Turczaninowia 28, 2: 202–235 (2025)
https://www.doi.org/10.14258/turczaninowia.28.2.21
http://turczaninowia.asu.ru

ISSN 1560–7259 (print edition)
TURCZANINOWIA
ISSN 1560–7267 (online edition)

УДК 582.739:581.92(575.1)

Diversity and distribution patterns of species of the genus *Oxytropis* (Fabaceae) in Uzbekistan

D. E. Turdiev[1, 4], N. Yu. Beshko[1, 5], I. Yu. Selyutina[2, 3, 6], K. Sh. Tojibaev[1, 7]*

[1] *Institute of Botany of the Academy of Sciences of the Republic of Uzbekistan, Durmon Yuli St., 32, Tashkent, 100125, Uzbekistan*

[2] *Institute of Botany and Phytointroduction, Timiryazeva St., 36D, Almaty, 050040, Kazakhstan*

[3] *Central Siberian Botanical Garden SB RAS, Zolotodolinskaya St., 101, Novosibirsk, 630090, Russian Federation*

[4] *E-mail: doston.turdiyev.91@mail.ru; ORCID ID: https://orcid.org/0000-0001-9910-5475*

[5] *E-mail: natalia_beshko@mail.ru; ORCID ID: https://orcid.org/0000-0001-7803-8525*

[6] *E-mail: selyutina.inessa@mail.ru; ORCID ID: https://orcid.org/0000-0001-5032-2065*

[7] *E-mail: ktojibaev@mail.ru; ORCID ID: https://orcid.org/0000-0003-2846-5777*

* *Corresponding author*

Keywords: biodiversity, checklist, distribution map, elevational distribution, endemic species, flora, grid mapping, locoweed, mountainous Middle Asia, Pamir-Alay, phytogeography, species richness, Western Tian Shan.

Summary. The article presents an actual checklist of *Oxytropis* (Fabaceae) of the flora of Uzbekistan compiled on the basis of authors' field observations, critically revised literature, herbarium collections and occurrence records from online platforms. The synopsis includes 62 species, 51 of them are endemic to Mountain Middle Asian floristic province, including 16 endemics of Western Tian Shan and 17 endemics of Pamir-Alay; eight species are national endemics, six are listed in the Red Data Book of Uzbekistan. Three species (*O. baldshuanica*, *O. ovczinnikovii* and *O. trajectorum*) are reported as new for Uzbekistan, *O. submutica* is a novelty for the flora of Kyrgyzstan. Distribution maps, species richness and collection density map based on all known records are provided; distribution patterns of *Oxytropis* species in Uzbekistan within phytochoria, mountain ranges and vertical zones are analyzed. Hissar Range in Pamir-Alay and Chatkal Range in Western Tian Shan are identified as "hot spots" of *Oxytropis* diversity in Uzbekistan.

Разнообразие и особенности распространения видов рода *Oxytropis* (Fabaceae) в Узбекистане

Д. Э. Турдиев[1], Н. Ю. Бешко[1], И. Ю. Селютина[2, 3], К. Ш. Тожибаев[1]

[1] *Институт ботаники Академии наук Республики Узбекистан, ул. Дурмон йули, д. 32, г. Ташкент, 100125, Узбекистан*

[2] *Институт ботаники и фитоинтродукции, ул. Тимирязева, д. 36Д, г. Алматы, 050040, Республика Казахстан*

[3] *Центральный сибирский ботанический сад СО РАН, ул. Золотодолинская, д. 101, г. Новосибирск, 630090, Россия*

Ключевые слова: биоразнообразие, ботаническая география, вертикальное распространение, видовое богатство, горная Средняя Азия, Западный Тянь-Шань, карта распространения, конспект, остролодочник, Памиро-Алай, сеточное картирование, флора, эндемичные виды.

Поступило в редакцию 31.01.2025
Принято к публикации 07.06.2025

Submitted 31.01.2025
Accepted 07.06.2025

Аннотация. В статье представлен актуальный конспект видов рода *Oxytropis* (Fabaceae) флоры Узбекистана, составленный на основе полевых наблюдений авторов, критической ревизии литературы, гербарных коллекций и данных о находках с онлайн-платформ. Список включает 62 вида, 51 из которых являются эндемиками Горносреднеазиатской флористической провинции, в том числе 16 эндемиков Западного Тянь-Шаня и 17 эндемиков Памиро-Алая. Восемь видов являются национальными эндемиками, шесть включены в Красную книгу Узбекистана. Три вида (*O. baldshuanica, O. ovczinnikovii* и *O. trajectorum*) впервые приводятся для флоры Узбекистана, *O. submutica* является новым видом для флоры Кыргызстана. Представлены карты распространения, карты видового богатства и плотности гербарных сборов, основанные на всех известных находках; проанализированы закономерности распространения видов *Oxytropis* в Узбекистане в разрезе ботанико-географических районов, горных хребтов и высотных поясов. Гиссарский хребет в Памиро-Алае и Чаткальский хребет в Западном Тянь-Шане являются центрами разнообразия видов *Oxytropis* в Узбекистане.

Introduction

The largest arid region in the temperate zone of the Northern Hemisphere, Middle Asia is a home to the unique plant diversity containing 9643 species with 3409 endemics, over 3/4 of which occur in the mountains (Ma et al., 2024). Mountains of Middle Asia are included in the Global 200, the list of priority terrestrial, freshwater and marine ecoregions identified as crucial for global biodiversity conservation. This region also is one of 36 global biodiversity hotspots, the most biologically rich and threatened terrestrial ecoregions of the World defined as areas that contain at least 1500 endemic plant species and have lost at least 70 % of its primary native vegetation (Mittermeier et al., 2004; Marchese, 2014). At the same time, Middle Asia and Uzbekistan in particular, remains among global darkspots of vascular plant diversity, i. e. regions with significant gaps in the knowledge of plant species composition and spatial distribution (Ondo et al., 2024).

The Republic of Uzbekistan has a rich and still insufficiently documented flora, which counts 4222 to 4344 species of vascular plants, according to the recently published estimations (Sennikov et al., 2016; Ma et al., 2024). In 2016, the Institute of Botany of the Academy of Sciences of Uzbekistan launched the international project 'Flora of Uzbekistan' aimed at critical taxonomic inventory of the national flora (Sennikov et al., 2016). To date, treatments of 20 families with 184 genera and 820 species (18.9 % of flora) have been published (Sennikov, 2016, 2017, 2019, 2022, 2023a, b). The revision of the families Amaranthaceae, Brassicaceae, Lamiaceae and Fabaceae, including the genus *Oxytropis* DC., is in progress.

Since the first synopsis of 34 species of *Oxytropis* of the flora of Uzbekistan has been released (Gontscharow, 1955), 12 new species have been described and a number of new findings documented, based on which the number of locoweeds recorded in Uzbekistan has expanded significantly and exceeded 60 species (Tojibaev et al., 2014a, b; Turdiev et al., 2023). The new national checklist of the genus *Oxytropis* has not been published to date, although some data on the composition and distribution of species were presented in a series of regional floristic cadastres (Tojibaev et al., 2018, 2019a, b, 2021; Beshko et al., 2024). Thus, 21 species of *Oxytropis* were reported for Jizzakh Region of Uzbekistan (Tojibaev et al., 2021), 20 species – for Kashkadarya Region (Tojibaev et al., 2019a), only 3 species – for Navoi Region (Tojibaev et al., 2019b), 13 – for Samarkand Region (Tojibaev et al., 2018), and 34 – for Tashkent Region (Beshko et al., 2024).

For comparison, 154 species are reported in "Check-list of the flora of Asian Russia" (2012), 133 species occur in China (Zhu et al., 2010), 97 in Mongolia (Baasanmunkh et al., 2022), 119 species are reported for Kazakhstan (Abdulina, 1999), 67 species grow in Kyrgyzstan (Lazkov, Sultanova, 2014), 58 in Tajikistan (Abdusalyamova, 1978; Nowak, Nobis, 2020; Nowak et al., 2020), and 39 species are known for Iran (Maassoumi, 2013, 2018).

Oxytropis is one of the largest and taxonomically complicated genera of the cosmopolitan family Fabaceae, as well as one of the leading genera in the flora of Middle Asia and Uzbekistan. The genus *Oxytropis* belongs to the subtribe *Astragalinae* of the tribe *Galegaeae* within the subfamily *Papilionoideae*, and it is closely related to the mega genus *Astragalus* L., the most species-rich genus of flowering plants (Yakovlev et al., 1996; Stevens, 2024). According to different sources, the genus *Oxytropis* includes 300–310 to more than 600 species (Malyshev, 2008; Zhu et al., 2010; POWO, 2024; Stevens, 2024). Although numerous works have been published on this genus (Malyshev, 2006, 2008; Karaman Erkul,

Aytaç, 2013; Shavvon et al., 2017; Sandanov et al., 2020, 2022; Kholina et al., 2021; Knyazev, 2023), many challenging questions remain in phylogeny, taxonomy and classification of *Oxytropis* due to its huge range, complex biogeographical history, rather low genetic differentiation among species, interspecific hybridization and the lack of convenient diagnostic morphological characters. *Oxytropis* was supposedly originated about 5.6 million years ago at the Miocene-Pliocene boundary in the mountains of South Siberia with subsequent rapid radiation associated with the processes of orogeny and climate changes (Polozhij, 2003; Shavvon et al., 2017). Its native range covers subarctic and temperate zone of the Northern Hemisphere, with the hotspots of species diversity and endemism in the mountains of North and Middle Asia (Malyshev, 2006, 2008; Shavvon et al., 2017; Sandanov et al., 2020, 2022).

In the flora of Middle Asia, the genus *Oxytropis* with 194 species, of which 118 are endemic, ranks fourth after *Astragalus* (647 species), *Allium* (286), and *Cousinia* (248) (Khassanov, 2015; Ma et al., 2024). Representatives of this genus are perennial herbs or cushion-like subshrubs, which occur mainly in montane and alpine habitats, some of them (*Oxytropis humifusa* Kar. et Kir., *O. leucocyanea* Bunge, *O. savellanica* Bunge, etc.) form specific patchy alpine swards and subnival cryopetrophytic communities. The data on distribution, ecology and population biology of *Oxytropis* in Middle Asia, especially rare and endemic species that are highly vulnerable due to their restricted range, habitat and populations, are still insufficient (Turdiev et al., 2023). Detailed researches are in demand because the problem of biodiversity loss and degradation of ecosystems of Middle Asia due to human impact and climate change is crucial.

Currently, large datasets of georeferenced occurrence records are widely applied for species distribution modelling and forecasting the climate change on biodiversity, assessment of threatened species and their critical habitats, identification of centers of endemism and priority areas for protection (Araújo et al., 2019). Maassoumi and Ashouri (2022) compiled a dataset of 20000 distribution records for 2748 species of *Astragalus* of the Old-World, Sandanov et al. (2021, 2022) created a dataset of 5172 records for 143 species and 15 subspecies of the genus *Oxytropis* of Asian Russia. A similar database for Middle Asian *Oxytropis* is also necessary and important both for further taxonomical revisions, biodiversity conservation and assessment of species status in accordance with global standards of the IUCN Red List (2012, 2025).

The present study is a part of critical revision of the Fabaceae family for the new edition of "Flora of Uzbekistan", focused on the analysis of species diversity and distribution patterns of representatives of the genus *Oxytropis* in Uzbekistan within phytochoria, mountain ranges and altitudinal zones.

Material and methods

Study area

Uzbekistan is landlocked country with a total area of 447400 km^2 and a population of about 37 million people situated in the center of the Eurasia between latitudes 37°11'N and 45°36'N, and longitudes 56°E and 73°10'E. Topographically, Uzbekistan is comprised of two uneven parts, plains (about 80 % of area) and mountains surrounded by foothills (about 20 %). The natural boundary between plain and mountainous part of the country runs approximately at 400–500 m a. s. l. There are following four altitudinal zones in Uzbekistan: arid plain or desert zone (usually called "chul" in the local literature) with the elevations up to 400–500 m a. s. l., foothills or so-called "adyr" (from 400–500 to 1500 m a. s. l.), montane zone named "tau" in Uzbek (from 1500 up to the tree line that lies approximately at 2700–2800 m a. s. l.) and highlands or so-called "yailau" (above 2700–2800 m a. s. l.) (Zakirov, 1955; Zakirov K. Z., Zakirov P. K., 1971; Tojibaev et al., 2017). Montane zone is often divided into two levels, lower and middle mountain belt, distinguished by the predomination of xerophytic shrublands (so-called "shiblyak") in the lower mountain belt, and juniper forests in the middle mountain belt. The zone of highlands also can be divided into subalpine and alpine belts characterized by the prevailing of tall-herb communities and juniper elfin wood in subalpine belt, and cryophytic bunchgrass steppes, pulvinates and low herb swards in the alpine belt (Zakirov, 1955; Zakirov K. Z., Zakirov P. K., 1971; Tojibaev et al., 2017).

According to the Köppen-Geiger climate classification (Kottek et al., 2006), the major part of plains of Uzbekistan lies within the zones of cold desert (BWk) and cold semi-arid climate (BSk), while the southernmost areas belong to the zone of hot desert climate (BWh). The climate of foothills and mountains is hot-summer Mediterranean (Csa),

Mediterranean-influenced hot-summer humid continental (Dsa) and Mediterranean-influenced warm-summer humid continental (Dsb). The climate of highlands is Mediterranean-influenced subarctic (Dsc) and alpine (ETH).

The climatic conditions, soils and vegetation of Uzbekistan are described in details in literature (Zakirov, 1955; Rastitelnyy pokrov…, 1971–1984; Tojibaev et al., 2017).

In terms of biogeography, Uzbekistan is located within the Mountain Middle Asian and Turan (Aralo-Caspian) floristic provinces of Iran-Turanian region of Tethyan (Ancient Mediterranean) subkingdom of the Holarctic Kingdom. The mountainous part of the country is divided into 8 phytogeographical districts and 23 regions, and the plain part is divided into 8 districts and 15 regions (Tojibaev et al., 2016, 2017) (Fig. 1).

In Uzbekistan, representatives of the genus *Oxytropis* are distributed almost exclusively in mountains and highlands, except for two species that occur along river valleys in piedmont plains and completely absent in deserts. Thus, our study area includes all mountain ranges of Uzbekistan with their foothills (Fig. 2).

The mountain ranges situated in the eastern part of Uzbekistan (Karzhantau, Ugam, Maydantal, Pskem, Chatkal and Kurama) belong to the Western Tian Shan. The highest peak in the Uzbek part of the Western Tian Shan (4395 m a. s. l.) is located at the junction of the Pskem Range and the Talas Alatau on the border with Kyrgyzstan. The ranges situated in the central and southern part of the country (Alay, Turkestan, Malguzar, Nuratau, Aktau, Zeravshan, Hissar, Kugitang, Babatag and several peripheral low mountains) are a part of Pamir-Alay mountain system, separated from Western Tian Shan by the Fergana Valley. The highest point in the Uzbek part of Pamir-Alay and Uzbekistan (4668 m a. s. l.) is located on the Hissar Range on the border with Tajikistan.

Methods

The field studies focused on the representatives of the genus *Oxytropis* of the flora of Uzbekistan were carried out in 2020–2024 in the mountainous part of the country. All collected specimens were identified, scanned and deposited in the National Herbarium of Uzbekistan (TASH). Photographs of *Oxytropis* species taken by authors during the field surveys were uploaded to the online citizen-science platforms "Plantarium. Plants and lichens of Russia and neighboring countries: open online galleries and plant identification guide" (Plantarium. *URL:* http://www.plantarium.ru) and "iNaturalist" (iNaturalist contributors, 2025).

The checklist of 62 species of *Oxytropis* of the flora of Uzbekistan represented in this paper was compiled on the basis of our field observations, critically revised literature (Gontscharow, 1955; Bajtenov, 1961; Abdusalyamova, 1978; Filimonova, 1983; Abdulina, 1999; Lazkov, Sultanova, 2014; Khassanov, 2015; Nowak et al., 2020; Nowak, Nobis, 2020; Sennikov, Tojibaev, 2021; Tojibaev, 2010; Tojibaev et al., 2018, 2019a, b, 2020, 2021; Turakulov et al., 2021; Beshko et al., 2024), herbarium collections from TASH, AA, LE, MW, Samarkand State University, Chatkal and Nuratau state nature reserves, and occurrence records from "Plantarium" (*URL:* http://www.plantarium.ru), "Global Biodiversity Information Facility" (GBIF. URL: https://www.gbif.org/) and "iNaturalist" (iNaturalist contributors, 2025).

The species are arranged in the checklist in the alphabetical order of accepted names. The nomenclature of species follows "Plants of the World Online" (POWO, URL: https://powo.science.kew.org/). The following information is provided for each species: the accepted name, the reference to protologue, habitat, distribution (general geographical range and distribution in Uzbekistan within mountain ranges, administrative and phytogeographical regions), conservation status (for nationally red-listed species), and distribution map based on known occurrence records from studied herbaria, "Plantarium" and "iNaturalist". The phytogeographical regions of Uzbekistan are given according to the scheme of phytogeographical division developed by Tojibaev et al. (2016, 2017) and used in the new edition of the "Flora of Uzbekistan" (Sennikov, 2016, 2017, 2019, 2022, 2023a, b).

The conservation status of the species is given according to the Red Data Book of Uzbekistan (2019). UzbRDB is the abbreviation for the Red Data Book of Uzbekistan in the checklist, and national categories of threatened plants are follows: 0 (probably extinct species) – corresponds to EX or EW categories of the IUCN Red List (2012, 2025), 1 (endangered, disappearing species) – meets CR or EN categories of IUCN, 2 (rare species) – meets VU category of IUCN, and 3 (vulnerable, declining species) – corresponds to NT category of IUCN.

A dataset of 2236 occurrence records of *Oxytropis* species has been compiled on the basis of our gatherings and georeferenced herbarium specimens collected from the territory of Uzbekistan since 1900 and stored in TASH, the largest collection of Middle Asian flora worldwide. The dataset is freely available at the Global Biodiversity Information Facility, GBIF (Turdiev et al., 2024). Additional occurrence records were obtained during the revision of *Oxytropis* specimens in AA, LE, MW and local herbarium collections without acronyms (the herbarium of Samarkand State University and herbaria of the Chatkal and Nuratau state nature reserves), as well as critically examined observations from "Plantarium" and "iNaturalist" platforms. After removing duplicates, a total of 2313 occurrence records of *Oxytropis* species were gathered and mapped. The coordinates of the collection locations of historical specimens were identified using Google Earth.

Distribution maps were created with the ArcGIS software (version 10.6.1). To highlight *Oxytropis* diversity hotspots, a species richness map was drawn using 10 × 10 km grid cells. The territory of Uzbekistan was divided into 4753 grid cells. The species richness (SR) is one of the most important biodiversity measures that can be calculated easily as the number of species recorded per a grid cell, and collection density (CD) was calculated as the number of occurrence records per a grid cell (Maassoumi, Ashouri, 2022; Sandanov et al., 2022).

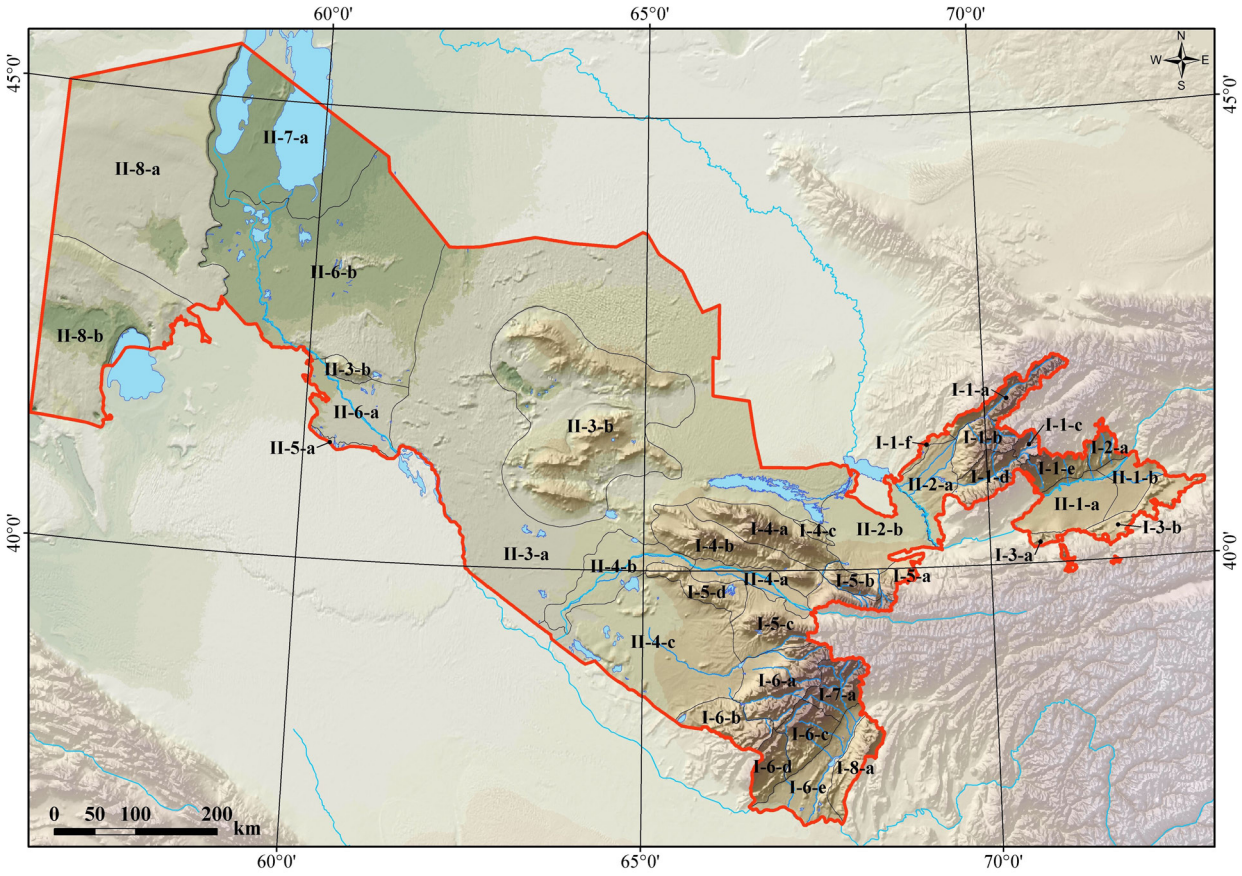

Fig. 1. The map of phytogeographical division of Uzbekistan (according to Tojibaev et al., 2016, 2017).
Legend: I Middle Asian Mountain Province: I-1 Western Tien Shan (I-1-a Ugam-Pskem, I-1-b Western Chatkal (Chimgan), I-1-c Arashan, I-1-d Kurama (Akhangaran), I-1-e Chorkesar, I-1-f Tashkent), I-2 Fergana (I-2-a South Chatkal), I-3 Fergana-Alay (I-3-a Western Alay, I-3-b Eastern Alay), I-4 Nuratau (I-4-a Nuratau, I-4-b Aktau, I-4-c Nuratau Relic Mountains), I-5 Kuhistan (I-5-a North Turkestan, I-5-b Malguzar, I-5-c Urgut, I-5-d Ziadin-Zirabulak), I-6 Western Hissar (I-6-a Kashkadarya, I-6-b Tarkapchigay, I-6-c Baysun, I-6-d Kugitang, I-6-e Surkhan-Sherabad), I-7 Hissar-Darvaz (I-7-a Sangardak-Tupalang), I-8 Panj (I-8-a Babatag).
II Turan Province: II-1 Central Fergana (II-1-a Kayrakum-Yazyavan, II-1-b East Fergana), II-2 Middle-Syrdarya (II-2-a Chinaz, II-2-b Mirzachul), II-3 Kyzylkum (II-3-a Kyzylkum, II-3-b Kyzylkum Relic Mountains), II-4 Bukhara (II-4-a Middle Zeravshan, II-4-b Lower Zeravshan, II-4-c Karshi-Karnabchul), II-5 Karakum (II-5-a North-East Karakum), II-6 South Aral (II-6-a Khorezm, II-6-b Amudarya Delta), II-7 Aral (II-7-a Aral Sea Bottom), II-8 Ustyurt (II-8-a North Ustyurt, II-8-b South Ustyurt).

