

REPRESENTATIVES OF THE FAMILY *AMARYLLIDACEAE* J.St.-Hil.
DISTRIBUTED IN THE KATTA AND KICHIK URADARYA BASINS

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Kalit soʻzlar: *Katta Oʻradaryo, Kichik Oʻradaryo, Amaryllidaceae J.St.-Hil. oilasi, Allium L. turkum, tur, gerbariy namuna, ekspeditsiya.*

Annotatsiya. *Maqolada Katta va Kichik Oʻradaryo havzalarida tarqalgan Amaryllidaceae J.St.-Hil. oilasi vakillarining turkum, tur, gerbariy namunalari, “Qizil kitob” (2019) ga kiritilgan va endem turlar haqida tahlillar keltirilgan. Unga koʻra tadqiqot hududida bitta turkum (Allium L.) 31 ta turning 141 ta gerbariy namunasi 42 ta indeksda tarqalganligini koʻrishimiz mumkin. Mavjud turlardan Allium majus, A.giganteum, A.botschantzevii “Qizil kitob” (2019) ga kiritilgan boʻlsa, A.botschantzevii va A.brevidentiforme endem turlardir. Olib borilgan tadqiqotlar avvalgi tadqiqotlarni toʻldirgan holda hudud florasini yanada yaxshiroq oʻrganish va floristik tarkibini shakllantirish va maʼlumotlarni toʻplash imkoniyatini yaxshilaydi.*

Ключевые слова: *Катта Урадария, Кичик Урадария, семейство Amaryllidaceae J.St.-Hil., род Allium L., вид, гербарный образец, экспедиция.*

Аннотация. *В статье представлен анализ родов, видов, гербарных образцов семейства Amaryllidaceae J.St.-Hil., распространенных в бассейнах рек Катта и Кичик Урадарья, а также видов, внесенных в Красную книгу*



(2019 г.), и эндемичных видов. По данным анализа, на исследуемой территории в 42 индексах распространены 141 гербарный образец 31 вида одного рода (*Allium L.*). Из имеющихся видов *Allium majus*, *A.giganteum*, *A.botschantzevii* занесены в Красную книгу (2019 г.), а *A.botschantzevii* и *A.brevidentiforme* являются эндемиками. Проведенные исследования дополняют предыдущие и расширяют возможности более глубокого изучения флоры региона, формирования ее флористического состава и сбора данных.

Key words: *Katta O'radaria*, *Kichik O'radaria*, *Amaryllidaceae J.St.-Hil.* family, *Allium L.* genus, species, herbarium specimen, expedition.

Annotation. *This article presents an analysis of the genera, species, and herbarium specimens of Amaryllidaceae J. St. Hil. family, distributed in the Katta and Kichik Uradarya basins, as well as the “Red Book” (2019), and endemic species. We can see that 141 herbarium specimens of 31 species of one genus (Allium L.) were distributed across 42 indices in the study area. Of the existing species, Allium majus, A.giganteum, A.botschantzevii are included in the “Red Book” (2019), whereas A.botschantzevii and A.brevidentiforme are endemic. 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

The importance of herbarium specimens, their historical and scientific significance, and their place in botanical knowledge of plant biodiversity have been noted [1].

Herbaria play a crucial role in the conservation of rare and endangered plant diversity. This study briefly describes the use of herbariums and their importance in biodiversity conservation. A 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 [2].

The aim of this study was to analyze representatives of the Amaryllidaceae family, which are 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 (TASH) during the inventory of the flora of the Katta and Kichik Uradarya basins. In this study, we analyzed only one species of this family, the genus *Allium* L., herbarium specimens, species included in the "Red Book" (2019), and endemic species.

RESEARCH METHODOLOGY

Research area

According to the botanical-geographical zoning scheme of Uzbekistan, the Katta and Kichik Uradarya basins are included in the Kashkadarya botanical-geographical region of the West Hissar district. [2]. According to the literature, although numerous studies have been conducted in the areas near this area, the flora composition of these river basins has not been purposefully studied. The species composition of the flora of the Katta and Kichik Uradarya basins has not been fully established (Fig. 1).

