vulgare* Gueldenst.) ex Ledeb.) *Chenopodium album*, sp.. Pl.: 219 (1753). White clover. Annual. Pluriregional. In fine soil. Weed, fodder, medicinal, edible, dyeing, essential oil, honey juice (O. Omonov, 540, 2022, 2023).

5. *Spinacia* L.- Spinach.

9. *Spinacia oleracea* subsp. *turkestanica* (Iljin) Del Guacchio and P. Caputo. -B.A. Keller et al., Weeds USSR 2:133 (1934 publ. 1935). Turkestan spinach. Annual. Turan. In fine soil. Forage, food crops, and weeds. (O.Omonov, 305, 2023, 2024).

6. *Atriplex* L. – Alabuta



10. *Atriplex aucherii* Moq., Chenop. Monogr. Enum. 51 (1840). Oshe salt marsh. Annual. Siberia-Central Asia. Plains, hills, clay slopes, salt marshes, roadsides, and wasteland. Forage. (O.Omonov, 1845, 2024).

11. **A. philippii* R.E.Fr. (*Atriplex prostrata* Phil.) It was first published in Nova Acta Regiae Soc. Sci. Upsal., ser. 4, 1(1): 157 (1905). Pontic-Ancient-Mediterranean. Forage. (O.Omonov, 550, 2023).

12. *A. micrantha* C.A. May. (*Atriplex hastata* var. *heterosperma* (Bunge) Regel ex Iljin-Icon. Pl. 1: 11 (1829). Small-flowered oleananders. Annual. Pontic-Southern Siberia-Ancient Mediterranean. Salt marshes, deserts, banks of ditches and canals. Forage, weeds. (S.Kudryashev, 506, 1935).

13. *A. flabellum* Bunge, and Boiss. Trudy Bot. Inst. Acad. Nauk S.S.S.R, ser. 1, Fl. Sist. Vyssh. Rast. 2: 123. 1934. Flabelliferous oleananders. Therophyte. Iran–Central Asia. Submontane and lower montane, gravel, stony, and gypsum fine soils. Fodder (Yakimova, Moskvina, 101, 1928).

14. *A. moneta* Bunge ex Boiss. - Fl. Orient. 4: 912 (1879). Aster. Annual. Turan. On saline, sandy, gravelly and oleaginous soils. Fodder, food, and medicine (Kudryashev 522, 1935).

15. **A. sagittata* Borkh. This was first published in Rhein. Mag. Erweit. Naturk. 1: 477 (1793). Euro-Siberian-Central Asian. Fodder. (O.Omonov, 1329, 2022).

7. *Krascheninnikovia* Gueldenst. - Teresken

16. *Krascheninnikovia ceratoides* (L.) Gueldenst. (*Ceratoides latens* Reveal & N.H. Holmgren) Fl. Orient. 4: 912. 1879. Teresken. Khamefit. South Paleorctic. Plain, foothill, stony, and sandy areas in gravel and olajins. Tragacanth. Fodder (B. Bochansev and A. Butkov 811, 1936).

8. *Ceratocarpus* L.- Ebelek

17. *Ceratocarpus arenarius* L. (*Ceratocarpus utriculosus* Bluket ex Krylov) Pl.: 969 (1753). Bagweed. Annual. Iran Central Asia. Sandy. In gravelly and sandy loams. Fodder. (Granitov, 531, 1931).

9. *Camphorosma* L.–Kamforosma

18. *Camphorosma monspeliaca* L. Spec. Plant. 969. 1753. Camphorosma of Marseille. Chamaephyte. Ancient Mediterranean. Plain, mid-mountain, saline, sandy. Gravelly, oleaginous and sandy areas Limestone, barren sand, and gravel. Fodder, food, and essential oils (Granitov, Dolgikh 541, 1937).

10. *Halopeplis* Bunge - Xalopeplis

19. *Halopeplis pygmaea* (Pall.) Bunge ex Ung.-Sternb. Vers. Syst. Salicorn.: 105 (1866). Low-growing Halopeplis. Therophyte. Turan. Plains, foothills, saline land, barren land, and saline lake shore. Not used (Linchevsky 833, 1930).

11. *Salicornia* L. – Karashura



20. *Salicornia europaea* L. Fl. Taur. Caucasus. 3: 3. 1819. European glasswort. Therophyte. Central Asia. Plains and foothills, near water with rocks, and small pebbles. Fodder, food (I. Sukervannik, 1, 1961).