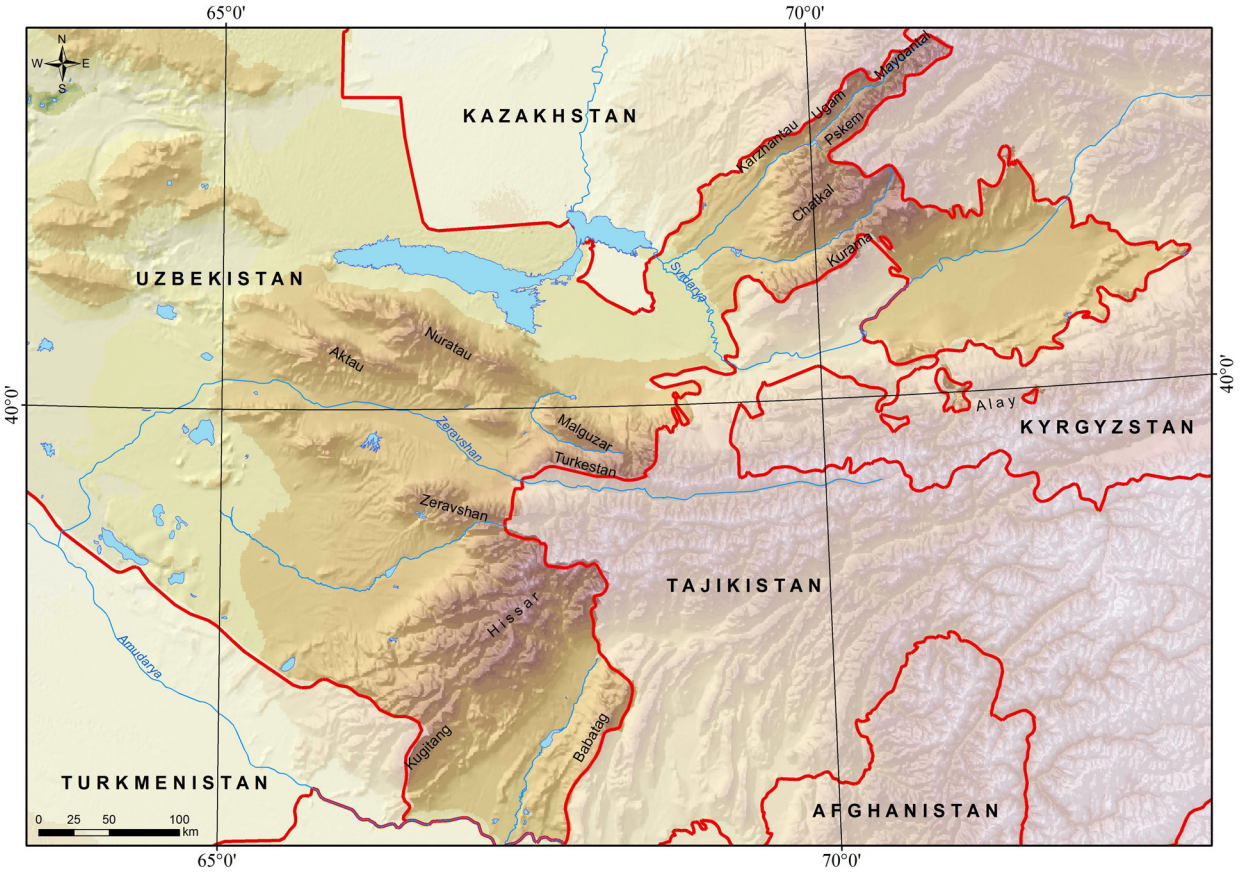

Fig. 2. Orography of the study area.

We analyzed spatial distribution patterns of *Oxytropis* species within the phytogeographical regions of Uzbekistan (Tojibaev et al., 2016, 2017) and major mountain ranges. The cluster analysis of *Oxytropis* species composition was performed using R software. We also analyzed elevational distribution of locoweeds in Western Tian Shan, Pamir-Alay, and major mountain ranges along a 100-m elevational gradient and vertical belts. Above mentioned four vertical zones are designated on the diagrams as following: I – plain, II – foothills, III – montane zone, IV – highlands.

Results and discussion

An actual checklist of the genus *Oxytropis* of the flora of Uzbekistan represented below includes 62 species confirmed by herbarium specimens, our field observations and verified occurrence records from "Plantarium", GBIF and "iNaturalist". The majority of them (51 species, 82.3 %) are endemics to Mountain Middle Asian floristic province, including 16 species endemic to Western Tian Shan and 17 species endemic to Pamir-Alay. Among 11 species with geographic range extending beyond the mountainous Middle Asia, 9 are endemic to Irano-Turanian floristic region (Takhtajan, 1986), and two species are widely spread in Eurasia. Eight species are national endemics, and six species are listed in the Red Data Book of Uzbekistan (including three national endemics). Three species (*O. baldshuanica, O. ovczinnikovii* and *O. trajectorum*) are reported as new records for the flora of Uzbekistan, and one species (*O. submutica*) is a novelty for Kyrgyzstan.

Checklist of the genus *Oxytropis* of Uzbekistan

1. *Oxytropis albovillosa* B. Fedtsch., 1905, Trudy Imp. S.-Peterburgsk. Bot. Sada 24: 182.

Habitat: stony, gravelly and fine earth slopes, alpine meadows, in montane zone and highlands (1800–3300 m a. s. l.).

Distribution area: Western Tian Shan (Kazakhstan, Kyrgyzstan, Uzbekistan).

Distribution in Uzbekistan: Chatkal, Maydantal, Pskem and Ugam Ranges (Tashkent and Namangan Regions). I-1 Western Tian Shan (I-1-a Ugam-

Pskem, I-1-b Western Chatkal, I-1-c Arashan) (Fig. 6).

Note: In accordance with "Conspectus Florae Asiae Mediae" (Filimonova, 1983), *O. albovillosa* grows on the ranges Chatkal, Karzhantau, Pskem, Talas Alatau, and Ugam. In the checklist of endemic plant species and checklist of flora of the Tian Shan mountain system (Tojibaev et al., 2020; Sennikov, Tojibaev, 2021), it was reported for the ranges Chatkal, Kurama, Maydantal, Pskem, Santalash, Talas Alatau, and Ugam. The presence of *O. albovillosa* in the Uzbekistanian part of Kurama Range remains questionable and requires confirmation because it is not supported by herbarium material, field observations or photographs. In Kyrgyzstan, it was recorded from basins of the rivers Kassansay and Ters on the Chatkal Range, about 15–20 km from its junction with Kurama Range and the border with Uzbekistan.

2. *Oxytropis anaulgensis* Pavlov, 1954, Vestn. Akad. Nauk Kazakhsk. S.S.R. 8(113): 131.

Habitat: screes, rocks, stony and gravelly slopes, in montane zone and highlands (2100–3300 m a. s. l.).

Distribution area: Western Tian Shan (Kazakhstan, Uzbekistan).

Distribution in Uzbekistan: Pskem and Ugam Ranges (Tashkent Region). I-1 Western Tian Shan (I-1-a Ugam-Pskem) (Fig. 7).

3. *Oxytropis arassanica* Gontsch., 1948, V. L. Komarov (ed.), Fl. URSS 13: 551 (Fig. 3a).

Habitat: stony, gravelly and fine earth slopes, alpine meadows, in montane zone and highlands (2300–3500 m a. s. l.).

Distribution area: Western Tian Shan (Uzbekistan, Kyrgyzstan).

Distribution in Uzbekistan: Chatkal and Kurama Ranges (Tashkent and Namangan Regions). I-1 Western Tian Shan (I-1-b Western Chatkal, I-1-c Arashan, I-1-d Kurama, I-1-e Chorkesar) (Fig. 7).

Note: In "Conspectus Florae Asiae Mediae" (Filimonova, 1983), *O. arassanica* was reported for Ugam and Pskem ranges. According to Bajtenov (1961), Abdulina (1999), Aralbayev et al. (2002) and "Plants of the World Online" (POWO, URL: https://powo.science.kew.org/), this species occurs in Kazakhstanian part of Western Tian Shan, while in the recently published checklists (Tojibaev et al., 2020; Sennikov, Tojibaev, 2021), *O. arassanica* was reported for Chatkal, Kurama and Pskem ranges (Uzbekistan). The information on the presence of this species on the Pskem Range is based on a single specimen gathered by V. N. Pavlov: "[Uzbekistan, Tashkent Region, Bostanliq District]: South Kazakhstan Region, Bostandyk. Pskem Range, upper reaches of river Choralma, crest of the range, near snowfields, 3400 m a. s. l. 6 IX 1953. № 590. V. N. Pavlov" (AA). Initially it was identified by N. V. Pavlov as *Oxytropis microsphaera* Bunge, and in 1955 determined by Bajtenov as *O. arassanica*. The specimen bears another determination "may be *O. albovillosa*". Our revision showed that this plant fits well morphological characters of *O. albovillosa*. Thus, the occurrence of *O. arassanica* on Pskem Range is not confirmed by herbarium material and observation records.

4. *Oxytropis aspera* Gontsch., 1948, V. L. Komarov (ed.), Fl. URSS 13: 548.

Habitat: stony, gravelly and fine earth slopes, outcrops of red sandstones, near snowfields, in montane zone and highlands (1600–3300 m a. s. l.).

Distribution area: Pamir-Alay (Uzbekistan, Tajikistan).

Distribution in Uzbekistan: Turkestan and Hissar Ranges (Jizzakh, Kashkadarya and Surkhandarya Regions). I-5 Kuhistan (I-5-a North Turkestan); I-6 Western Hissar (I-6-a Kashkadarya, I-6-c Baysun); I-7 Hissar-Darvaz (I-7-a Sangardak-Tupalang) (Fig. 6).

5. *Oxytropis aulieatensis* Vved., 1948, V. L. Komarov (ed.), Fl. URSS 13: 546.

Habitat: stony and gravelly slopes, alpine meadows, in montane zone and highlands (1400–3000 m a. s. l.).

Distribution area: Western Tian Shan (Kazakhstan, Kyrgyzstan, Uzbekistan).

Distribution in Uzbekistan: Chatkal, Karzhantau and Ugam Ranges (Tashkent Region). I-1 Western Tian Shan (I-1-a Ugam-Pskem, I-1-b Western Chatkal) (Fig. 7).

Note: In "Conspectus Florae Asiae Mediae" (Filimonova, 1983) and recently published checklists (Tojibaev et al., 2020; Sennikov, Tojibaev, 2021) *O. aulieatensis* was reported also for Kurama Range, but occurrence records from this range are absent, and the presence of the species on Kurama Range requires confirmation.

6. *Oxytropis babatagi* Abdusal., 1978, Fl. Tadzhiksk. S.S.R. 5: 633.

Habitat: fine earth slopes, among juniper and pistachio woodlands, in montane zone (1500–2290 m a. s. l.). Distribution area: Babatag Range in Southern Pamir-Alay (Tajikistan, Uzbekistan). Endemic.

Distribution in Uzbekistan: Babatag Range (Surkhandarya Region). I-8 Panj (I-8-a Babatag) (Fig. 8).

7. *Oxytropis baissunensis* Vassilcz., 1960, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk S.S.S.R. 20: 240.

Habitat: stony, gravelly and fine earth slopes, screes, among juniper woodlands and in grasslands, in foothills and montane zone (1500–2500 m a. s. l.).

Distribution area: Pamir-Alay (Tajikistan, Uzbekistan).

Distribution in Uzbekistan: Hissar, Kugitang and Babatag Ranges (Kashkadarya and Surkhandarya Regions). I-6 Western Hissar (I-6-a Kashkadarya, I-6-c Baysun, I-6-d Kugitang); I-7 Hissar-Darvaz (I-7-a Sangardak-Tupalang); I-8 Panj (I-8-a Babatag) (Fig. 7).

Fig. 3. Species of *Oxytropis* distributed in Western Tian Shan: A – *O. arassanica*; B – *O. fedtschenkoana*; C – *O. ornata*; D – *O. submutica*; E – *O. terekensis*; F – *O. ugamica*. Photos by D. E. Turdiev.

8. *Oxytropis baldshuanica* B. Fedtsch., 1907, Bot. Zhurn. (St. Petersburg) 1906: 192.

Habitat: stony, gravelly, fine earth and gypsaceous slopes, among juniper woodlands, in foothills and montane zone (1000–2200 (2600) m a. s. l.).

Distribution area: Pamir-Alay (Tajikistan, Uzbekistan).

Distribution in Uzbekistan: Hissar Range (Surkhandarya Region). I-7 Hissar-Darvaz (I-7-a Sangardak-Tupalang) (Fig. 9).

Note: The species is widely spread in Tajikistan (ranges Hissar, Karategin, Darvaz, Vakhsh, Khozretishi, low mountains of Southern Tajikistan) (Abdusalyamova, 1978; Filimonova, 1983). In TASH, there is a gathering of *O. baldshuanica* from Surkhandarya Region, based on which this species should be newly recorded for Uzbekistan: "UzbekSSR, Surkhandarya Region, gorge of river Shargun, Hissar Range. 27 IV 1977. S. A. Khamidkhodzhaev" (TASH00239253).

This specimen fits morphological characters of *O. baldshuanica* (Abdusalyamova, 1978; Filimonova, 1983) and differs well from other species of sect. *Mesogaea* Bunge that occur in Uzbekistan (*O. glabra* DC., *O. lapponica* (Wahlenb.) J. Gay. and *O. riparia* Litv.) by significantly larger standard (17–23 mm vs 6–10 mm) and longer beak of keel (4–5 mm vs 0.2–0.6 mm).

9. *Oxytropis caespitosula* Gontsch., 1948, V. L. Komarov (ed.), Fl. URSS 13: 551.

Habitat: stony slopes, rocks, moraines, in montane zone and highlands (2500–3500 m a. s. l.).

Distribution area: Western Tian Shan (Kazakhstan, Kyrgyzstan, Uzbekistan).

Distribution in Uzbekistan: Maydantal, Pskem and Ugam Ranges (Tashkent Region). I-1 Western Tian Shan (I-1-a Ugam-Pskem) (Fig. 8).

10. *Oxytropis canopatula* Vassilcz., 1960, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk S.S.S.R. 20: 242.

Habitat: stony and gravelly slopes, in foothills and montane zone (1000–2500 m a. s. l.).

Distribution area: Western Tian Shan (Kazakhstan, Kyrgyzstan, Uzbekistan).

Distribution in Uzbekistan: Pskem Range (Tashkent Region). I-1 Western Tian Shan (I-1-a Ugam-Pskem) (Fig. 7).

Note: In "Conspectus Florae Asiae Mediae" (Filimonova, 1983) and recent publications (Tojibaev et al., 2020; Sennikov, Tojibaev, 2021) *O. canopatula* was reported as endemic to the Syrdarya Karatau Range (Kazakhstan), while in "Flora of the South-Western Tian Shan (within the Republic of Uzbekistan)" (Tojibaev, 2010) it is included in the checklist of the flora of Uzbekistanian part of the Western Tian Shan. This is confirmed by our gathering and several specimens stored in TASH: "Uzbekistan, Tashkent Region, Bostanliq District, Ugam-Chatkal National Park, valley of the river Oygaing, between Beshtor and Turagain, about 1800 m a. s. l. 42.09074 N, 70.71559 E [42°05'26.7"N, 70°42'56.1"E]. 20 VII 2024. N. Yu. Beshko, I. I. Malzev" (TASH); "[Uzbekistan, Tashkent Region, Bostanliq District]: South-western spurs of Talas Alatau. Pskem Range. Valley of the river Oygaing, near the mouth of river Koksu. 3 VI 1963. № 40. Puchkova" (TASH00239339, TASH00239340, TASH00239341); "[Uzbekistan, Tashkent Region, Bostanliq District]: South-western spurs of Talas Alatau. Pskem Range. Valley of the river Oygaing, north-eastern slope between the river Koksu and Barkraksay. 4 VI 1963. № 55. Puchkova" (TASH00239332); "[Uzbekistan, Tashkent Region, Bostanliq District]: South-western spurs of Talas Alatau. Pskem Range. Valley of the river Oygaing between the river Koksu and Barkraksay. 5 VI 1963. № 150. Puchkova" (TASH00239335, TASH00239336, TASH00239342, TASH00239343).

11. *Oxytropis capusii* Franch., 1883, Ann. Sci. Nat., Bot., sér. 6, 15: 263 (Fig. 4a).

Habitat: stony and gravelly slopes, in montane zone and highlands (1300–2800 m a. s. l.).

Distribution area: Western Tian Shan, Western Pamir-Alay (Kyrgyzstan, Tajikistan, Uzbekistan).

Distribution in Uzbekistan: Alay, Hissar, Malguzar, Turkestan and Zeravshan Ranges (Jizzakh, Fergana, Kashkadarya, Samarkand, and Surkhandarya Regions). I-3 Fergana-Alay (I-3-b Eastern Alay); I-5 Kuhistan (I-5-a North Turkestan, I-5-b Malguzar, I-5-c Urgut); I-6 Western Hissar (I-6-a Kashkadarya, I-6-b Tarkapchigay, I-6-c Baysun); I-7 Hissar-Darvaz (I-7-a Sangardak-Tupalang) (Fig. 7).

12. *Oxytropis chesneyoides* Gontsch., 1947, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk S.S.S.R. 10: 86.

Habitat: outcrops of red clays, red and gray sanstones, rocks, gypsaceous gravelly and stony slopes, in foothills and montane zone (1000–1800 m a. s. l.).

Distribution area: Western Pamir-Alay (Uzbekistan).

Distribution in Uzbekistan: Hissar and Zeravshan Ranges (Samarkand, Kashkadarya and Surkhandarya Regions). I-5 Kuhistan (I-5-c Urgut); I-6 Western Hissar (I-6-a Kashkadarya, I-6-c Baysun) (Fig. 8).

Note: In "Flora of Uzbekistan" (Gontscharow, 1955), *O. chesneyoides* was reported as endemic to the upper reaches of river Turgan-Darya [Machay-Darya]. According to "Conspectus Florae Asiae Mediae" (Filimonova, 1983), this species occurs on the Nuratau Range (surroundings of railway station Jizzakh), on the Zeravshan Range (Amankutan Pass) and on the Hissar Range (basin of the river Kashkadarya, mountains Baysuntau and Khodzha-Gurgur-ata). In accordance with "Plants of the World Online" (POWO, URL: https://powo.science.kew.org/), it is distributed in Uzbekistan and Tajikistan. All gatherings of *O. chesneyoides* stored in TASH including type (Tojibaev et al., 2022; Turdiev et al., 2024) were collected from the Hissar Range (Kashkadarya and Surkhandarya Regions

of Uzbekistan). Two duplicate specimens collected from the Zeravshan Range are stored in LE: "[Uzbekistan, Samarkand Region, Urgut District]: Samarkand Region, Samarkand District. North slope of Zeravshan Range, Amankutan. 25 IV 1913. № 2836. A. I. Michelson" (LE). The presence of the species on the Nuratau Range remains questionable and requires confirmation. We did not find in studied herbaria any gatherings of *O. chesneyoides* from the Nuratau Range in surroundings of railway station Jizzakh cited by Filimonova (1983), as well as from Tajikistan. This species also is not included in the most actual published checklist of the flora of Tajikistan with 4269 species (Nowak et al., 2020). Considering these facts, *O. chesneyoides* is national endemic of Uzbekistan.

13. *Oxytropis didymophysa* Bunge, 1874, Mém. Acad. Imp. Sci. Saint Pétersbourg, Sér. 7, 22(1): 61.

Habitat: stony and gravelly slopes, screes, in montane zone and highlands (2400–3500 m a. s. l.).

Distribution area: Western Tian Shan (Kazakhstan, Kyrgyzstan, Uzbekistan).

Distribution in Uzbekistan: Chatkal Range (Tashkent Region). I-1 Western Tian Shan (I-1-b Western Chatkal, I-1-d Kurama) (Fig. 10).

14. *Oxytropis fedtschenkoana* Vassilcz., 1960, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk S.S.S.R. 20: 246 (Fig. 3b).

Habitat: stony and gravelly slopes, screes, in montane zone and highlands (1800–3000 m a. s. l.).

Distribution area: Western Tian Shan (Kyrgyzstan, Uzbekistan).

Distribution in Uzbekistan: Chatkal and Kurama Ranges (Tashkent and Namangan Regions). I-1 Western Tian Shan (I-1-b Western Chatkal, I-1-c Arashan, I-1-d Kurama, I-1-e Chorkesar) (Fig. 10).

Conservation status: UzbRDB 2.

15. *Oxytropis fedtschenkoi* Vassilcz., 1980, Novosti Sist. Vyssh. Rast. 17: 189.

Habitat: stony and gravelly slopes, in montane zone (1500–2500 m a. s. l.).

Distribution area: Chatkal Range in Western Tian Shan (Uzbekistan). Endemic, national endemic of Uzbekistan.

Distribution in Uzbekistan: Chatkal Range (Tashkent Region). I-1 Western Tian Shan (I-1-b Western Chatkal) (Fig. 10).

16. *Oxytropis glabra* DC., 1802, Astragalogia: 95.