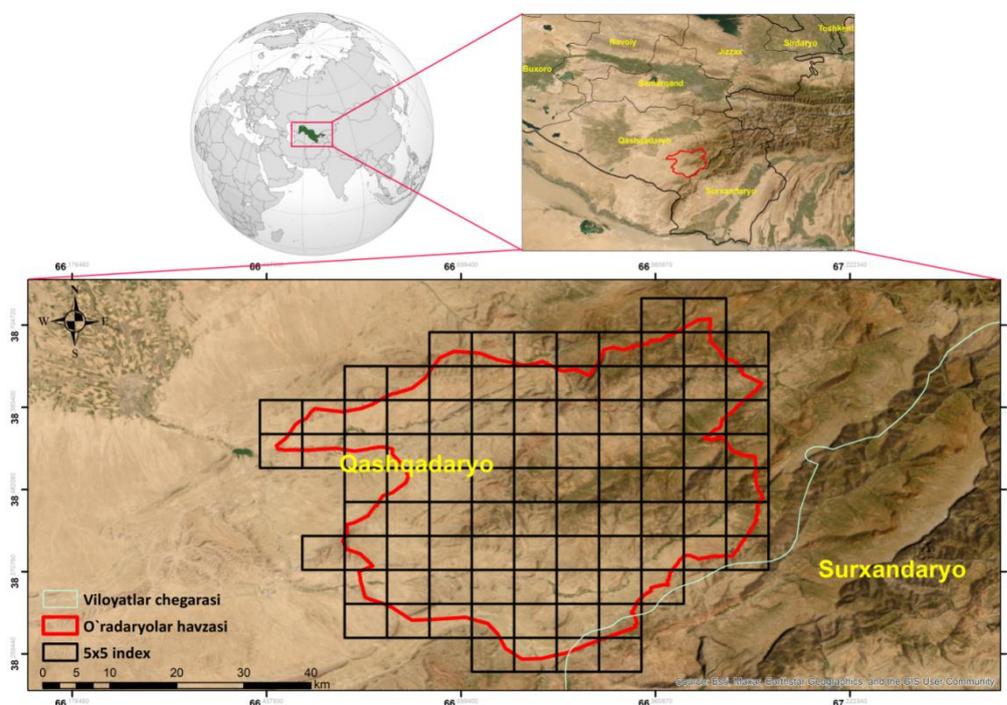


Figure 1. Grid-system map of the flora of the Katta and Kichik Uradarya basins

In the formation of a modern synopsis of the flora in the study area, and in carrying out their analysis, the analysis of materials collected by collectors is of great importance. The samples stored in the National Herbarium of Uzbekistan (NHU) show that a number of botanical studies have been conducted in the Katta and Kichik Uradaryo Basins. Currently, targeted studies are being conducted to inventory the flora [3].

Sample Collections – Expeditions Carried Out

The analysis of herbarium materials collected by several scientists is of great importance in the formation of a modern synopsis of the flora of the region [184]

and the implementation of their analysis. From herbarium data, it can be said that research conducted in the study area covers a period of more than 125 years [3].

RESULTS AND DISCUSSION

Digitization of biodiversity allows the exchange and analysis of various types of data on 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 listed (Table 3).

Table 3

REPRESENTATIVES OF THE FAMILY AMARYLLIDACEAE J.ST.-HIL. DISTRIBUTED IN THE KATTA AND KICHIK ORADARYO BASINS

Type	S ample	By species of the family (%)	In total flora (%)
<i>Allium</i> L. – Onion series			
<i>Allium oreodictyum</i> Vved.	1	0,71	0,0 1
<i>Allium drepanophyllum</i> Vved.	9	6,39	0,0 9
<i>Allium sordidiflorum</i> Vved.	1	0,71	0,0 1
<i>Allium barsczewskii</i> Lipsky	1 2	8,51	0,1 2
<i>Allium jodanthum</i> Vved.	1 1	7,8	0,1 1
<i>Allium stephanophorum</i> Vved.	1	0,71	0,0 1
<i>Allium tythanthum</i> Vved.	1	0,71	0,0 1
<i>Allium atrosanguineum</i> Schrenk	1	0,71	0,0 1
<i>Allium oschaninii</i> B. Fedtsch. ex O. Fedtsch.	3	2,13	0,0 3
<i>Allium griffithianum</i> Boiss.	1 8	12,76	0,1 8



