# SYNOPSIS OF SOME SPECIES OF THE GENUS PHLOMOIDES MOENCH (LAMIACEAE)

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**Abstract:** This article presents a new study list of Phlomoides Moench series species in the Fergana valley herbarium collections. The purpose of this study is the compilation of a verified checklist of the Phlomoides of Fergana valley in accordance with the current taxonomy and most recent information on species distribution. The checklist contains the following information about each species: type, life form, conservation, geographical distribution and a selection of specimens studied are provided.

**Keywords:** Fergana valley, phlomoides, checklist, type, species

# СИНОПСИС НЕКОТОРЫХ ВИДОВ РОДА PHLOMOIDES MOENCH (LAMIACEAE)

**Аннотация:** В данной статье представлен новый список исследований видов серии Phlomoides Moench в гербарных коллекциях Ферганской долины. Целью данного исследования является составление проверенного контрольного списка Phlomoides Ферганской долины в соответствии с текущей таксономией и самой последней информацией о распространении видов. Контрольный список содержит следующую информацию о каждом виде: тип, жизненная форма, сохранение, географическое распространение и выборка изученных образцов.

**Ключевые слова:** Ферганская долина, phlomoides, конспект, тип, вид.

## INTRODUCTION.

Phlomoides is one of the largest tribe of the genus Phlomoideae, with a distribution range of Central Europe and the Far East of Russia, with China, Southern Europe and Central Asia, the mountainous regions of Iran (Iran and Afghanistan), and the Mediterranean as the main centers of species diversity, possible. In the terrestrial flora 150 to 170 species of this genus, the major centers of diversity of Phlomoides are Central Asia 59 species, including Kyrgyzstan - 36 species; Tajikistan - 27 species; There are 43 species in the flora of Uzbekistan; There are 26 species in the Fergana valley [6, 7, 8].

The main reasons for conducting scientific research on the species of Phlomoides Moench, distributed in the Fergana valley, are as follows: Most species have a narrow endemic range; low level of coverage and encounter in the ecological space; Targeted field research on collection of herbarium samples of species has not been conducted; No effective measures have been taken to preserve species with different levels of endemic status in-situ[4, 5].

## MATERIAL AND METHODS.

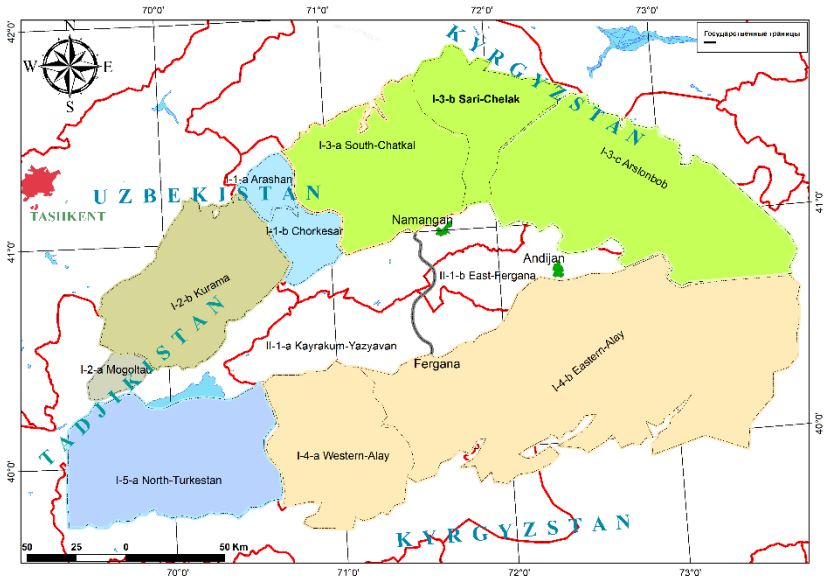


**Figure 1. Phytogeographical division of Fergana valley (Kamelin, 1973).**

**(I Central Asian Mountain Province: I-1 Western Tian-Shan district. (**I-1-a Arashan, I-1-b Chorkesar**), I-2 Mogoltau-Kurama (**I-2-a Mogoltau, I-2-b Kurama**), I-3 Fergana (**I-3-a South-Chatkal, I-3-b Sari-Chelak**,** I-3-c Arslonbob**), I-4 Fergana-Alay (**I-4-a Western-Alay, I-4-b Eastern-Alay), **I-5 Kuhistan (**I-5-a North-Turkestan**), II Turan Province: II-1 Upper Syrdarya** (II-1-a Kayrakum-Yazyavan, II-1-b East-Fergana)).