Habitat: wet grasslands, fens, banks of rivers, lakes and canals, from plain to highlands (300–3000 m a. s. l.).

Distribution area: Euro-Siberian (Afghanistan, China, Iran, Kazakhstan, Kyrgyzstan, Mongolia, Pakistan, Russia, Tajikistan, Turkmenistan, Uzbekistan).

Distribution in Uzbekistan: Fergana valley, valleys of the rivers Amudarya, Syrdarya and Zeravshan (Andijan, Fergana, Namangan, Bukhara, Navoi and Samarkand Regions). I-3 Fergana-Alay (I-3-b Eastern Alay); II-1 Central Fergana (II-1-a Kayrakum-Yazyavan, II-1-b East Fergana); II-4 Bukhara (II-4-a Middle Zeravshan, II-4-b Lower Zeravshan) (Fig. 8).

17. *Oxytropis gymnogyne* Bunge, 1874, Mém. Acad. Imp. Sci. Saint Pétersbourg, Sér. 7, 22(1): 25.

Habitat: stony, gravelly and fine earth slopes, rocks, rarely on sandy river banks, in foothills and montane zone (600–2500 m a. s. l.).

Distribution area: Western Tian Shan (Uzbekistan, Tajikistan).

Distribution in Uzbekistan: Chatkal and Kurama Ranges (Tashkent and Namangan Regions). I-1 Western Tian Shan (I-1-b Western Chatkal, I-1-d Kurama, I-1-e Chorkesar) (Fig. 6).

18. *Oxytropis humifusa* Kar. et Kir., 1842, Bull. Soc. Imp. Naturalistes Moscou 15: 535.

Habitat: stony, gravelly and fine earth slopes, alpine meadows, moraines, near snowfields, in montane zone and highlands (1800–3500 m a. s. l.).

Distribution area: eastern part of Irano-Turanian floristic region (China, Kazakhstan, Kyrgyzstan, Nepal, Pakistan, Tajikistan, Uzbekistan).

Distribution in Uzbekistan: Alay, Chatkal, Karzhantau, Maydantal, Pskem, and Ugam Ranges (Fergana and Tashkent Regions). I-1 Western Tian Shan (I-1-a Ugam-Pskem, I-1-b Western Chatkal); I-3 Fergana-Alay (I-3-b Eastern Alay) (Fig. 10).

19. *Oxytropis immersa* (Baker ex Aitch.) Bunge ex Lipsky, 1905, Trudy Tiflissk. Bot. Sada 7: 804.

Habitat: stony, gravelly and fine earth slopes, rocks, moraines, alpine swards, in montane zone and highlands (1800–4000 m a. s. l.).

Distribution area: Irano-Turanian floristic region (Afghanistan, China, Iran, Iraq, Kazakhstan, Kyrgyzstan, Pakistan, Tajikistan, Turkey, Uzbekistan).

Distribution in Uzbekistan: Chatkal, Kurama, Maydantal, Pskem, Ugam, Alay, Hissar, and

Turkestan Ranges (Tashkent, Namangan, Fergana, Jizzakh, Kashkadarya, and Surkhandarya Regions). I-1 Western Tian Shan (I-1-a Ugam-Pskem, I-1-b Western Chatkal, I-1-c Arashan, I-1-d Kurama); I-3 Fergana-Alay (I-3-b Eastern Alay); I-5 Kuhistan (I-5-a North Turkestan); I-6 Western Hissar (I-6-c Baysun); I-7 Hissar-Darvaz (I-7-a Sangardak-Tupalang) (Fig. 11).

20. *Oxytropis integripetala* Bunge, 1874, Mém. Acad. Imp. Sci. Saint Pétersbourg, Sér. 7, 22(1): 69.

Habitat: stony and clayey slopes, grasslands, in foothills and montane zone, 800–2000 m a. s. l.

Distribution area: Tian Shan, Pamir-Alay (Kyrgyzstan, Tajikistan, Uzbekistan).

Distribution in Uzbekistan: Alay and Zeravshan Ranges (Fergana and Samarkand Regions). I-3 Fergana-Alay (I-3-a Western Alay); I-5 Kuhistan (I-5-c Urgut) (Fig. 6).

21. *Oxytropis iskanderica* B. Fedtsch., 1937, Fl. Tadzhiksk. S.S.R. 5: 685.

Habitat: stony, gravelly and fine earth slopes, pebbles, in montane zone and highlands, 2200–3600 m a. s. l.

Distribution area: Western Pamir-Alay (Tajikistan, Uzbekistan).

Distribution in Uzbekistan: Hissar Range (Kashkadarya Region). I-6 Western Hissar (I-6-a Kashkadarya) (Fig. 10).

22. *Oxytropis jucunda* Vved., 1948, V. L. Komarov (ed.), Fl. URSS 13: 549.

Habitat: stony and gravelly slopes, screes, pebbles, bedrock outcrops, in montane zone and highlands (2000–3000 m a. s. l.).

Distribution area: Western Tian Shan (Kazakhstan, Kyrgyzstan, Uzbekistan).

Distribution in Uzbekistan: Chatkal, Maydantal and Pskem Ranges (Tashkent Region). I-1 Western Tian Shan (I-1-a Ugam-Pskem, I-1-b Western Chatkal) (Fig. 12).

Note: In "Conspectus Florae Asiae Mediae" (Filimonova, 1983) and recently published checklists (Tojibaev et al., 2020; Sennikov, Tojibaev, 2021) *O. jucunda* was reported also for Ugam Range, but occurrence records from Uzbekistanian part of Ugam Range are absent. Thus, the presence of this species on the Ugam Range requires confirmation.

Fig. 4. Species of *Oxytropis* distributed in Pamir-Alay: A – *O. capusii*; B – *O. kamelinii*; C – *O. lehmannii*; D – *O. pseudoleptophysa*; E – *O. pseudorosea*; F – *O. vvedenskyi*. Photos by D. E. Turdiev.

23. *Oxytropis kamelinii* Vassilcz., 1980, Byull. Moskovsk. Obshch. Isp. Prir., Otd. Biol. 85(2): 112 (Fig. 4b).

Habitat: fine earth slopes, among juniper woodlands, in montane zone (1600–2000 m a. s. l.).

Distribution area: Malguzar Range in North-Western Pamir-Alay (Uzbekistan). Endemic, national endemic of Uzbekistan.

Distribution in Uzbekistan: Malguzar Range (Jizzakh Region). I-5 Kuhistan (I-5-b Malguzar) (Fig. 8).

24. *Oxytropis lapponica* (Wahlenb.) J. Gay, 1827, Flora 10: 30.

Habitat: humid stony, gravelly and fine earth slopes, screes, pebbles, moraines, fens, alpine meadows, banks of rivers, in montane zone and highlands (2000–4000 m a. s. l.).

Distribution area: subarctic and mountainous regions of Eurasia (Afghanistan, Austria, China, Finland, France, India, Italy, Kazakhstan, Kyrgyzstan, Mongolia, Nepal, North Macedonia, Norway, Pakistan, Spain, Sweden, Switzerland, Tajikistan, Russia, Uzbekistan).

Distribution in Uzbekistan: Chatkal, Kurama, Pskem, and Hissar Ranges (Tashkent and Namangan Regions). I-1 Western Tian Shan (I-1-a Ugam-Pskem, I-1-c Arashan, I-1-d Kurama); I-6 Western Hissar (I-6-a Kashkadarya) (Fig. 11).

25. *Oxytropis lasiocarpa* Gontsch., 1941, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk S.S.S.R. 9: 86.

Habitat: stony, gravelly and fine earth slopes, screes, in montane zone and highlands (2500–4000 m a. s. l.).

Distribution area: Hissar Range in Western Pamir-Alay (Uzbekistan). Endemic, national endemic of Uzbekistan.

Distribution in Uzbekistan: Hissar Range (Kashkadarya and Surkhandarya Regions). I-6 Western Hissar (I-6-a Kashkadarya, I-6-c Baysun); I-7 Hissar-Darvaz (I-7-a Sangardak-Tupalang) (Fig. 10).

26. *Oxytropis lehmannii* Bunge, 1847, Arbeiten Naturf. Vereins Riga 1: 225 (Fig. 4c).

Habitat: stony, gravelly and fine earth slopes, rocks, pebbles, alpine swards, in montane zone and highlands (2000–3800 m a. s. l.).

Distribution area: Pamir-Alay, West Himalaya (Afghanistan, China, Kyrgyzstan, Pakistan, Tajikistan, Uzbekistan).

Distribution in Uzbekistan: Alay, Hissar and Turkestan Ranges (Fergana, Jizzakh and Kashkadarya Regions). I-3 Fergana-Alay (I-3-b Eastern Alay); I-5 Kuhistan (I-5-a North Turkestan); I-6 Western Hissar (I-6-a Kashkadarya) (Fig. 11).

27. *Oxytropis leptophysa* Bunge, 1874, Mém. Acad. Imp. Sci. Saint Pétersbourg, Sér. 7, 22(1): 61.

Habitat: stony and gravelly slopes, screes, outcrops of conglomerates, in montane zone and highlands (1500-4000 m a. s. l.).

Distribution area: Pamir-Alay (Kyrgyzstan, Tajikistan, Uzbekistan).

Distribution in Uzbekistan: Hissar, Kugitang and Zeravshan Ranges (Samarkand, Kashkadarya and Surkhandarya Regions). I-5 Kuhistan (I-5-c Urgut); I-6 Western Hissar (I-6-a Kashkadarya, I-6-d Kugitang) (Fig. 6).

28. *Oxytropis leucocyanea* Bunge, 1874, Mém. Acad. Imp. Sci. Saint Pétersbourg, Sér. 7, 22(1): 22 (Fig. 5a).

Habitat: stony, gravelly and fine earth slopes, screes, in montane zone and highlands (2500–4500 m a. s. l.).

Distribution area: Tian Shan, Pamir-Alay (Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan).

Distribution in Uzbekistan: Chatkal, Kurama, Pskem, Hissar, and Turkestan Ranges (Tashkent, Namangan, Jizzakh, Kashkadarya, and Surkhandarya Regions). I-1 Western Tian Shan (I-1-a Ugam-Pskem, I-1-b Western Chatkal, I-1-c Arashan, I-1-d Kurama); I-5 Kuhistan (I-5-a North Turkestan); I-6 Western Hissar (I-6-a Kashkadarya); I-7 Hissar-Darvaz (I-7-a Sangardak-Tupalang) (Fig. 12).

29. *Oxytropis lipskyi* Gontsch., 1940, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk S.S.S.R. 8: 190.

Habitat: gravelly and fine earth slopes, in montane zone (1500–2500 m a. s. l.).

Distribution area: Western Pamir-Alay (Tajikistan, Uzbekistan).

Distribution in Uzbekistan: Hissar and Zeravshan Ranges (Samarkand and Kashkadarya Regions). I-5 Kuhistan (I-5-c Urgut); I-6 Western Hissar (I-6-a Kashkadarya) (Fig. 11).

30. *Oxytropis lithophila* Vassilcz., 1960, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk S.S.S.R. 20: 242.

Habitat: stony, gravelly and fine earth slopes, in montane zone (1300–2600 m a. s. l.).

Fig. 5. Species of *Oxytropis* distributed in Tian Shan and Pamir-Alay: A – *O. leucocyanea*; B – *O. macrocarpa*; C – *O. microsphaera*; D – *O. rosea*; E – *O. savellanica*; F – *O. trichocalycina*. Photos by D. E. Turdiev.

Distribution area: Western Tian Shan, Pamir-Alay (Tajikistan, Uzbekistan).

Distribution in Uzbekistan: Chatkal, Kurama, Babatag, Hissar, and Turkestan Ranges (Tashkent, Jizzakh, Kashkadarya, and Surkhandarya Regions). I-1 Western Tian Shan (I-1-d Kurama); I-5 Kuhistan (I-5-a North Turkestan); I-6 Western Hissar (I-6-a Kashkadarya, I-6-b Tarkapchigay, I-6-c Baysun); I-7 Hissar-Darvaz (I-7-a Sangardak-Tupalang); I-8 Panj (I-8-a Babatag) (Fig. 13).

Note: In "Conspectus Florae Asiae Mediae" (Filimonova, 1983), *O. lithophila* was reported for Western Pamir-Alay (Turkestan, Zeravshan and Hissar Ranges). During the field surveys performed in 2021–2023, this species was newly recorded from the Chatkal and Kurama Ranges in Tashkent Region and Babatag Range in Surkhandarya Region of Uzbekistan.

31. *Oxytropis litwinowii* B. Fedtsch., 1905, Trudy Imp. S.-Peterburgsk. Bot. Sada 24: 185.

Habitat: stony, gravelly and fine earth slopes, rocks, pebbles, dry riverbeds, in foothills and montane zone (700-2500 m a. s. l.).

Distribution area: Western Tian Shan, Pamir-Alay (Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan).

Distribution in Uzbekistan: Chatkal, Ugam, Hissar, Kugitang, and Zeravshan Ranges (Tashkent, Namangan, Samarkand, Kashkadarya, and Surkhandarya Regions). I-1 Western Tian Shan (I-1-a Ugam-Pskem); I-2 Fergana (I-2-a Southern Chatkal); I-5 Kuhistan (I-5-c Urgut); I-6 Western Hissar (I-6-a Kashkadarya, I-6-d Kugitang); I-7 Hissar-Darvaz (I-7-a Sangardak-Tupalang) (Fig. 12).

32. *Oxytropis macrocarpa* Kar. et Kir., 1842, Bull. Soc. Imp. Naturalistes Moscou 15: 326 (Fig. 5b).

Habitat: stony, gravelly and fine earth slopes, in montane zone (1000–2600 m a. s. l.).

Distribution area: Dzungarian Alatau, Tian Shan, Pamir-Alay (Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan).

Distribution in Uzbekistan: Chatkal, Kurama, Hissar, and Turkestan Ranges, Nuratau Mts. (Tashkent, Namangan, Jizzakh, and Kashkadarya Regions). I-1 Western Tian Shan (I-1-b Western Chatkal, I-1-d Kurama, I 1-e Chorkesar); I-2

Fergana (I-2-a Southern Chatkal); I-4 Nuratau (I-4-a Nuratau, I-4-b Aktau); I-5 Kuhistan (I-5-a North Turkestan); I-6 Western Hissar (I-6-c Baysun) (Fig. 12).

33. *Oxytropis macrodonta* Gontsch., 1940, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk S.S.S.R. 8: 188.

Habitat: stony, gravelly and fine earth slopes, among juniper and deciduous woodlands and shrubs, pebbles, in foothills and montane zone (1000–2600 m a. s. l.).

Distribution area: Tian Shan, Pamir-Alay (Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan).

Distribution in Uzbekistan: Chatkal, Karzhantau, Pskem, Ugam, Alay, and Hissar Ranges (Tashkent, Fergana, Kashkadarya, and Surkhandarya Regions). I-1 Western Tian Shan (I-1-a Ugam-Pskem, I-1-b Western Chatkal); I-3 Fergana-Alay (I-3-a Western Alay, I-3-b Eastern Alay); I-6 Western Hissar (I-6-a Kashkadarya, I-6-c Baysun); I-7 Hissar-Darvaz (I-7-a Sangardak-Tupalang) (Fig. 14).

34. *Oxytropis maidantalensis* B. Fedtsch., 1948, V. L. Komarov (ed.), Fl. URSS 13: 552.

Habitat: stony and gravelly slopes, screes, pebbles, river valleys, in montane zone and highlands (2200–3500 m a. s. l.).

Distribution area: Western Tian Shan (Kazakhstan, Kyrgyzstan, Uzbekistan).

Distribution in Uzbekistan: Maydantal and Ugam Ranges (Tashkent Region). I-1 Western Tian Shan (I-1-a Ugam-Pskem) (Fig. 8).

Conservation status: UzbRDB 2.

35. *Oxytropis megalorrhyncha* Nevski, 1937, Trudy Bot. Inst. Akad. Nauk S.S.S.R., Ser. 1, Fl. Sist. Vyssh. Rast. 4: 259.

Habitat: stony and fine earth slopes, ravines, near snowfields, in montane zone and highlands (1500–3000 m a. s. l.).

Distribution area: Kugitang Range in South-Western Pamir-Alay (Uzbekistan, Turkmenistan). Endemic.

Distribution in Uzbekistan: Kugitang Range (Surkhandarya Region). I-6 Western Hissar (I-6-d Kugitang) (Fig. 7).

36. *Oxytropis michelsonii* B. Fedtsch., 1937, Fl. Tadzhiksk. S.S.R. 5: 684.

Habitat: stony, gravelly and fine earth slopes, outcrops of red clays, limestones and sandstones, near snowfields, in montane zone and highlands (2200–3500 m a. s. l.).

Distribution area: Western Pamir-Alay (Tajikistan, Uzbekistan).

Distribution in Uzbekistan: Hissar, Malguzar and Turkestan Ranges (Jizzakh, Kashkadarya and Surkhandarya Regions). I-5 Kuhistan (I-5-a North Turkestan, I-5-b Malguzar); I-6 Western Hissar (I-6-a Kashkadarya, I-6-c Baysun) (Fig. 12).

37. *Oxytropis microcarpa* Gontsch., 1948, V. L. Komarov (ed.), Fl. URSS 13: 542.

Habitat: stony slopes, alpine swards, in highlands (3500–4500 m a. s. l.).

Distribution area: Hissar Range in Western Pamir-Alay (Uzbekistan). Endemic, national endemic of Uzbekistan.

Distribution in Uzbekistan: Hissar Range (Surkhandarya Region). I-7 Hissar-Darvaz (I-7-a Sangardak-Tupalang) (Fig. 8).

Note: Being known by type specimen only, *O. microcarpa* remains one of the most poorly studied representatives of the genus in the flora of Middle Asia.

38. *Oxytropis microsphaera* Bunge, 1874, Mém. Acad. Imp. Sci. Saint Pétersbourg, Sér. 7, 22(1): 64 (Fig. 5c).

Habitat: stony and gravelly slopes, screes, alpine swards, outcrops of red sandstones and shists, among juniper woodlands, near snowfields, in montane zone and highlands (2200–4000 m a. s. l.).

Distribution area: Western Tian Shan, Pamir-Alay (Afghanistan, Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan).

Distribution in Uzbekistan: Chatkal, Kurama, Maydantal, Pskem, Ugam, Turkestan, and Hissar Ranges (Tashkent, Namangan, Jizzakh, Kashkadarya and Surkhandarya Regions). I-1 Western Tian Shan (I-1-a Ugam-Pskem, I-1-b Western Chatkal, I-1-c Arashan, I-1-d Kurama, I-1-e Chorkesar); I-5 Kuhistan (I-5-a North Turkestan); I-6 Western Hissar (I-6-a Kashkadarya, I-6-c Baysun); I-7 Hissar-Darvaz (I-7-a Sangardak-Tupalang) (Fig. 13).

39. *Oxytropis ornata* Vassilcz., 1960, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk S.S.S.R. 20: 241 (Fig. 3c).

Habitat: stony, gravelly and fine earth slopes, among juniper and deciduous woodlands and shrubs, in foothills and montane zone (1000–2500 m a. s. l.).

Distribution area: Western Tian Shan (Kazakhstan, Uzbekistan).

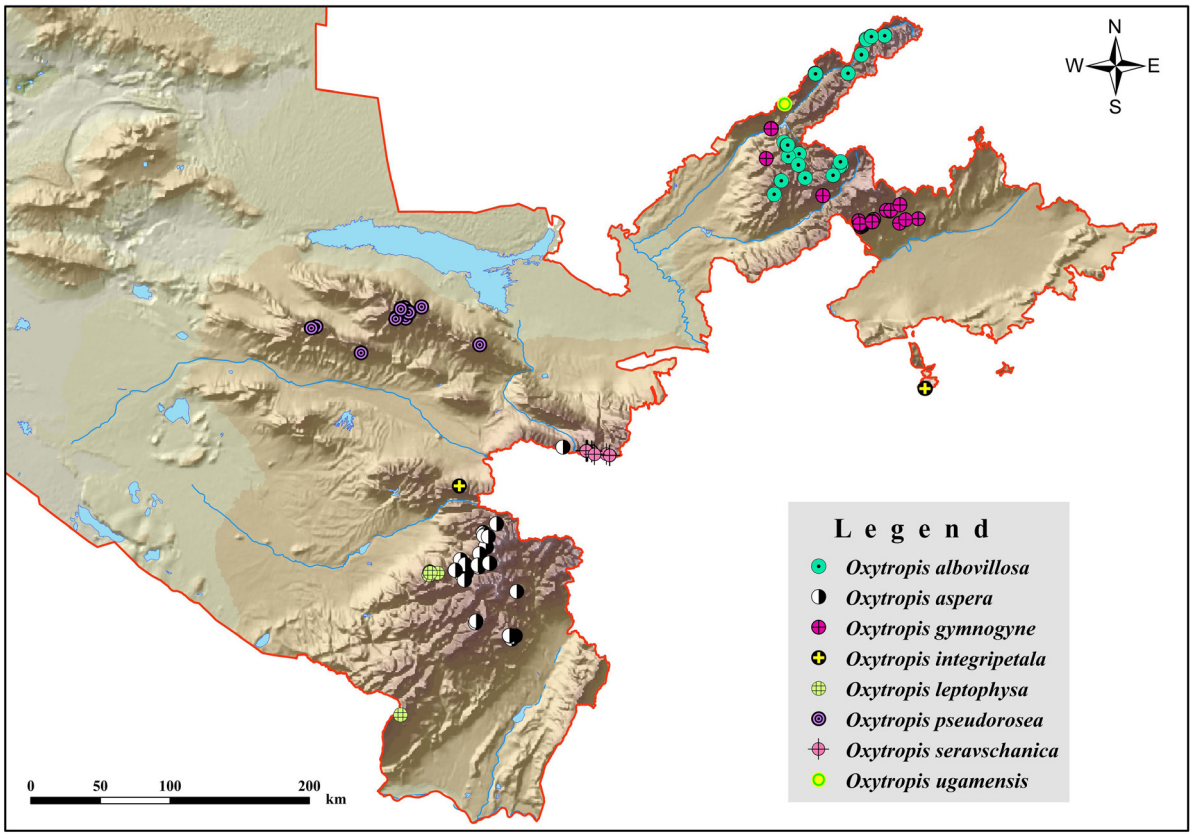

Fig. 6. Distribution map of *Oxytropis* species in Uzbekistan based on all occurrence records: *O. albovillosa, O. aspera, O. gymnogyne, O. integripetala, O. leptophysa, O. pseudorosea, O. seravschanica, O. ugamensis*.

