

FLORA OF THE DZHIZAK PROVINCE, UZBEKISTAN

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The Dzhizak Province is a large administrative region of the Republic of Uzbekistan located in the central part of the country, between two large rivers, Syrdarya and Zeravschan. There are represented all altitudinal zones and the majority of ecosystems and vegetation types of Central Asia. The territory of the Dzhizak Province is divided into two physiographical parts. The northern plain part includes the Kyzylkum Desert, the Aydar-Arnasay lake system, and the Hungry Steppe depression in the middle reaches of the Syrdarya River. The southern mountainous part includes Turkestan Range and its western spurs, Malguzar and Nuratau mountains. The highest and lowest points are 4029 m and 240 m above sea level, respectively. This area is characterized by rich plant diversity with a large number of endemic, endangered species, and species of global economic importance. The *Flora of the Dzhizak Province, Uzbekistan* has been compiled for the first time. It includes 1965 species of 613 genera and 105 families of vascular plants, among which 51 species are red-listed at the national level. The book contains following information of species: life form, habitat, altitudinal zone, distribution within province, conservation status, and economic use. Photographs of selected plant species and landscapes are provided.

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FOREWORD



Dzhizak Province is the large region in the central part of the Republic of Uzbekistan, which has a unique history, great political, economic and spiritual status, and this region has a great importance for the development of science, culture and tourism.

Dzhizak Province is characterized by outstanding diversity of natural landscapes and wildlife, including a large number of endemic, rare species, and species of global economic importance. There are represented different ecosystems and cultural landscapes: deserts and lakes, foothills and mountains, croplands and pastures, gardens and vineyards.

The territory has colourful natural landscapes. In the mountains of Zaamin, Bakhmal and Forish districts with an exotic relief and temperate climate, there are juniper, almond and walnut forests, and valuable medicinal and ornamental plants.

The plant diversity of the Dzhizak Province is extremely rich, and its detailed study is very important. This book provides detailed information about almost 2000 wild-growing plant species of the Dzhizak Province, as well as their images. This is the fruitful result of extensive joint research performed by Uzbek and Chinese botanists.

Uzbekistan and China are neighbors and partners along the belt and road. In recent years, the Academy of Sciences of the Republic of Uzbekistan has been working more and more closely with the Chinese Academy of Sciences. In particular, the Institute of Botany, Academy of Sciences of the Republic of Uzbekistan and the Kunming Institute of Botany, Chinese Academy of Sciences, within the framework of projects devoted to the study and protection of plant diversity, sustainable use of plant resources in the two countries, have made good achievements in joint scientific researches, personnel training and other aspects. The Global Allium Garden with Kunming center and Tashkent center has been created in collaboration of Chinese and Uzbek sides. These unique living collections conserve and display the outstanding global diversity of *Allium* species, provide resource support for systematic and thorough research on this group of plants, knowledge dissemination, education, environmental protection, etc.



Academician Yuldashev Bekhzod Sadikovich
**The President of Academy of Sciences
of the Republic of Uzbekistan**

PREFACE



The Republic of Uzbekistan is located in the heart of the Eurasian continent and occupies a position of great bio-geographical importance. The territory of Uzbekistan characterized by rich biological and landscape diversity belongs to the Iran-Turanian region in the Tethyan (Ancient Mediterranean) floristic subkingdom of Holarctic kingdom, which is one of major centers of plant diversity in the world (Takhtajan, 1986). Ecosystems of Uzbekistan are included in the list of key ecological regions of our planet (Olson & Dinerstein, 2002). Flora of vascular plants of Uzbekistan is rich with a large number of crop wild relatives, relicts, endemic and endangered species. Considerable diversity of plants can be explained by the geographic position and huge area of the country, as well as wide spectrum of physiographic factors and complicated geological history. The unique centers of origin and diversity of many genera are revealed on the territory of the country. However, it is necessary to note that the ecosystems of the country have been influenced by human activities since ancient times; anthropogenic impact has increased considerably in recent decades.

Floristic surveys in Uzbekistan were started more than 150 years ago, and the first edition of *Flora of Uzbekistan* was published in 6 volumes (1941–1962). This treatment includes 4,148 species of vascular plants (3,663 of them are native for Uzbekistan, and 485 are naturalized, alien and cultivated taxa). However, at the present stage of our knowledge, this fundamental synopsis and the data on distribution of many plant species were significantly outdated. Currently, non-published database of the flora of Uzbekistan counts more than 4,375 species; thus, at least 712 wild-growing species were added to the national checklist after issue of the first edition of the *Flora of Uzbekistan* (Sennikov et al., 2016).

Detailed study of plant diversity became extremely important in the last decades in connection with current trends and approaches in plant sciences and biodiversity conservation. Protection and sustainable use of biodiversity are priority directions of state ecological policy in Uzbekistan. The *National Strategy and Action Plan on CBD* (1998) includes identification, sampling and monitoring of flora and vegetation (*The Fifth National Report*, 2015). Compilation of national and regional floristic checklists has a special significance, as well as the assessment of populations of economic valuable and endangered plants does so. The Flora of Uzbekistan Project aimed at taxonomical revision of the national flora was started in 2012, and the first two volumes of the second edition of

Flora of Uzbekistan were published (Sennikov, 2016, 2017). Synopses of flora were compiled for some large bio-geographical and administrative regions of the country.

In this book, the results of inventory of flora of the Dzhizak Province, a large administrative region of the Republic of Uzbekistan, are represented for the first time.

The Dzhizak Province has been chosen as the study area because this territory is located in the central part of the country and characterized by rich plant diversity with a large number of endemic and rare species. There are represented all altitudinal zones and the majority of ecosystems of Central Asia, including deserts, foothills, mountains, highlands and wetlands.

The synopsis of the flora of the Dzhizak Province has been compiled on the basis of the data of our field surveys, analysis of TASH herbarium collections, publications, and scientific reports. We hope that this book will become a reliable source for further studies and nature conservation planning, and will be useful for botanists, ecologists, staff of nature reserves and national parks, students, educators, and amateur-naturalists.

The study has been performed within the framework of the Uzbek state research projects I5-FA-0-17440 and BA-FA-F5-010 and supported by the Second Tibetan Plateau Scientific Expedition and Research (STEP) Program (2019QZKK0502), the Strategic Priority Research Program of Chinese Academy of Sciences (XDA20050203), the International Partnership Program of Chinese Academy of Sciences (151853KYSB20160021) as well as the International Partnership Program of Chinese Academy of Sciences (151853KYSB20180009). We would like to extend special thanks to the Institute of Botany of Academy Sciences of the Republic of Uzbekistan, the Bureau of International Cooperation of Chinese Academy of Sciences (CAS), the Kunming Institute of Botany of CAS and the CAS Key Laboratory for Plant Diversity and Biogeography of East Asia for supporting the study and to the China Forestry Publishing House for publishing this book.

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STUDY AREA



The Dzhizak Province (Jizzax Viloyati in Uzbek) has been established in 1973. It is a large administrative region of the Republic of Uzbekistan located in the central part of the country. The total area is 21.210 km² (approximately 5% of the country), 23% are occupied with arable lands, 2.2% with gardens and vineyards, 36% with pastures, and 7.7% are forested. The average population density is 54 people/km². The province is divided into 12 administrative districts: Arnasay, Bakhmal, Dustlik, Farish, Gallaaral, Mirzachul, Pakhtakor, Sharaf Rashidov, Yangiabad, Zaamin, Zafarabad and Zarbdar. The Dzhizak Province borders with the Syrdarya Province to the east and north-east, with the Navoi Province to the west, with the Samarkand Province and Tajikistan to the south, and with Kazakhstan to the north. The economy of the province is primarily based on agriculture; cotton and wheat are the main crops, and extensive irrigation is used. Approximately 80% of population lives in rural areas. The industry, mining operations and transportation infrastructure also are well-developed (www.jizzax.uz; www.stat.uz).

The study area is located between two large rivers, Syrdarya and Zeravschan. The territory of the Dzhizak Province is divided into two physiographical parts (Figure A). The northern plain part includes the desert of south-eastern Kyzylkum, the Aydar-Arnasay lake system located in the large saline depression, and the Hungry Steppe depression in the middle reaches of the Syrdarya River. The southern mountainous part includes Turkestan Ridge and its western spurs, Malguzar and Nuratau mountains. The natural boundary between plain and mountainous part of the Dzhizak Province runs approximately at 380–400 m.s.l.^① in the west (piedmonts of the Nuratau Ridge), and 480–500 m.s.l. in the east (piedmonts of the Turkestan Ridge). The highest and lowest points are 4029 m (Mt. Shaukartau, Turkestan Ridge) and 240 m.s.l. (the shore of Aydar-Arnasay lake system), respectively (Aramov, 2012).

The plain part of region has been transformed significantly due to human activity. Up to the middle of the 20th Century, the Aydar salt marsh and a number of small salty lakes were located in the large drainless depression in the south-eastern edge of Kyzylkum. With the beginning of intensive agricultural development of the Hungry Steppe, this depression used to evacuate the drainage water from irrigated lands. In 1969, the water level was extremely high; more than 21210 km² of

① m.s.l.=meter(s) above sea level.

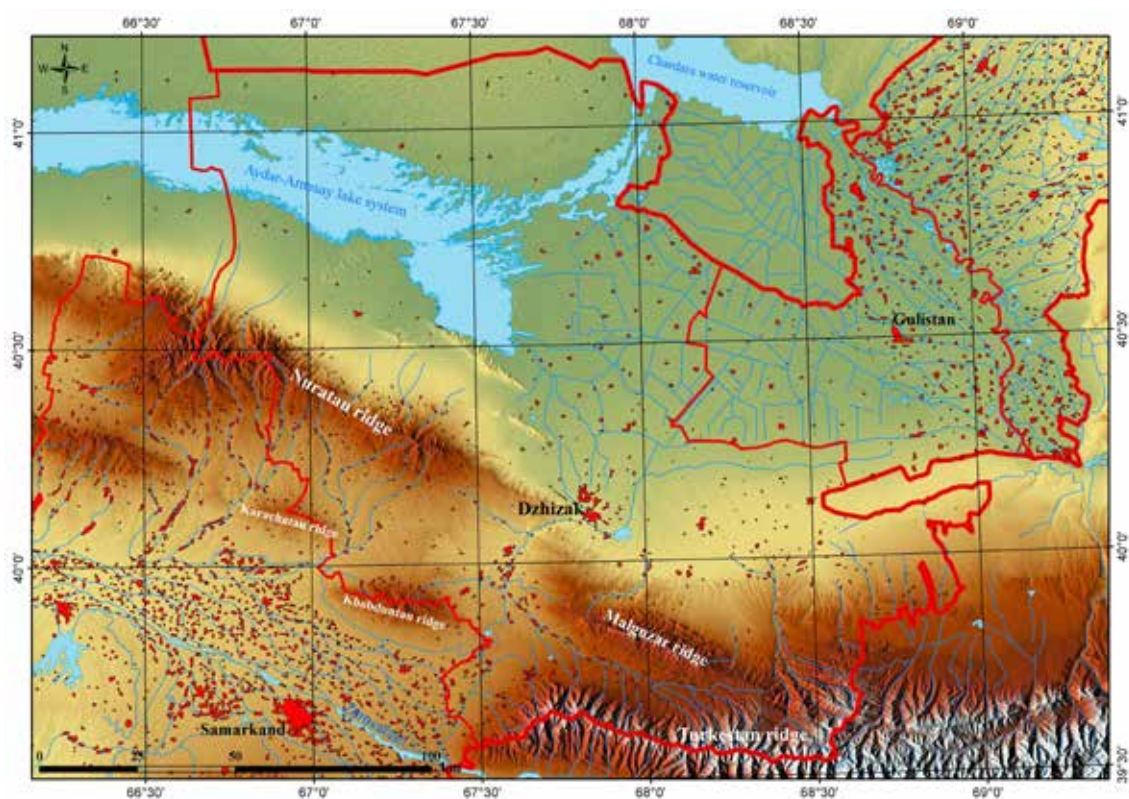


Figure A Physiographical map of the Dzhizak Province

water was discharged from the Chardara Reservoir, the Aydar salt marsh was flooded completely, and a large drainless salty Aydar-Arnasay lake system was formed. At the present time, this anthropogenic water body holds the 4th position in Central Asia in order of size, after the Aral Sea, Balkhash and Issyk-Kul. In the past, an alluvial-proluvial plain on the left bank of the Syrdarya River called the Hungry Steppe or Mirzachul was an almost waterless desert with ephemeroïd vegetation and fragments of salt marshes. At present, almost the entire territory of Hungry Steppe is occupied by irrigated crop lands and settlements.

The climate is continental (Csa and BWk according to the Köppen climate classification), with high amplitudes of daily, monthly and annual air temperature, low precipitation and high intensity of solar radiation. In general, the winter is moderately cold, and summer is hot and dry.

There are significant differences among the climates of different natural regions of the province related to their geomorphology. The continentality of climate and contrast seasonal changes is much more expressed in the desert areas than in the mountains. The vast arid plain of Kyzylkum, located in the north and north-west, and huge mountain ranges in the south and southeast have a great influence on the climate of the Dzhizak Province.

Within the Dzhizak Province, the annual and monthly air temperature decreases from the south to the north and from the plain to the mountains. In the plain and piedmonts, the mean annual temperature

ranges from 12°C to 15°C, the mean temperature of July is +27–+29°C, and the mean temperature of January ranges from –4.4°C in the northern part of the province to –0.1–0°C in piedmonts. The average duration of the no frost period in plain and foothills ranges from 170 to 230 days. The warmest area of the province is the piedmont plain of the Turkestan, Malguzar and Nuratau ridges (the mean annual temperature reaches 15.1°C, and the mean temperature of July reaches 29.4°C). The coldest area is the alpine zone of the Turkestan range (the mean annual temperature does not exceed 5°C, and the mean temperature of July is 11–16°C). The lowest temperature recorded in the province is –37°C, and the highest temperature is 48°C (Alibekov & Nishanov, 1978; Williams & Konovalov, 2008).

The amount of precipitation and humidity increases from the northwest to the southeast and from the plain to the mountains. The mean annual precipitation is 150–200 mm in the plain, and 200–300 mm in foothills. In the montane and alpine zones, this indicator ranges from 300–400 mm (Nuratau Mts.) to 400–500 mm (Turkestan Ridge). Precipitation in the desert and foothill zones occurs mainly in the winter and spring period; the maximum is in March–April, and the dry period is July–September. In the mountains, the rainfall takes place throughout the year, but the maximum is in April–May (Alibekov & Nishanov, 1978; Williams & Konovalov, 2008).

The Dzhizak Province is distinguished by outstanding diversity of flora and vegetation determined by its geographical location, natural conditions and wide variety of landscapes and habitats. The territory of the province is represented by all altitudinal zones, from the plain to highlands, the majority of Central Asian vegetation types and most types of ecosystems including sandy and clay desert, saline lands, wetlands, insular relic mountains, foothills, montane and alpine ecosystems. In accordance with phytogeographical division of Uzbekistan, the territory of the Dzhizak Province belongs to Nuratau and Kuhistan districts of Mountain Central Asian Province, and Middle Syrdarya and Kyzylkum districts of the Turan Province (Tojibaev et al., 2016; Tojibaev et al., 2017). The study area is divided into following phytogeographical regions: Nuratau, Nuratau Relic Mountains and Aktau regions of the Nuratau district, North Turkestan and Malguzar regions of the Kuhistan district, Mirzachul region of the Middle Syrdarya district, and Kyzylkum region of the Kyzylkum district (Figure B).

Northern and north-western part of the Dzhizak Province belongs to the Kyzylkum region of the Kyzylkum district. This area includes the aeolian plain of the Southeastern Kyzylkum with fixed and semi-fixed sands, and the Aydar-Arnasay lake system with saline wetlands and small plots of tugay vegetation. The sand desert is covered with psammophilous woodlands of saxaul, sand acacia and *Calligonum* species, psammophilous shrubs, semishrub sand herbs (Zakirov, 1971, 1973, 1976, 1984).