The nomenclatural part of the checklist includes the accepted names of species according to "Conspectus Florae Asiae Mediae". Our taxonomic review is based on the use of living and herbarium materials from various systematic collections as well as field research. The species was identified using a variety of flora and herbarium samples using large herbariums, namely TASH, Moscow State University MW, Komarov Institute of Botany, LE Institute of Biology of the National Academy of Sciences of Kyrgyzstan and the Institute of Botany. The coordinates of these plant records were converted to ArcGIS 10.0 and the point map layer [1, 2, 3].

**RESULTS AND DISCUSSION.**

**1. Phlomoides adylovii** Lazkov in Novosti Sist. Vyssh. Rast. 36: 32 (2004). **Type.** KYRGYZSTAN: At-Oynok Mts.; ravine of Kurp-Say river, right riverside, among shrubs of Exochorda tianschanica, 14.07.2003. G.Lazkov & N.Kenjebaeva (LE, holotype; isotypes, FRU). **Life form.** Hemicryptophyte (Protohemicryptophytes), polycarpic. **Conservation.** No measures to in-situ protection are currently taken. It is necessary to perform special field surveys for determining the current distribution range and population size of this insufficiently known species risk (Figure 2).

**Distribution in the Fergana valley.** I-3 Fergana district. I-3-b Sari-Chelak region: CHATKAL RIDGE (Ungur-Tepa, northern slope, 16.06.1912, Knorring [LE]; At-Oynak Mts., Bozbu-Too mts., Fergana range, 23.07.2005, Lazkov [FRU]). I-3-c Arslonbob region: FERGANA RIDGE (Kyrgyzstan, Fergan ridge, Baubash-Ata mountain, Kara-Ungur river basin, Sary-Tash river, 13.06.2004, Lazkov [FRU]; Fergana Range: Babash-Ata mts., Sary-Tash River (Kara-Ungur River system), in bushes, 17.06.2004, Lazkov [FRU]) [9, 10].

2. **Phlomoides alaica** (Knorring) Adylov, Kamelin & Machmedov in Opred. Rast. Sred. Azii 9: 107 (1987). **Type.** KYRGYZSTAN: "Turkestania, prov. Fergana, distr. Osch, prope Gulcza [Gulcho]", 27.05.1900 W. Tranzschel (LE, holotype; isotypes LE). **Life form.**

Hemicryptophyte (Protohemicryptophytes), polycarpic. **Conservation:** No special measures are required for protection.

**Distribution in the Fergana valley.** I-3 Fergana district. I-3-b Sari-Chelak region: CHATKAL RIDGE (Kyrgyz SSR. Karavan district Jida-say. The upper reaches of the Kizil-Alma-Say, 14.06.1951, Nabiev 304, 309 [TASH!]). I-3-c Arslonbob region: FERGANA RIDGE (Mountain slopes near Taran-Bazar, 12.06.1911, Knorring et al., [LE]; Eastern Fergana. Jelal-Abad region. River basin Kug-art-su. Summit of Achi-say, 17.06.1927, Korovin 63 [TASH!]; Fergana Range. Tar river basin, vicinity of Terek villege, Boztektir, 12.07.1974, Aydarova et al., [FRU]). I-4 Fergana-Alay district. I-4-a Western-Alay region: ALAY RIDGE (Between Soh and Ohna, 30.06.1871, Fedtschenko [LE]; Alay Range. Sokh, 06.07.1968, Khudaiberdiev [TASH!]; The northern slope of the Alai ridge to the east of the village. Aydarken, 15.07.1981, Pimenov et al., 337 [MW!]). I-4-b Eastern-Alay region: ALAY RIDGE (Fergana, distr. Osch, pr. Gulcza, 27.05.1900, Tranzschel [LE]; Osh and sat down. Gulcha. Kaplan-kul, 05.07.1929, Linchevsky [TASH!]; Alay Range: Taktalyk village, 01.07.2006, Lazkov [FRU]).