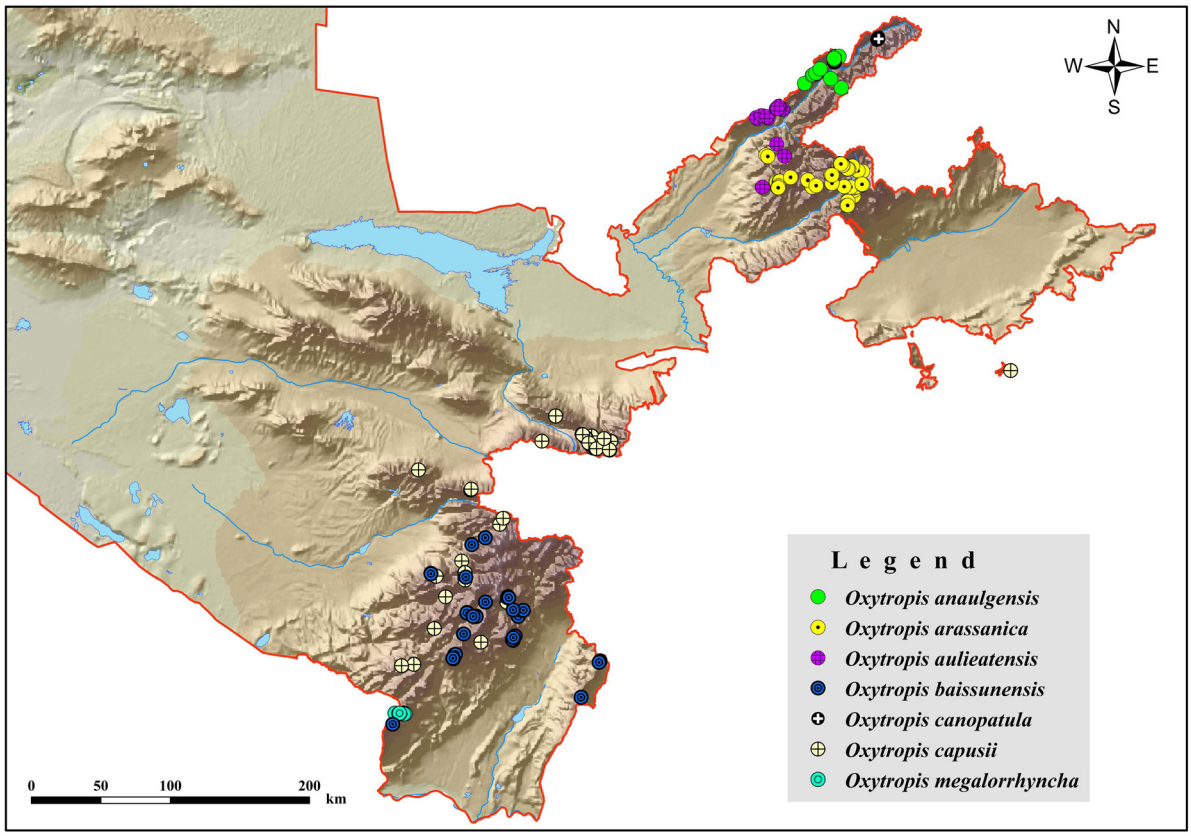

Fig. 7. Distribution map of *Oxytropis* species in Uzbekistan based on all occurrence records: *O. anaulgensis, O. arassanica, O. aulieatensis, O. baissunensis, O. canopatula, O. capusii, O. megalorrhyncha.*

Distribution in Uzbekistan: Chatkal, Karzhantau, Pskem, and Ugam Ranges (Tashkent Region). I-1 Western Tian Shan (I-1-a Ugam-Pskem, I-1-b Western Chatkal) (Fig. 13).

Note: In "Conspectus Florae Asiae Mediae" (Filimonova, 1983) and recently published checklists (Tojibaev et al., 2020; Sennikov, Tojibaev, 2021) *O. ornata* was reported also for the Kurama Range, but occurrence records from this range are absent. Thus, the presence of the species on the Kurama Range requires confirmation.

40. *Oxytropis ovczinnikovii* Abdusal., 1970, Dokl. Akad. Nauk Tadzhiksk. S.S.R. 13(7): 60.

Habitat: gravelly and fine earth slopes, in montane zone and highlands (1500–3200 m a. s. l.).

Distribution area: Pamir-Alay (Tajikistan, Uzbekistan).

Distribution in Uzbekistan: Hissar Range (Surkhandarya Region). I-6 Western Hissar (I-6-c Baysun) (Fig. 13).

Note: The species is widely spread in Tajikistan (ranges Zeravshan, Hissar, Peter I, Karategin, Darvaz, Khozretishi) (Abdusalyamova, 1978; Filimonova, 1983). This species should be newly recorded for Uzbekistan based on a gathering from Surkhandarya Region stored in MW: "Uzbekistan, western spurs of Hissar Range, surroundings of Baysun, village Avlet [Aulat], Mt. Ketmen-Chapty. № 448. 28 V 1971. M. G. Pimenov" (MW0848373).

41. *Oxytropis pamiroalajca* Abdusal., 1970, Dokl. Akad. Nauk Tadzhiksk. S.S.R. 13(7): 59.

Habitat: gravelly and fine earth slopes, in montane zone and highlands (2500–3500 m a. s. l.).

Distribution area: Pamir-Alay (Tajikistan, Uzbekistan).

Distribution in Uzbekistan: Hissar Range (Kashkadarya Region). I-6 Western Hissar (I-6-a Kashkadarya) (Fig. 8).

42. *Oxytropis pilosissima* Vved., 1948, V. L. Komarov (ed.), Fl. URSS 13: 547.

Habitat: stony, gravelly and fine earth slopes, in foothills and montane zone (900–2500 m a. s. l.).

Distribution area: Western Tian Shan (Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan).

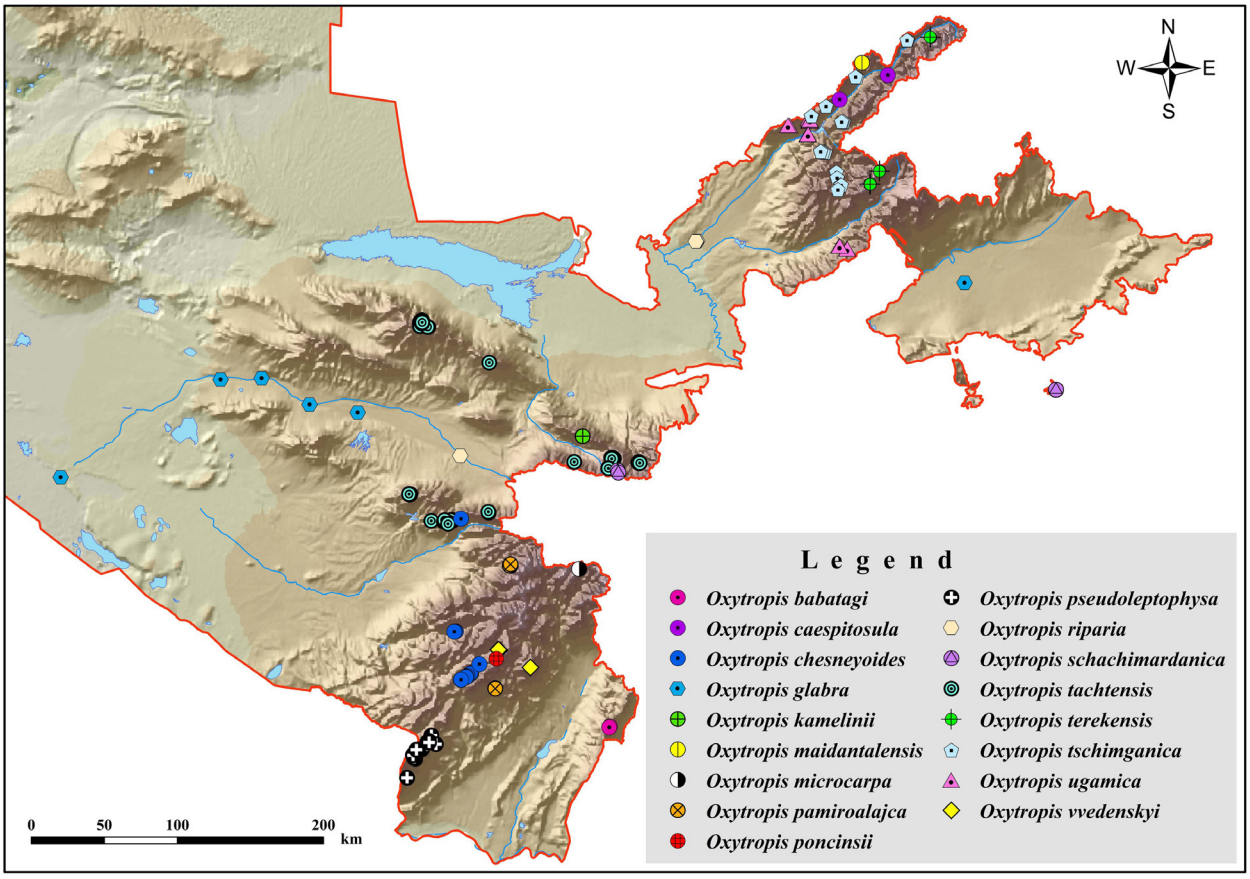

Fig. 8. Distribution map of *Oxytropis* species in Uzbekistan based on all occurrence records: *O. babatagi, O. caespitosula, O. chesneyoides, O. glabra, O. kamelinii, O. maidantalensis, O. macrocarpa, O. pamiroalajca, O. poncisii, O. pseudoleptophysa, O. riparia, O. schachimardanica. O. tachtensis, O. terekensis, O. tschimganica, O. ugamica, O. vvedenskyi.*

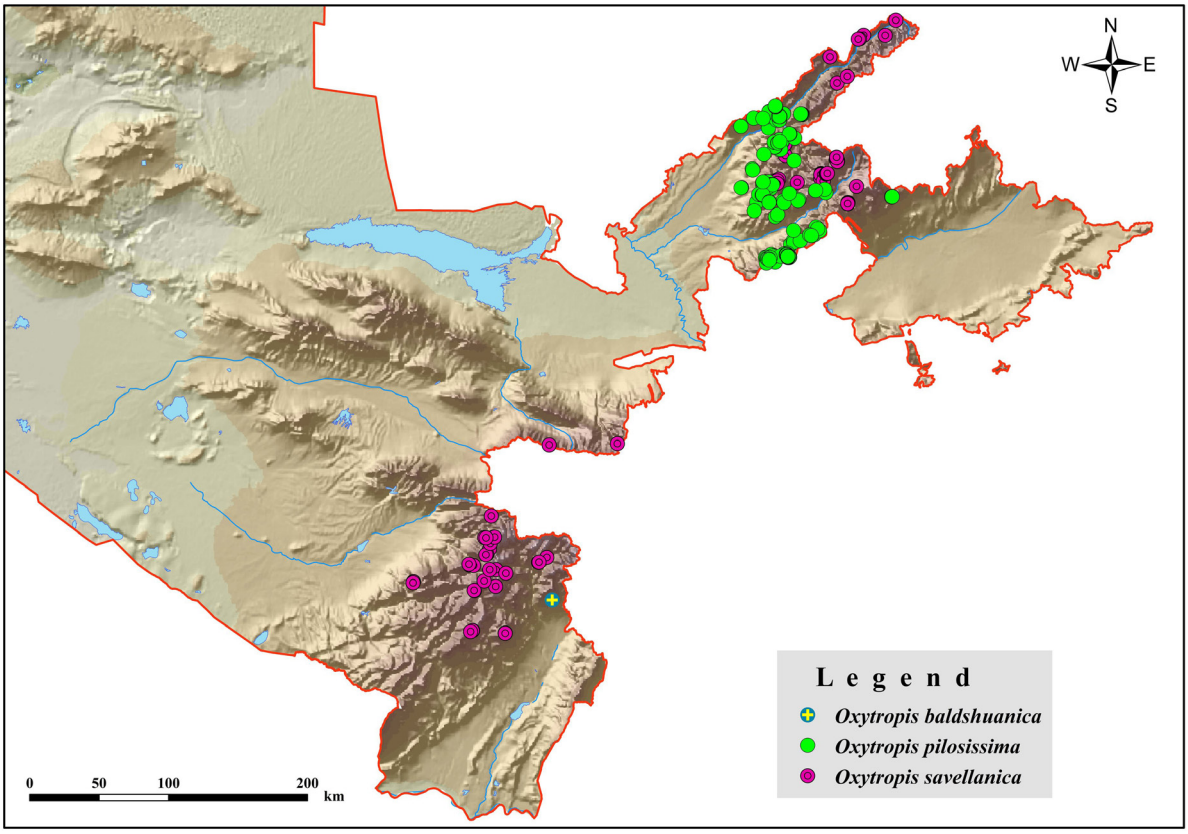

Fig. 9. Distribution map of *Oxytropis* species in Uzbekistan based on all occurrence records: *O. baldshuanica, O. pilosissima, O. savellanica*.

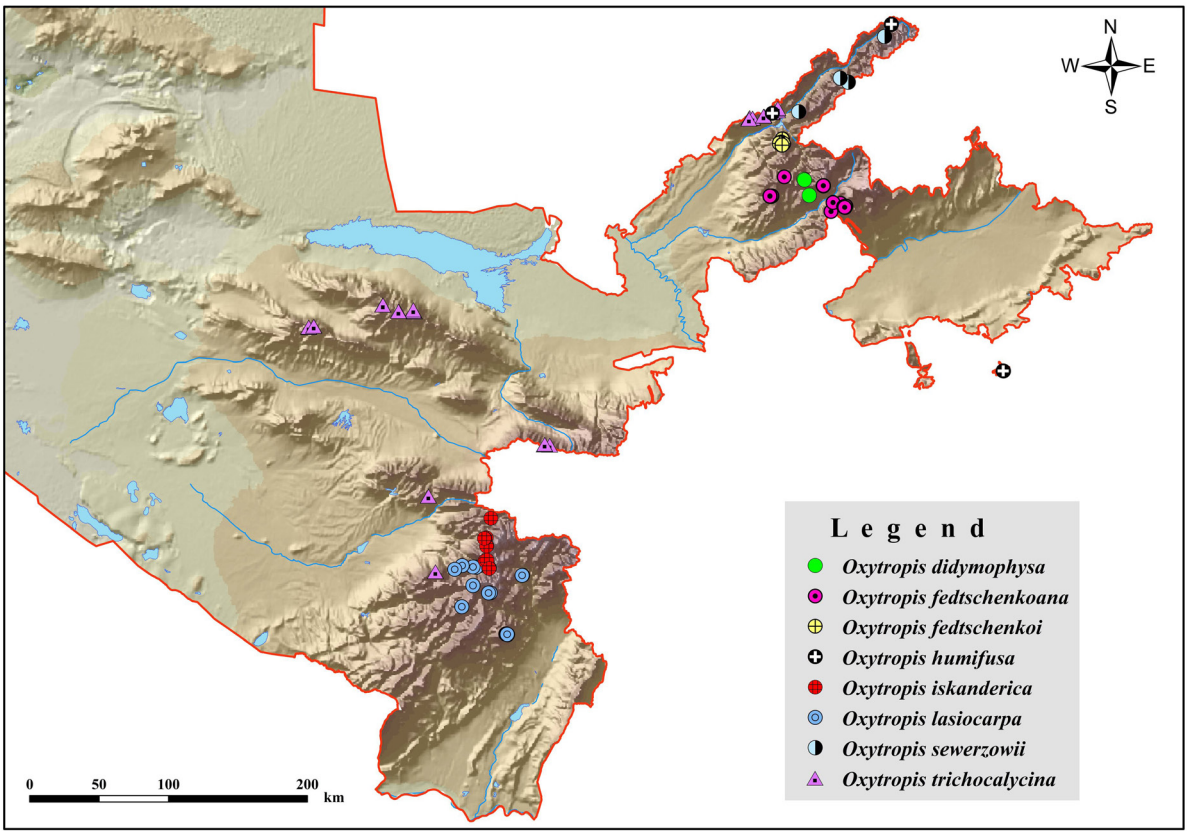

Fig. 10. Distribution map of *Oxytropis* species in Uzbekistan based on all occurrence records: *O. didymophysa, O. fedtschenkoana, O. fedtschenkoi, O. humifusa, O. iskanderica, O. lasiocarpa, O. sewerzowii, O. trichocalycina*.

Distribution in Uzbekistan: Chatkal, Karzhantau, Kurama, Maydantal, Pskem and Ugam Ranges (Tashkent and Namangan Regions). I-1 Western Tian Shan (I-1-a Ugam-Pskem, I-1-b Western Chatkal, I-1-d Kurama, I-1-e Chorkesar) (Fig. 9).

43. *Oxytropis platonychia* Bunge, 1874, Mém. Acad. Imp. Sci. Saint Pétersbourg, Sér. 7, 22(1): 44.

Habitat: stony and gravelly slopes, screes, pebbles, alpine meadows, in highlands (3000–4500 m a. s. l.).

Distribution area: Pamir-Alay, Hindukush (Afghanistan, Kyrgyzstan, Pakistan, Tajikistan, Uzbekistan).

Distribution in Uzbekistan: Turkestan and Hissar Ranges (Jizzakh and Surkhandarya Regions). I-5 Kuhistan (I 5-a North Turkestan), I-7 Hissar-Darvaz (I-7-a Sangardak-Tupalang) (Fig. 14).

Note: In "Flora of Uzbekistan" (Gontscharow, 1955), this species was reported for basin of the river Tupalang on the southern slope of Hissar Range. We did not find any gatherings from Tupalang in the studied herbaria, perhaps these samples were lost.

44. *Oxytropis poncinsii* Franch., 1896, Bull. Mus. Hist. Nat. (Paris) 2: 343.

Habitat: stony, gravelly and fine earth slopes, screes, pebbles, moraines, sandy deposits, outcrops of variegated beds, alpine swards, in highlands (3000–4500 m a. s. l.).

Distribution area: Tian Shan, Pamir-Alay, West Himalaya (Afghanistan, China, Kyrgyzstan, Pakistan, Tajikistan, Uzbekistan).

Distribution in Uzbekistan: Hissar Range (Surkhandarya Region). I-6 Western Hissar (I-6-c Baysun) (Fig. 8).

45. *Oxytropis pseudoleptophysa* Boriss., 1947, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk S.S.S.R. 10: 79 (Fig. 4d).

Habitat: stony and gravelly slopes, in montane zone (1200–2000 m a. s. l.).

Distribution area: Kugitang Range in South-Western Pamir-Alay (Uzbekistan, Turkmenistan). Endemic.

Distribution in Uzbekistan: Kugitang Range (Surkhandarya Region). I-6 Western Hissar (I-6-d Kugitang) (Fig. 8).

Conservation status: UzbRDB 2.

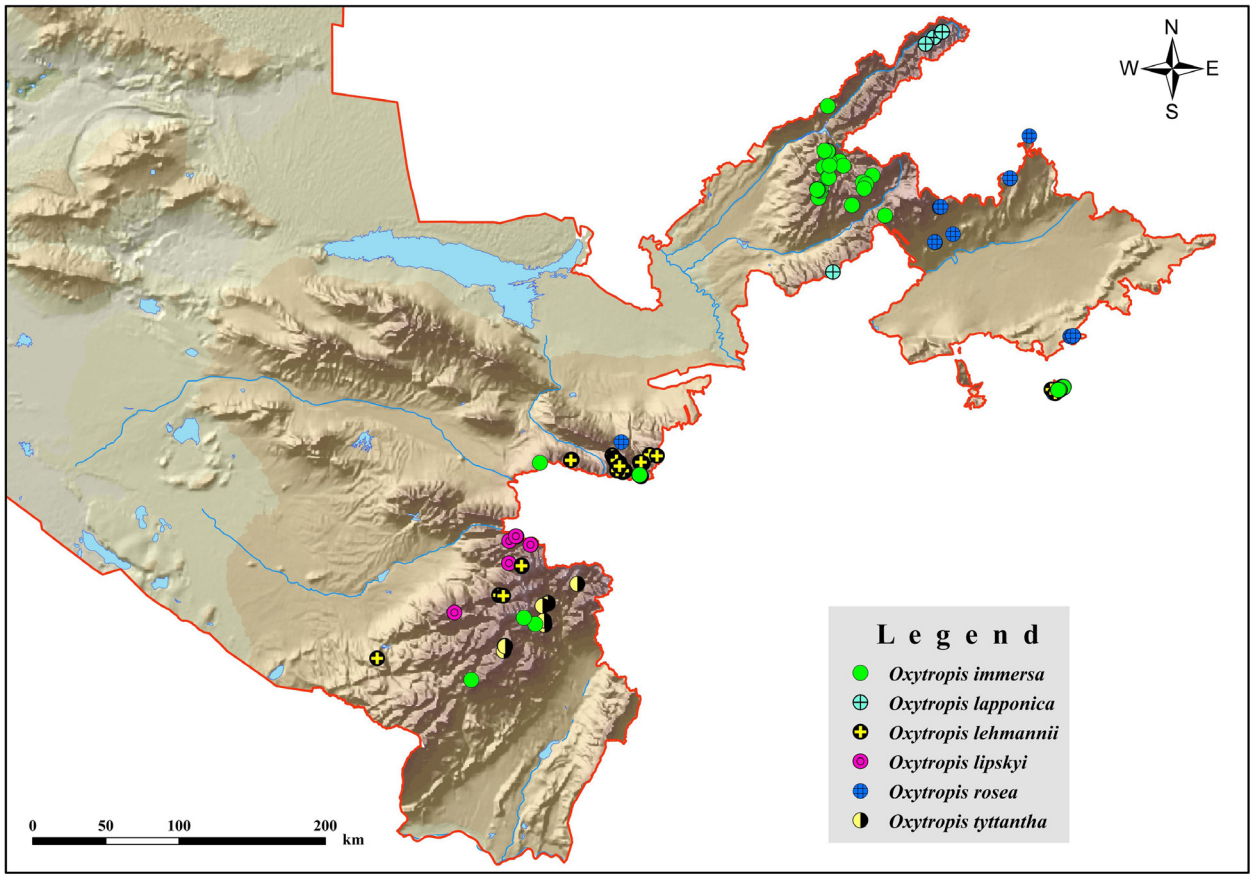

Fig. 11. Distribution map of *Oxytropis* species in Uzbekistan based on all occurrence records: *O. immersa, O. lapponica, O. lehmannii, O. lipskyi, O. rosea, O. tyttantha*.