Before 1993–1995, the shore of the Aydar-Arnasay lake system was fringed with a wide belt of tugay vegetation (reeds and riparian woodlands of bloomy poplar, willow, oleaster and tamarisk). Since 1993, the Chardara Reservoir was overflowed with waters of the Syrdarya River several times. A huge volume of water was drained into the Aydar-Arnasay lake system, the water surface level was drastically increased, and large areas were flooded. Currently, tugay vegetation is represented mainly

with local plots of reeds, camel-thorn and tamarisks.

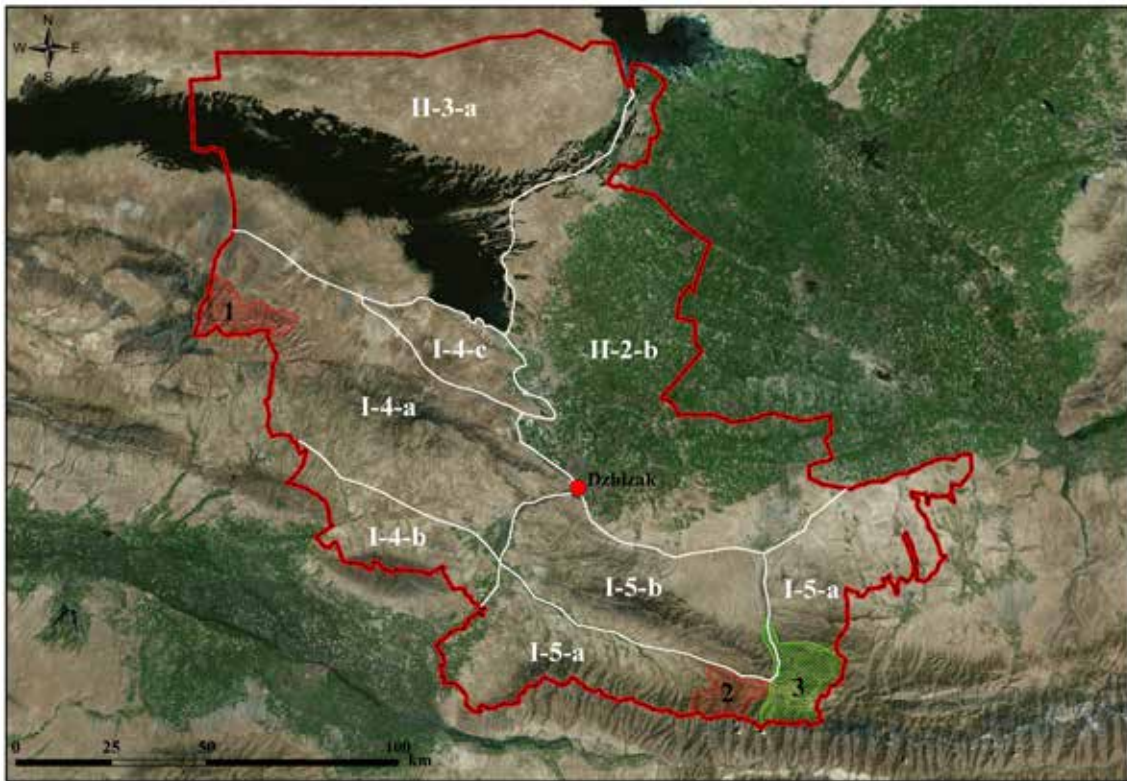


Figure B Phytogeographical regions of the Dzhizak Province (according to Tojibaev et al., 2017)

Notes: I. Central Asian Mountain Province: I-4 Nuratau district (I-4-a Nuratau, I-4-b Aktau, I-4-c Nuratau Relic Mountains). II. Turan Province: II-2 Middle-Syrdarya district (II-2-b Mirzachul), II-3 Kyzylkum (II-3-a Kyzylkum). Protected areas: 1—Nuratau Nature Reserve, 2—Zaamin Nature Reserve, 3—Zaamin National Park.

The central and north-eastern part of the Dzhizak Province belongs to the Mirzachul region of the Middle Syrdarya district. The Mirzachul or Hungry Steppe is an alluvial-proluvial plain on the left bank of the Syrdarya River in its middle reaches between the throat of the Fergana valley in the east, the Chardara water reservoir, Aydar-Arnasay lake system and salt river Kly in the west, and foothills of Turkestan and Malguzar ridges on the south. At present, this region is densely populated and occupied by anthropogenic landscapes. Small areas of natural ecosystems with ephemeral-ephemeroid, saline and tugay vegetation can be found on the eastern shore of the Aydar-Arnasay lake system, in the piedmonts of the Turkestan and Malguzar ridges, and along the irrigation network (Zakirov, 1971, 1973, 1976, 1984).

The region of Nuratau Relic Mountains include the insular ridges, Pistalitau (557 m.s.l.), Khanbandytag (476 m.s.l.), Egarbelistag (618 m.s.l.) and Balyklitau (581 m.s.l.), located at the southern edge of the Kyzylkum, to the north of the Nuratau ridge. They stretch parallel to the Nuratau Mountains from south-east to north-west. The largest of them is the Pistalitau ridge approximately 40 km long (Aramov, 2012). These small ridges are covered with sagebrush communities and

xerophytic shrublands. The general appearance of vegetation and dominant species is similar to that in the lower belts of the Nuratau and other mountain ridges of the North-Western Pamir-Alay (Batoshov & Beshko, 2013, 2015; Batoshov, 2016; Tojibaev et al., 2017).

The territory of the Nuratau region includes the northern branch of the Nuratau Mountains (or North Nuratau Ridge) and is divided into two parts separated by the Saurbel pass: the Nuratau and Koytash ridges. The length of this middle-altitude mountain chain is approximately 200 km, and the highest peak named Khayat-bashi is 2169 m.s.l. (Aramov, 2012).

The Nuratau ridge was formed in the late Proterozoic and early Paleozoic as a result of the Baikal and the Caledonian orogeny. It is one of the oldest mountains of Central Asia, almost unaffected by the Alpine orogeny. During transgressions of the Tethys Sea (Cretaceous–Paleogene), it was an isolated island. These circumstances contributed to the evolution of the autochthonous flora. In general, the vegetation has xerophytic character with an original type of vertical zonality determined by geographical position and natural conditions of the territory, but the majority of mountainous Central Asian vegetation types (except for alpine communities) are represented here. The piedmont plain named the Farish Steppe, and foothills of the Nuratau ridge (400–800 m.s.l.) are covered with ephemeroïd–sagebrush and phlomis–ephemeroïd communities. The stony slopes in the upper part of the foothills are occupied by petrophytic ephemeral–sagebrush vegetation and xerophytic shrublands. The montane zone (from 800 m.s.l. up to the crest of the ridge) has mosaic vegetation represented by tall grass and tall herb communities (so-called savannoids), forb–sagebrush, semishrub and dwarf shrub communities (so-called phryganoids), bunch grass steppes, spiny herbs and pulvinates (so-called mountain xerophytes), shrubs and open woodlands. This area is the most western point of the distribution of forests of *Juniperus polycarpos* var. *seravschanica*. In the past, juniper woodlands grew in the Nuratau Mountains, but they were cut down almost entirely by the beginning of the 20th century and were replaced with scrublands and tall grass communities. Small populations and solitary trees of *Zeravshan juniper* were still preserved in some remote places (Zakirov P., 1969, 1971; Zakirov K., 1971, 1973, 1976, 1984; Tojibaev et al., 2017).

The Nuratau ridge is one of the three isolated sites of the relict walnut-fruit forests in Uzbekistan. The walnut-fruit stands occupy the valleys of the largest streams on the northern slope of the Nuratau ridge. Currently, they represent an original cultural landscape (so-called forest-garden) that has been transformed extensively by local people over the centuries-old horticultural activities. These gallery woodlands with 0.7–0.8 degree of density are composed by *Juglans regia* L., *Malus sieversii* (Ledeb.) M. Roem, *Prunus armeniaca* L., *Morus alba* L., *Acer semenovii* Regel & Herder, *Crataegus turkestanica* Pojark., etc. Walnut-fruit forests of the Nuratau ridge accounts approximately 16.7 percent of the national area.

In central part of Nuratau ridge, there is situated the Nuratau Nature Reserve (17.752 hectares, among which 2.303 are forested), a strictly protected area of Category I IUCN established in 1975. Flora of the Nuratau Nature Reserve numbers 835 species, 33 of them are red-listed at the national

level (Beshko et al., 2013).

Aktau phytogeographical region includes the southern branch of the Nuratau Mountains, which consists of several small ridges. Within the study area, it is represented with the north slopes of Khobduntau and Karachatau ridges (1672 and 1101 m.s.l., respectively) situated in the south-western part of the Dzhizak Province (Aramov, 2012). Vegetation of of this territory is similar with foothills and lower part of montane zone of the Nuratau ridge.

The southern and south-eastern part of the Dzhizak Province belongs to the North Turkestan phytogeographical region. This area covers the northern slope of the Turkestan ridge with the complete profile of altitudinal zones. The zone of foothills lies here between of 480–500 and 1000–1300 m.s.l, montane zone is situated between 1000–1300 and 2800–3000 m.s.l., and upper part of the ridge (up of 2800–3000 m.s.l.) belongs to the alpine zone. The highest peak of the Dzhizak Province, Mt. Shaukartau (4029 m.s.l.) is located here (Aramov, 2012). This is the most humid area of the Dzhizak Province. The flora and vegetation of this area is distinguished by the significant diversity due to the strongly rugged terrain, large amplitude of elevations, and wide range of soil and climatic conditions. There are represented the semi-arid version of all piedmont and mountainous types of landscapes of Central Asia and almost all mountain types of vegetation. The piedmont plain and foothills are characterized by ephemeral-sagebrush and low herb ephemeral–ephemeroïd communities, often with saltworts. Tall grass savannoids and xerophytic open woodlands replace them at 1000–1300 m.s.l. In river valleys, there are small plots of walnut–fruit forests. A thick belt of juniper forests begins at 1500–1700 m.s.l. In some areas, the juniper trees form stands with a stock density of 0.6–1.0. *Juniperus polycarpus* var. *seravschanica* (Kom.) Kitam., *J. semiglobosa* Regel, and *J. pseudosabina* Fisch. & C. A. Mey. dominates in the lower, middle, and upper part of the juniper belt, respectively. Despite the rich diversity of deciduous trees and shrubs represented with maple, hawthorn, Sievers apple, cherry-plum, honeysuckle, and other species, broad-leaved woodlands not play a notable role in the landscape. The vegetation of highlands is comprised of juniper elfin wood, bunchgrass steppes, mountain xerophytes and alpine meadows (Demurina, 1975; Konnov, 1973, 1990; Zakirov K., 1971, 1973, 1976, 1984; Esankulov, 2012; Khassanov et al., 2013; Tojibaev, 2017).

The Zaamin Nature Reserve is situated here, it is one of the oldest nature reserves in Central Asia established in 1926 under the name Guralash Reserve. At the present time, the area of the nature reserve is 26.840 hectares (22.137 hectares are forested). The check-list of flora of the Zaamin Nature Reserve includes 1216 plant species (Khassanov et al., 2013). In the east, the reserve borders with the territory of the Zaamin National Park (23.894 hectares) established in 1976. A synopsis of the flora of the national park is still incomplete (Beshko et al., 2013a).

The Malguzar phytogeographical region includes the Malguzar ridge (2620 m.s.l.), a north-western spur of the Turkestan ridge stretching about 80 km and separated from the Turkestan ridge by the Zaaminsu River valley in the east and the Sanzar river valley in the south (Aramov, 2012). The gorge called Tamerlane's Gate is the border between the Malguzar and Nuratau

ridges. The northern slope of the ridge faces the Hungry Steppe, which is almost completely occupied by arable land. The vegetation of Malguzar and the northern slope of the Turkestan ridge is similar (Demurina, 1975; Zakirov K., 1971, 1973, 1976, 1984). There are arid and semi-arid piedmont and mountain landscapes, and most mountain vegetation types (except for highlands). As on the Turkestan ridge, the foothills are covered with ephemeroïd and ephemeroïd–sagebrush communities. The vegetation of the montane zone is represented with savannoids, fescue steppes, xerophytic shrubs, juniper woodlands with small plots of broad-leaved stands. The natural boundary between foothills and montane zone lies at the same elevations as in the northern slope of the Turkestan ridge. The differences between the flora and vegetation of the Malguzar and North Turkestan phytogeographical regions (e.g., the absence of alpine plants and communities) are explained by the relatively low altitude and xeric conditions of the Malguzar ridge (Demurina, 1975; Azimova, 2017; Tojibaev et al., 2017).

Uzbekistan is the most densely populated country in Central Asia, and the ecosystems of the Dzhizak Province have been influenced by human activities since ancient times. Anthropogenic impact has increased considerably since the second half of the 20th century. Indigenous vegetation communities have been transformed extensively, except for remote desert and mountain areas. In the Hungry Steppe, natural ecosystems have been replaced almost completely by arable lands and settlements. In the piedmonts, large areas are covered by rainfed crops and fallow lands with ruderal vegetation. In the mountainous part of the Province, the main threats influencing the plant diversity are excessive grazing and clear-cutting of trees and shrubs. Forests and open woodlands are under serious threat from over-exploitation, over-grazing and desertification. In this connection, the study and analysis of historical and current distribution of plant species and communities within this large region of the country is extremely important.



Landscapes of South-eastern Kyzylkum and sandy desert with a giant Umbelliferae *Ferula foetida* (photography by N. Yu. Beshko)



Landscapes of South-eastern Kyzylkum and psammophilous woodlands of white saxaul *Haloxylon persicum* (photography by N. Yu. Beshko)



Aydar-Arnasay lake system (photography by N. Yu. Beshko)



Aydar-Arnasay lake system, a view from the ridge Pistalitau (photography by N. Yu. Beshko)



The insular ridge Balyklitau (photography by N. Yu. Beshko)



Piedmonts of the ridge Nuratau (photography by N. Yu. Beshko)



Landscapes of the Nuratau ridge (photography by N. Yu. Beshko)



Landscapes of the Nuratau ridge and the rock massif Parrandas (photography by N. Yu. Beshko)



Landscapes of the Nuratau ridge and spiny almond communities in foothills (photography by N. Yu. Beshko)



Landscapes of the Nuratau ridge and the walnut-fruit gallery forest (photography by N. Yu. Beshko)



Landscapes of the Nuratau ridge and tall grass communities and xerophytic shrublands (photography by N. Yu. Beshko)



Landscapes of the Nuratau ridge and mountain xerophytes (photography by N. Yu. Beshko)



Landscapes of the Turkestan ridge and juniper forests (photography by N. Yu. Beshko)



Landscapes of the Malguzar ridge (photography by N. Yu. Beshko)



Landscapes of Mirzachul (Hungry Steppe) and *Papaver pavoninum* on the fallow lands (photography by N. Yu. Beshko)



Landscapes of Mirzachul (Hungry Steppe) and saline lands (photography by N. Yu. Beshko)

INVENTORY OF THE FLORA



First botanical expeditions in the territory that currently belongs to the Dzhizak Province were conducted in the Sanzar river basin and surroundings of the town Dzhizak by A. Fedtschenko (1866), P. Capus and G. Bonvalot (1881), A. Regel (1882), and V. I. Lipsky (1890). Many naturalists and officials, who worked in Central Asia in the late 19th century, also collected herbarium specimens and contributed to the accumulation of floristic data.