3. **Phlomoides brachystegia** (Bunge) Adylov, Kamelin & Machmedov in Opred. Rast. Sred. Azii 9: 103 (1987). **Type.** Not designated. UZBEKISTAN: “Hab.Prope Taschkend (Krause) v.s.sp.” (P). **Life form.** Hemicryptophyte (Protohemicryptophytes), polycarpic. **Conservation.** No special measures are required for protection [11, 12].

**Distribution in the Fergana valley.** I-2 Mogoltau-Kurama district. I-2-b Kurama region: KURAMA RIDGE (Western Tien Shan. River basin Angren. Near the Kamchik pass, 02.08.1954, Nabiyev, Li 531 [TASH!]).

4. **Phlomoides ferganensis** (Popov) Adylov, Kamelin & Machmedov in Opred. Rast. Sred. Azii 9: 104 (1987). **Type.** KYRGYZSTAN: Chatkal Range: Gava river valley, Shu-Kul, juniper forest (Juniperus pseudosabina), 03.07.1928 N. Dzens-Litowskaya 156 (LE, lectotype, with isotypes). **Life form.** Hemicryptophyte (Protohemicryptophytes), polycarpic. **Conservation.** No measures are currently being taken to protect the site. There is a need for field research to assess the species population due to the erratic feeding of livestock [13, 14].

**Distribution in the Fergana valley.** I-3 Fergana district. I-3-a South-Chatkal region: CHATKAL RIDGE (N slope of Chapchyma pass, 24.07.1960, Ubukeeva [FRU]; Kassan-Say forestry, Kochkor-Ata river, middle course, W slope, wormwood-grassland, 26.06.1962, Sudnitsyna, Gorbunova [FRU]; Kurama Range: right side of Kasan-Say river, 5 km from Buzuk village to Chapchyma pass, 09.06.2001, Lazkov [FRU]; Ara-Say river ravine (tributary of Gava-Say), 22 km W of Sumsar village, 2300 m. 01.06.2007, Lazkov [MW]).

5. **Phlomoides ostrowskiana** (Regel) Adylov, Kamelin & Machmedov in Opred. Rast. Sred. Azii 9: 103 (1987). **Type.** UZBEKISTAN: “Am Berge Tschimgan auf der linken Seite des Tschirtschik, 5-7000”, 02.06.1881 A. Regel (LE, lectotype). **Life form.** Hemicryptophyte (Protohemicryptophytes), polycarpic. **Conservation.** No measures are currently being taken to protect the species. Due to the erratic feeding of livestock, the species population (Kurama Ridge: Indagan) is seriously damaged [15, 16].