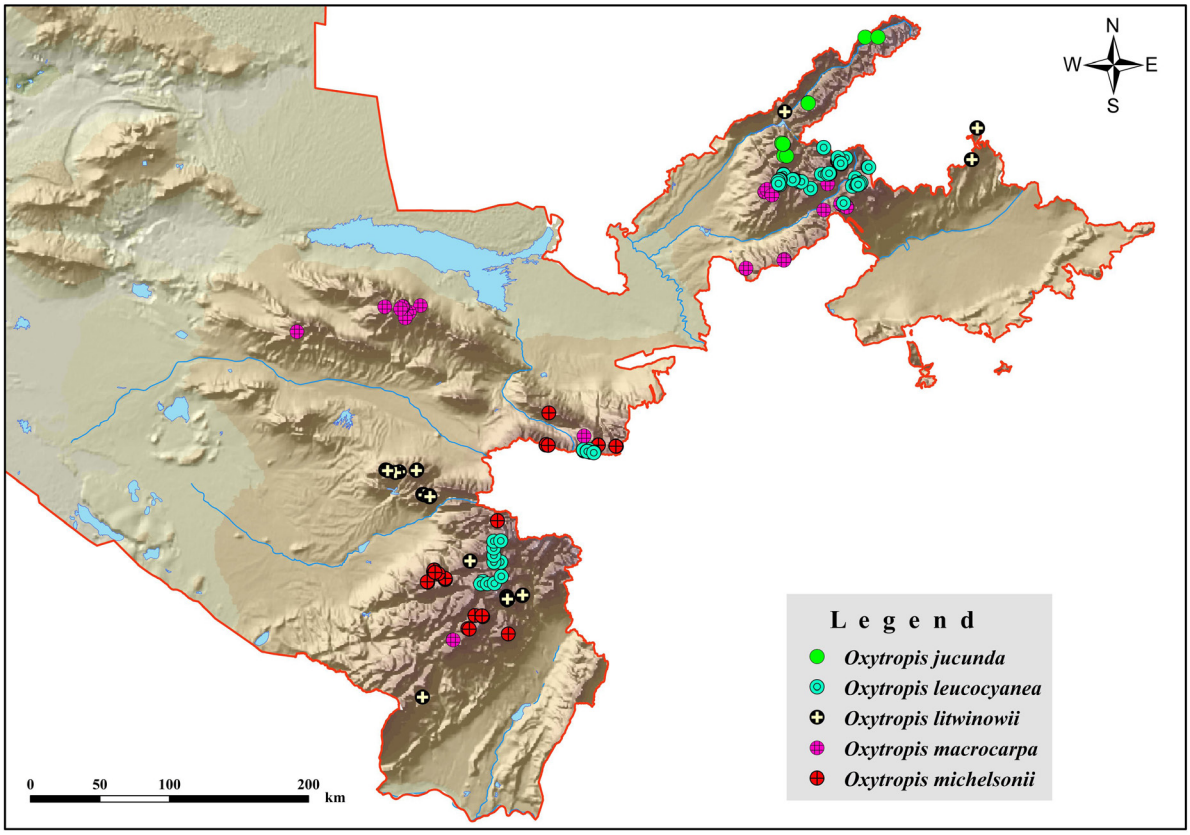

Fig. 12. Distribution map of *Oxytropis* species in Uzbekistan based on all occurrence records: *O. jucunda, O. leucocyanea, O. litwinowii, O. macrocarpa, O. michelsonii*.

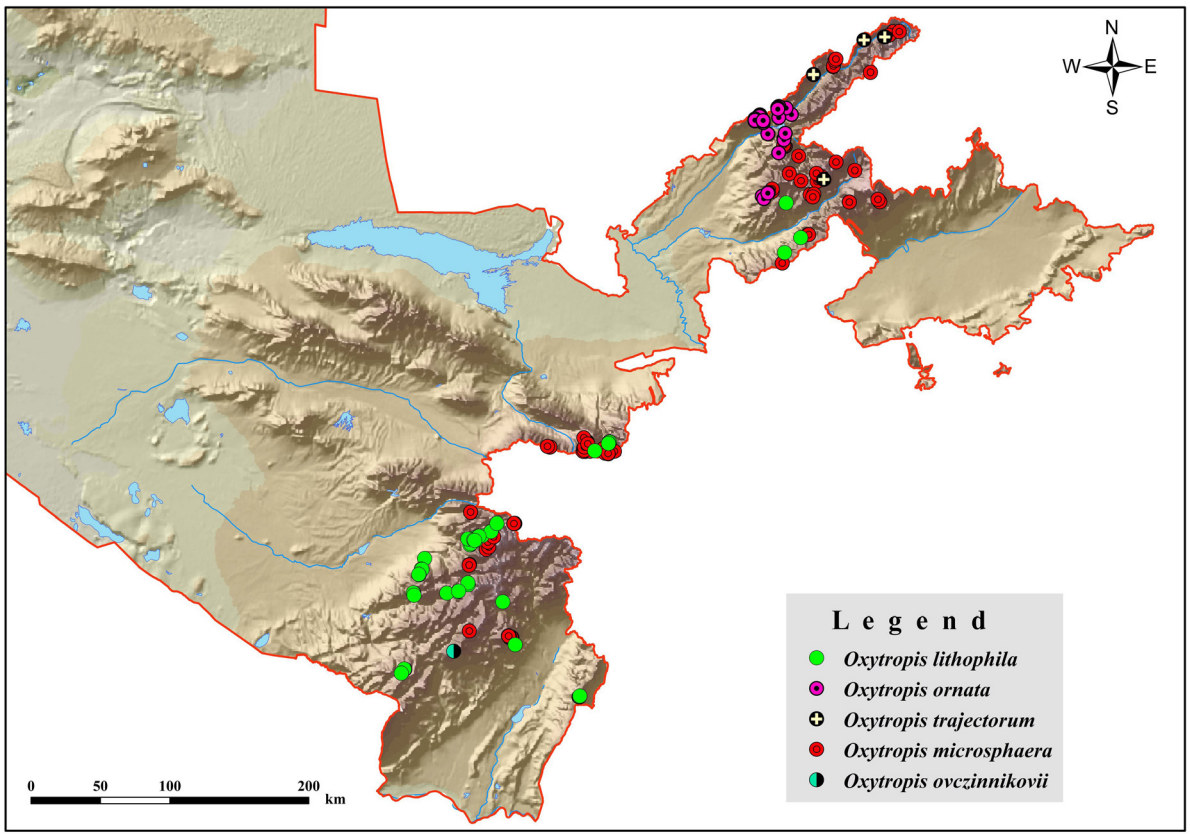

Fig. 13. Distribution map of *Oxytropis* species in Uzbekistan based on all occurrence records: *O. lithophila, O. ornata, O. trajectorum, O. microsphaera, O. ovczinnikovii*.

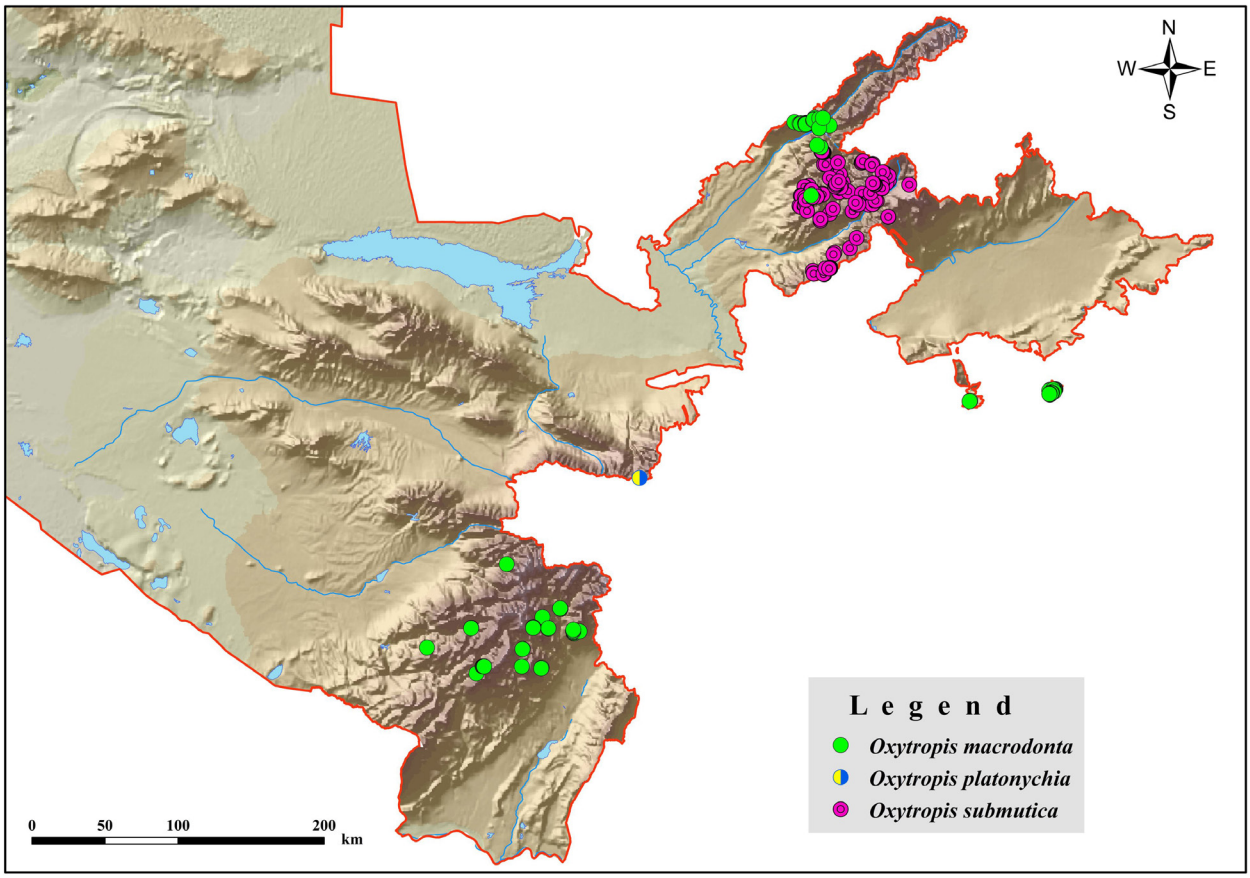

Fig. 14. Distribution map of *Oxytropis* species in Uzbekistan based on all occurrence records: *O. macrodonta, O. platonychia, O. submutica*.

46. *Oxytropis pseudorosea* Filim., 1982, Bot. Mater. Gerb. Inst. Bot. Akad. Nauk Uzbeksk. S.S.R. 20: 44 (Fig. 4e).

Habitat: stony, gravelly and fine earth slopes, rocks, in foothills and montane zone (800–2000 m a. s. l.).

Distribution area: Nuratau Mountains in North-Western Pamir-Alay (Uzbekistan). Endemic, national endemic of Uzbekistan.

Distribution in Uzbekistan: Nuratau and Aktau Ranges (Jizzakh, Navoi and Samarkand Regions). I-4 Nuratau (I-4-a Nuratau, I-4-b Aktau) (Fig. 6).

Conservation status: UzbRDB 2.

47. *Oxytropis riparia* Litv., 1908, Spisok Rast. Gerb. Russk. Fl. Bot. Muz. Imp. Akad. Nauk 6: 98.

Habitat: wet grasslands, fens, banks of rivers, humid slopes, from plain to montane zone (300–1500 m a. s. l.).

Distribution area: Middle Asia (Tajikistan, Turkmenistan, Uzbekistan).

Distribution in Uzbekistan: valleys of rivers Chirchiq and Zeravshan, upland Chupan-ata (Tashkent and Samarkand Regions). II-2 Middle-Syrdarya (II-2-a Chinaz); I-5 Kuhistan (I-5-c Urgut) (Fig. 8).

Note: In "Conspectus Florae Asiae Mediae" (Filimonova, 1983) and in the actual checklist of the flora of Tajikistan (Nowak et al., 2020), *O. riparia* and *O. glabra* are included as separated species. As noted by Filimonova (1983), these species are closely related, with numerous transitional forms. Malyshev (2008) treated *O. riparia* as *O. glabra* ssp. *riparia* (Litv.) Popov. In "Checklist of vascular plants of the Tian-Shan Mountain System" (Sennikov, Tojibaev, 2021) and "Plants of the World Online" (POWO, URL: https://powo.science.kew.org/) *O. riparia* is synonymized under *O. glabra*. In this checklist, we followed Filimonova's treatment and included *O. riparia* as a separated species, because it was considered synonym of *O. glabra* based on morphological characters only, while phylogenetic relationships of these two species have not yet been studied.

48. *Oxytropis rosea* Bunge, 1874, Mém. Acad. Imp. Sci. Saint Pétersbourg, Sér. 7, 22(1): 69 (Fig. 5d).

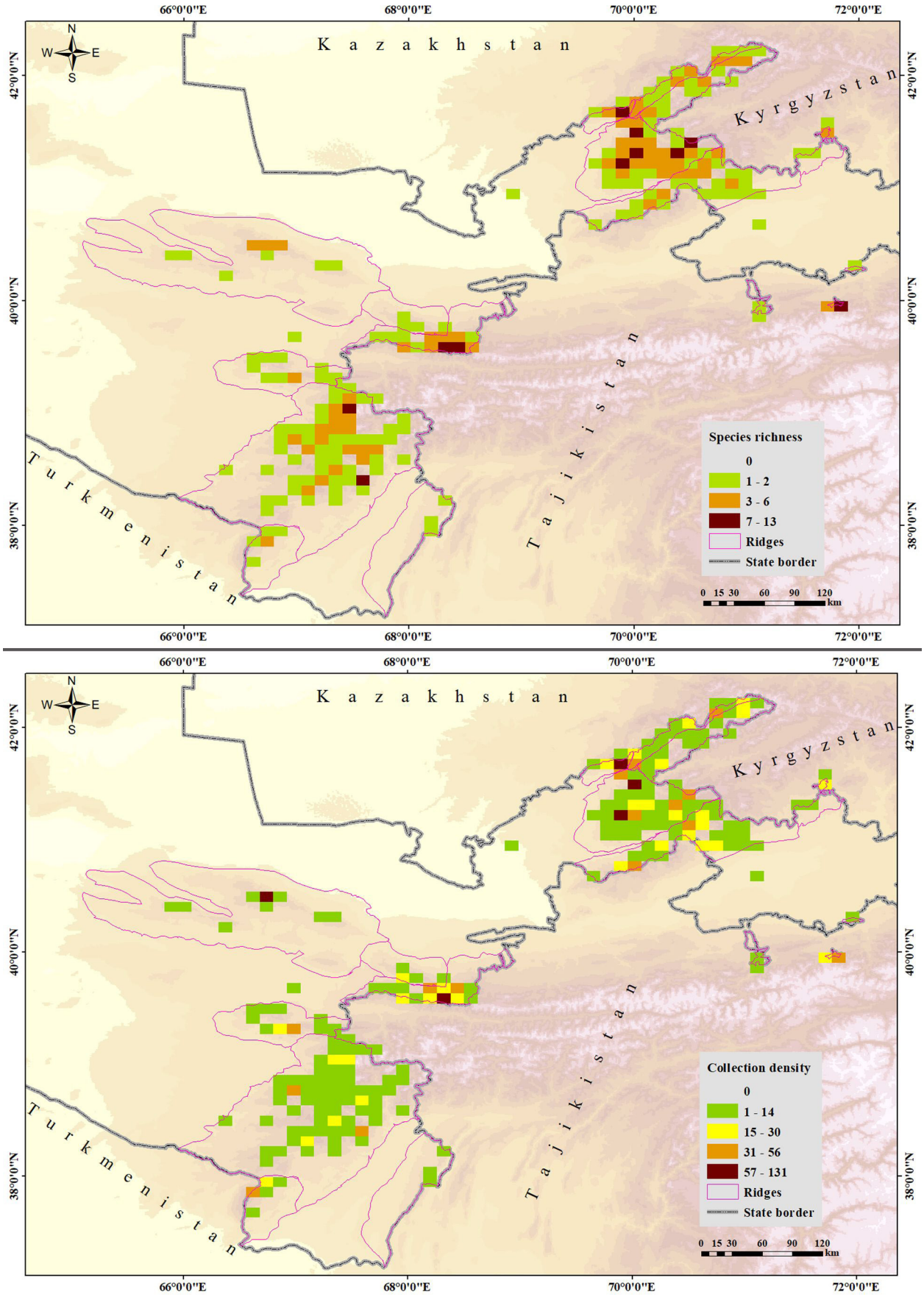

Fig. 15. Species richness (SR) and collection density (CD) map of *Oxytropis* species in Uzbekistan based on 10 × 10 km grid cells.

Habitat: clayey hills, dry riverbeds, pebbles, stony and gravelly slopes, outcrops of limestones and variegated beds, in foothills and montane zone (700–2000 m a. s. l.).

Distribution area: Western Tian Shan, Northern Pamir-Alay (Kyrgyzstan, Tajikistan, Uzbekistan).

Distribution in Uzbekistan: Alay, Chatkal, Kurama and Malguzar Ranges (Jizzakh, Fergana and Namangan Regions). I-1 Western Tian Shan (I-1-e Chorkesar); I-2 Fergana (I-2-a Southern Chatkal: I-3 Fergana-Alay (I-3-b Eastern Alay); I-5 Kuhistan (I-5-b Malguzar) (Fig. 11).

49. *Oxytropis savellanica* Bunge ex Boiss., 1872, Fl. Orient. 2: 503 (Fig. 5e).

Habitat: stony, gravelly and fine earth slopes, screes, rocks, banks of streams, fescue steppes, alpine swards, near snowfields, in montane zone and highlands (2500–4500 m a. s. l.).

Distribution area: Irano-Turanian floristic region (Afghanistan, China, Iran, Iraq, Kazakhstan, Kyrgyzstan, Pakistan, Tajikistan, Turkey, Uzbekistan).

Distribution in Uzbekistan: Chatkal, Kurama, Maydantal, Pskem, Ugam, Turkestan, and Hissar Ranges (Tashkent, Namangan, Jizzakh, Kashkadarya, and Surkhandarya Regions). I-1 Western Tian Shan (I-1-a Ugam-Pskem, I-1-b Western Chatkal, I-1-c Arashan, I-1-d Kurama, I-1-e Chorkesar); I-5 Kuhistan (I-5-a North Turkestan); I-6 Western Hissar (I-6-a Kashkadarya, I-6-c Baysun; I-7 Hissar-Darvaz (I-7-a Sangardak-Tupalang) (Fig. 9).

50. *Oxytropis schachimardanica* Filim., 1983, Opred. Rast. Sred. Azii 7: 379.

Habitat: stony and gravelly slopes, screes, in montane zone and highlands (2200–3200 m a. s. l.).

Distribution area: Northern Pamir-Alay (Kyrgyzstan, Uzbekistan).

Distribution in Uzbekistan: Alay and Turkestan Ranges (Fergana and Jizzakh Regions). I-3 Fergana-Alay (I-3-b Eastern Alay); I-5 Kuhistan (I-5-a North Turkestan) (Fig. 8).

51. *Oxytropis seravschanica* Gontsch., 1948, V. L. Komarov (ed.), Fl. URSS 13: 552.

Habitat: stony, gravelly and fine earth slopes, pebbles, dry riverbeds, in montane zone and highlands (2000-3500 m a. s. l.).

Distribution area: Pamir-Alay (Tajikistan, Uzbekistan).

Distribution in Uzbekistan: Alay and Turkestan Ranges (Fergana and Jizzakh Regions). I-3 Fergana-Alay (I-3-b Eastern Alay); I-5 Kuhistan (I-5-a North Turkestan) (Fig. 6).

52. *Oxytropis sewerzowii* Bunge, 1874, Mém. Acad. Imp. Sci. Saint Pétersbourg, Sér. 7, 22(1): 36.

Habitat: stony, gravelly and fine earth slopes, rocks, screes, pebbles, banks of streams, dry riverbeds, alpine swards, in montane zone and highlands (2300–3500 m a. s. l.).

Distribution area: Tian Shan, Northern Pamir-Alay (Kazakhstan, Kyrgyzstan, Uzbekistan).

Distribution in Uzbekistan: Pskem and Ugam Ranges (Tashkent Region). I-1 Western Tian Shan (I-1-a Ugam-Pskem) (Fig. 10).

53. *Oxytropis submutica* Bunge, 1874, Mém. Acad. Imp. Sci. Saint Pétersbourg, Sér. 7, 22(1): 50 (Fig. 3d).

Habitat: stony, gravelly and fine earth slopes, rocks, screes, pebbles, banks of streams, dry riverbeds, alpine swards, in montane zone and highlands (1800–3500 m a. s. l.).

Distribution area: Western Tian Shan, Northern Pamir-Alay (Kazakhstan, Kyrgyzstan, Uzbekistan).

Distribution in Uzbekistan: Chatkal, Karzhantau and Kurama Ranges (Tashkent and Namangan Regions). I-1 Western Tian Shan (I-1-a Ugam-Pskem, I-1-b Western Chatkal, I-1-c Arashan, I-1-d Kurama, I-1-e Chorkesar) (Fig. 14).

Note: Although in "Conspectus Florae Asiae Mediae" (Filimonova, 1983) this species was reported for basins of the rivers Sokh and Shakhimardan and mountains Katrantau on the northern slope of Alay Range, it was missed in the actual checklist of the flora of Kyrgyzstan (Lazkov, Sultanova, 2014). There are following gatherings of *O. submutica* from Chatkal and Alay Ranges, based on which this species should be newly recorded for Kyrgyzstan: "[Kyrgystan, Batken Region, Kadamjay District, Alay Range]: top of Katran. 6 X 1936. T. G. Glybin" (TASH00255687); "[Kyrgystan, Batken Region, Kadamjay District]: Northern foothills of Alay Range, between rivers Sokh and Shakhimardan, north slope of Mts. Katrantau. 11 V 1938. T. G. Glybin" (TASH00255686); "[Kyrgystan, Jalal-Abad Region, Chatkal District]: Chatkal Range, Kumbel Range, left side of the river Ozernaya, alt. 2900–3000 m a. s. l. 8 IX 1963. Blazheevich" (TASH00255721). In addition, in LE, there is a specimen collected on the Chatkal Range on the border between Uzbekistan and Kyrgyzstan: "Pass. Dzhirdan, alpine steppe. № 133. 30 VII 1938. O. E. Knorring" (LE).

54. *Oxytropis tachtensis* Franch., 1883, Ann. Sci. Nat., Bot., sér. 6, 15: 263.

Habitat: stony, gravelly and fine earth slopes, among juniper woodlands and shrubs, in montane zone (1400-2500 m a. s. l.).

Distribution area: Western Pamir-Alay, Kopet Dag (Afghanistan, Tajikistan, Turkmenistan, Uzbekistan).

Distribution in Uzbekistan: Nuratau, Turkestan, Zeravshan and Hissar Ranges (Jizzakh, Navoi, Samarkand and Kaskadarya Regions). I-4 Nuratau (I-4-a Nuratau); I-5 Kuhistan (I-5-a North Turkestan, I-5-c Urgut); I-6 Western Hissar (I-6-a Kashkadarya) (Fig. 8).