The systematic and purposeful study of the flora and vegetation of Central Asia began in the 1910s. Several significant botanical expeditions were carried out in the first half of the 20th century and in 1950–1970s on the Turkestan, Malguzar and Nuratau Ranges and in the Hungry Steppe. The studies of this period have been focused on applied purposes, mainly on an investigation of the vegetation cover and resource plants. The most important collections in this region were made by B. A. Fedtschenko, E. P. Korovin, V. P. Drobow, M. G. Popov, I. I. Sprygin, M. V. Kultiassov, B. S. Zakrzczewsky, S. N. Kudrjashev, P. A. Gomolitsky, M. M. Sovetkina, E. M. Demurina, E. E. Korotkova, O. E. Knorring, A. I. Vvedensky, L. L. Bulgakova, L. I. Nazarenko, P. K. Zakirov, and R. V. Kamelin. *Essay on the Vegetation of the Pistalitau Mountains* by M. V. Kultiassov (1923), *Plant Formations of the Nurata Valley* (1923) and *Vegetation of Middle Asia and South Kazakhstan* (1934; 1961; 1962) by E. P. Korovin, *Vegetation of the Khobduntau and Karachatau Mountains* by S. N. Kudrjashev (1930), *Vegetation of the Guralash Nature Reserve and Zaamin Forestry* by M. G. Popov and N. V. Androssov (1937), *Flora and Vegetation of the Zeravschan River Basin* by K. Z. Zakirov (1955, 1962), *Vegetation Cover of the Nuratau Mountains* (1969) and *Botanical Geography of Low Mountains of Kyzylkum and Nuratau Ridge* (1971) by P. K. Zakirov, *Vegetation of the Western Part of Turkestan Ridge and Its Spurs* by E. M. Demurina (1975), *To the Knowledge of the Flora of Nuratau Mountains* (1973) and *The Kuhistan District of Mountainous Middle Asia* (1979) by R.V. Kamelin should be cited as the most important publications of the second half of the 20th century dedicated to the plant diversity of this region. Several new studies have been performed since 2000 (Beshko, 2000a, 2000b, 2011; Tirkasheva, 2011; Botirova, 2012; Esankulov, 2012; Khassanov et al., 2013; Batoshov, 2016; Azimova, 2017), a number of new species have been described from this territory and dozens of new records were found. Analysis of obtained data allows us to give a summary of floristic studies in the Dzhizak Province.

The synopsis of flora of the Dzhizak Province of the Republic of Uzbekistan has been compiled for

the first time as a result of analysis of a huge volume of data of our long-term field surveys, revision of herbarium material stored in TASH, LE and MW, publications, and reports (Azimova, 2017; Batoshov & Beshko, 2013, 2015; Batoshov, 2016; Belolipov, 1973; Beshko, 2000a, 2000b, 2011; Beshko & Azimova, 2013, 2014; Beshko et al., 2013, 2014; Botirova, 2012; Botschantzev et al., 1961; *Conspectus Florae Asiae Mediae* (1963–1993); Demurina, 1975; Esankulov, 2012; *Flora of Tajikistan* (1957–1991); *Flora of Uzbekistan* (1941–1962); Kamelin, 1973a, 1973b, 1979, 1990; Khassanov, 2015; Khassanov et al., 2013; Konnov, 1973, 1990; Korovin, 1923; Kudrjashev, 1930; Kultiassov, 1923; Popov & Androsov, 1937; Sennikov, 2016, 2017; Tirkasheva, 2011; Tojibaev & Beshko, 2007, 2015; Tojibaev et al., 2015; Zakirov, 1955, 1962; Zakirov & Burygin, 1956; Zakirov, 1969, 1971).

The *Flora of the Dzhizak Province, Uzbekistan* contains information about plant species arranged in the following order: currently accepted scientific name, commonly-used synonymy (optional), life form, habitat, altitudinal zone, distribution in the Province, character of use, conservation status (for nationally or globally red-listed species).

Families and genera of ferns in the checklist are arranged in accordance with the modern classification that was recently proposed by the Pteridophytes Phylogeny Group (Christenhusz et al., 2011a), Gymnosperms are arranged according to Christenhusz et al. (2011b), flowering plants are arranged in accordance with the APG system (APG IV, 2016). Species are arranged in alphabetic order. Accepted names of species are provided in accordance with The Plant List database (www.theplantlist.org), databases and recently published treatments of different taxonomical groups (Akhani et al., 2007; Al-Shehbaz et al., 2014; Clayton et al., 2006; Degtjareva et al., 2013; Downie et al., 2010; Egorova, 1999; <http://www.e-monocot.org/>; Hill, 2017; Horandl & Emadzade, 2012; www.ildis.com; Khassanov & Rakhimova N. 2012; Lammers, 2007; Lazkov, 2016; Lopez-Vinyallonga et al., 2009, 2011; Podlech & Zarre, 2013; Salmaki et al., 2012; Sennikov, 2016, 2017; The Global Compositae Checklist, 2009; The Gymnosperm Database, 2017; The World Umbellifer Database, 1999; Tsvelev, 1983; Wiegler et al., 2017). Citation of authorship of taxa corresponds to the *Authors of Plants Names* (Brummitt & Powell, 1992) and the International Plant Names Index (www.ipni.org).

Altitudinal distribution is provided with the following elevation zones: plains, foothills, montane zone, and alpine zone (their natural boundaries were described above). The distribution of species within the Dzhizak Province was indicated according to the scheme of phytogeographical regions of Uzbekistan (Tojibaev et al., 2017).

Character of economical use of plants is done in accordance with published data (*Plant Resources of the U. S. S. R.*, 1984–1996; Larin, 1956; Gammerman & Grom, 1976; Nikitin, 1983; Kurmikov & Belolipov, 2012, etc.).

IUCN RL is the abbreviation for the IUCN Red List (www.iucnredlist.org). UzbRDB is the abbreviation for the *Red Data Book of Uzbekistan* (2009), and categories of threatened species used in that book are employed as follows: 0 (extinct species) — corresponds to EX or EW categories of the IUCN Red List, 1 (endangered, disappearing species) — meets CR or EN categories of IUCN, 2 (rare species) — meets VU

category of IUCN and 3 (declining species) — corresponds to NT category of IUCN.

The checklist presented below includes 1965 species of 613 genera and 105 families of vascular plants occurring in the wild in the study area including naturalized aliens. Alien taxa are marked with an asterisk. The assessment of alien status is based on analysis of publications and online databases (Nikitin, 1983; IUCN/ISSG, 2014; CABI, 2017).

There are 44 species of trees and 116 shrubs, among which 11 species can have a habit of tree or shrub; 108 species of semi-shrubs; 1062 perennial herbs, among which 61 biennial, 516 annual; 46 herbaceous plants can have different life forms (annual, biennial or perennial). The number of plant species recorded for different phytogeographical regions of the Dzhizak Province is shown in Table 1. The leading families and genera are represented in Table 2, and ratio of life forms is shown in Table 3.

Only 5 species of the flora of the Dzhizak Province are assessed as globally threatened (CR, EN, VU) on the IUCN Red List (www.iucnredlist.org), and 3 species are assessed as Near Threatened (Table 4). Only one species among them (*Lonicera paradoxa* Pojark.) is red-listed at the national level. The status of *Platycladus orientalis* (L.) Franco is uncertain because the species was naturalized in different Asian countries in ancient times, but many botanists regarded *Platycladus* in Uzbekistan as native and Tertiary relic. The list of plants included in the *Red Data Book of Uzbekistan* is represented with 51 species, most of them (42 species) occur within protected areas (Table 5).

Following 20 species of the flora of the Dzhizak Province are endemic to the Nuratau Mountains: *Acantholimon nuratavicum* Zakirov ex Lincz., *Acantholimon subavenaceum* Lincz., *Acantholimon zakirovii* Beshko, *Arctium pallidivirens* (Kult.) S. López, Romaschenko, Susanna & N. Garcia [*Anura pallidivirens* (Kult.) Tscherneva], *Cousinia botschantzevii* Juz. ex Tscherneva, *Dianthus helenae* Vved., *Dracocephalum nuratavicum* Adylov, *Eremurus nuratavicus* A. P. Khohkr., *Helichrysum nuratavicum* Krasch., *Jurinea zakirovii* Iljin, *Lagochilus olgae* Kamelin, *Lagochilus proskorjakovii* Ikramov, *Lappula nuratavica* Nabiev & Zakirov, *Lepidium olgae* (R. M. Vinogr.) Al-Shehbaz & Mummenhoff (*Stubendorffia olgae* R. Vinogradova), *Oxytropis pseudorosea* Filim., *Parrya nuratensis* Botsch. & Vved., *Phlomis nubilans* Zakirov, *Phlomoides anisochila* (Pazij & Vved.) Salmaki, *Salvia submutica* Botsch. & Vved., *Thymus subnervosus* Vved., Nabiev & Tulyag. One species, *Ferula helenae* Rakhm. & Melibaev, is endemic to the insular low mountains located to the north of the Nuratau ridge.

One species, *Eremurus chloranthus* Popov, is endemic to the Turkestan ridge. Two species are endemic to the Malguzar ridge: *Allium levichevii* F. O. Khass. & N. Sulejm. and *Oxytropis kamelinii* Vassilcz. Following 13 species occurring in Turkestan and Malguzar ridges are endemic to the Kuhistan phytogeographical district: *Allium alexeianum* Regel, *Astragalus belolipovii* Kamelin ex F. O. Khass. & N. Sulajm., *Astragalus rusanovii* F. O. Khass., Sarybaeva & Esankulov, *Dianthus subscabridus* Lincz., *Euphorbia rosularis* Fed., *Ferula ovzinnikovii* Pimenov, *Jurinea helichrysofolia* Popov ex Iljin, *Oxytropis capusii* Franch., *Oxytropis seravschanica* Gontsch. ex Vassilcz. & B. Fedtsch., *Primula iljinskii* Fed., *Scutellaria schachristanica* Juz., *Serratula lancifolia* Zakirov, *Tanacetopsis urgutensis* (Popov ex Tzvelev) Kovalevsk. One species, *Bryonia melanocarpa* Nabiev, is endemic to the South-eastern Kyzylkum.

The identification of economically valuable species is an important result of the inventory of the flora of vascular plants of the Dzhizak Province. The most numerous group among them are fodder plants (558 species); 446 species are medicinal plants (official and used in folk medicine); 407 species are meliferous, 388 ornamental, 154 essential oil, 123 dye, 136 food plants (including wild-growing vegetables, fruits, berries, nut-bearing, spicy-aromatic species, *etc.*); 89 species can be used for afforestation and soil stabilization. At the same time, various ruderal, segetal and pastoral weeds (355 species), as well as poisonous plants (99 species) and alien species (114) are widespread in the Dzhizak Province. This fact indicates that ecosystems of study area have been noticeably transformed by anthropogenic impact.

Table 1. The number of species recorded for different phytogeographical regions of the Dzhizak Province

Phytogeographical regions	Number of species
Mountain Central Asian Province	
North Turkestan	1463
Malguzar	1255
Nuratau	1139
Nuratau Relic Mountains	614
Aktau	541
Turan Province	
Mirzachul	590
Kyzylkum	456

Table 2. Leading families and genera of the flora of the Dzhizak Province

Families	Number of genera	Number of species	Percentage (%)	Genera	Number of species	Percentage (%)
Asteraceae	82	281	14.32	<i>Astragalus</i>	107	5.45
Fabaceae	26	210	10.70	<i>Allium</i>	37	1.89
Poaceae	58	173	8.82	<i>Cousinia</i>	34	1.73
Brassicaceae	57	113	5.76	<i>Artemisia</i>	27	1.38
Lamiaceae	29	95	4.84	<i>Silene</i>	25	1.27
Apiaceae	41	91	4.64	<i>Ranunculus</i>	22	1.12
Amaranthaceae	29	86	4.38	<i>Oxytropis</i>	21	1.07
Caryophyllaceae	25	83	4.23	<i>Taraxacum</i>	20	1.02
Rosaceae	18	66	3.36	<i>Ferula</i>	19	0.97
Boraginaceae	21	58	2.96	<i>Carex</i>	18	0.92
Ranunculaceae	18	57	2.91	<i>Galium,</i> <i>Polygonum,</i> <i>Salsola, Stipa</i>	16	0.82

Table 3. The ratio of life forms of the flora of the Dzhizak Province

Life form	Number of species	Percentage (%)
Trees	44	2.24
Shrubs	116	5.91
Trees or shrubs	11	0.56
Semi-shrubs	108	5.50
Perennial herbs	1064	54.17
Biennial herbs	61	3.11
Annual herbs	516	26.22
Annual, biennial or perennial herbs	46	2.34

Table 4. List of plants of the flora of Dzhizak Province included in the IUCN Red List

No	Species	Category	Distribution in the Dzhizak Province (phytogeographical regions and protected areas)
1	<i>Prunus bucharica</i> (Korsh.) B. Fedtsch. ex Rehder [<i>Amygdalus bucharica</i> Korsh.] (Rosaceae)	VU B2ab(iii,v)	Nuratau, Aktau, North Turkestan, Malguzar. Nuratau Reserve, Zaamin Reserve, Zaamin National Park. Dominant species of open woodlands widely distributed in mountainous part of the province
2	<i>Prunus armeniaca</i> L. [<i>Armeniaca vulgaris</i> Lam.] (Rosaceae)	EN B2ab(iii)	Nuratau, North Turkestan, Malguzar. Nuratau Reserve, Zaamin Reserve, Zaamin National Park
3	<i>Fraxinus sogdiana</i> Bunge (Oleaceae)	NT	Nuratau, North Turkestan, Malguzar. Nuratau Reserve, Zaamin Reserve, Zaamin National Park
4	<i>Juglans regia</i> L. (Juglandaceae)	NT	Nuratau, North Turkestan, Malguzar. Nuratau Reserve, Zaamin Reserve, Zaamin National Park
5	<i>Lonicera paradoxa</i> Pojark. (Caprifoliaceae)	EN B2ab(iii,v) UzBRDB 1	North Turkestan
6	<i>Malus sieversii</i> (Ledeb.) M. Roem (Rosaceae)	VU A2cde	Nuratau, Aktau, North Turkestan, Malguzar. Nuratau Reserve, Zaamin Reserve, Zaamin National Park
7	<i>Platycladus orientalis</i> (L.) Franco (Cupressaceae)	NT	Nuratau. Nuratau Reserve. One giant “holy” tree in the valley Madjrum ca. 2000 years old
8	<i>Pyrus korshinskyi</i> Litv. (Rosaceae)	CR B2ab(iii,v)	Malguzar. Only one location is known

Table 5. List of plants of the flora of the Dzhizak Province included in the Red Data Book of Uzbekistan

No	Species	Category of UzbRDB	Distribution in the Dzhizak Province (phytogeographical regions and protected areas)
1	<i>Acantholimon nuratavicum</i> Zakirov ex Lincz. (Plumbaginaceae)	2	Nuratau. Nuratau Reserve
2	<i>Aconitum talassicum</i> Popov (Ranunculaceae)	3	North Turkestan, Malguzar. Zaamin Reserve, Zaamin National Park
3	<i>Allium isakulii</i> R. M. Fritsch & F. O. Khass. (Amaryllidaceae)	2	Nuratau, Malguzar. Nuratau Reserve
4	<i>Allium praemixtum</i> Vved. (Amaryllidaceae)	1	Nuratau, Malguzar. Nuratau Reserve
5	<i>Allochrysa gypsophiloides</i> Regel (Caryophyllaceae)	3	Nuratau, Malguzar, North Turkestan
6	<i>Arctium haesitabundum</i> (Juz.) S. López, Romasch., Susanna & N. Garcia [<i>Cousinia haesitabunda</i> Juz.] (Asteraceae)	1	Nuratau, Malguzar
7	<i>Arctium pallidivirens</i> (Kult.) S. López, Romaschenko, Susanna & N. Garcia [<i>Anura pallidivirens</i> (Kult.) Tscherneva] (Asteraceae)	1	Nuratau, Malguzar. Nuratau Reserve
8	<i>Astragalus belolipovii</i> Kamelin ex F. O. Khass. & N. Sulajm. (Fabaceae)	1	North Turkestan, Malguzar. Zaamin Reserve
9	<i>Astragalus kelleri</i> Popov (Fabaceae)	2	Nuratau, Aktau, Nuratau Relic Mountains, Malguzar. Nuratau Reserve
10	<i>Astragalus knorringianus</i> Boriss. (Fabaceae)	2	Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Nuratau Reserve, Zaamin Reserve, Zaamin National Park
11	<i>Astragalus leptophysus</i> Vved. (Fabaceae)	2	Nuratau, North Turkestan. Nuratau Reserve
12	<i>Bryonia melanocarpa</i> Nabiev (Cucurbitaceae)	2	Kyzylkum
13	<i>Cicer grande</i> (Popov) Korotkova (Fabaceae)	2	Nuratau. Nuratau Reserve
14	<i>Colchicum kesselringii</i> Regel (Colchicaceae)	3	Nuratau, Malguzar, North Turkestan. Nuratau Reserve, Zaamin Reserve, Zaamin National Park
15	<i>Cousinia dshizakensis</i> Kult. (Asteraceae)	2	Nuratau, Aktau, Malguzar, North Turkestan. Nuratau Reserve, Zaamin Reserve, Zaamin National Park
16	<i>Eremurus chloranthus</i> Popov (Asphodelaceae)	0	North Turkestan. Zaamin Nature Reserve. Only type specimen collected in 1926 is known