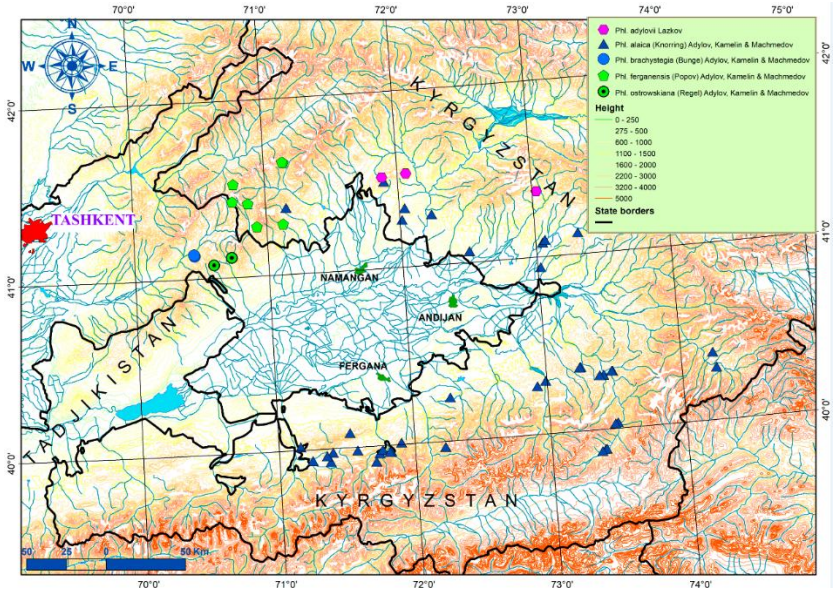


**Figure 2. Distribution of species in the Fergana Valley**

**Distribution in the Fergana valley.** I-1 Western Tian-Shan district. I-1-a Arashan region: KURAMA RIDGE (Pop district, upper part of Kandagan river, 11.08.1949, Bondarenko 1442 [TASH!]; Kandagan river basin, Indagan pass, 11.08.1949, Chevrenidi 1512; Betagalik, 11.08.1949, Chevrenidi 1441 [TASH!]). I-2 Mogoltau-Kurama district. I-2-b Kurama region: KURAMA RIDGE (Asht river basins, Kurgan-Tash river mouth, Nikitin, Soskov [TAD]).

6. **Phlomoides eriocalyx** (Regel) Adylov, Kamelin & Machmedov in Opred. Rast. Sred. Azii 9: 100 (1987). **Type.** UZBEKISTAN: West Tien Shan, on the clay-gypsum-bearing slopes of the hills between the railway station. Sary-Agach and Dzhilga, 23.04.1926, M. Popov (TASH!). **Life form.** Hemicryptophyte (Protohemicryptophytes), polycarpic. **Conservation:** Not protected [17, 18].

**Distribution in the Fergana valley.** I-2 Mogoltau-Kurama district. I-2-a Mogoltau region: MOGOLTAU (Mogoltau. Mirzarabat, 12.05.1939, Kamelin 16074 [TASH!]; Fergana region of Sarytau mountain, 20.06.1920, Popov 555 [TASH!]).

7. **Phlomoides kirghisorum** Adylov, Kamelin & Machmedov in Opred. Rast. Sred. Azii 9: 99 (1987). **Type.** KYRGYZSTAN: Karavan distr., Jede-Say, headstrearn of Parcho-Say, at the top of the slope, 21.05.1952, Popova, Kirsanova & Schpota (FRU, holotype). **Life form.** Hemicryptophyte (Partial rosette plants), polycarpic. **Conservation.** As a result of anthropogenic transformation and fragmentation, species specimens have not been collected for more than 40 years. Special field surveys should be conducted to assess the current population of the species and small reserves should be established in the identified areas [19, 20].

**Distribution in the Fergana valley.** I-3 Fergana district. I-3-b Sari-Chelak region: CHATKAL RIDGE (Fergana Valley. Andijan district Uch-Kurgan steppe. 2.5 km from Kum-kupryuk on the V-C-V wormwood steppe, 29.05.1929, Joffe 243 [TASH!]; Karavan distr., Jede-Say, headstrearn of Parcho-Say, at the top of the slope, 21.05.1952, Popova, Kirsanova & Schpota [FRU]; Kirg. SSR. Caravan region, Jida-say tract. On the slopes of fine earth, 07.05.1952, Nabiev 81 [TASH!]; Fergana Valley, surroundings. Jede-Say with tausagiz, 24.05.1952, Arifkhanova 977 [TASH!]; Bozbu-Too Mts.: N of Uch-Kurgan, Jite-Say, 27.05.1978, Takhtajan et al., [LE]). I-3-c Arslonbob region: FERGANA RIDGE (Southern Kyrgyzstan, state farm Suzak, 760 m Red flowers, 24.04.1945, Viter 19 [TASH!]). I-4 Fergana-Alay district. I-4-b Eastern-Alay region:

ALAY RIDGE (Fergana region Osh district 12 versts south of the city ... roads to Naukat, 05.05.1913, Knorring 8 [TASH!]).

8. **Phlomides michaelis** Adylov, Kamelin & Machmedov in Opred. Rast. Sred. Azii 9: 99 (1987). **Type.** UZBEKISTAN: "Fergana Region, Kokand distr., to the south of Palasan, on conglomerate lowland area, № 146, 15.04.1913 N. Desiatov (LE, lectotype, with isolectotype). **Life form.** Hemicryptophyte (Protohemicryptophytes), polycarpic. **Conservation.** As a result of anthropogenic transformation and fragmentation, specimens of the species have not been collected for more than 50 years. It is recommended to conduct special field surveys to assess the current population of the species and to establish small reserves in the identified areas and to include them in the next edition of the Red Book of Uzbekistan [21, 22].