55. *Oxytropis terekensis* B. Fedtsch., 1905, Trudy Imp. S.-Peterburgsk. Bot. Sada 24: 192 (Fig. 3e).

Habitat: stony and gravelly slopes, screes, moraines, alpine meadows, in highlands (3000–4000 m a. s. l.).

Distribution area: Tian Shan (Kazakhstan, Kyrgyzstan, Uzbekistan).

Distribution in Uzbekistan: Pskem and Chatkal Ranges (Tashkent and Namangan Regions). I-1 Western Tian Shan (I-1-a Ugam-Pskem, I-1-b Western Chatkal, I-1-c Arashan) (Fig. 8).

Note: In "Conspectus Florae Asiae Mediae" (Filimonova, 1983) and recently published checklists (Tojibaev et al., 2020; Sennikov, Tojibaev, 2021), *O. terekensis* was reported for Kazakhstan and Kyrgyzstan (Karzhantau, Kyrgyz, Pskem, Talas Alatau, Uzun-Akhmat, and Ugam Ranges). Tojibaev (2010) included this species in the checklist of Uzbekistanian part of Western Tian Shan (without citation of gatherings). In Uzbekistan, *O. terekensis* occurs in following localities: "[Uzbekistan, Namangan Region, Pap District]: Western Tian Shan, Chatkal Range, above the lake Arashan, 3500 m a. s. l. 31 VII 1993. I. I. Malzev" (TASH00239095); "[Uzbekistan, Namangan Region, Pap District]: South-western spurs of Tian Shan, Chatkal Range, surroundings of the lake Arashan, gravelly slopes of watershed, 3453 m a. s. l., 41°21'56.6"N, 70°29'35.6"E. 17 VII 2019. K. Sh. Tojibaev, N. Yu. Beshko" (TASH00255859, TASH00255860); "[Uzbekistan, Namangan Region, Pap District]: Chatkal Range, surroundings of the lakes Arashan, stony-gravelly slope, 3268 m a. s. l., N41.368196°, E70.494786°. 14 VII 2021. D. Turdiev, N. Beshko" (TASH00267695, TASH00267696, TASH00267697, TASH00267698, TASH00267699); "[Uzbekistan, Namangan Region, Pap District]: Western Tian Shan, Chatkal Range, basin of the river Angren, upper reaches of Kelinchaksay, 3276 m a. s. l., N41.289454°, E70.412748°. 21 VII 2023. D. Turdiev" (TASH00267798); "[The same locality], 3239 m a. s. l. N41.290645°, E70.414831°. 21 VII 2023. D. Turdiev" (TASH00267799); "[The same locality], 3345 m a. s. l. N41.290617°, E70.411869°. 21 VII 2023. D. Turdiev" (TASH00267800); "[The same locality], 3374 m a. s. l. N41.290623°, E70.40967°. 21 VII 2023. D. Turdiev" (TASH00267801); "[The same locality], 3348 m a. s. l. N41.28996°, E70.40949°. 21 VII 2023. D. Turdiev" (TASH00267802); "[Uzbekistan, Tashkent Region, Bostanliq District]: Western Tian Shan, Pskem Range, watershed between Barkraksay and Tuyaqorin, 3464 m a. s. l. N42.170698°, E70.972946°. 3 VIII 2023. D. Turdiev" (TASH00267797); "[The same locality], 3407 m a. s. l. N42.172095°, E70.971243°. 3 VIII 2023. D. Turdiev" (TASH00267805); "[The same locality], 3492 m a. s. l. N42.169885°, E70.974183°. 3 VIII 2023. D. Turdiev" (TASH00267824).

56. *Oxytropis trajectorum* B. Fedtsch., 1905, Trudy Imp. S.-Peterburgsk. Bot. Sada 24: 182.

Habitat: stony, gravelly and fine earth slopes, moraines, pebbles, in montane zone and highlands (1600–4000 m a. s. l.).

Distribution area: Western Tian Shan (Kazakhstan, Kyrgyzstan, Uzbekistan).

Distribution in Uzbekistan: Maydantal, Pskem and Ugam Ranges (Tashkent Region). I-1 Western Tian Shan (I-1-a Ugam-Pskem) (Fig. 13).

Note: *O. trajectorum* is a novelty for the flora of Uzbekistan. In "Conspectus Florae Asiae Mediae" (Filimonova, 1983) and recently published checklists (Tojibaev et al., 2020; Sennikov, Tojibaev, 2021), it was reported for Kyrgyz, Susamyr and Talas Alatau Ranges (Kazakhstan, Kyrgyzstan). We collected this species from several localities in Uzbekistanian part of Western Tian Shan: "[Uzbekistan, Tashkent Region, Bostanliq District]: Western Tian Shan, Pskem Range, watershed between Barkraksay and Tuyaqorin, 3217 m a. s. l. N42.173005°, E70.962195°. 3 VIII 2023. Turdiev" (TASH00267531); "[The same locality], 3224 m a. s. l. N42.172685°, E70.962385°. 3 VIII 2023. Turdiev" (TASH00267539); "[The same locality], 3213 m a. s. l. N42.17295°, E70.961122°. 3 VIII 2023. Turdiev" (TASH00267540); "[The same locality], 3219 m a. s. l. N42.17274°, E70.961614°. 3 VIII 2023. Turdiev" (TASH00267541, TASH00267542); "[The same locality], 3193 m a. s. l. N42.173329°, E70.958485°. 3 VIII 2023. Turdiev" (TASH00267543); "[The same locality], 3205 m a. s. l. N42.173061°, E70.959446°. 3 VIII 2023. Turdiev" (TASH00267544); "[Uzbekistan, Tashkent Region, Bostanliq District]: Western Tian Shan, Maydantal Range, basin of river Tekeshsay, 2777 m a. s. l.

N42.161092°, E70.781245°. 4 VIII 2023. Turdiev" (TASH00267532); "[The same locality], 2786 m a. s. l. N42.161093°, E70.781034°. 4 VIII 2023. Turdiev" (TASH00267533); "[The same locality], 2775 m a. s. l. N42.161152°, E70.78129°. 4 VIII 2023. Turdiev" (TASH00267534); "[The same locality], 2815 m a. s. l. N42.161291°, E70.779955°. 4 VIII 2023. Turdiev" (TASH00267535); "[The same locality], 2807 m a. s. l. N42.16123°, E70.780336°. 4 VIII 2023. Turdiev" (TASH00267536); "[The same locality], N42.16116°, E70.780642°, 4 VIII 2023. Turdiev" (TASH00267537); "[The same locality], 2799 m a. s. l. N42.161124°, E70.78092°. 2790 m a. s. l. 4 VIII 2023. Turdiev" (TASH00267538); "[Uzbekistan, Tashkent Region, Bostanliq District]: Western Tian Shan, Ugam Range, upper reaches of Kurumzholsay, 3174 m a. s. l. N41.954997°, E70.326809°. 27 VII 2024. Turdiev" (TASH00267392). In addition, in MW, there are gatherings collected by V. N. Pavlov: "[Uzbekistan, Tashkent Region, Bostanliq District]: Western Tian Shan, South Kazakhstan Region, Bostandyk District. Floodplain of the river Pskem, Karangi-tugay (at the confluence of rr. Maydantal and Oygaing, left bank, on pebbles. № 287. 14 VIII 1954. V. N. Pavlov" (MW0848611, MW0848616).

57. *Oxytropis trichocalycina* Bunge ex Boiss., 1872, Fl. Orient. 2: 502 (Fig. 5f).

Habitat: stony and gravelly slopes, rocks, screes, in montane zone and highlands (1300–3000 m a. s. l.). Distribution area: Tian Shan, Western Pamir-Alay (China, Kazakhstan, Kyrgyzstan, Uzbekistan).

Distribution in Uzbekistan: Karzhantau, Ugam, Aktau, Nuratau, Turkestan, Hissar, and Zeravshan Ranges (Tashkent, Jizzakh, Kashkadarya, Navoi and Samarkand Regions). I-1 Western Tian Shan (I-1-a Ugam-Pskem); I-4 Nuratau (I-4-a Nuratau, I-4-b Aktau); I-5 Kuhistan (I-5-a North Turkestan, I-5-c Urgut); I-6 Western Hissar (I-6-a Kashkadarya) (Fig. 10).

58. *Oxytropis tschimganica* Gontsch., 1947, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk S.S.S.R. 10: 85.

Habitat: stony, gravelly and fine earth slopes, alpine meadows, pebbles, in montane zone and highlands (1700-3200 m a. s. l.).

Distribution area: Tian Shan (Kazakhstan, Kyrgyzstan, Uzbekistan).

Distribution in Uzbekistan: Chatkal, Maydantal, Pskem, and Ugam Ranges (Tashkent Region). I-1 Western Tian Shan (I-1-a Ugam-Pskem, I-1-b Western Chatkal) (Fig. 8).

59. *Oxytropis tyttantha* Gontsch., 1941, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk S.S.S.R. 9: 90.

Habitat: stony and fine earth slopes, outcrops of red clays, near snowfields, in montane zone and highlands (2000–3500 m a. s. l.).

Distribution area: Hissar Range in Western Pamir-Alay (Uzbekistan). Endemic, national endemic of Uzbekistan.

Distribution in Uzbekistan: Hissar Range (Kashkadarya and Surkhandarya Regions). I-6 Western Hissar (I-6-a Kashkadarya, I-6-c Baysun); I-7 Hissar-Darvaz (I-7-a Sangardak-Tupalang) (Fig. 11).

Conservation status: UzbRDB 3.

60. *Oxytropis ugamensis* Vassilcz., 1980, Byull. Moskovsk. Obshch. Isp. Prir., Otd. Biol. 85(2): 113.

Habitat: stony slopes, rocks, in montane zone (2000–2500 m a. s. l.).

Distribution area: Ugam Range in Western Tian Shan (Kazakhstan, Uzbekistan). Endemic.

Distribution in Uzbekistan: Ugam Range (Tashkent Region). I-1 Western Tian Shan (I-1-a Ugam-Pskem) (Fig. 6).

61. *Oxytropis ugamica* Gontsch., 1947, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk S.S.S.R. 10: 87 (Fig. 3f).

Habitat: stony and gravelly slopes, rocks, outcrops of variegated beds, in foothills and montane zone (800–2500 m a. s. l.).

Distribution area: Western Tian Shan (Kazakhstan, Tajikistan, Uzbekistan).

Distribution in Uzbekistan: Chatkal, Karzhantau, Kurama, and Ugam Ranges (Tashkent Region). I-1 Western Tian Shan (I-1-a Ugam-Pskem, I-1-b Western Chatkal, I-1-d Kurama) (Fig. 8).

62. *Oxytropis vvedenskyi* Filim., 1982, Bot. Mater. Gerb. Inst. Bot. Akad. Nauk Uzbeksk. S.S.R. 20: 43 (Fig. 4f).

Habitat: outcrops of red clays, stony and fine earth slopes, rocks, in montane zone and highlands (2500–3500 m a. s. l.).

Distribution area: Hissar Range in Western Pamir-Alay (Uzbekistan). Endemic, national endemic of Uzbekistan.

Distribution in Uzbekistan: Hissar Range (Surkhandarya Region). I-6 Western Hissar (I-6-c Baysun) (Fig. 8).

Conservation status: UzbRDB 3.

Among 62 *Oxytropis* species recorded in Uzbekistan, 34 are shared with Kyrgyzstan, 33 – with Tajikistan, 28 – with Kazakhstan, 5 – with Turkmenistan, and 8 are national endemics. Narrow endemics distributed on a single mountain range are 11 species, 7 of them are national endemics and 4 are shared with an adjacent country (*O. babatagi* – with Tajikistan, *O. megalorrhyncha* and *O. pseudoleptophysa* – with Turkmenistan, *O. ugamensis* – with Kazakhstan). National endemics of Uzbekistan are following *Oxytropis* species: *O. chesneyoides, O. fedtschenkoi, O. kamelinii* (Fig. 4b), *O. lasiocarpa, O. macrocarpa, O. pseudorosea* (Fig. 4e), *O. tyttantha*, and *O. vvedenskyi* (Fig. 4f). One of them is distributed in Western Tian Shan, the rest 7 species – in Pamir-Alay. Three national endemics (*O. pseudorosea, O. tyttantha*, and *O. vvedenskyi*) are listed in the Red Data Book of Uzbekistan (2019), while the conservation status of five species endemic to Uzbekistan has not yet been assessed.

The analysis of the spatial distribution of *Oxytropis* species in Uzbekistan showed that 21 species occur only in the Western Tian Shan (16 are endemics), 29 – only in Pamir-Alay (17 are endemics), and 12 species are widespread in both mountain systems. The richest diversity of *Oxytropis* species in Uzbekistan is concentrated on Hissar (29), Chatkal (25) and Ugam (19) ranges, while the lowest number of species (only 3) is recorded for Aktau and Babatag ranges. Among 23 phytogeographical regions of the mountainous part of Uzbekistan, the highest number of species occurs in Ugam-Pskem (25), Western Chatkal (21) and Kashkadarya (21) regions (Table 1).

Table 1. Distribution of *Oxytropis* species by phytogeographical regions of Uzbekistan

Phytogeographical districts	Species number	Phytogeographical region	Species number
I Mountain Middle Asian province			
Tian Shan mountain system			
I-1 Western Tian Shan	32	I-1-a Ugam-Pskem	25
		I-1-b Western Chatkal (Chimgan)	21
		I-1-c Arashan	9
		I-1-d Kurama (Akhangaran)	13
		I-1-e Chorkesar	10
Pamir-Alay mountain system			
I-2 Fergana	3	Southern Chatkal	3
I-3 Fergana-Alay	8	I-3-a Western Alay	3
		I-3-b Eastern Alay	7
I-4 Nuratau	4	I-4-a Nuratau	4
		I-4-b Aktau	3
I-5 Kuhistan	19	I-5-a North Turkestan	14
		I-5-b Malguzar	4
		I-5-c Urgut	7
I-6 Western Hissar	26	I-6-a Kashkadarya	21
		I-6-b Tarkapchigay	3
		I-6-c Baysun	16
		I-6-d Kugitang	5
I-7 Hissar-Darvaz	12	I-7-a Sangardak-Tupalang	12
I-8 Panj	3	I-8-a Babatag	3
II Turan Province			
II-1 Central Fergana	1	II-1-a Kayrakum-Yazyavan	1
II-2 Middle-Syrdarya	1	II-2-a Chinaz	1
II-4 Bukhara	1	II-4-a Middle Zeravshan	1
		II-4-b Lower Zeravshan	1

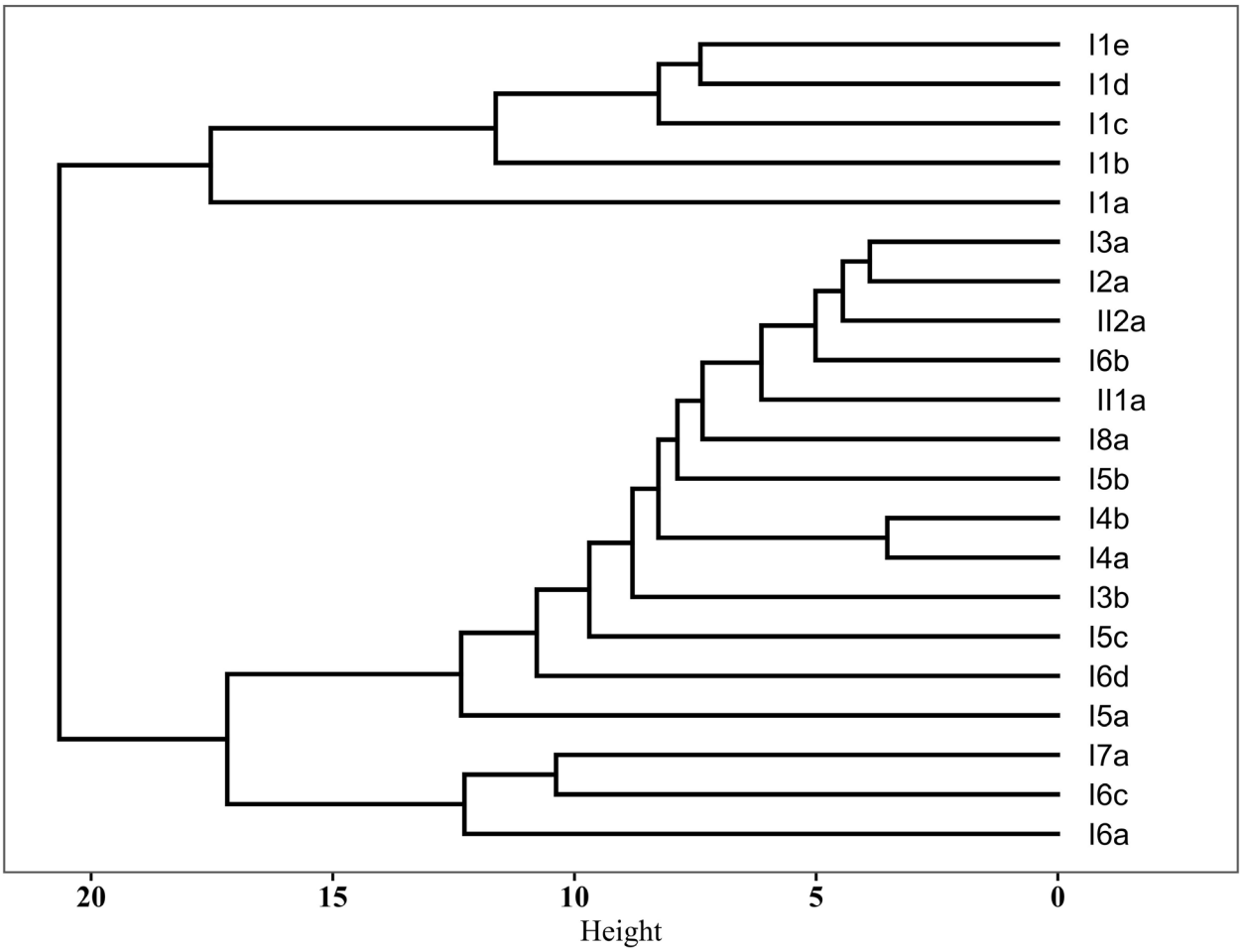

Fig. 16. Cluster dendrogram demonstrating similarities and differences of *Oxytropis* species composition between the phytogeographical regions of Uzbekistan.

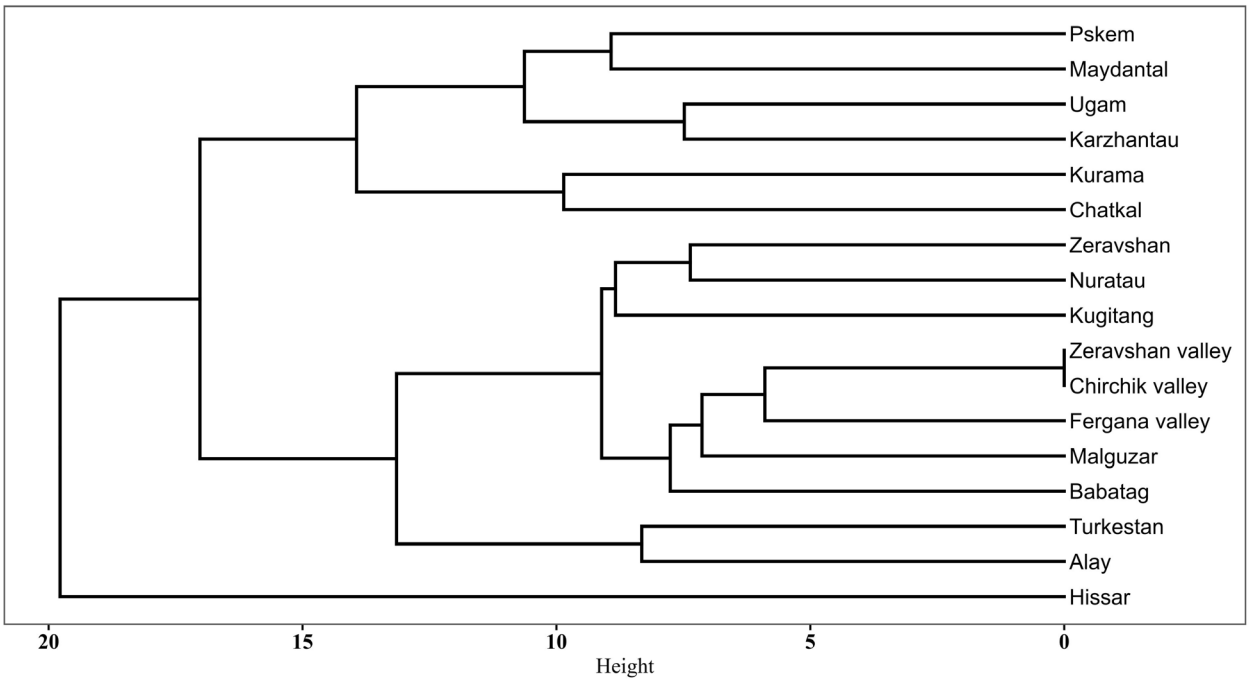

Fig. 17. Cluster dendrogram demonstrating similarities and differences of *Oxytropis* species composition between mountain ranges of Uzbekistan.

The cluster dendrogram of phytogeographical regions demonstrates a significant difference of *Oxytropis* species composition between two major clusters, regions belonging to Western Tian Shan phytogeographical district and a cluster of all other regions (Fig. 16). Within the cluster of Western Tian Shan district, the arrangement of *Oxytropis* species composition among phytogeographical regions shows a similarity between neighboring mountain regions with a distinctive north to south pattern, the same pattern demonstrates the dendrogram of mountain ranges (Fig. 17). Within this major group, the Ugam-Pskem Region forms a separated cluster due to floristic relationships of this area with the Talas Alatau and Syrdarya Karatau.

Within the second major group, there are two subgroups. One of them is composed of Kashkadarya and Baysun regions of Western Hissar district and Sangardak-Tupalang region of Hissar-Darvaz district; this cluster of adjacent phytogeographical regions covers the Uzbekistanian part of highlands of Hissar Range. Within the second subgroup, the North Turkestan region of Kuhistan district occupies an outgroup position in relation to the other regions. Nuratau and Aktau regions together form a separated cluster of Nuratau district. The South Chatkal phytogeographical region of Fergana district (southern foothills of Chatkal Range within the Uzbekistanian part of Fergana valley) forms a cluster with Eastern Alay region of Fergana-Alay district (northern slope of Alay Range) and differs very noticeably from neighboring Chorkesar region of Western Tian Shan district. Thus, results of cluster analysis of *Oxytropis* species composition fits well the scheme of phytogeographical division of Uzbekistan, especially, in Western Tian Shan (Tojibaev et al., 2016, 2017).