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1.	Allium caesium Schrenk	2	1,42	0,0 2
2.	Allium brevidentiforme Vved.	1	0,71	0,0 1
3.	Allium crystallinum Vved.	3	2,13	0,0 3
4.	Allium filidens Regel	1 2	8,51	0,1 2
5.	Allium longicuspis Regel	1	0,71	0,0 1
6.	Allium gypsaceum Popov & Vved.	1	0,71	0,0 1
7.	Allium verticillatum (Regel) Regel	6	4,25	0,0 6
8.	Allium aroides Popov & Vved.	6	4,25	0,0 6
9.	Allium nevskianum Vved.	1	0,71	0,0 1
0.	Allium alexeianum Regel	7	4,96	0,0 7
1.	Allium bucharicum Regel	1	0,71	0,0 1
2.	Allium suworowii Regel	5	3,55	0,0 5
3.	Allium stipitatum Regel	3	2,13	0,0 3
4.	Allium sarawschanicum Regel	1 3	9,22	0,1 3
5.	Allium macleanii J.G. Baker	1	0,71	0,0 1
6.	Allium majus Vved.	2	1,42	0,0 2
7.	Allium giganteum Regel	1	0,71	0,0 1
8.	Allium protensum Wendelbo	5	3,55	0,0 5
9.	Allium lipskyanum Vved.	3	2,13	0,0 3



0.	<i>Allium botschantzevii</i> Kamelin	4	2,83	0,0 4
1.	<i>Allium longispathum</i> Redouté	1	0,71	0,0 1
2.	<i>Allium</i> sp.	4	2,83	0,0 4
	Total:	1 41	100	1,4 1/9850

As can be seen from this analysis, the leading species in this family, with more than 10 herbarium specimens, were *Allium griffithianum* (18), 12.76%; *A. sarawschanicum* (13), 9.22%; *A. barsczewskii* and *A. filidens* (12), 8.51%; and *A. jodanthum* (11) 7.8%. The following locations were occupied by the species, including one herbarium specimen. We observed that 141 herbarium specimens of 31 species of one genus (*Allium* L.) were distributed across 42 indices in the study area. Among the existing species, *Allium majus*, *A. giganteum*, and *A. botschantzevii* are included in the “Red Book” (2019), whereas *A. botschantzevii* and *A. brevidentiforme* are endemic.

Below is a synopsis of the representatives of this family, which are distributed in the flora of the region by species. 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 herbarium species, only one is listed, and information on the areal types, places of occurrence, and economic importance of these species is provided.

Species synopsis of representatives of the family Amaryllidaceae J.St.-Hil. distributed in the Katta and Kichik Oradary basins

***Allium* L.-Onion**

1. *Allium oreodictyum* var. Byull. Sredne-Aziatsk. Gosud. Univ. 19: 119 1934. Mountain onion. Mountainous Central Asia. Central mountains, rocky and gravelly slopes. Scenic (Adylov, sn, 1957).

2. *Allium drepanophyllum* var. Byull. Sredne-Aziatsk. Gosud. Univ. 19: 120 (1934). Dill onion. Perennial. Western Tyonshon-Pomiroloy. Fine soil. gravelly, oleaginous. Scenic. (M. Nabiev, G. Shermatov, R. Kazakbaev 53, 1972).

3. *Allium sordidiflorum* var. Bot. Mater. Gerb. Bot. Inst. Komarova Acad. Nauk S.S.S.R. 9: 242 1946. Ugly onion. Mountainous Central Asia. Rocky, gravelly slope, oleaginous rock (Abduraimov et al. 2019).

4. *Allium barsczewskii* Lipsky Trudy Imp. S.-Peterburgsk. Bot. Sada XVIII. 114, 1939. Barshevsky onion. Cryptophyte. Iran-Central Asia. Midmountain, rocky, gravelly. Scenic (O.Omonov, 1901, 2024).