12. *Kaviria* Akhani & Roalson - Shurak

21. *Kaviria vvedenskyi* (Iljin & Popov) Akhani=Salsola vvedenskyi Iljin & Popov-Int. J. Pl. Sci. 168: 948 (2007). Vvedensky saltwort. Annual. Central Asia. Oleaginous saline oleaginous soil. Fodder. (Gnezdillo 157, 1935).

13. *Salsola* L.- Shorak

22. *Salsola collina* Pall. Ill. Pl. 34 1803. Salt marsh. Therophyte. Palearctic. Saline soils, wastelands, roadsides, and crops. Medicinal fodder (Li, Niyazov, sn,1959).

14. *Halothamnus* Jaub. et Spach - Galotamnus.

23. *Halothamnus glaucus* (bieb.) Botsch. - News System. Vyssh. True. 18:157 (1981). Gray halotamnus. Shrub. Poleoartic. Gypsum, calcareous. Fodder, Dorivor (S. Kudryashev 337, 1935).

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15. *Girgensohnia* Bunge-Girgensoniya

25. *Girgensohnia oppositiflora* (Pall.) Fenzl-C.F.von Ledebour, Fl. Ross. 3: 835 (1851). *Girgensohnia oppositiflora*. Annual. Iran, Central Asia. Sandy, oleaginous. Fodder. (Pyatayeva 873, 1954).

16. *Anabasis* (Schrenk) Benth. – Анабазис

26. *Anabasis eriopoda* (Schrenk) Paulsen Bot. Tidsskr. 32: 199 (1912). Sertukli anabasis. Chamaephyte. Central Asia. Bare, oleaginous, chalky, gypsum, saline soils. Fodder, alkaloids, and honeydew. (Pyatayeva, 1954).

27. *A. turkestanica* Korovin ex Iljin-VL Komarov (Ed.), Fl. URSS 6: 878 (1936). Turkestan anabasis. Low shrub. Turan. Oleaginous soil, bare soil not used. (Gnezdillo, 161, 1905).

17. *Hammada* Iljin - Gammada

28. *Eriantha Botsch* in all. - Bot. Mater. coat of arms Inst. Bot. Acad. Nauk Uzbeksk. S.S.R. 13: 7 (1952). Barokgulli Gamma. Bush. Pamiroloy. Limestone, in olajins. Not used. (A. Lepeshkin, 1934).

18. *Haloxyton* Bunge - Saksovul

29. *Haloxyton griffithii* (Moq.) Boiss.(*Hammada leptoclada* (Popov ex Iljin) Iljin)–bot. Mater. coat of arms Inst. Bot. Acad. Nauk Uzbeksk. S.S.R. 13: 7. 1952. Gamma rays with a narrow cap. Shrub. Iran. Olajinsli, salted. Alkaloid. (YE. Korotkova, 855, 1947).



19. *Halocharis* Moq.- Galoxaris, quyonjun

30. *Halocharis hispida* (Schrenk) Bunge (*Halimocnemis hispida* Schrenk ex C.A. May)–Mém. Acad. Imp. Sci. Saint Petersburg, Sér. 7, 4(11): 62 (1862). Hare One year. Iran. Sandy, roadsides. Fodder hay. software (Drugiye 232, 1988).

20. *Halimocnemis* C.A. Mey.- Donashor

31. *Halimocnemis commixtus* (Bunge) Akhani (*Gamanthus commixtus* Bunge)–Mém. Acad. Imp. Sci. Saint Petersburg, Sér. 7, 4(11): 76 (1862). Hybrid grain. One year. Garbiytyanshon pomirolay. On loamy soils. Fodder hay. (A. Granitov, 547, 1931).

32. *H. leucophysa* (Botsch.) Akhani (*Gamanthus leucophysus* Botsch) Bot. Mater. coat of arms Bot. Inst. Komarova Acad. Nauk S.S.S.R. 22: 97 (1963). Therophyte. Iran-Central Asia. Foothills, low mountains, and olajins. Fodder (Malsev, 2018).

CONCLUSION

As the main parts of the Katta and Kichik Oradaryo basins are located mainly in the foothills, species belonging to the Amaranthaceae family are distributed over a wider area. The conducted studies complement previous studies and improve the ability to better study the flora of the region and form and collect information on floristic composition.

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