On the dendrogram demonstrating similarities and differences of *Oxytropis* species composition between mountain ranges (Fig. 17), the Hissar Range, highest and largest among mountain chains of Uzbekistan, forms a separated cluster that occupies an outgroup position to two major clusters of Western Tian Shan and Pamir-Alay. As noted above, the arrangement of mountain ranges of Western Tian Shan demonstrates a similarity between neigbouring ranges and a distinctive north to south pattern. In Pamir-Alay group, there is a more complex pattern of clusters, quite logical and expected arranged in two subgroups, a cluster of adjacent high-altitude humid ranges of North Pamir-Alay (Alay and Turkestan), and a cluster of Zeravshan Range (its western part) with peripheral medium-altitude arid and semi-arid western and southern branches of Pamir-Alay, with adjacent river valleys. Within this subgroup, the western part of Zeravshan Range forms a cluster with Nuratau and Kugitang, which should be attributed to floristic relationships between these regions.

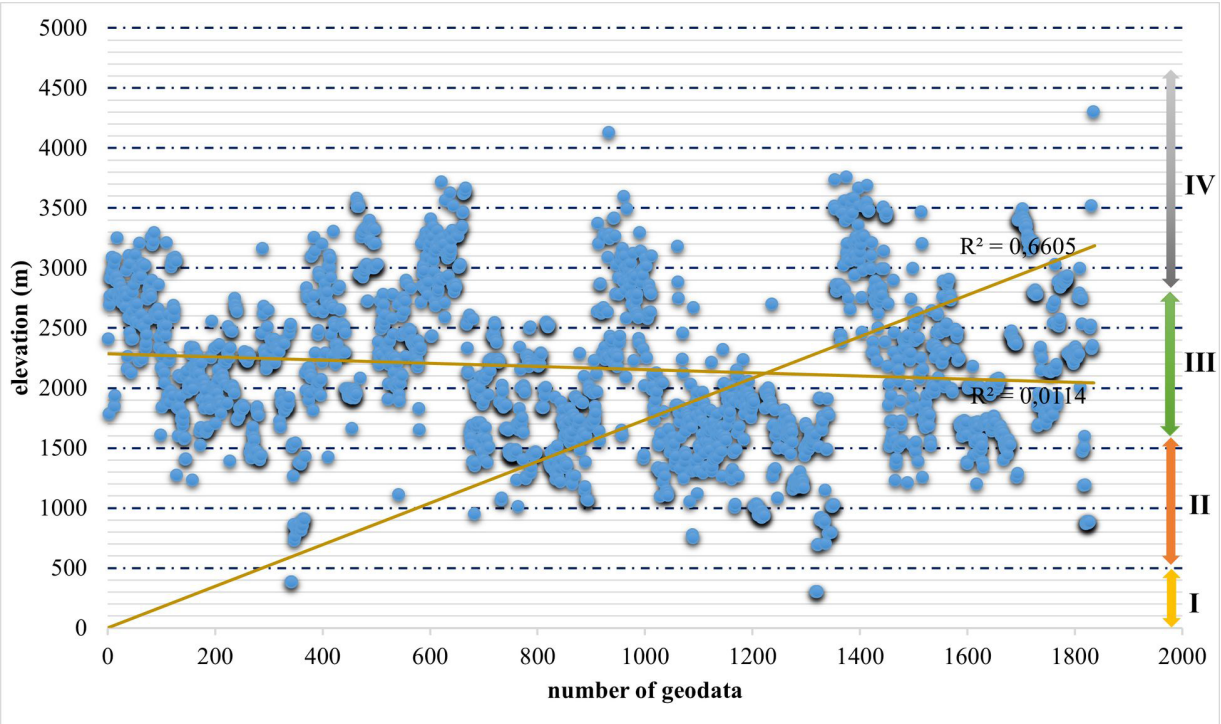

Fig. 18. Elevational distribution of *Oxytropis* species in Uzbekistan.

The species richness (SR) and collection density (CD) maps (Fig. 15) demonstrate that *Oxytropis* species are very unevenly spread in Uzbekistan. In total, the country was divided into 4753 10 × 10 km grid cells; representatives of the genus were recorded only in 210 (4.41 %) of these cells. We identified 11 grid cells with high *Oxytropis* SR (7–13 species), 66 cells with moderate SR (3–6 species), and 133 cells with low SR (1–2 species). The "hot spots" of *Oxytropis* diversity of Uzbekistan are situated near the junction of Karzhantau and Ugam Ranges, on Chatkal Range (Mts. Chimgan and Kyzylnura, northern part of Angren Plateau), Turkestan Range (upper reaches of the rivers Zaaminsu and Guralash) and on Hissar Range. The most widely spread species are *O. savellanica* (Fig. 5e, recorded in 35 cells), *O. microsphaera* (Fig. 5c, 33 cells), *O. submutica* (Fig. 3d, 30 cells), *O. pilosissima* (29), *O. macrodonta* (23), *O. capusii* (Fig. 4a, 21 cells), and *O. lithophila* (20 cells), while *O. babatagi*, *O. baldshuanica*, *O. canopatula*, *O. microcarpa*, *O. poncisii*, and *O. ugamensis* were recorded in a single cell only.

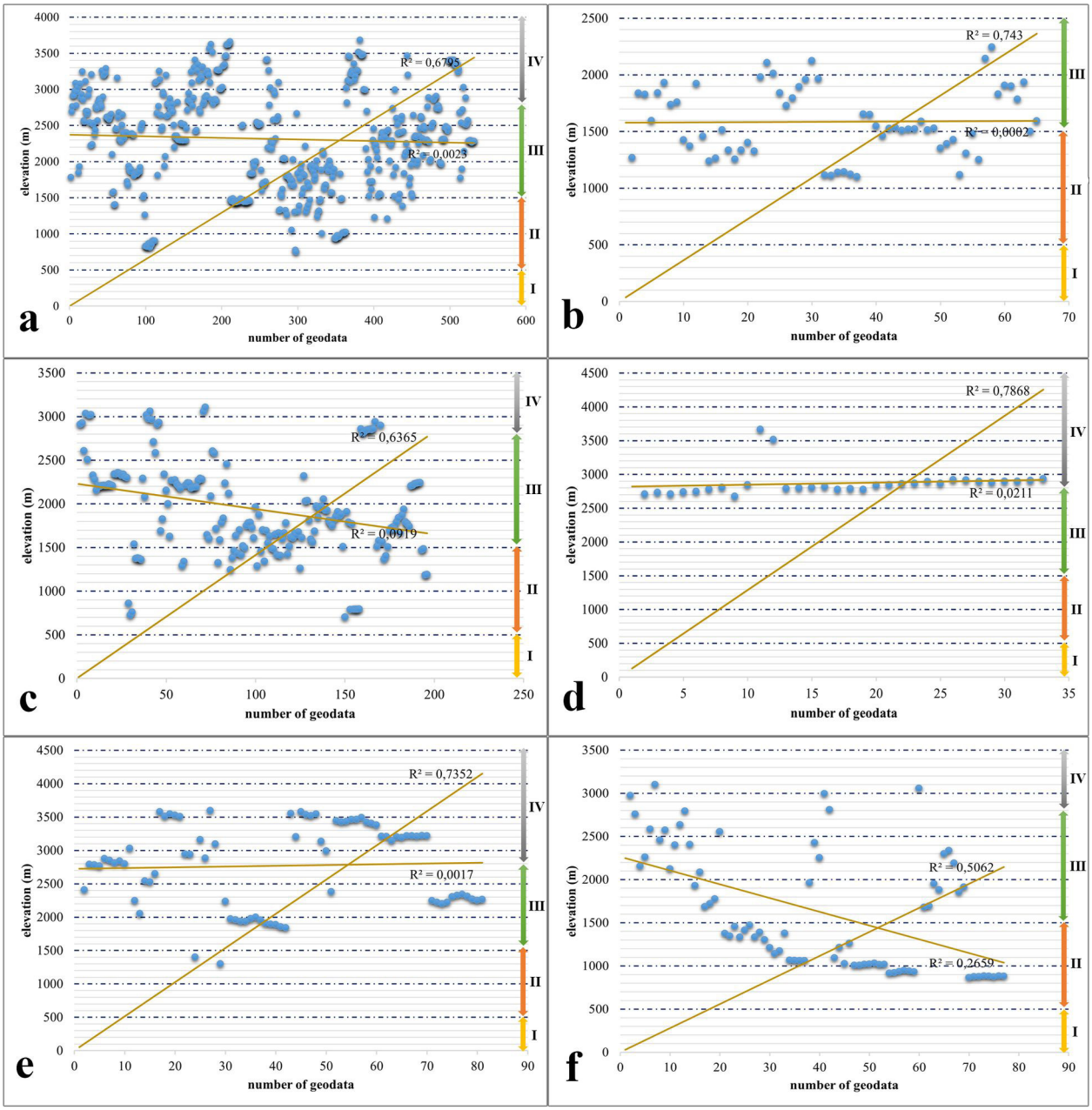

Fig. 19. Elevational distribution of *Oxytropis* species in Uzbekistan within mountain ranges of Western Tian Shan: a – Chatkal; b – Karzhantau; c – Kurama; d – Maydantal; e – Pskem; f – Ugam.

We identified 5 cells as the areas very high of collection density (CD is 57–131 specimens), these are surroundings of the village Khumsan near the junction of Karzhantau and Ugam Ranges, Mts. Chimgan and Kyzylnura on Chatkal Range, upper reaches of the river Zaaminsu on Turkestan Range and the central part of Nuratau Range. In 15 cells CD is 31–56 specimens, in 30 cells – 15–30 specimens, and in 160 cells – 1–14 specimens. The most common and frequently collected species are *O. pilosissima* (194 occurrence records), *O. submutica* (157), *O. tachtensis* (118), *O. macrodonta* (112), *O. microsphaera* (91), and *O. leucocyanea* (Fig. 5a, 90 specimens), while *O. microcarpa*, *O. poncisii*, and *O. ugamensis* are known by a single record only.

In general, the species richness (SR) and collection density (CD) maps (Fig. 15) confirmed that the "hotspots" of *Oxytropis* diversity in Uzbekistan are situated on the largest mountain ranges, Hissar in Pamir-Alay and Chatkal in Western Tian Shan.

We also analyzed elevational distribution of *Oxytropis* species in Uzbekistan along a 100-m elevational gradient and four vertical belts designated on the diagrams as following: I – plain, II – foothills, III – montane zone, IV – highlands (Figs. 18–20). It was found that majority of locoweeds of Uzbekistan (57 species, 91.9 %) is distributed in the montane zone (between 1500 and 2700–2800 m a. s. l.), 39 species (62.9 %) grow in highlands (above 2700–2800 m a. s. l.) and 14 species (22.6 %) occur in foothills (between 400–500 and 1500 m a. s. l.). Only two species (*O. glabra* and *O. riparia*) descent to the plains along the river valleys and occur in phytogeographical regions belonging to Turanian Province. In general, the average elevation of *Oxytropis* species distribution in Uzbekistan is 2100 m a. s. l. The results of separated analysis for the mountain ranges of Western Tian-Shan and Pamir-Alay showed that the average elevation of *Oxytropis* species distribution lies at 2200 m a. s. l. in Western Tian-Shan (Chatkal Range – 2300 m, Karzhantau Range – 1600 m, Kurama Range – 1850 m, Maydantal Range – 2900 m, Pskem Range – 2800 m, and Ugam Range – 1400 m), and at 2100 m a. s. l. in Pamir-Alay (Alay Range – 1800 m), Babatag Range – 2100 m, Hissar Range – 2400 m, Kugitang Range – 1600 m, Malguzar Range – 2000 m, Nuratau Range – 1650 m, Turkestan Range – 2500 m, and Zeravshan Range – 1650 m) (Figs. 19–20). The widest amplitude of locoweeds elevational distribution occurs on the largest mountain ranges of Uzbekistan, Hissar in Pamir-Alay and Chatkal in Western Tian Shan, vertical profile of which covers all altitudinal zones, from plain to highlands (Fig. 19a, 20c).

Thus, the majority of *Oxytropis* species in Uzbekistan occurs in two upper vertical zones, but there are noticeable peculiarities in elevational distribution of locoweeds on different mountain ranges should be attributed to local climatic and habitat conditions connected with their geographic position, geology and diversity of landscapes.

Conclusion

Being a part of Mountains of Middle Asia global biodiversity hotspot, mountainous regions of Uzbekistan are characterized by the outstanding richness and endemism of representatives of the family Fabaceae, e. g. *Oxytropis*. An updated checklist of *Oxytropis* of the flora of Uzbekistan includes 62 species, predominantly Middle Asian endemics, with 8 national endemics, which is somewhat inferior to neigbouring Kazakhstan and Kyrgyzstan but superior to Tajikistan and Turkmenistan. The "hotspots" of *Oxytropis* diversity in Uzbekistan are situated on the largest mountain ranges, Hissar in Pamir-Alay and Chatkal in Western Tian Shan. The mapping and analysis of distribution patterns of *Oxytropis* species provide a background for further taxonomical treatments, assessment of global status of species and biodiversity conservation.

Acknowledgements

The authors are grateful to curators of studied herbaria for providing an opportunity to examine the collections, and for the administration of nature reserves and national parks for help in field expeditions. We thank A. D. Gaziev for contribution to field studies and identification of gatherings. We also thank recently departed Prof. F. O. Khassanov for helpful comments and consultations. The study was carried out within the framework of state research programs "Cadaster of the flora of Tashkent Region" and "Digital Nature. Development of a digital platform for the flora of Central Uzbekistan", and the research project "Taxonomic revision of polymorphic plant families of the flora of Uzbekistan" (FZ-20200929321) of the Institute of Botany, Academy of Sciences of the Republic of Uzbekistan.

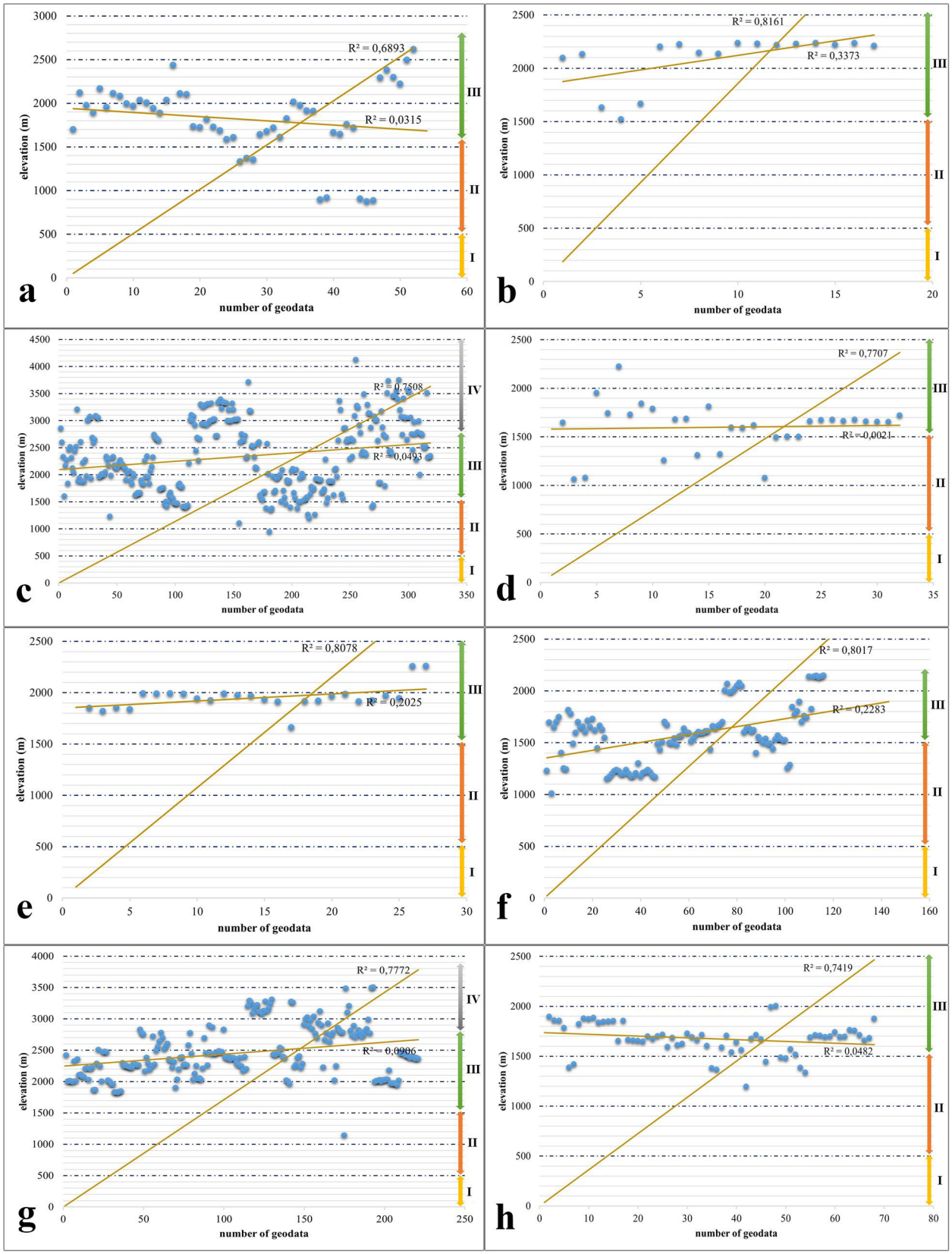

Fig. 20. Elevational distribution of *Oxytropis* species in Uzbekistan within mountain ranges of Pamir-Alay: a – Alay; b – Babatag; c – Hissar; d – Kugitang; e – Malguzar; f – Nuratau; g – Turkestan; h – Zeravshan.

REFERENCES / ЛИТЕРАТУРА

Abdulina S. A. 1999. Spisok sosudistykh rasteniy Kazakhstana [*Checklist of vascular plants of Kazakhstan*]. R. V. Kamelin (ed.). Almaty: Steka. 187 pp. [In Russian] (***Абдулина С. А.*** Список сосудистых растений Казахстана. Под ред. Р. В. Камелина. Алматы: Стека, 1999. 187 с.).

Abdusalyamova L. N. 1978. *Oxytropis* DC. In: *Flora Tadzhikskoy SSR* [*Flora of TajikSSR*]. Vol. 5. Moscow; Leningrad: Publishers of Academy of Sciences of USSR. Pp. 426–496. [In Russian] (***Абдусалямова Л. Н.*** *Oxytropis* DC. – Остролодочник // Флора Таджикской ССР. Т. 5. М.; Л.: Изд-во АН СССР, 1978. С. 426–496).

Aralbayev N. K., Kudabayeva G. M., Vesselova P. V., Danilov M. P., Zakirova R. O., Nelina N. V., et al. 2002. *Gosudarstvennyy kadastr rasteniy Yuzhno-Kazakhstanskoy oblasti. Kniga pervaya. Konspekt vidov vysshikh sosudistykh rasteniy* [*State cadastre of plants of South-Kazakhstanian Province. First book. Checklist of higher vascular plants*]. N. K. Aralbayev (ed.). Almaty: Gylym. 314 pp. [In Russian] (***Аралбаев Н. К., Кудабаева Г. М., Веселова П. В., Данилов М. П., Закирова Р. О., Нелина Н. В., и др.*** Государственный кадастр растений Южно-Казахстанской области. Книга первая. Конспект видов высших сосудистых растений. Под ред. Н. К. Аралбаева. Алматы: Гылым, 2002. 314 с.).

Araújo M. B., Anderson R. P., Barbosa A. M., Beale C. M., Dormann C. F., Early R., Garcia R. A., Guisan A., Maiorano L., Naimi B., O'Hara R. B., Zimmermann N. E., Rahbek C. 2019. Standards for distribution models in biodiversity assessments. *Sci. Adv.* 5(1): eaat4858. https://doi.org/10.1126/sciadv.aat4858

Baasanmunkh S., Urgamal M., Oyuntsetseg B., Sukhorukov A. P., Tsegmed Z., Son D. C., et al. 2022. Flora of Mongolia: annotated checklist of native vascular plants. *PhytoKeys* 192: 63–169. https://doi.org/10.3897/phytokeys.192.79702

Bajtenov M. S. 1961. *Oxytropis* DC. In: *Flora Kazakhstana* [*Flora of Kazakhstan*]. Vol. 3. Alma-Ata: Academy of Sciences of the Kazakh SSR. Pp. 330–411. [In Russian] (***Байтенов М. С.*** *Oxytropis* DC. – Остролодочник // Флора Казахстана. Т. 3. Алма-Ата: Изд-во АН Казахской ССР, 1961. С. 330–411).

Beshko N. Yu., German D. A., Gaziev A. D., Malzev I. I., Khojimatov O. K., Kodyrov U. Kh., Kosimov Z. Z., Madaminov F. M., Daminova N. E. 2024. *Kadastr flory Uzbekistana: Tashkentskaya oblast* [*Cadaster of the flora of Uzbekistan: Tashkent region*]. Tashkent: Kaleon Press. 366 p. [In Russian] (***Бешко Н. Ю., Герман Д. А., Газиев А. Д., Мальцев И. И., Ходжиматов О. К., Кодиров У. Х., Косимов З. З., Мадаминов Ф. М., Даминова Н. Э.*** Кадастр флоры Узбекистана: Ташкентская область. Ташкент: Kaleon Press, 2024. 366 с.).

Filimonova Z. N. 1983. *Oxytropis* DC. In: *Opredelitel rasteniy Sredney Azii* [*Conspectus Florae Asiae Mediae*]. Vol. 7. Tashkent: Publ. House "Fan" of Uzbek SSR. Pp. 323–368. [In Russian] (***Филимонова З. Н.*** *Oxytropis* DC. – Остролодочник // Определитель растений Средней Азии. Т. 7. Ташкент: Изд-во «Фан» Узбекской ССР, 1983. С. 323–368).

GBIF [2025]. *Global Biodiversity Information Facility*. URL: https://www.gbif.org/ (Accessed 01 January 2025).

Gontscharow N. F. 1955. *Oxytropis* DC. In: *Flora Uzbekistana* [*Flora of Uzbekistan*]. Vol. 3. Tashkent: Academy of Sciences of the Uzbek SSR. Pp. 686–714. [In Russian] (***Гончаров Н. Ф.*** *Oxytropis* DC. – Остролодочник // Флора Узбекистана. Т. 3. Ташкент: Изд-во Академии наук УзССР, 1955. С. 686–714).

iNaturalist contributors, iNaturalist [2025]. iNaturalist Research-grade Observations. iNaturalist.org. Occurrence dataset https://doi.org/10.15468/ab3s5x accessed via GBIF.org on 2025-01-31.