(continued)

No	Species	Category of UzbRDB	Distribution in the Dzhizak Province (phytogeographical regions and protected areas)
17	<i>Eremurus lactiflorus</i> O. Fedtsch. (Asphodelaceae)	2	Nuratau. Nuratau Nature Reserve
18	<i>Eremurus nuratavicus</i> A. P. Khokhr. (Asphodelaceae)	2	Nuratau. Nuratau Nature Reserve
19	<i>Eremurus robustus</i> (Regel) Regel (Asphodelaceae)	3	Nuratau, Malguzar, North Turkestan. Nuratau Reserve, Zaamin Reserve, Zaamin National Park
20	<i>Ferula fedtschenkoana</i> Koso-Pol. (Apiaceae)	1	Malguzar, North Turkestan. Zaamin Reserve, Zaamin National Park
21	<i>Ferula moschata</i> (H. Reinsch) Koso-Pol. [<i>Ferula sumbul</i> (Kauffm.) Hook. f.] (Apiaceae)	2	Nuratau, Malguzar, North Turkestan. Nuratau Reserve, Zaamin Reserve, Zaamin National Park
22	<i>Gladiolus italicus</i> Mill. (Iridaceae)	1	North Turkestan. Only one herbarium specimen collected in 1934 is known
23	<i>Helichrysum nuratavicum</i> Krasch. (Asteraceae)	2	Nuratau. Nuratau Reserve
24	<i>Jurinea zakirovii</i> Iljin (Asteraceae)	1	Nuratau. Nuratau Reserve
25	<i>Lagochilus inebrians</i> Bunge (Lamiaceae)	2	Nuratau, Aktau, Malguzar. Nuratau Reserve
26	<i>Lagochilus olgae</i> Kamelin (Lamiaceae)	2	Nuratau. Nuratau Reserve
27	<i>Lagochilus proskorjakovii</i> Ikramov (Lamiaceae)	1	Nuratau. Nuratau Reserve
28	<i>Lappula nuratavica</i> Nabiev & Zakirov (Boraginaceae)	2	Nuratau. Nuratau Reserve
29	<i>Lepidium olgae</i> (R. Vinogradova) Al-Shehbaz & Mummenhoff [<i>Stubendorffia olgae</i> R. Vinogradova] (Brassicaceae)	2	Nuratau. Nuratau Reserve
30	<i>Lepidolopha nuratavica</i> Krasch. (Asteraceae)	1	Nuratau. Nuratau Reserve
31	<i>Lipskyia insignis</i> Nevski (Apiaceae)	3	Malguzar
32	<i>Lonicera paradoxa</i> Pojark. (Caprifoliaceae)	1	North Turkestan
33	<i>Oxytropis pseudorosea</i> Filim. (Fabaceae)	2	Nuratau. Nuratau Reserve
34	<i>Paeonia tenuifolia</i> L. [<i>P. hybrida</i> Pall.] (Paeoniaceae)	3	North Turkestan. Zaamin Nature Reserve. Only one location is known
35	<i>Phlomoides anisochila</i> (Pazij & Vved.) Salmaki (Lamiaceae)	1	Nuratau. Nuratau Reserve
36	<i>Phlomis nubilans</i> Zakirov (Lamiaceae)	2	Nuratau. Nuratau Reserve

(continued)

No	Species	Category of UzbRDB	Distribution in the Dzhizak Province (phytogeographical regions and protected areas)
37	<i>Parrya olgae</i> (Regel & Schmalh) D. A. German & Al. Shehbaz [<i>Pseudoclausia olgae</i> (Regel & Schmalh.) (Brassicaceae)]	2	Nuratau, Malguzar, North Turkestan. Nuratau Reserve, Zaamin Reserve, Zaamin National Park
38	<i>Parrya sarawschanica</i> (Regel & Schmalh.) D. A. German & Al-Shehbaz [<i>Pseudoclausia sarawschanica</i> (Regel & Schmalh.) Botsch.] (Brassicaceae)	2	Nuratau. Nuratau Nature Reserve
39	<i>Pseudosedum campanuliflorum</i> Boriss. (Crassulaceae)	1	North Turkestan, Malguzar. Zaamin National Park
40	<i>Salsola titovii</i> Botsch. (Chenopodiaceae)	1	Aktau
41	<i>Salvia submutica</i> Botsch. & Vved. (Lamiaceae)	2	Nuratau. Nuratau Reserve
42	<i>Saxifraga hirculus</i> L. (Saxifragaceae)	2	North Turkestan. Zaamin Reserve, Zaamin National Park
43	<i>Serratula lancifolia</i> Zakirov (Asteraceae)	1	Malguzar
44	<i>Seseli turbinatum</i> Korovin (Apiaceae)	2	Nuratau. Nuratau Reserve
45	<i>Silene paranadena</i> Bondarenko & Vved. (Caryophyllaceae)	2	Nuratau, Malguzar. Nuratau Reserve
46	<i>Tulipa affinis</i> Botschantz (Liliaceae)	2	Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Nuratau Reserve, Zaamin Reserve, Zaamin National Park
47	<i>Tulipa dasystemon</i> Regel (Liliaceae)	2	North Turkestan, Malguzar. Zaamin Reserve, Zaamin National Park
48	<i>Tulipa korolkowii</i> Regel (Liliaceae)	2	Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Nuratau Reserve, Zaamin Reserve, Zaamin National Park
49	<i>Tulipa lehmanniana</i> Mercklin (Liliaceae)	3	Kyzylkum
50	<i>Tulipa micheliana</i> Hoog (Liliaceae)	2	Nuratau, Nuratau Relic Mountains, Malguzar. Nuratau Reserve
51	<i>Vitis vinifera</i> L. (Vitaceae)	2	Nuratau. Nuratau Reserve

POLYPODIOPHYTA
[FERNS]

Family 1. Equisetaceae

Genus 1. Equisetum L.

1. *Equisetum arvense* L.

Perennial. Banks of rivers, wet places. Plain, foothills, montane zone. Nuratau, Malguzar, North Turkestan. Medicinal.

2. *Equisetum ramosissimum* Desf. Figure 1

Perennial. Banks of rivers, wet places, meadows. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Medicinal, fodder.



Figure 1 *Equisetum ramosissimum* (photography by Natalya Beshko)

Family 2. Ophioglossaceae

Genus 2. Botrychium Sw.

3. *Botrychium lunaria* (L.) Sw.

Perennial. Wet meadows, moraines. Montane and alpine zones. North Turkestan.

Family 3. Marsileaceae

Genus 3. Marsilea L.

4. *Marsilea quadrifolia* L.

Perennial. Standing and slowly flowing water, rice fields. Plain. Kyzylkum, Mirzachul.

Family 4. Salviniaceae

Genus 4. *Salvinia* Micheli

5. *Salvinia natans* (L.) All.

Perennial. Standing and slowly flowing water. Plain. Kyzylkum, Mirzachul.

Family 5. Pteridaceae

Genus 5. *Cheilanthes* Sw.

6. *Cheilanthes persica* (Bory) Mett. ex Kuhn. Figure 2

Perennial. Rocks. Montane zone. Nuratau, Malguzar, North Turkestan.



Figure 2 *Cheilanthes persica* (photography by Natalya Beshko)

Genus 6. *Adiantum* L.

7. *Adiantum capillus-veneris* L. Figure 3

Perennial. Wet rocks and boulders near waterfalls, stream banks. Montane zone. Nuratau, Malguzar, North Turkestan. Ornamental, medicinal.



Figure 3 *Adiantum capillus-veneris* (photography by Natalya Beshko)

Family 6. Aspleniaceae

Genus 7. *Cystopteris* Berh.

8. *Cystopteris fragilis* (L.) Bernh. Figure 4

Perennial. Shady wet places. Montane zone. Nuratau, Aktau, Malguzar, North Turkestan.



Figure 4 *Cystopteris fragilis* (photography by Natalya Beshko)

Genus 8. *Asplenium* L.

9. *Asplenium ruta-muraria* L. Figure 5

Perennial. Rocks. Montane zone. Nuratau, Malguzar, North Turkestan. Ornamental, medicinal.



Figure 5 *Asplenium ruta-muraria* (photography by Natalya Beshko)

10. *Asplenium trichomanes* L.

Perennial. Rocks. Montane zone. Nuratau, Malguzar, North Turkestan. Ornamental, medicinal.

Genus 9. *Ceterach* Gorsault.

11. *Ceterach officinarum* Willd. Figure 6

Perennial. Rocks. Montane zone. Malguzar, North Turkestan. Ornamental, medicinal.



Figure 6 *Ceterach officinarum* (photography by Natalya Beshko)

Family 7. Polypodiaceae

Genus 10. *Dryopteris* Adans.

12. *Dryopteris filix-mas* (L.) Schott.

Perennial. Shady wet places. Montane zone. Malguzar, North Turkestan. Ornamental, medicinal.

GYMNOSPERMAE
[GYMNOSPERMS]

Family 8. Ephedraceae

Genus 11. *Ephedra* L.

13. *Ephedra botschantzevii* Pachom.

Shrub. Stony slopes. Foothills, montane zone. Nuratau.

14. *Ephedra equisetina* Bunge Figure 7

Shrub. Stony and fine-earth slopes, rocks, screes. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Medicinal.



Figure 7 *Ephedra equisetina* (photography by Natalya Beshko)

15. *Ephedra fedtschenkoae* Paulsen

Shrub. Stony slopes. Montane and alpine zones. Nuratau, Malguzar, North Turkestan.

16. *Ephedra foliata* Boiss. ex C. A. Mey. [*Ephedra kokanica* Regel] Figure 8

Shrub. Stony and fine-earth slopes. Foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan.



Figure 8 *Ephedra foliata* (photography by Natalya Beshko)

17. *Ephedra intermedia* Schrenk & C. A. Mey. Figure 9

Shrub. Stony and fine-earth slopes. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Medicinal.



Figure 9 *Ephedra intermedia* (photography by Natalya Beshko)

18. *Ephedra regeliana* Florin Figure 10

Shrub. Gravelly and stony slopes. Montane and alpine zones. Nuratau, Malguzar, North Turkestan.



Figure 10 *Ephedra regeliana* (photography by Natalya Beshko)

19. *Ephedra strobilacea* Bunge Figure 11

Shrub. Sandy and clay desert, relic mountains. Plain, foothills. Nuratau Relic Mountains, Kyzylkum. Fodder, afforestation.



Figure 11 *Ephedra strobilacea* (photography by Natalya Beshko)

Family 9. Cupressaceae

Genus 12. **Platycladus* Spach^①

20. **Platycladus orientalis* (L.) Franco

Tree. A giant “holy” tree in the valley Madjrum, the Nuratau Nature Reserve, ca. 8 m in diam., ca. 2000 years old. Their status is uncertain because the species was naturalized in many Asian countries in ancient times, but botanists regarded *Platycladus* in Uzbekistan as native and Tertiary relic. Nuratau. Ornamental. IUCN NT.

Genus 13. *Juniperus* L.

21. *Juniperus pseudosabina* Fisch. & C. A. Mey. [*Juniperus turkestanica* Kom.] Figure 12
Tree. Stony and fine-earth slopes. Montane and alpine zones. North Turkestan. Industrial, essential

① An asterisk means the alien taxon.

oil, medicinal, afforestation.



Figure 12 *Juniperus pseudosabina* (photography by Natalya Beshko)

22. *Juniperus semiglobosa* Regel Figure 13

Tree. Stony and fine-earth slopes, screes. Montane and alpine zones. Malguzar, North Turkestan. Industrial, essential oil, medicinal, afforestation.



Figure 13 *Juniperus semiglobosa* (photography by Natalya Beshko)

23. *Juniperus polycarpos* var. *seravschanica* (Kom.) Kitam. [*Juniperus seravschanica* Kom.] Figure 14
Tree. Stony and fine-earth slopes, rocks, screes. Montane zone. Nuratau, Malguzar, North Turkestan.
Industrial, essential oil, food (spice-aromatic), medicinal, afforestation.



Figure 14 *Juniperus polycarpos* var. *seravschanica* (photography by Natalya Beshko)

ANGIOSPERMAE

[ANGIOSPERMS]

LILIOPSIDA

[MONOCOTS]

Family 10. Araceae

Genus 14. Lemna L.

24. *Lemna gibba* L.

Perennial. Standing and slowly flowing water. Plain. Mirzachul, Kyzylkum. Medicinal, fodder, food.

25. *Lemna minor* L.

Perennial. Standing and slowly flowing water. Plain. Mirzachul, Kyzylkum. Medicinal, fodder, food.

Genus 15. Arum L.

26. *Arum korolkowii* Regel Figure 15

Perennial. Shady wet places, river valleys, stony slopes, rocks, screes. Montane zone. Nuratau, Aktau, Nuratau Relic Mountains, North Turkestan. Medicinal, poisonous, ornamental, dye.



Figure 15 *Arum korolkowii* (photography by Natalya Beshko)

Genus 16. *Eminium* Schott.

27. *Eminium lehmanii* (Bunge) O. Kuntze

Perennial. Sandy deserts. Plain. Nuratau Relic Mountains, Kyzylkum. Poisonous, ornamental.

Family 11. Alismataceae

Genus 17. *Alisma* L.

28. *Alisma plantago-aguatica* L.

Perennial. Banks of rivers, lakes and canals, shallows. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, poisonous.

Genus 18. *Sagittaria* L.

29. *Sagittaria trifolia* L.

Perennial. Banks of rivers, lakes and canals, shallows. Plain, foothills. Nuratau Relic Mountains, Malguzar, Mirzachul, Kyzylkum. Medicinal, fodder, ornamental.

Family 12. Butomaceae

Genus 19. *Butomus* L.

30. *Butomus umbellatus* L.

Perennial. Banks of rivers, lakes and canals, shallows. Plain, foothills, montane zone. Nuratau Relic Mountains, Mirzachul, Kyzylkum. Medicinal, fodder, meliferous, ornamental.

Family 13. Hydrocharitaceae

Genus 20. **Vallisneria* L.

31. **Vallisneria spiralis* L.

Perennial. Standing and slowly flowing water. Plain. Nuratau Relic Mountains, Malguzar, North

Turkestan, Mirzachul, Kyzylkum. Fodder (for geese and ducks), ornamental.

Genus 21. *Najas* L.

32. *Najas marina* L.

Annual. Standing and slowly flowing water. Plain. Nuratau Relic Mountains, Malguzar, Mirzachul, Kyzylkum.

33. *Najas minor* All.

Annual. Standing and slowly flowing water. Plain, foothills. Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum.

Family 14. Juncaginaceae

Genus 22. *Triglochin* L.

34. *Triglochin palustre* L.

Perennial. Banks of rivers, lakes and canals, swamp meadows. Plain, foothills, montane zone. Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Fodder, food.

Family 15. Potamogetonaceae

Genus 23. *Potamogeton* L.

35. *Potamogeton crispus* L.

Perennial. Standing and slowly flowing water. Plain, foothills. Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder (for geese, ducks and muskrats).

36. *Potamogeton filiformis* Pers.

Perennial. Standing and slowly flowing water. Plain, foothills, montane zone. Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder (for geese, ducks and muskrats).

37. *Potamogeton lucens* L.

Perennial. Standing and slowly flowing water. Plain, foothills, montane and alpine zones. North Turkestan, Mirzachul, Kyzylkum. Fodder (for geese, ducks and muskrats).

38. *Potamogeton natans* L.