5. *Allium jodanthum* ved., Opred. Rast. Sred. Azii 2: 312 (1971). Yellow onion. Perennial. Western-Tiyan-shan-Western-Pomiroloi. Lower and middle mountains, fine soil, gravel. Scenic. (O.Omonov, 21, 2024).

6. *Allium stephanophorum* survived. Not, Syst. Herb. Hort. Bot. Petrop. 5: 94. 1924. Crown onion. Many years. Garbiytyanshon pomiroloy. Fine soil-gravel. Scenic. (Nabiev, Shermatov, R. Kazakbaev, 474, 1972).

7. *Allium tytthanthum* var. Byull. Sredne-Aziatsk. Gosud. Univ. 19: 122 1934. Small-flowered onion. Cryptophyte. Boysun. Middle mountain, fine-grained soil. Scenic (Bochantsev, Butkov, 809, 1936).

8. *Allium atosanguineum* Schrenk. For example, Bull et al.. Sci. Acad. Imp. Sci. Saint Petersburg, 10,355 (1842). Black-red onion. Cryptophyte. Tarbagatay-mountainous Central Asia (Goryanenka, Lepeshkin 226, 1935).

9. *Allium oschaninii* Fedtsch. Progr. Sad. i Ogor. 3:332. 1906. Oshanin onion. Cryptophyte. Kopetdag–mountainous Central Asia. Lower and middle mountains on rocky slopes. Petrophyte. Edible, ornamental (Turginov 2012).

10. *Allium griffithianum* Boiss. (=Allium bahri Regel.) Diagn. Pl. Or. Nov. Ser. 2,4:117. 1859. Griffith's onion. Perennial. Himalayan. Variegated. Scenic. (O.Omonov, sn, 2023).

11. *Allium caesium* chrenk bulls. Phys. Math. Acad. Petrsb. 2: 405. 1844. Cauliflower. Cryptophyte. Siberia-Central Asia. Mountainous and mid-mountainous, soft soil, gravelly. Shiblyak. Scenic (A.Pyataeva, 1075, 1955).

12. *Allium brevididentiforme* var. First published in Opred. Rast. Sred. Azii 2: 315 (1971). Short-toothed onion. Cryptophyte. South-West-Hissar. Endemic species. (Pyataeva, Tsukervanik, 1617, 1955).

13. *Allium crystallinum* var. Bull. Univ. As. Centr. 19: 126. 1834. Stinging onion. Perennial. Pomiroloy. Various. Scenic. (A.Pyataeva, 1212, 1955).

14. *Allium filidens* Regel Trudy Imp. S.-Peterburgsk. Bot. Sada 3(2): 174, 1875. Thread onion. Cryptophyte. Central Asia. Hilly and lower mountains, soft soil, gravelly, stony. Scenic (O.Omonov, 2530, 2024).

15. *Allium longicuspis* Regel, (*Allium sativum* L.) Acta. Horti Petrop. 3, 2 : 45. (1875). Long-stemmed onion. Perennial. Iran-Central Asia. Hilly and lower mountains, soft soil, and gravel. Medicinal, edible, scenic. (M.Nabiev, G.Shermatov, R.Kazakbaev, 63, 1972).

16. *Allium gypsaceum* Popov, and Vved. Not. Syst. Herb. Bot. Petrop. 5: 92. 1924. Gypsum onion. Cryptophyte. Pomiroloy. The lower and middle mountains are oleaginous. Scenic (M. Nabiev et al., 483, 1972).

17. *Allium verticillatum* Regel Acta Horti Petrop. 3, 2: 103. 1875. Mutovka onion. Cryptophyte. Western Tiyonshan komiroloy. Foothills, soft soil, and gravel. Scenic (A. Pyataeva, 1012, 1955).



18. *Allium aroides* Popov & Vved., Bull. Univ. As. Centr. 19: 128. (1934). Aroid onion. Perennial. Southwestern pomiroloy. Pomiroloy. Lower mountains, rocky and fine soil. Petrophyte. Scenic. (Pyataeva, 726, 1954).