IUCN [2025]. *The IUCN Red List of Threatened Species*. Version 2024-2. URL: https://www.iucnredlist.org/ (Accessed 31 January 2025).

IUCN Red List Categories and Criteria. 2012. Version 3.1. Second Edition. Gland, Switzerland and Cambridge, UK. 32 pp.

Karaman Erkul S., Aytaç Z. 2013. The revision of the genus *Oxytropis* (Leguminosae) in Turkey. *Turk. J. Bot*. 37(1): 24-38. https://doi.org/10.3906/bot-1109-17

Khassanov F. O. (ed.). 2015. *Opredelitel rasteniy Sredney Azii* [*Conspectus Florae Asiae Mediae*]. Vol. 11. Tashkent: Publ. house "FAN" of the Academy of Sciences of the Republic of Uzbekistan. 456 pp. [In Russian] (***Хасанов Ф. О.*** (ред.). *Определитель растений Средней Азии*. Т. 11. Ташкент: Изд-во «Фан» АН РУз, 2015. 456 с.).

Kholina A., Kozyrenko M., Artyukova E., Sandanov D., Selyutina I. 2021. Genetic diversity of *Oxytropis* section *Xerobia* (Fabaceae) in one of the centres of speciation. *Genetica* 149: 89–101. https://doi.org/10.1007/s10709-021-00115-9

Knyazev M. S. 2023. Synopsis of the genus *Oxytropis* (Fabaceae) of Eastern Europe and the Urals. *Novosti Sist. Vyssh. Rast.* 54: 53–75. [In Russian] (***Князев М. С.*** Конспект рода *Oxytropis* (Fabaceae) Восточной Европы и Урала // Новости сист. высш. раст., 2023. Т. 54. С. 53–75).

Konspekt flory Aziatskoy Rossii: Sosudistyye rasteniya [*Check-list of the flora of Asian Russia: Vascular plants*]. 2012. K. S. Baikov (ed.). Novosibirsk: Izdatelstvo SO RAN. 640 pp. [In Russian] (*Конспект флоры Азиатской России: Сосудистые растения*. Под ред. К. С. Байкова. Новосибирск: Изд-во СО РАН, 2012. 640 с.).

Kottek M., Grieser J., Beck C., Rudolf B., Rubel F. 2006. World Map of the Köppen-Geiger Climate Classification Updated. *Meteorol. Z.* 15(3): 259–263.

Lazkov G. A., Sultanova B. A. 2014. *Kadastr flory Kyrgyzstana. Sosudistyye rasteniya* [*Checklist of Kyrgyzstan's flora. Vascular plants*]. Bishkek: UNDP. 125 pp. [In Russian] (***Лазьков Г. А., Султанова Б. А.*** Кадастр флоры Кыргызстана. Сосудистые растения. Бишкек: ПРООН, 2014. 125 с.).

Ma S., Li W., Tojibaev K. Sh., Turginov O., Yang W., Ma K. 2024. Regionwide and nationwide floristic richness reveal vascular plant diversity in Central Asia. *Plants* 13: 2275. https://doi.org/10.3390/plants13162275

Maassoumi A. A. 2013. A contribution to the genus *Oxytropis* in Iran. *Iran. J. Bot.* 21: 19–23.

Maassoumi A. A. 2018. A new species and some additions to the genus *Oxytropis* DC. (Fabaceae) in Iran. *Feddes Repert.* 129: 38–42. https://doi.org/10.1002/fedr.201700003

Maassoumi A. A., Ashouri P. 2022. The hotspots and conservation gaps of the mega genus *Astragalus* (Fabaceae) in the Old-World. *Biodivers. Conserv.* 31: 2119–2139. https://doi.org/10.1007/s10531-022-02429-2

Malyshev L. I. 2006. Model significance of the genus *Oxytropis* (Fabaceae) for phytogeographical division of North and Central Asia. *Bot. Zhurn.* 91(8): 1145–1156. [In Russian] (***Малышев Л. И.*** Модельное значение рода *Oxytropis* (Fabaceae) для ботанико-географического районирования Северной и Центральной Азии // Бот. журн., 2006. Т. 91, № 8. С. 1145–1156).

Malyshev L. I. 2008. Diversity of the genus *Oxytropis* in Asian Russia. *Turczaninowia* 11, 4: 5–141. [In Russian]. (***Малышев Л. И.*** Разнообразие рода Остролодка (*Oxytropis*) в Азиатской России // Turczaninowia, 2008. Т. 11, № 4. С. 5–141).

Marchese C. 2014. Biodiversity hotspots: A shortcut for a more complicated concept. *Global Ecology and Conservation* 3: 297–309. https://doi.org/10.1016/j.gecco.2014.12.008

Mittermeier R. A., Gil P. R., Hoffmann M., Pilgrim J., Brooks T., Mittermeier C. G., Lamoreux J., Da Fonseca G. A. B., Seligmann P. A. 2004. *Hotspots revisited: Earth's biologically richest and most endangered terrestrial ecoregions*. Mexico City: CEMEX. 315 pp.

Nowak A., Nobis M. (eds.). 2020. *Illustrated flora of Tajikistan and adjacent areas*. Warsaw, Cracow, Opole: Polish Academy of Sciences, Botanical Garden, Center for Biological Diversity Conservation. 766 pp.

Nowak A., Świerszcz S., Nowak S., Hisoriev H., Klichowska E., Wrobel A., Nobis A., Nobis M. 2020. Red List of vascular plants of Tajikistan – the core area of the Mountains of Central Asia global biodiversity hotspot. *Sci. Rep.* 10: 6235. https://doi.org/10.1038/s41598-020-63333-9

Ondo I., Dhanjal-Adams K. L., Pironon S., Silvestro D., Colli-Silva M., Deklerck V., Grace O. M., Monro A. K., Nicolson N., Walker B., Antonelli A. 2024. Plant diversity darkspots for global collection priorities. *New Phytol.* 244(2): 719–733. https://doi.org/10.1111/nph.20024

Plantarium [2007–2025]. *Plants and lichens of Russia and neighboring countries: open online galleries and plant identification guide*. URL: https://www.plantarium.ru/lang/en.html (Accessed 11 January 2025). [In Russian] (*Плантариум. Растения и лишайники России и сопредельных стран: открытый онлайн атлас и определитель растений.* 2007–2025. URL: https://www.plantarium.ru/ [дата обращения: 11.01.2025]).

Polozhij A. V. 2003. On the problem of the origin and evolution of the genus *Oxytropis* (Fabaceae). *Bot. Zhurn.* 88(10): 55-59. [In Russian] (***Положий А. В.*** К вопросу о происхождении и эволюции рода *Oxytropis* (Fabaceae) // Бот. журн., 2003. Т. 88, № 10. С. 55–59).

POWO [2025]. *Plants of the World Online*. Kew: Facilitated by the Royal Botanic Gardens. URL: https://powo.science.kew.org/ (Accessed 11 January 2025).

Rastitelnyy pokrov Uzbekistana i puti ego ratsionalnogo ispolzovaniya [*Vegetation cover of Uzbekistan and the ways of its rational use*]. 1971. Vol. 1. I. I. Granitov, L. N. Babushkin (eds.). Tashkent: Publ. House "Fan" of Uzbek SSR. 228 pp. [In Russian] (*Растительный покров Узбекистана и пути его рационального использования.* Т. 1. Ред. И. И. Гранитов, Л. Н. Бабушкин. Ташкент: Изд-во «Фан» Узбекской ССР, 1971. 228 с.).

Rastitelnyy pokrov Uzbekistana i puti ego ratsionalnogo ispolzovaniya [*Vegetation cover of Uzbekistan and the ways of its rational use*]. 1973. Vol. 2. K. Z. Zakirov, I. I. Granitov (eds.). Tashkent: Publ. House "Fan" of Uzbek SSR. 404 pp. [In Russian] (*Растительный покров Узбекистана и пути его рационального использования*. Т. 2. Ред. К. З. Закиров, И. И. Гранитов. Ташкент: Изд-во «Фан» Узбекской ССР, 1973. 404 с.).

Rastitelnyy pokrov Uzbekistana i puti ego ratsionalnogo ispolzovaniya [*Vegetation cover of Uzbekistan and the ways of its rational use*]. 1976. Vol. 3. I. I. Granitov, A. D. Pjataeva (eds.). Tashkent: Publ. House "Fan" of Uzbek SSR. 298 pp. [In Russian] (*Растительный покров Узбекистана и пути его рационального использования*. Т. 3. И. И. Гранитов, А. Д. Пятаева. Ташкент: Изд-во «Фан» Узбекской ССР, 1976. 298 с.).

Rastitelnyy pokrov Uzbekistana i puti ego ratsionalnogo ispolzovaniya [*Vegetation cover of Uzbekistan and the ways of its rational use*]. 1984. Vol. 4. K. Z. Zakirov (ed.). Tashkent: Publ. House "Fan" of Uzbek SSR. 384 pp. [In Russian] (*Растительный покров Узбекистана и пути его рационального использования*. Т. 4. Ред. К. З. Закиров. Ташкент: Изд-во «Фан» Узбекской ССР, 1984. 384 с.).

Red Data Book of the Republic of Uzbekistan. 2019. Vol. 1. Plants. F. O. Khassanov (ed.). Tashkent: Tasvir. 356 pp. [In Uzbek, Russian and English] (*Красная книга Республики Узбекистан.* Т. 1. Растения. Ташкент: Tasvir, 2019. 356 с.).

Sandanov D. V., Dugarova A. S., Selyutina I. Yu. 2020. Species distribution modeling for the section *Xerobia* Bunge of the genus *Oxytropis* DC. on the territory of Central Asia under past and future climate change. *Vestnik Tomskogo Gosudarstvennogo Universiteta. Biologia [Tomsk State University Journal of Biology]* 52: 85–104. [In Russian] (***Сандanов Д. В., Дугарова Ф. С., Селютина И. Ю.*** Моделирование распространения видов секции *Xerobia* Bunge рода *Oxytropis* DC. на территории Центральной Азии при климатических изменениях в прошлом и будущем // Вестн. Том. гос. ун-та. Биология, 2020. № 52. С. 85–104). https://doi.org/10.17223/19988591/52/5

Sandanov D. V., Dugarova A. S., Brianskaia E. P., Selyutina I. Yu., Makunina N. I., Dudov S. V., Chepinoga V. V., Wang Z. 2021. *Occurrences of Oxytropis species on the territory of Asian Russia.* Version 1.6. Institute of General and Experimental Biology of SB RAS. Occurrence dataset. https://doi.org/10.15468/3vcw7y (Accessed 11 January 2025).

Sandanov D. V., Dugarova A. S., Brianskaia E. P., Selyutina I. Yu., Makunina N. I., Dudov S. V., Chepinoga V. V., Wang Z. 2022. Diversity and distribution of *Oxytropis* DC. (Fabaceae) species in Asian Russia. *Biodivers. Data J.* 10: e78666. https://doi.org/10.3897/BDJ.10.e78666

Sennikov A. N. (ed.) 2016. *Flora Uzbekistana* [*Flora of Uzbekistan*]. Vol. 1. Tashkent: Navruz Publishers. xxviii + 173 pp. [In Russian] (***Сенников А. Н.*** (ред.). *Флора Узбекистана*. Т. 1. Ташкент: Навруз, 2016. xxviii + 173 с.).

Sennikov A. N. (ed.) 2017. *Flora Uzbekistana* [*Flora of Uzbekistan*]. Vol. 2. Tashkent: Navruz Publishers. xii + 200 pp. [In Russian] (***Сенников А. Н.*** (ред.). Флора Узбекистана. Т. 2. Ташкент: Навруз, 2017. xii + 200 с.).

Sennikov A. N. (ed.) 2019. *Flora Uzbekistana* [*Flora of Uzbekistan*]. Vol. 3. Tashkent: Ma'navijat Publishers. xii + 201 pp. [In Russian] (***Сенников А. Н.*** (ред.). Флора Узбекистана. Т. 3. Ташкент: Маънавият, 2019. xii + 201 с.).

Sennikov A. N. (ed.) 2022. *Flora Uzbekistana* [*Flora of Uzbekistan*]. Vol. 4. Tashkent: Publ. house "FAN" of the Academy of Sciences of the Republic of Uzbekistan. xviii + 238 pp. [In Russian] (***Сенников А. Н.*** (ред.). Флора Узбекистана. Т. 4. Ташкент: Изд-во «Фан» АН РУз, 2022. xviii + 238 с.).

Sennikov A. N. (ed.) 2023a. *Flora Uzbekistana* [*Flora of Uzbekistan*]. Vol. 5. Tashkent: Publ. house "FAN" of the Academy of Sciences of the Republic of Uzbekistan. xiv + 469 pp. [In Russian] (***Сенников А. Н.*** (ред.). Флора Узбекистана. Т. 5. Ташкент: Изд-во «Фан» АН РУз, 2023. xiv + 469 с.).

Sennikov A. N. (ed.) 2023b. *Flora Uzbekistana* [*Flora of Uzbekistan*]. Vol. 6. Tashkent: Ma'navijat Publishers. xiv + 209 pp. [In Russian] (***Сенников А. Н.*** (ред.). Флора Узбекистана. Т. 6. Ташкент: Маънавият, 2023. xiv + 209 с.).

Sennikov A. N., Tojibaev K. Sh. (eds.). 2021. *Checklist of vascular plants of the Tian-Shan Mountain System*. Pocheon: Korea National Arboretum. 607 pp.

Sennikov A. N., Tojibaev K. Sh., Khassanov F. O., Beshko N. Yu. 2016. The Flora of Uzbekistan Project. *Phytotaxa* 282(2): 107–118. https://doi.org/10.11646/phytotaxa.282.2.2

Shavvon R. S., Osaloo S. K., Maassoumi A. A., Moharrek F., Erkul S. K., Lemmon A. R., Lemmon E. M., Michalak I., Muellner-Riehl A. N., Favre A. 2017. Increasing phylogenetic support for explosively radiating taxa: The promise of high-throughput sequencing for *Oxytropis* (Fabaceae): Radiation of *Oxytropis. J. Syst. Evol.* 55: 385–404. https://doi.org/10.1111/jse.12269

Stevens P. F. [2024]. *Angiosperm Phylogeny website, version 14.* St Louis: Facilitated by Missouri Botanical Garden and University of Missouri. URL: http://www.mobot.org/MOBOT/research/APweb/ (Accessed 11 January 2025).

Takhtajan A. 1986. *Floristic Regions of the World*. Berkeley, Los Angeles, London: University of California Press. xxii+522 pp.

Tojibaev K. Sh. 2010. *Flora Yugo-Zapadnogo Tyan-Shanya (v predelakh Respubliki Uzbekistan*) [*Flora of the South-Western Tien Shan (within the Republic of Uzbekistan)*]. Tashkent: Publ. house "FAN" of the Academy of Sciences of the Republic of Uzbekistan. 98 pp. [In Russian] (***Тожибаев К. Ш.*** Флора Юго-Западного Тянь-Шаня (в пределах Республики Узбекистан). Ташкент: Изд-во «Фан» АН РУз, 2010. 98 с.).

Tojibaev K. Sh., Beshko N. Yu., Esankulov A. S., Batoshov A. R., Azimova D. E. 2021. *Kadastr flory Uzbekistana: Dzhizakskaya oblast* [*Cadaster of the flora of Uzbekistan: Dzhizak region*]. Tashkent: Zamin nashr Publ. 368 pp. [In Russian] (***Тожибаев К. Ш., Бешко Н. Ю., Эсанкулов А. С., Батошов А. Р., Азимова Д. Э.*** Кадастр флоры Узбекистана: Джизакская область. Ташкент: Zamin nashr, 2021. 368 с.).

Tojibaev K., Beshko N., Karimov F., Batoshov A., Turginov O., Azimova D. 2014a. The Data Base of the flora of Uzbekistan. *Journal of Arid Land Studies* 24(1): 157–160.

Tojibaev K. Sh., Beshko N. Yu., Kodirov U. Kh., Batoshov A. R., Mirzalieva D. U. 2018. *Kadastr flory Uzbekistana: Samarkandskaya oblast* [*Cadaster of the flora of Uzbekistan: Samarkand region*]. Tashkent: Publ. house "FAN" of the Academy of Sciences of the Republic of Uzbekistan. 220 pp. [In Russian] (***Тожибаев К. Ш., Бешко Н. Ю., Кодиров У. Х., Батошов А. Р., Мирзалиева Д. У.*** Кадастр флоры Узбекистана: Самаркандская область. Ташкент: Изд-во «Фан» АН РУз, 2018. 220 с.).

Tojibaev K., Beshko N., Mirzalieva D., Khassanov F. 2022. *Type Collection of the National Herbarium of Uzbekistan (TASH)*. Institute of Botany of the Academy of Sciences of the Republic of Uzbekistan. Occurrence dataset. https://doi.org/10.15468/sb2srm (Accessed 31 January 2025).

Tojibaev K., Beshko N., Turginov O., Mirzalieva D. 2014b. New records for Fabaceae in the flora of Uzbekistan. *Fl. Medit.* 24: 25–35. https://doi.org/10.7320/FlMedit24.025

Tojibaev K. Sh., Beshko N. Yu., Popov V. A. 2016. Botanical-geographical regionalization of Uzbekistan. *Bot. Zhurn.* 101(10): 1105–1132. [In Russian] (***Тожибаев К. Ш., Бешко Н. Ю., Попов В. А.*** Ботанико-географическое районирование Узбекистана // Бот. журн., 2016. Т. 101, № 10. С. 1105–1132).

Tojibaev K. Sh., Beshko N. Yu., Popov V. A., Jang C. G., Chang K. S. 2017. *Botanical Geography of Uzbekistan*. Pocheon: Korea National Arboretum. 250 pp.

Tojibaev K. Sh., Beshko N. Yu., Shomurodov Kh. F., Abduraimov O. S., Adilov B. A., Akhmedov A. K., Rakhimova T. T., Rakhimova N. K., Saribaeva Sh. U., Khayitov R. Sh., Sharipova V. K. 2019b. *Kadastr flory Uzbekistana: Navoiyskaya oblast* [*Cadaster of the flora of Uzbekistan: Navoi region*]. Tashkent: Publ. house "FAN" of the Academy of Sciences of the Republic of Uzbekistan. 216 pp. [In Russian]. (***Тожибаев К. Ш., Бешко Н. Ю., Шомуродов Х. Ф., АбдураимовО. С., Адилов Б. А., Ахмедов А. К., Рахимова Т. Т., Рахимова Н. К., Сарибаева Ш. У., Хайитов Р. Ш., Шарипова В. К.*** Кадастр флоры Узбекистана: Навоийская область. Ташкент: Изд-во «Фан» АН РУз, 2019. 216 с.).

Tojibaev K. Sh., Beshko N. Yu., Shomurodov Kh. F., Kodirov U. Kh., Turginov O. T., Sharipova V. K. 2019a. *Kadastr flory Uzbekistana: Kashkadarinskaya oblast* [*Cadaster of the flora of Uzbekistan: Kashkadarya region*]. Tashkent: Publ. house "FAN" of the Academy of Sciences of the Republic of Uzbekistan. 256 pp. [In Russian] (***Тожибаев К. Ш., Бешко Н. Ю., Шомуродов Х. Ф., Кодиров У. Х., Тургинов О. Т., Шарипова В. К.*** Кадастр флоры Узбекистана: Кашкадарьинская область. Ташкент: Изд-во «Фан» АН РУз, 2019. 256 с.).

Tojibaev K. Sh., Jang C. G., Lazkov G. A., Chang K. S., Sitpayeva G. T., Safarov N., et al. 2020. An annotated checklist of endemic vascular plants of the Tian-Shan Mountains in Central Asian Countries. *Phytotaxa* 464(2): 117–158. https://doi.org/10.11646/phytotaxa.464.2.1

Turakulov I., Safarov N., Tojibaev K., Segizboev M., Suyunkulov H., Park M., Na N., Usmonov M., Chang K. S., Oh S.-H., Jang C.-G. 2021. The flora of the Western Tian Shan: Tajikistan part. *J. Asia-Pacific Biodivers.* 14(2): 221–227. https://doi.org/10.1016/j.japb.2021.02.005

Turdiev D. E., Selyutina I. Yu., Gaziev A. D. 2023. Distribution and assessment of the state of rare species of *Oxytropis* DC. in the flora of Uzbekistan. *Rastitelnyy mir Aziatskoy Rossii* [*Plant life of Asian Russia*] 16, 3: 255–270. [In Russian] (***Турдиев Д. Э., Селютина И. Ю., Газиев А. Д.*** Распространение и оценка состояния редких видов *Oxytropis* DC. во флоре Узбекистана // Растительный мир Азиатской России, 2023. Т. 16, № 3. С. 255–270). https://doi.org/10.15372/RMAR20230304

Turdiev D., Tojibaev K., Alieva K. 2024. *Taxonomic and geographical analysis of the genus Oxytropis DC. distributed in the flora of Uzbekistan*. Institute of Botany of the Academy of Sciences of the Republic of Uzbekistan. Occurrence dataset. https://doi.org/10.15468/kxya6r (Accessed 31 January 2025).

Yakovlev G. P., Sytin A. K., Roskov Y. R. 1996. *Legumes of Northern Eurasia. A checklist*. Richmond, Kew: Royal Botanic Gardens. 724 pp.

Zakirov K. Z. 1955. *Flora i rastitelnost basseyna reki Zeravshan* [*Flora and vegetation of the Zeravshan river basin*]. Vol. 1. Tashkent: Publ. Academy of Sciences of Uzbek SSR. 205 pp. [In Russian] (***Закиров К. З.*** Флора и растительность бассейна реки Зеравшан. Т. 1. Ташкент: Изд-во АН УзССР, 1955. 205 с.).

Zakirov K. Z., Zakirov P. K. 1971. Patterns of vegetation distribution and principles of altitudinal zonality. In: *Rastitelnyy pokrov Uzbekistana i puti ego ratsionalnogo ispolzovaniya* [*Vegetation cover of Uzbekistan and the ways of its rational use*]. Vol. 1. Tashkent: Publ. House "Fan" of Uzbek SSR. Pp. 136–155. [In Russian] (***Закиров К. З., Закиров П. К.*** Закономерности распределения растительного покрова и принципы высотной зональности // Растительный покров Узбекистана и пути его рационального использования. Т. 1. Ташкент: Изд-во «Фан» Узбекской ССР, 1971. С. 136–155).

Zhu X. Y., Welsh S. L., Ohashi H. 2010. *Oxytropis*. In: Z. Wu, P. H. Raven, D. Y. Hong (eds.) *Flora of China*. Vol. 10. Beijing; St. Louis: Science Press, Missouri Botanical Garden Press. Pp. 453–500.