Perennial. Standing and slowly flowing water. Plain, foothills. Nuratau Relic Mountains, Mirzachul,

Kyzylkum. Fodder (for geese, ducks and muskrats), medicinal, ornamental.

39. *Potamogeton pectinatus* L.

Perennial. Standing and slowly flowing water. Plain, foothills. Nuratau Relic Mountains, Mirzachul, Kyzylkum. Fodder (for geese, ducks and muskrats), medicinal, ornamental.

40. *Potamogeton perfoliatus* L.

Perennial. Standing and slowly flowing water. Plain, foothills. Nuratau Relic Mountains, Mirzachul, Kyzylkum. Fodder (for geese, ducks and muskrats), medicinal, ornamental.

41. *Potamogeton pusillus* L.

Perennial. Standing and slowly flowing water. Plain, foothills. Malguzar, Mirzachul, Kyzylkum. Fodder (for geese, ducks and muskrats), medicinal, ornamental.

Genus 24. *Zannichellia* L.

42. *Zannichellia pedunculata* Rchb.

Perennial. Standing and slowly flowing water, usually saline. Plain. Nuratau Relic Mountains, Mirzachul, Kyzylkum. Fodder (for geese, ducks and muskrats).

Family 16. Ruppiceae

Genus 25. *Ruppia* L.

43. *Ruppia maritima* L.

Perennial. Standing and slowly flowing water. Plain. Mirzachul, Kyzylkum. Fodder (for geese, ducks and muskrats).

Family 17. Colchicaceae

Genus 26. *Colchicum* (Tourn.) L.

44. *Colchicum kesselringii* Regel Figure 16

Perennial. Wet places, fine-earth, gravelly and stony slopes, places near melting snow. Plain, foothills, montane and alpine zones. Nuratau, Malguzar, North Turkestan. Medicinal, alkaloid-bearing, poisonous, ornamental, threatened species. UzbRDB 3.



Figure 16 *Colchicum kesselringii* (photography by Natalya Beshko)

45. *Colchicum luteum* Baker Figure 17

Perennial. Fine-earth, gravelly and stony slopes, places near melting snow. Montane and alpine zones. Malguzar, North Turkestan. Medicinal, alkaloid-bearing, poisonous, ornamental, dye.



Figure 17 *Colchicum luteum* (photography by Natalya Beshko)

Genus 27. *Merendera* Ramond.

46. *Merendera robusta* Bunge Figure 18

Perennial. Sandy and clay deserts, fine-earth slopes. Plain, foothills. Nuratau Relic Mountains, Kyzylkum. Medicinal, alkaloid-bearing, poisonous, ornamental.



Figure 18 *Merendera robusta* (photography by N. Yu. Beshko)

Family 18. Liliaceae

Genus 28. *Gagea* Salisb.

47. *Gagea afghanica* A. Terracc.

Perennial. Sandy soils. Plain. Nuratau Relic Mountains, Mirzachul, Kyzylkum. Ornamental.

48. *Gagea bergii* Litv.

Perennial. Sandy deserts. Plain. Kyzylkum. Ornamental.

49. *Gagea calyptrifolia* Levichev

Perennial. Fine-earth and stony slopes. Montane zone. North Turkestan. Ornamental.

50. *Gagea capillifolia* Vved.

Perennial. Shady places. Montane and alpine zones. North Turkestan. Ornamental.

51. *Gagea capusii* A. Terracc. Figure 19

Perennial. Fine-earth and stony slopes. Montane zone. Nuratau, Malguzar, North Turkestan. Ornamental.



Figure 19 *Gagea capusii* (photography by Natalya Beshko)

52. *Gagea chomutovae* (Pascher) Pascher Figure 20

Perennial. Fine-earth and stony slopes. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Ornamental.



Figure 20 *Gagea chomutovae* (photography by Natalya Beshko)

53. *Gagea divaricata* Regel

Perennial. Sandy soils. Plain. Nuratau Relic Mountains, Kyzylkum. Ornamental.

54. *Gagea dschungarica* Regel

Perennial. Fine-earth and stony slopes, places near melting snow. Montane and alpine zones. Malguzar, North Turkestan. Ornamental.

55. *Gagea filiformis* (Ledeb.) Kar. & Kir.

Perennial. Fine-earth and stony slopes. Montane and alpine zones. Malguzar, North Turkestan. Ornamental.

56. *Gagea gageoides* (Zucc.) Vved. Figure 21

Perennial. Shady wet places. Montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Ornamental.



Figure 21 *Gagea gageoides* (photography by N. Yu. Beshko)

57. *Gagea graminifolia* Vved. Figure 22

Perennial. Clay deserts, piedmont plains, fine-eart slopes. Foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Ornamental.



Figure 22 *Gagea graminifolia* (photography by Natalya Beshko)

58. *Gagea hissarica* Lipsky Figure 23

Perennial. Fine-earth and stony slopes, places near melting snow. Montane and alpine zones. Malguzar, North Turkestan. Ornamental.



Figure 23 *Gagea hissarica* (photography by N. Yu. Beshko)

59. *Gagea kamelinii* Levichev Figure 24

Perennial. Fine-earth and stony slopes. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. Ornamental.



Figure 24 *Gagea kamelinii* (photography by Natalya Beshko)

60. *Gagea ova* Stapf.

Perennial. Sandy and clay deserts, piedmont plains, fine-earth and stony slopes. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Ornamental.

61. *Gagea liotardii* (Sternb.) Schult. & Schult. f. [*Gagea emarginata* Kar. & Kir] Figure 25
Perennial. Fine-earth and stony slopes. Montane and alpine zones. Malguzar, North Turkestan.
Ornamental.



Figure 25 *Gagea liotardii* (photography by N. Yu. Beshko)

62. *Gagea nabievii* Levichev
Perennial. Fine-earth and stony slopes. Montane and alpine zones. Malguzar, North Turkestan.
Ornamental.

63. *Gagea olgae* Regel Figure 26
Perennial. Clay deserts, piedmont plains, fine-earth slopes. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Ornamental.



Figure 26 *Gagea olgae* (photography by Natalya Beshko)

64. *Gagea reinhardii* Levichev

Perennial. Fine-earth and stony slopes. Foothills, montane zone. Malguzar, North Turkestan. Ornamental.

65. *Gagea reticulata* (Pall.) Schult. & Schult. f. [*Gegea pseudoreticulata* Vved.] Figure 27

Perennial. Fine-earth and stony slopes. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. Ornamental.



Figure 27 *Gagea reticulata* (photography by N. Yu. Beshko)

66. *Gagea stipitata* Merckl. ex Bunge Figure 28

Perennial. Sandy and clay deserts, piedmont plains, fine-earth and stony slopes. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Ornamental.



Figure 28 *Gagea stipitata* (photography by Natalya Beshko)

67. *Gagea stolonifera* Popov & Czugaeva

Perennial. Fine-earth and stony slopes. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. Ornamental.

68. *Gagea subtilis* Vved. Figure 29

Perennial. Stony slopes, rocks, shady places. Foothills, montane zone. Nuratau, Malguzar, North Turkestan, Mirzachul. Ornamental.



Figure 29 *Gagea subtilis* (photography by N. Yu. Beshko)

69. *Gagea taschkentica* Levichev

Perennial. Clay deserts, piedmont plains, fine-earth and stony slopes. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Ornamental.

70. *Gagea tenera* Pascher

Perennial. Clay deserts, piedmont plains, fine-earth and stony slopes. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Ornamental.

71. *Gagea turkestanica* Pascher

Perennial. Stony slopes. Foothills. Malguzar, North Turkestan. Ornamental.

72. *Gagea vegeta* Vved.

Perennial. Fine-earth and stony slopes. Montane zone. Nuratau, Malguzar, North Turkestan, Mirzachul. Ornamental.

73. *Gagea vvedenskyi* Grossh.

Perennial. Fine-earth and stony slopes. Montane and alpine zones. Malguzar, North Turkestan. Ornamental.

Genus 29. *Tulipa* L.

74. *Tulipa affinis* Botschantz. Figure 30

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Ornamental. Threatened species, UzbRDB 2.



Figure 30 *Tulipa affinis* (photography by N. Yu. Beshko)

75. *Tulipa borszczowii* Regel

Perennial. Sandy deserts. Plain. Kyzylkum. Ornamental.

76. *Tulipa buhseana* Boiss. Figure 31

Perennial. Sandy and clay deserts, piedmont plain, relic mountains. Plain. Nuratau, Nuratau Relic Mountains, Kyzylkum. Ornamental.



Figure 31 *Tulipa buhseana* (photography by Natalya Beshko)

77. *Tulipa dasystemon* Regel

Perennial. Fine-earth, gravelly and stony slopes. Montane and alpine zones. Malguzar, North Turkestan. Ornamental. Threatened species, UzbRDB 2.

78. *Tulipa dasystemonoides* Vved.

Perennial. Fine-earth, gravelly and stony slopes. Alpine zone. North Turkestan. Ornamental.

79. *Tulipa korolkowii* Regel

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Ornamental. Threatened species, UzbRDB 2.

80. *Tulipa lehmanniana* Mercklin Figure 32

Perennial. Sandy and clay deserts, relic mountains. Plain, foothills. Nuratau Relic Mountains, Kyzylkum. Ornamental. Threatened species, UzbRDB 3.



Figure 32 *Tulipa lehmanniana* (photography by N. Yu. Beshko)

81. *Tulipa micheliana* Hoog Figure 33

Perennial. Fine-earth, gravelly and stony slopes. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan. Ornamental. Threatened species, UzbRDB 2.



Figure 33 *Tulipa micheliana* (photography by Natalya Beshko)

82. *Tulipa turkestanica* Regel

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Ornamental.

Genus 30. *Lloydia* Salisb.

83. *Lloydia serotina* (L.) Reichenb

Perennial. Wet stony slopes, rocks, screes, moraines. Alpine zone. North Turkestan. Ornamental.

Genus 31. *Fritillaria* L.

84. *Fritillaria olgae* Vved. Figure 34

Perennial. Fine-earth, gravelly and stony slopes, wet shady places. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Ornamental, medicinal.



Figure 34 *Fritillaria olgae* (photography by Natalya Beshko)

Family 19. Orchidaceae

Genus 32. *Epipactis* Adans.

85. *Epipactis latifolia* (L.) All.

Perennial. Swamp meadows, river valleys. Montane and alpine zones. Nuratau, North Turkestan. Ornamental.

Genus 33. *Orchis* L.

86. *Orchis pseudolaxiflora* Czerniak.

Perennial. Swamp meadows, river valleys. Montane zone. Nuratau, Malguzar, North Turkestan. Ornamental, medicinal.

Genus 34. *Dactylorhiza* Nevski

87. *Dactylorhiza umbrosa* (Kar. & Kir.) Nevski Figure 35

Perennial. Swamp meadows, river valleys. Foothills, montane and alpine zones. Nuratau, Malguzar, North Turkestan. Ornamental, medicinal.



Figure 35 *Dactylorhiza umbrosa* (photography by Natalya Beshko)

Family 20. Ixioliriaceae

Genus 35. *Ixiolirion* Herb.

88. *Ixiolirion tataricum* (Pall.) Schult. & Schult. f. Figure 36

Perennial. Fine-earth, gravelly and stony slopes, river valleys, piedmont plains, sandy and clay deserts. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Ornamental, medicinal.



Figure 36 *Ixiolirion tataricum* (photography by Natalya Beshko)

Family 21. Iridaceae

Genus 36. *Crocus* L.

89. *Crocus korolkowii* Maw & Regel Figure 37

Perennial. Fine-earth and gravelly slopes, places near melting snow. Foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Ornamental, medicinal, food (spice).



Figure 37 *Crocus korolkowii* (photography by Natalya Beshko)

Genus 37. *Iris* L.

90. *Iris linifoliiformis* (Khalk.) Tojibaev & Turginov

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. Malguzar, North Turkestan. Ornamental.

91. *Iris loczyi* Kanitz

Perennial. Fine-earth, gravelly and stony slopes. Montane and alpine zones. North Turkestan. Ornamental.

92. *Iris longiscapa* Ledeb. Figure 38

Perennial. Sandy and clay deserts. Plain. Nuratau Relic Mountains, Kyzylkum. Ornamental.



Figure 38 *Iris longiscapa* (photography by Natalya Beshko)

93. *Iris maracandica* (Vved.) Wendelbo Figure 39

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Ornamental.



Figure 39 *Iris maracandica* (photography by Natalya Beshko)

94. *Iris narbutii* O. Fedtsch. Figure 40

Perennial. Fine-earth and gravelly slopes, clay deserts, piedmont plains. Plain, foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Ornamental.



Figure 40 *Iris narbutii* (photography by Natalya Beshko)

95. *Iris parvula* (Vved.) T. Hall & Seisums

Perennial. Fine-earth, gravelly and stony slopes. Alpine zone. North Turkestan. Ornamental.

96. *Iris songarica* Schrenk Figure 41

Perennial. Sandy and clay deserts, piedmont plains. Plain, foothills. Nuratau, Aktau, Nuratau Relic Mountains, Kyzylkum. Ornamental, poisonous.



Figure 41 *Iris songarica* (photography by Natalya Beshko)

97. *Iris tadshikorum* Vved.

Perennial. Fine-earth and stony slopes. Montane and alpine zones. Malguzar, North Turkestan. Ornamental.

Genus 38. *Gladiolus* L.

98. *Gladiolus italicus* Mill.

Perennial. Fine-earth slopes, meadows, fields. Foothills, montane zone. North Turkestan. Ornamental. Threatened species, UzbRDB 1.

Family 22. Asphodelaceae

Genus 39. *Eremurus* M. Bieb.

99. *Eremurus anisopterus* (Kar. & Kir.) Regel

Perennial. Sandy deserts. Plain. Kyzylkum. Ornamental.

100. *Eremurus chloranthus* Popov

Perennial. Alpine zone. North Turkestan. Ornamental. Threatened species, UzbRDB 0. Endemic to the Turkestan ridge.

101. *Eremurus fuscus* (O. Fedtsch.) Vved.

Perennial. Fine-earth, gravelly and stony slopes. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Ornamental, meliferous.

102. *Eremurus nderiensis* (Stev.) Regel

Perennial. Sandy deserts. Plain. Kyzylkum. Ornamental, meliferous.

103. *Eremurus kaufmannii* Regel Figure 42

Perennial. Fine-earth, gravelly and stony slopes. Montane and alpine zones. Malguzar, North Turkestan. Ornamental.



Figure 42 *Eremurus kaufmannii* (photography by Natalya Beshko)

104. *Eremurus lactiflorus* O. Fedtsch. Figure 43

Perennial. Gravelly and stony slopes, rocks, screes. Montane zone. Nuratau. Ornamental. Threatened species, UzbRDB 2.



Figure 43 *Eremurus lactiflorus* (photography by N. Yu. Beshko)

105. *Eremurus nuratavicus* A. P. Khohkr. Figure 44

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. Nuratau. Ornamental. Threatened species, UzbRDB 2. Endemic to the Nuratau ridge.



Figure 44 *Eremurus nuratavicus* (photography by N. Yu. Beshko)

106. *Eremurus olgae* Regel Figure 45

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Ornamental, food, medicinal, dye, meliferous.