19. *Allium nevskianum* Vved. ex Wendelbo. Wend. Bot. Not. 122: 37. 1969. Nevsky onion. Perennial. Pomiroloy. Rocky. Scenic. (A.Pyataeva, 1640, 1955).

20. *Allium alexeianum* Regel, Acta. Hort. Petrop. 3(2): 244. (1875). Alexei onion. Perennial. South-pomiroloy. Middle and upper mountains, rocky and gravelly. Petrophyte. Scenic. (O.Omonov, 2401, 2024).

21. *Allium bucharicum* Regel, Acta. Horti Petrop. 8(3): 660. (1884). Bukhara onion. Perennial. Pomiroloy. Lower and middle mountains, fine soil, and stony gravel. Scenic. Petrophyte. Scenic. (Nabiev et R. Levichev, 198, 1980).

22. *Allium suworowii* Regel Gartenflora 30:365. 1881. Suvorov onion. Cryptophyte. Mountainous Central Asia. Mountainous, middle mountain, fine soil. Medicinal, edible, scenic (O.Omonov, 852, 2024).

23. *Allium stipitatum* Regel. Acta. Horti Petrop. 30: 355. 1881. Stem onion. Cryptophyte. Western Tiyonshan-Western Pomiroloy. Middle mountain, soft soil. Food, ornamental (A.Pyatayeva, 1522, 1955).

24. *Allium sarawschanicum* Regel, Acta. Horti Petrop. 3, 2: 244. (1875). Zarafshon onion. Perennial. Kopetdog-Pomiroloi. Middle mountains, soft soil, and small stones. Ornamental. (O.Omonov, 107, 2024).

25. *Allium macleanii* Baker. Bot. Mag. 109: tab. 707. 1883. Maclaini onion. Cryptophyte. Iran. Archazor. Ornamental. (M.Nabiev, G.Shermatov, R.Kazakbaev, 48, 1972).

26. *Allium majus* Vved., Fl. Uzbek. I. 543.: 462. (1941). Large onion. Perennial. South-Western Hisar. Middle mountain, fine soil. gravelly. Petrophyte. Scenic, rare species. (Pyataeva 706a, 1954).

27. *Allium giganteum* Regel Gartenflora 32:97. 1833. Large onion. Cryptophyte. Iran Mountains, Lower Mountains, Fine Soil, and Small Stones. Food-loving, colorful, scenic, rare species (Bagdanovich, Ryabov, sn, 1928).

28. *Allium protensum* Wendelbo. Bot. Not. 121: 276 (1968). Elongated onion. Perennial. Turan. Sandy, residual mountains, oleaginous, stony, gravelly. Scenic. (Nabiev, Shermatov, Kazakboev, Levichev, 198, 1980).

29. *Allium lipskyanum* Vved. First published in Opred. Rast. Sred. Azii 2: 317 (1971). Lipsky onion. Sandy, residual mountains, oleaginous, stony, gravelly. Scenic. (O.Omonov, 1996, 2023).

30. *Allium botschantzevii* Kamelin. Not. Syst. Pl. Vasc. 13: 42 (1976). Bochansov onion. Mountainous: Central Asia. Low mountains with reddish soil. Scenic rare species (Bochantsev 1967).



31. *Allium longispatum* Redouté. This was first published in Liliac. 6: t. 316 (1811). Cryptophyte. Iran-Mountain-Central Asia. Upper and lower mountains. Scenic. (O.Omonov, 22, 2024).

CONCLUSION

Because the main parts of the Katta and Kichik Uradarya basins are located in the foothills, species belonging to the *Amaryllidaceae* J.St.-Hil. The family members were distributed over a wider area. We can see that 141 herbarium specimens of 31 species of one genus (*Allium L.*) were distributed across 42 indices in the study area. Among the existing species, *Allium majus*, *A. giganteum*, *A. botschantzevii* are included in the “Red Book” (2019), whereas *A. botschantzevii* and *A. brevidentiforme* are endemic. These studies complement previous studies and improve our ability to better study the flora of the region, form its floristic composition, and collect data.

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