**Distribution in the Fergana valley.** I-4 Fergana-Alay district. I-4-b Eastern-Alay region: ALAY RIDGE (Fergana Region, Kokand distr., to the south of Palasan, on conglomerate lowland area, 15.04.1913, Desiatov 146 [LE]; near Vladykino railway station, 12.04.1915, Samokish [LE]; Shakhimardan river basin. Along the edges of the Vuadil road, 10.04.1947, Shafeev [TASH!]; Fergana region, a neighborhood of Kuvasay on the northern slope on the high variegated, 18.06.1949, Sakhobiddinov, Lee 1129 [TASH!]; Fergana Valley. Fergana breeding station named after Schroeder virgin pebble land, 20.04.1961, Anonymous? [TASH!]; Uch-Korgon forestry, Markas, forest plantations, valley, 06.05.1963, Ubukeeva, Gorbunova [FRU]; Uch-Korgan forestry, Isfayram department, station 61, young fruit garden, 01.05.1963, Ubukeeva, Gorbunova [FRU]; Sadkak, 22.04.1967, Khalkuziev [TASH!]; The neighborhood of the city of Fergana Satkak, 30.04.1968, Khudaiberdiev [TASH!]).(Figure 3)

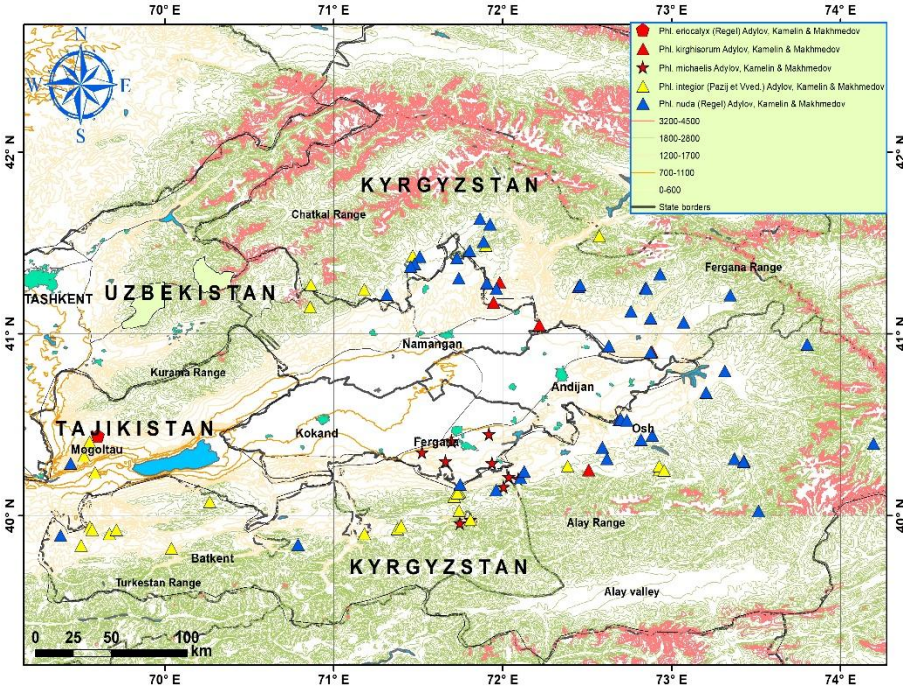


**Figure 3**. Distribution of species in the Fergana Valley

## CONCLUSION

A compiled dichotomous key for species identification and the geographical distribution of all Phlomoides species in Fergana valley has been mapped on a GIS basis. Use of the geographic locations of the collection sites in combination with the GIS software allowed prediction of the distribution and estimation of species richness for genus Phlomoides in Fergana valley. Species distribution maps based on GIS using data for the last century can provide valuable information

about where species (populations) may disappear because of anthropogenic impact and provide an important tool for species conservation.

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