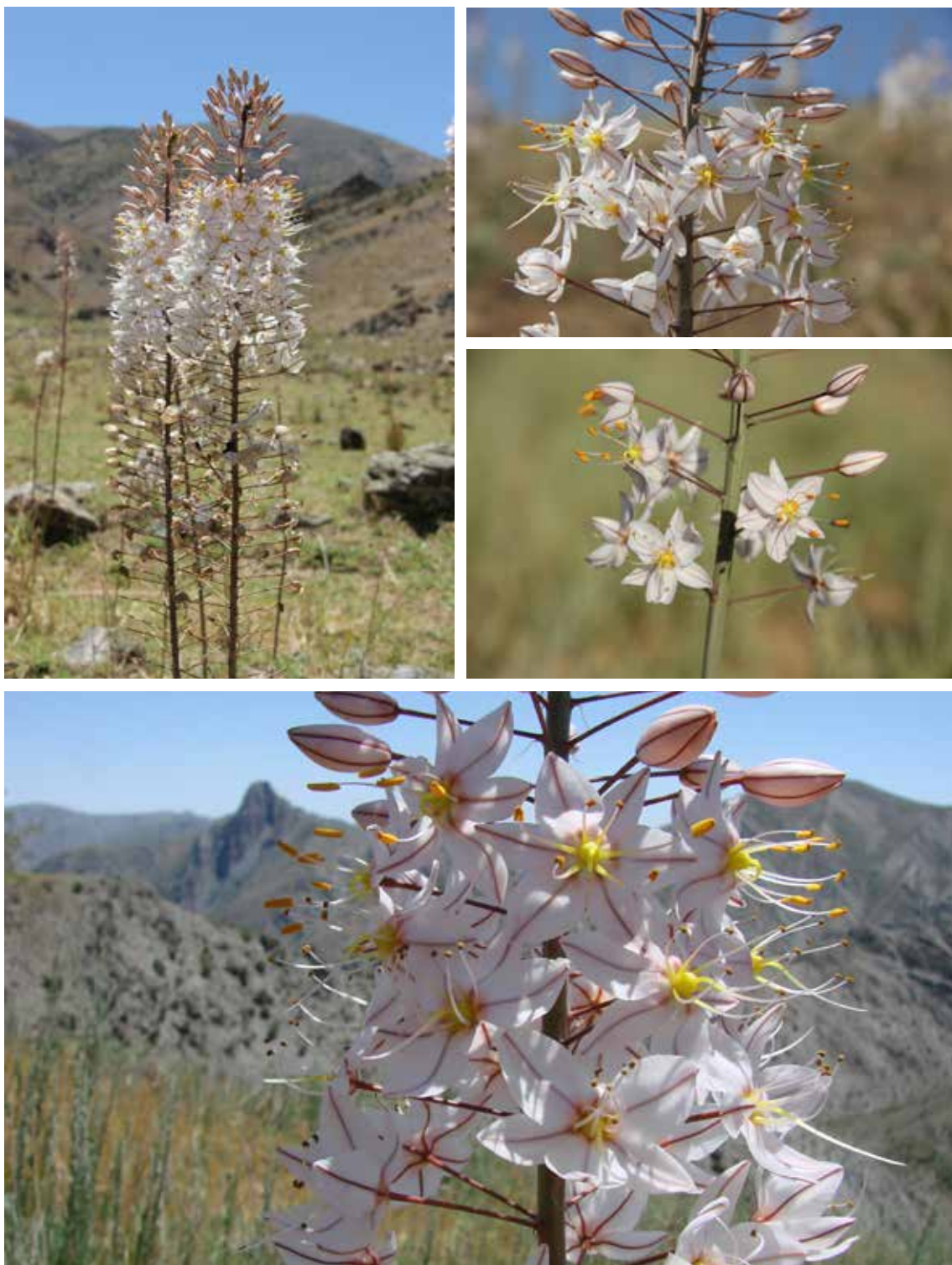


Figure 45 *Eremurus olgae* (photography by Natalya Beshko)

107. Eremurus regelii Vved. Figure 46

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. Nuratau, Malguzar, North Turkestan. Ornamental, food, medicinal, dye, melliferous.



Figure 46 *Eremurus regelii* (photography by Natalya Beshko)

108. Eremurus robustus (Regel) Regel Figure 47

Perennial. Fine-earth, gravelly and stony slopes, rocks. Montane zone. Nuratau, Malguzar, North Turkestan. Ornamental, medicinal, melliferous. Threatened species, UzbRDB 3.



Figure 47 *Eremurus robustus* (photography by Natalya Beshko)

109. Eremurus sogdianus (Regel) Benth. & Hook. f. Figure 48

Perennial. Gravelly and stony slopes. Foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Ornamental.



Figure 48 *Eremurus sogdianus* (photography by Natalya Beshko)

110. *Eremurus tianschanicus* Pazij & Vved. Figure 49

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. North Turkestan. Ornamental, meliferous.



Figure 49 *Eremurus tianschanicus* (photography by Natalya Beshko)

111. *Eremurus turkestanicus* Vved. Figure 50

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. Nuratau, Malguzar, North Turkestan. Ornamental, meliferous.



Figure 50 *Eremurus turkestanicus* (photography by Natalya Beshko)

Family 23. Amaryllidaceae

Genus 40. *Ungernia* Bunge

112. *Ungernia oligostroma* Popov & Vved. Figure 51

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. Nuratau, Malguzar, North Turkestan. Ornamental, medicinal.



Figure 51 *Ungernia oligostroma* (photography by Natalya Beshko)

Genus 41. *Allium* L.

113. *Allium alexeianum* Regel Figure 52

Perennial. Stony and gravelly slopes, screes. Montane and alpine zones. Malguzar, North Turkestan. Ornamental.



Figure 52 *Allium alexeianum* (photography by Natalya Beshko)

114. *Allium altissimum* Regel Figure 53

Perennial. River valleys. Montane zone. Nuratau, Malguzar, North Turkestan. Ornamental, food.



Figure 53 *Allium altissimum* (photography by Natalya Beshko)

115. *Allium barsczewskii* Lipsky

Perennial. Fine-earth, gravelly and stony slopes. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Ornamental.

116. *Allium caesium* Schrenk Figure 54

Perennial. Fine-earth, gravelly and stony slopes, river valleys. Foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan. Ornamental, food.



Figure 54 *Allium caesium* (photography by Natalya Beshko)

117. *Allium carolinianum* DC. Figure 55

Perennial. Fine-earth, gravelly and stony slopes. Alpine zone. North Turkestan. Ornamental.



Figure 55 *Allium carolinianum* (photography by Natalya Beshko)

118. *Allium caspium* (Pall.) M. Bieb. Figure 56

Perennial. Sandy deserts. Plain. Nuratau Relic Mountains, Kyzylkum.



Figure 56 *Allium caspium* (photography by Natalya Beshko)

119. *Allium clausum* Vved. Figure 57

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. North Turkestan. Ornamental.



Figure 57 *Allium clausum* (photography by Natalya Beshko)

120. *Allium cupuliferum* Regel subsp. *cupuliferum* Figure 58

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar. Ornamental.



Figure 58 *Allium cupuliferum* subsp. *cupuliferum* (photography by Natalya Beshko)

121. *Allium cupuliferum* subsp. *nuratavicum* R. M. Fritsch & Beshko Figure 59

Perennial. Stony slopes. Montane zone. Nuratau. Ornamental.



Figure 59 *Allium cupuliferum* subsp. *nuratavicum* (photography by Natalya Beshko)

122. *Allium drepanophyllum* Vved.

Perennial. Stony and gravelly slopes. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains. Ornamental.

123. *Allium filidens* Regel Figure 60

Perennial. Piedmont plains, fine-earth, gravelly and stony slopes, rocks. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Ornamental.



Figure 60 *Allium filidens* (photography by Natalya Beshko)

124. *Allium griffithianum* Boiss. Figure 61

Perennial. Fine-earth slopes, piedmont plains. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Ornamental.



Figure 61 *Allium griffithianum* (photography by Natalya Beshko)

125. *Allium gusaricum* Regel Figure 62

Perennial. Stony slopes, screes, rocks. Montane zone. Nuratau, Malguzar, North Turkestan. Ornamental.



Figure 62 *Allium gusaricum* (photography by Natalya Beshko)

126. *Allium inconspicuum* Vved.

Perennial. Stony and gravelly slopes. Foothills. Nuratau, Nuratau Relic Mountains. Ornamental.

127. *Allium isakulii* R. M. Fritsch & F. O. Khass. Figure 63

Perennial. Stony slopes. Foothills, montane zone. Nuratau, Malguzar. Ornamental. UzbRDB 2.



Figure 63 *Allium isakulii* (photography by Natalya Beshko)

128. *Allium jodanthum* Vved. Figure 64

Perennial. Fine-earth and gravelly slopes. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Ornamental.



Figure 64 *Allium jodanthum* (photography by Natalya Beshko)

129. *Allium karataviense* Regel Figure 65

Perennial. Stony and gravelly slopes, screes. Montane zone. Malguzar, North Turkestan. Ornamental.



Figure 65 *Allium karataviense* (photography by Natalya Beshko)

130. *Allium kaufmannii* Regel Figure 66

Perennial. Swamp meadows, wet places. Montane and alpine zones. Malguzar, North Turkestan. Ornamental.



Figure 66 *Allium kaufmannii* (photography by Natalya Beshko)

131. *Allium kokanicum* Regel Figure 67

Perennial. Stony slopes. Alpine zone. North Turkestan. Ornamental.



Figure 67 *Allium kokanicum* (photography by Natalya Beshko)

132. *Allium komarowii* Lipsky Figure 68

Perennial. Screes. Montane zone. Malguzar, North Turkestan. Ornamental.



Figure 68 *Allium komarowii* (photography by Natalya Beshko)

133. *Allium levichevii* F. O. Khass., Esankulov & N. Sulejm

Perennial. Stony slopes. Montane zone. Malguzar. Ornamental. Endemic to the Malguzar ridge.

134. *Allium longicuspis* Regel

Perennial. Ravines, river valleys. Montane zone. Nuratau. Ornamental, food, medicinal.

135. *Allium oreodictyum* Vved.

Perennial. Stony slopes. Montane zone. Nuratau, North Turkestan. Ornamental.

136. *Allium oreophiloides* Regel

Perennial. Stony slopes, rocks. Alpine zone. North Turkestan. Ornamental.

137. *Allium oreophilum* C. A. Mey. Figure 69

Perennial. Stony slopes. Alpine zone. North Turkestan. Ornamental.



Figure 69 *Allium oreophilum* (photography by Natalya Beshko)

138. *Allium oschaninii* O. Fedtsch.

Perennial. Rocks, stony slopes. Montane zone. Malguzar, North Turkestan. Ornamental, food.

139. *Allium praemixtum* Vved. Figure 70

Perennial. Rocks, stony slopes, screes. Montane zone. Nuratau, Malguzar. Ornamental, food. Threatened species, UzbRDB 1.



Figure 70 *Allium praemixtum* (photography by Natalya Beshko)

140. *Allium protensum* Wendelbo

Perennial. Stony and gravelly slopes. Foothills. Nuratau Relic Mountains. Ornamental.

141. *Allium sarawschanicum* Regel Figure 71

Perennial. River valleys, fine earth slopes. Montane zone. Malguzar, North Turkestan. Ornamental.



Figure 71 *Allium sarawschanicum* (photography by Natalya Beshko)

142. *Allium stephanophorum* Vved.

Perennial. Fine-earth and gravelly slopes. Montane zone. Nuratau, Malguzar, North Turkestan. Ornamental.

143. *Allium stipitatum* Regel Figure 72

Perennial. Fine-earth slopes, wet places, river valleys. Montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Ornamental, food.



Figure 72 *Allium stipitatum* (photography by Natalya Beshko)

144. *Allium suworowii* Regel Figure 73

Perennial. Fine-earth slopes, river valleys, burials, gardens. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Ornamental, food.



Figure 73 *Allium suworowii* (photography by Natalya Beshko)

145. *Allium taeniopetalum* Popov & Vved. Figure 74

Perennial. Fine-earth and stony slopes, shady places. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Ornamental.



Figure 74 *Allium taeniopetalum* (photography by Natalya Beshko)

146. *Allium talassicum* Regel

Perennial. Stony slopes. Montane zone. North Turkestan. Ornamental.

147. *Allium turkestanicum* Regel Figure 75

Perennial. Stony slopes, rocks. Foothills, montane zone. Nuratau, Malguzar. Ornamental.



Figure 75 *Allium turkestanicum* (photography by Natalya Beshko)

148. *Allium verticillatum* Regel Figure 76

Perennial. Piedmont plains, fine-earth and gravelly slopes. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Ornamental.



Figure 76 *Allium verticillatum* (photography by Natalya Beshko)

149. *Allium xiphopetalum* Aitch. & Baker

Perennial. Stony slopes. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Ornamental.

Family 24. Asparagaceae**Genus 42. *Polygonatum* Adans.****150. *Polygonatum sewerzowii* Regel Figure 77**

Perennial. Fine-earth and stony slopes, shady places. Montane zone. Malguzar, North Turkestan. Medicinal, food, poisonous, ornamental.



Figure 77 *Polygonatum sewerzowii* (photography by Natalya Beshko)

Genus 43. *Asparagus* L.

151. *Asparagus brachyphyllus* Turcz. Figure 78

Perennial. Saline lands and depressions, sand deserts, alkaline meadows, lake shores. Plain. Kyzylkum. Medicinal, fodder.



Figure 78 *Asparagus brachyphyllus* (photography by Natalya Beshko)

152. *Asparagus persicus* Baker Figure 79

Perennial. River valleys, rocks, fine-earth, gravelly and stony slopes. Foothills, montane zone. Malguzar, North Turkestan.



Figure 79 *Asparagus persicus* (photography by Natalya Beshko)

Genus 44. Fessia Speta

153. Fessia puschkinioides (Regel) Speta

Perennial. Fine-earth and stony slopes, places near melting snow. Montane and alpine zones. Malguzar, North Turkestan. Ornamental.

Family 25. Typhaceae

Genus 45. Sparganium L.

154. Sparganium stoloniferum (Buch.-Ham. ex Graebn.) Buch.-Ham. ex Juz.

Perennial. Banks of rivers, lakes and canals. Plain. Mirzachul, Kyzylkum.

Genus 46. Typha L.

155. Typha angustata Bory & Chaub

Perennial. Swamps, banks of rivers, lakes and canals. Plain. Mirzachul, Kyzylkum.

156. Typha angustifolia L. Figure 80

Perennial. Swamps, banks of rivers, lakes and canals. Plain, foothills. Malguzar, North Turkestan, Mirzachul, Kyzylkum.



Figure 80 *Typha angustifolia* (photography by Natalya Beshko)

157. *Typha latifolia* L.

Perennial. Swamps, banks of rivers, lakes and canals. Plain, foothills, montane zone. Malguzar, North Turkestan, Mirzachul, Kyzylkum.

158. *Typha laxmannii* Lepech.

Perennial. Swamps, banks of rivers, lakes and canals. Plain. Mirzachul.

159. *Typha minima* Funck

Perennial. Swamps, banks of rivers, lakes and canals. Plain. Mirzachul.

Family 26.*Eriocaulaceae

Genus 47.*Eriocaulon L.

160.*Eriocaulon sieboldianum Sieb. ex Zucc.

Annual. Swamps, banks of rivers, lakes and canals, pebbles, rice fields. Plain, foothills, montane and alpine zones. Nuratau, North Turkestan, Mirzachul. Medicinal, weed.

Family 27. Juncaceae

Genus 48. Juncus L.

161. *Juncus articulatus* L.

Perennial. Swamps, banks of rivers, lakes and canals, pebbles. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Malguzar, North Turkestan, Mirzachul. Fodder.

162. *Juncus bufonius* L.

Annual. Swamp meadows, banks of rivers, lakes and canals, pebbles, saline lands. Plain, foothills, montane and alpine zones. Nuratau, Malguzar, North Turkestan, Mirzachul. Fodder, medicinal, weed.

163. *Juncus compressus* Jacq.

Perennial. Banks of rivers and lakes, dry riverbeds, swamp meadows, fields, saline lands. Plain, foothills, montane and alpine zones. North Turkestan. Fodder, medicinal, industrial.

164. *Juncus gerardii* Loisel

Perennial. Swamp meadows, banks of rivers, lakes and canals, wet slopes, fallow lands. Plain, foothills, montane zone. Nuratau, Malguzar, North Turkestan, Mirzachul. Fodder, medicinal, industrial.

165. *Juncus heptopotamicus* V. I. Krecz. & Gontsch.

Perennial. Swamp meadows, banks of rivers, wet stony slopes, saline lands. Plain, foothills, montane and alpine zones. North Turkestan. Fodder.

166. *Juncus hybridus* Brot.

Annual. Banks of rivers and lakes, dry riverbeds, swamp meadows, fallow lands. Plain, foothills, montane and alpine zones. North Turkestan, Mirzachul, Kyzylkum. Fodder.

167. *Juncus inflexus* L.

Perennial. Swamp meadows, banks of rivers, lakes and canals, wet slopes. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Malguzar, North Turkestan, Mirzachul. Fodder.

168. *Juncus jaxarticus* V. I. Krecz. & Gontsch.

Perennial. Swamp meadows, banks of rivers, lakes and canals, saline lands, depressions, fields. Plain, foothills, montane zone. Malguzar, Mirzachul, Kyzylkum. Fodder.

169. *Juncus macrantherus* V. I. Krecz. & Gontsch.

Perennial. Swamps, banks of rivers, wet slopes. Montane and alpine zones. North Turkestan. Fodder.

170. *Juncus persicus* subsp. *libanoticus* (J.Thiébaud) Novikov & Snogerup [*Juncus vvedenskyi* V. I. Krecz.]

Perennial. Swamp meadows, banks of rivers and lakes, wet slopes. Plain, foothills, montane zone. Nuratau. Fodder.

171. *Juncus rechingeri* Snogerup.

Annual. Swamp meadows, banks of rivers and lakes. Plain, foothills, alpine zone. Nuratau. Fodder.

172. *Juncus sphaerocarpus* Nees.

Annual. Swamp meadows, banks of rivers and lakes. Plain, foothills, montane and alpine zones. Nuratau. Fodder.

173. *Juncus triglumis* L.[*Juncus schischkinii* Krylov & Sumnev.]

Perennial. Swamp meadows, banks of rivers and lakes. Montane and alpine zones. Malguzar, North Turkestan. Fodder.

174. *Juncus turkestanicus* V. I. Krecz. & Gontsch.

Annual. Swamp meadows, banks of rivers and lakes. Plain, foothills, montane zone. Nuratau, North Turkestan. Fodder.

Genus 49. *Luzula* DC.

175. *Luzula pallescens* Sw.

Perennial. River banks, swamps, alpine meadows. Montane and alpine zones. North Turkestan. Fodder.

176. *Luzula spicata* (L.) DC.

Perennial. Moraines, rocks, wet stony slopes, swamps, banks of rivers. Alpine zone. North Turkestan. Fodder.

Family 28. Cyperaceae

Genus 50. *Schoenoplectus* (Rchb.) Palla

177. *Schoenoplectus litoralis* (Schrad.) Palla [*Scirpus litoralis* Schrad.]

Perennial. Banks of rivers, lakes and canals. Plain. Nuratau Relic Mountains, Mirzachul, Kyzylkum.

178. *Schoenoplectus triqueter* (L.) Palla [*Scirpus triqueter* L.]

Perennial. Banks of rivers, lakes and canals. Plain. Mirzachul.

Genus 51. *Scirpus* L.

179. *Scirpus triquetrisformis* (V. Krecz.) T. V. Egorova

Perennial. Banks of rivers, lakes and canals, near springs. Plain, foothills, montane zone. North Turkestan.

Genus 52. *Bolboschoenus* (Aschers.) Palla

180. *Bolboschoenus maritimus* (L.) Palla Figure 81

Perennial. Banks of rivers, lakes and canals, near springs, swamp meadows, saline depressions. Plain, foothills. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, fodder, industrial, weed.



Figure 81 *Bolboschoenus maritimus* (photography by Natalya Beshko)

181. *Bolboschoenus popovii* T. V. Egorova Figure 82

Perennial. Banks of rivers, lakes and canals, saline lands. Plain. Kyzylkum. Medicinal, fodder, industrial, weed.



Figure 82 *Bolboschoenus popovii* (photography by Natalya Beshko)

Genus 53. *Holoschoenus* Link.

182. *Holoschoenus vulgaris* Link. Figure 83

Perennial. Banks of rivers, lakes and canals, pebbles, dry riverbeds, wet depressions, saline lands. Plain, foothills, montane zone. Nuratau, Malguzar, North Turkestan, Mirzachel, Kyzylkum.



Figure 83 *Holoschoenus vulgaris* (photography by Natalya Beshko)

Genus 54. *Blysmus* Panz. ex Schult.

183. *Blysmus compressus* (L.) Panz. ex Link.

Perennial. Swamp meadows, banks of rivers, lakes and canals. Foothills, montane and alpine zones. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachel.

Genus 55. *Baeothryon* A. Dietr.

184. *Baeothryon pumilum* (Vahl) Á. & D. Löve

Perennial. Banks of rivers, swamps, alpine meadows, wet places, places near melting snow. Foothills, montane and alpine zones. Nuratau, Malguzar, North Turkestan.

Genus 56. *Eleocharis* R. Br.

185. *Eleocharis argyrolepis* Kier.

Perennial. Swamp meadows, banks of rivers, lakes and canals. Plain. Mirzachel. Weed.

186. *Eleocharis quinqueflora* (Hartmann) O. Schwarz. [*Eleocharis meridionalis* Zinserl.]

Perennial. Swamp meadows, banks of rivers, lakes and canals, saline depressions. Plain, foothills, montane and alpine zones. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul.

187. *Eleocharis mitracarpa* Steud.

Perennial. Banks of rivers, lakes and canals, swamps, wet meadows. Plain, foothills, montane zone. Malguzar, North Turkestan, Mirzachul.

188. *Eleocharis uniglumis* (Link.) Schult.

Perennial. Swamp meadows, saline lands, banks of rivers, lakes and canals. Plain, foothills, montane zone. Nuratau, Malguzar.

Genus 57. *Fimbristylis* Vahl.

189. *Fimbristylis dichotoma* (L.) Vahl

Annual. Wet places, banks of rivers, lakes and canals, pebbles. Plain. Mirzachul. Weed.

Genus 58. *Cyperus* L.

190. *Cyperus glaber* L.

Annual. Banks of rivers, lakes and canals, pebbles, swamp meadows, wet places near springs. Plain, foothills, montane zone. Nuratau. Fodder, weed.

191. *Cyperus longus* L. Figure 84

Perennial. Banks of rivers, lakes and canals, pebbles, swamp meadows, wet places near springs. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Medicinal, food (spice-aromatic), fodder, ornamental.



Figure 84 *Cyperus longus* (photography by Natalya Beshko)

192. *Cyperus rotundus* L.

Banks of rivers, lakes and canals, pebbles, swamp meadows, wet places near springs, fallow lands.

Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Medicinal, fodder, weed, ornamental.

Genus 59. *Pycreus* P. Beauv.

193. *Pycreus globosus* (All.) Reichenb

Annual. Banks of rivers and canals, pebbles, swamps, wet places near springs, pebbles, alkaline meadows. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains. Fodder, weed.

Genus 60. *Schoenus* L.

194. *Schoenus nigricans* L. Figure 85

Perennial. Swamp meadows, banks of rivers, wet places near springs. Montane zone. Nuratau.



Figure 85 *Schoenus nigricans* (photography by Natalya Beshko)

Genus 61. *Kobresia* Willd.

195. *Kobresia pamiroalaica* Ivanova

Perennial. Wet slopes, banks of rivers, swamps, highlands. Montane and alpine zones. North Turkestan. Fodder.

196. *Kobresia persica* Kük. & Bornm.

Perennial. Banks of rivers, swamps, highlands, wet stony slopes, screes. Montane and alpine zones. North Turkestan. Fodder.

197. *Kobresia stenocarpa* (Kar. & Kir.) Steud.

Perennial. Swamps, banks of rivers, wet places near springs. Montane and alpine zones. North Turkestan. Fodder.

Genus 62. Carex L.

198. Carex diluta M. Bieb.

Perennial. Swamp meadows, banks of rivers, wet places near springs. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Fodder.

199. Carex divisa Huds.

Perennial. Swamp meadows, banks of rivers, lakes and canals, wet places near springs, depressions. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Fodder.

200. Carex enervis C. A. Mey.

Perennial. Swamp meadows, banks of rivers, wet places near springs. Montane and alpine zones. North Turkestan. Fodder.

201. Carex karoii (Freyn) Freyn

Perennial. Swamp meadows, banks of rivers, wet places near springs. Montane and alpine zones. North Turkestan. Fodder.

202. Carex melanantha C. A. Mey. Figure 86

Perennial. Swamp meadows, banks of rivers, wet places near springs. Alpine zone. North Turkestan. Fodder.



Figure 86 *Carex melanantha* (photography by Natalya Beshko)

203. *Carex melanostachya* M. Bieb. ex Willd.

Perennial. Swamp meadows, fine-earth slopes, banks of rivers, wet places near springs. Plain, foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Fodder.

204. *Carex microglochin* Wahlenb

Perennial. Swamp meadows, banks of rivers and canals, wet places near springs. Montane and alpine zones. North Turkestan. Fodder.

205. *Carex orbicularis* Boott.

Perennial. Swamp meadows, banks of rivers, lakes and canals, pebbles, wet places near springs. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Malguzar, North Turkestan. Fodder.

206. *Carex pachystilis* J. Gay.

Perennial. Clay deserts, piedmont plain, fine-earth, gravelly and stony slopes, fallow lands. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Fodder.

207. *Carex parva* Nees.

Perennial. Swamps, banks of rivers, wet places near springs. Montane and alpine zones. North Turkestan. Fodder.

208. *Carex physodes* M. Bieb. Figure 87

Perennial. Sandy deserts. Plain. Kyzylkum. Fodder.



Figure 87 *Carex physodes* (photography by Natalya Beshko)

209. *Carex pseudofetida* Kük.

Perennial. Swamps, banks of rivers, wet places near springs, alpine meadows. Montane and alpine zones. North Turkestan. Fodder.

210. *Carex serotina* Mérat.

Perennial. Swamp meadows, banks of rivers, wet places near springs. Foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan. Fodder.

211. *Carex songorica* Kar. & Kir.

Perennial. Swamp meadows, river valleys, ravines, pebbles, banks of canals. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Fodder.

212. *Carex stenophylla* Wahlenb

Perennial. Piedmont plains, fine-earth slopes, meadows, river valleys, dry riverbeds, banks of canals. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Fodder.

213. *Carex subphysodes* Popov ex V. I. Krecz.

Perennial. Sandy deserts. Plain. Kyzylkum. Fodder.

214. *Carex stenocarpa* Turcz. & Besser.

Perennial. Alpine and subalpine meadows, fine-earth slopes, rocks. Montane and alpine zones, Malguzar, North Turkestan. Fodder.

215. *Carex turkestanica* Regel Figure 88

Perennial. Fine-earth and stony slopes, river valleys, rocks, screes. Montane zone. Malguzar, North Turkestan. Fodder.



Figure 88 *Carex turkestanica* (photography by Natalya Beshko)

Family 29. Poaceae [Gramineae]

Genus 63. *Imperata* Cyr.

216. *Imperata cylindrica* (L.) Raeusch.

Perennial. River valleys, banks of lakes and canals, fallow lands, fine-earth slopes. Plain, foothills, montane zone. North Turkestan. Fodder, industrial, ornamental.

Genus 64. *Saccharum* L.

217. *Saccharum spontaneum* L.

Perennial. Banks of rivers, lakes and canals, pebbles. Plain. Mirzachul, Kyzylkum. Fodder, food, industrial.

Genus 65. *Erianthus* Rich.

218. *Erianthus ravennae* (L.) P. Beauv. Figure 89

Perennial. River valleys, banks of lakes and canals, wet places. Plain, foothills, montane zone. Nuratau, Malguzar, North Turkestan, Mirzachul. Fodder, industrial, ornamental.



Figure 89 *Erianthus ravennae* (photography by Natalya Beshko)

Genus 66. *Botriochloa* Kuntze

219. *Botriochloa ischaemum* (L.) H. Keng

Perennial. Fine-earth and stony slopes, banks of canals, roadsides. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Fodder, medicinal, weed.

Genus 67. **Sorghum* Pers.

220. **Sorghum halepense* (L.) Pers.

Perennial. Fields, fallow lands, gardens, river valleys, banks of canals. Plain, foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan, Mirzachul. Fodder, food, medicinal, industrial, weed.

Genus 68. *Digitaria* Heist.

221. *Digitaria ischaemum* (Schreb.) Muehl.

Annual. Banks of rivers and canals, fields, fallow lands, gardens, wastelands. Plain, foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan, Mirzachul. Fodder, weeds.

222. *Digitaria sanguinalis* (L.) Scop.

Annual. Banks of rivers and canals, fields, gardens, wastelands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Fodder, weed.

Genus 69. **Echinochloa* P. Beauv.

223. **Echinochloa crus-galli* (L.) P. Beauv.

Annual. Fields, fallow lands, gardens, wastelands, banks of rivers and canals, pebbles. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, food, medicinal, weed.

Genus 70. *Setaria* P. Beauv.

224. *Setaria lutescens* (Weig.) F. T. Hubb.

Annual. Fields, fallow lands, gardens, wastelands, banks of canals. Plain, foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan, Mirzachul. Fodder, weed.

225. **Setaria verticillata* (L.) P. Beauv.

Annual. Fields, fallow lands, gardens, wastelands, banks of canals. Plain, foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan, Mirzachul. Fodder, weed.

226. *Setaria viridis* (L.) P. Beauv.

Annual. Fields, fallow lands, gardens, wastelands, banks of canals, stony slopes. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, weed.

Genus 71. *Phalaroides* Wolf

227. *Phalaroides arundinacea* (L.) Rauschert

Perennial. Banks of rivers, lakes and canals, swamp meadows, wet places. Plain, foothills, montane zone. Nuratau, Malguzar, North Turkestan. Fodder, ornamental, weed.

Genus 72. *Stipagrostis* Nees

228. *Stipagrostis karelinii* (Trin. & Rupr.) H. Scholz [*Aristida karelinii* (Trin. & Rupr.) Roshev.] Figure 90

Perennial. Sandy deserts. Plain. Mirzachul, Kyzylkum. Fodder.



Figure 90 *Stipagrostis karelinii* (photography by Natalya Beshko)

229. *Stipagrostis pennata* (Trin.) De Winter [*Aristida pennata* Trin.]

Perennial. Sandy deserts. Plain. Kyzylkum. Fodder.

Genus 73. *Stipa* L.

230. *Stipa arabica* Trin. & Rupr. [*Stipa szovitsiana* Trin.]

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Fodder.

231. *Stipa caragana* Trin. [*Achnatherum caragana* (Trin.) Roshev.]

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. Nuratau, Malguzar, North Turkestan. Fodder, industrial.

232. *Stipa capillata* L. Figure 91

Perennial. Fine-earth, gravelly and stony slopes. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Fodder, ornamental.



Figure 91 *Stipa capillata* (photography by Natalya Beshko)

233. *Stipa caucasica* Schmalh.

Perennial. Stony slopes, screes. Foothills, montane and alpine zones. Nuratau, Malguzar, North Turkestan. Fodder.

234. *Stipa hohenackeriana* Trin. & Rupr.

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Fodder.

235. *Stipa kirghisorum* P. A. Smirn.

Perennial. Fine-earth, gravelly and stony slopes, pebbles, rocks, screes. Montane and alpine zones. North Turkestan. Fodder.

236. *Stipa kurdistanica* Bor. [*Achnatherum turkomanicum* (Roshev.) Tzvelev]

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. North Turkestan. Fodder, industrial.

237. *Stipa lessingiana* Trin. & Rupr.

Perennial. Fine-earth, gravelly and stony slopes, screes. Montane zone. North Turkestan. Fodder, ornamental.

238. *Stipa lingua* Junge

Perennial. Fine-earth, gravelly and stony slopes. Montane and alpine zones. North Turkestan. Fodder.

239. *Stipa lipskyi* Roshev.

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. Nuratau, Malguzar, North Turkestan. Fodder.

240. *Stipa margelanica* P. A. Smirn.

Perennial. Stony slopes. Foothills, montane zone. North Turkestan. Fodder.

241. *Stipa orientalis* Trin. ex Ledeb.

Perennial. Stony and gravelly slopes, screes, rocks. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Fodder.

242. *Stipa richteriana* Kar. & Kir.

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. North Turkestan. Fodder.

243. *Stipa sareptana* Beck.

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. North Turkestan. Fodder.

244. *Stipa splendens* Trin. [*Achnatherum splendens* (Trin.) Nevski]

Perennial. Saline lands, river valleys. Plain, foothills, montane and alpine zones. North Turkestan. Fodder, industrial.

245. *Stipa turkestanica* Hack. [*Stipa trichoides* P. Smirn.]

Perennial. Stony slopes. Montane and alpine zones. North Turkestan. Fodder.

Genus 74. *Piptatherum* P. Beauv.

246. *Piptatherum alpestre* (Grig.) Roshev.

Perennial. Stony slopes, screes, moraines, swamp meadows. Alpine zone. North Turkestan. Fodder.

247. *Piptatherum ferganense* (Litv.) Roshev.

Perennial. Fine-earth, gravelly and stony slopes. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Fodder.

248. *Piptatherum holciforme* (M. Bieb.) Roem. & Schult.

Perennial. Stony slopes, screes. Montane zone. North Turkestan. Fodder.

249. *Piptatherum laterale* (Regel) Nevski

Perennial. Fine-earth, gravelly and stony slopes, screes, rocks. Montane and alpine zones. Malguzar, North Turkestan. Fodder.

250. *Piptatherum latifolium* (Roshev.) Nevski

Perennial. Fine-earth and stony slopes, rocks. Montane zone. Nuratau, Malguzar, North Turkestan. Fodder.

251. *Piptatherum pamiralaicum* (Grig.) Roshev.

Perennial. Fine-earth, gravelly and stony slopes, moraines. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Fodder.

252. *Piptatherum platyanthum* Nevski

Perennial. Stony slopes, moraines, pebbles, screes, rocks. Montane and alpine zones. North Turkestan. Fodder.

253. *Piptatherum sogdianum* (Grig.) Roshev.

Perennial. Fine-earth, gravelly and stony slopes, screes, rocks. Montane and alpine zones. Nuratau, Malguzar, North Turkestan.

254. *Piptatherum songaricum* (Trin. & Rupr.) Roshev.

Perennial. Fine-earth and stony slopes, rocks, screes. Foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Fodder.

255. *Piptatherum microcarpum* (Pilg.) Tzvelev [*Piptatherum vicarium* (Grig.) Roshev.]

Perennial. Stony slopes, rocks. Montane zone. North Turkestan. Fodder.

Genus 75. *Milium* L.

256. *Milium vernale* M. Bieb.

Annual. Fine-earth and stony slopes, wet places, banks of rivers and canals, gardens. Foothills, montane zone. Nuratau, North Turkestan. Fodder.

Genus 76. *Crypsis* Ait.

257. *Crypsis schoeoides* (L.) Lam.

Annual. River valleys, banks of canals, wastelands, saline depressions. Plain. Nuratau, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder.

Genus 77. Phleum L.

258. Phleum alpinum L. Figure 92

Perennial. Banks of rivers, wet places, alpine meadows. Montane and alpine zone. North Turkestan. Fodder.



Figure 92 Phleum alpinum (photography by Natalya Beshko)

259. *Phleum exaratum* Griseb. [*Phleum graecum* Boiss. & Heldr.]

Annual. Stony slopes. Foothills, montane zone. North Turkestan. Fodder.

260. *Phleum paniculatum* Huds. Figure 93

Annual. Fine-earth, gravelly and stony slopes, screes, pebbles, fallow lands. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Fodder.



Figure 93 *Phleum paniculatum* (photography by Natalya Beshko)

261. *Phleum phleoides* (L.) H. Karst.

Perennial. Fine-earth slopes. Montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Fodder.

262. **Phleum pratense* L.

Perennial. Meadows, river valleys, banks of canals, swamps. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. Fodder.

Genus 78. *Alopecurus* L.

263. *Alopecurus arundinaceus* Poir.

Perennial. Swamp meadows, banks of rivers, wet screes. Plain, foothills, montane and alpine zones. Nuratau, Malguzar, North Turkestan. Fodder.

264. *Alopecurus himalaicus* Hook. f.

Perennial. Fine-earth and gravelly slopes, screes, alpine meadows. Montane and alpine zones. North Turkestan. Fodder.

265. *Alopecurus myosuroides* Huds.

Annual. Banks of rivers and canals, meadows, pebbles, fields. Plain, foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Fodder, weed.

266. *Alopecurus pratensis* L.

Perennial. Swamp meadows, banks of rivers, pebbles. Plain, foothills, montane and alpine zones. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan. Fodder, ornamental.

Genus 79. *Polypogon* Desf.

267. *Polypogon fugax* Nees ex Steud.

Annual, perennial. Saline lands, banks of rivers and canals, fields, swamp meadows. Plain, foothills, montane zone. Nuratau, Malguzar, North Turkestan. Fodder.

268. *Polypogon monspleniensis* (L.) Desf.

Annual. Wet places, banks of rivers and canals, fields, swamp meadows. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan.

269. *Polypogon viridis* (Gouan) Breistr. [*Polypogon semiverticillatus* (Forssk.) Hyl.]

Annual, perennial. Banks of rivers and canals, fields, swamp meadows. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Fodder.

Genus 80. *Agrostis* L.

270. *Agrostis gigantea* Roth.

Perennial. Wet places, banks of rivers, swamp meadows. Foothills, montane and alpine zones.

Malguzar, North Turkestan. Fodder, ornamental.

271. *Agrostis hissarica* Roshev.

Perennial. River valleys. Alpine zone. Nuratau, Malguzar, North Turkestan. Fodder.

272. *Agrostis olympica* (Boiss.) Bor. [*Pentatherum agrostidiforme* (Roshev.) Nevski]

Perennial. Swamps, banks of rivers. Alpine zone. North Turkestan. Fodder.

273. *Agrostis stolonifera* L.

Perennial. Wet places, banks of rivers, swamp meadows. Foothills, montane and alpine zones. Nuratau, North Turkestan. Fodder.

Genus 81. *Calamagrostis* Adans.

274. *Calamagrostis anthoxanthoides* (Munro) Regel [*Calamagrostis laguroides* Regel]

Perennial. Stony slopes, screes. Alpine zone. North Turkestan. Fodder.

275. *Calamagrostis dubia* Bunge

Perennial. River valleys, saline lands, banks of canals, fields. Plain, foothills. Nuratau, Malguzar, North Turkestan. Fodder.

276. *Calamagrostis epigeios* (L.) Roth.

Perennial. Banks of rivers and canals, fallow lands, wet fine-earth slopes. Plain, foothills, montane and alpine zones. Malguzar, North Turkestan. Fodder, medicinal, industrial.

277. *Calamagrostis holciformis* Jaub. & Spach.

Perennial. Rocks, stony slopes. Alpine zone. North Turkestan. Fodder.

278. *Calamagrostis pseudophragmites* (Haller f.) Koeler.

Perennial. Banks of rivers, pebbles, meadows, wet stony slopes. Foothills, montane and alpine zones. Nuratau, North Turkestan. Fodder.

Genus 82. *Apera* Adans.

279. *Apera interrupta* (L.) P. Beauv.

Annual. Saline lands, river valleys. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Fodder.

Genus 83. *Deschampsia* P. Beauv.

280. *Deschampsia cespitosa* (L.) P. Beauv.

Perennial. River valleys, subalpine meadows. Alpine zone. North Turkestan. Fodder, industrial.

281. *Deschampsia koelerioides* Regel

Perennial. Alpine meadows, stony slopes. Alpine zone. North Turkestan. Fodder, industrial.

Genus 84. *Trisetum* Pers.

282. *Trisetum spicatum* (L.) K. Richt.

Perennial. Fine-earth and gravelly slopes, swamps, subalpine meadows, banks of rivers. Alpine zone. North Turkestan. Fodder, ornamental.

Genus 85. *Avena* L.

283. *Avena barbata* Pott ex Link.

Annual. Fine-earth, gravelly and stony slopes, fields, fallow lands. Foothills. North Turkestan. Fodder, weed.

284. **Avena fatua* L.

Annual. Fine-earth, gravelly and stony slopes, fields, fallow lands. Plain, foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Fodder, food, medicinal, weed.

285. **Avena sterilis* subsp. *ludoviciana* (Durieu) Gillet & Magne [*Avena persica* Steud.; *Avena trichophylla* K. Koch]

Annual. River valleys, fine-earth slopes. Foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, weed.

Genus 86. *Helictotrichon* Bess.

286. *Helictotrichon asiaticum* (Roshev.) Grossh.

Perennial. Fine-earth, gravelly and stony slopes. Montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Fodder.

287. *Helictotrichon desertorum* (Less.) Pilg.

Perennial. Piedmont plain, fine-earth, gravelly and stony slopes. Plain, foothills, montane zone. Malguzar, North Turkestan. Fodder.

Genus 87. **Cynodon* Rich.

288. **Cynodon dactylon* (L.) Pers. Figure 94

Perennial. River valleys, fields, gardens, fallow lands, banks of canals, roadsides, wastelands, fine-earth slopes. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Fodder, medicinal, industrial, weed.



Figure 94 *Cynodon dactylon* (photography by Natalya Beshko)

Genus 88. *Enneapogon* Desv.

289. *Enneapogon persicus* Boiss.

Perennial. Fine-earth and stony slopes, dry riverbeds, pebbles, rocks. Foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum.

Genus 89. *Phragmites* Adans.

290. *Phragmites australis* (Cav.) Trin. & Steud. Figure 95

Perennial. Banks of rivers, lakes and canals, swamps, wet places, saline lands, fields. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, food, industrial, medicinal, ornamental.



Figure 95 *Phragmites australis* (photography by Natalya Beshko)

Genus 90. *Eragrostis* Host.

291. *Eragrostis minor* Host.

Annual. Fine-earth slopes, pebbles, banks of rivers and canals, fields, fallow lands. Plain, foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, weed.

292. *Eragrostis pilosa* (L.) Beauv.

Annual. River valleys, banks of canals, pebbles, fields, fallow lands, gardens, wastelands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Fodder, weed.

Genus 91. *Koeleria* Pers.

293. *Koeleria macrantha* (Ledeb.) Schult. [*Koeleria cristata* (L.) Pers.]

Perennial. Fine-earth, gravelly and stony slopes. Montane and alpine zones. North Turkestan. Fodder, medicinal, ornamental.

Genus 92. *Cutandia* Willk.

294. *Cutandia rigescens* (Grossh.) Tzvelev

Annual. Wet places, saline lands, banks of rivers, lakes and canals, fields. Plain. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, weed.

Genus 93. *Catabrosa* P. Beauv.

295. *Catabrosa aquatica* (L.) Beauv. [*Catabrosa capusii* Franch.]

Perennial. Wet places, banks of rivers, lakes and canals, swamps. Montane and alpine zones. Malguzar, North Turkestan. Fodder.

Genus 94. *Melica* L.

296. *Melica altissima* L.

Perennial. Stony slopes. Montane zone. Nuratau, North Turkestan. Poisonous.

297. *Melica hohenackeri* Boiss.

Perennial. Stony slopes, rocks, screes. Montane zone. Nuratau, Malguzar, North Turkestan.

298. *Melica inaequiglumis* Boiss. Figure 96

Perennial. Stony slopes, screes, pebbles. Montane zone. Nuratau, Malguzar, North Turkestan.



Figure 96 *Melica inaequiglumis* (photography by Natalya Beshko)

Genus 95. Aeluropus Trin.

299. Aeluropus intermedius Regel

Perennial. Saline sandy soils, saline lands, depressions. Plain. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder.

300. Aeluropus litoralis (Gouan.) Parl.

Perennial. Saline lands, swamp meadows, banks of rivers, lakes and canals. Plain, foothills. Nuratau Relic Mountains, Mirzachul, Kyzylkum. Fodder.

Genus 96. Dactylis L.

301. Dactylis glomerata L.

Perennial. Meadows, river valleys, fine-earth and stony slopes, gardens, wet places. Plain, foothills, montane zone. Nuratau, Malguzar, North Turkestan, Mirzachul. Fodder, medicinal, ornamental.

Genus 97. Sclerochloa P. Beauv.

302. Sclerochloa dura (L.) P. Beauv.

Annual. Banks of rivers and canals, roadsides. Plain, foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Fodder, weed.

Genus 98. Schismus P. Beauv.

303. Schismus arabicus Nees.

Annual. Sandy and clay deserts, saline lands, piedmont plains, fine-earth and gravelly slopes. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder.

Genus 99. Poa L.

304. Poa alpina L. Figure 97

Perennial. Alpine meadows. Alpine zone. North Turkestan. Fodder.



Figure 97 *Poa alpina* (photography by Natalya Beshko)

305. *Poa angustifolia* L.

Perennial. Fine-earth and stony slopes, screes, meadows. Montane and alpine zones, Malguzar, North Turkestan. Fodder.

306. *Poa annua* L.

Annual or perennial. Banks of rivers and canals, wet places near springs, wastelands, gardens. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Fodder, weed.

307. *Poa bactriana* Roshev.

Perennial. Fine-earth, gravelly and stony slopes, river valleys. Montane and alpine zones. Malguzar, North Turkestan. Fodder.

308. *Poa bucharica* Roshev.

Perennial. Fine-earth, gravelly and stony slopes, meadows. Montane and alpine zones. North Turkestan. Fodder.

309. *Poa bulbosa* L. Figure 98

Perennial. This plant has a wide ecological range, and it is found almost everywhere in the Province. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder.



Figure 98 *Poa bulbosa* (photography by Natalya Beshko)

310. *Poa diaphora* Trin.

Annual. Sandy, clayey, stony and saline soils, banks of rivers and lakes, wet places near springs. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder.

311. *Poa fragilis* Ovcz.

Perennial. Fine-earth, gravelly and stony slopes. Montane and alpine zones, Nuratau, Malguzar, North Turkestan. Fodder.

312. *Poa litvinoviana* Ovcz.

Perennial. Stony slopes, rocks. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Fodder.

313. *Poa nemoralis* L.

Perennial. River valleys, ravines, meadows, stony slopes, rocks. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Fodder.

314. *Poa palustris* L.

Perennial. Wet places, river valleys, swamp meadows. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. Fodder.

315. *Poa pratensis* L.

Perennial. River valleys, banks of canals, meadows. Plain, foothills, montane and alpine zones. Nuratau, Malguzar, North Turkestan, Mirzachul. Fodder, ornamental.

316. *Poa relaxa* Ovcz.

Perennial. Stony, Fine-earth and stony slopes, rocks, screes. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Fodder.

317. *Poa supina* Schrad.

Annual or perennial. Wet places, swamps, banks of rivers. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Fodder.

318. *Poa trivialis* L.

Perennial. River valleys, gardens, banks of canals, fallow lands. Plain, foothills, montane zone. Nuratau, Malguzar, North Turkestan, Mirzachul. Fodder.

Genus 100. *Colpodium* Trin.

319. *Colpodium humile* (M. Bieb.) Griseb.

Perennial. Sandy deserts, saline lands, wet places. Plain, foothills. Mirzachul, Kyzylkum. Fodder.

320. *Colpodium parviflorum* Boiss. & Buhse.

Perennial. Wet places. Plain. Mirzachul. Fodder.

Genus 101. *Glyceria* R. Br.

321. *Glyceria plicata* (Fr.) Fr.

Perennial. Banks of rivers, lakes and canals. Plain. Nuratau, Malguzar, North Turkestan. Fodder.

Genus 102. Puccinelia Parl.

322. Puccinelia distans (Jack.) Parl.

Perennial. Banks of rivers, lakes and canals, swamp meadows. Plain, foothills, montane and alpine zones. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, weed.

323. Puccinellia poecilantha (K. Koch) Grossh.

Perennial. Swamp meadows, saline lands, banks of rivers, lakes and canals. Plain, foothills. Nuratau, Malguzar, North Turkestan, Mirzachul. Fodder, weed.

Genus 103. Festuca L.

324. Festuca alaica Drobow.

Perennial. Stony slopes, screes, rocks, moraines. Montane and alpine zones. North Turkestan. Fodder.

325. Festuca amblyodes Krecz. & Bobrov

Perennial. Stony slopes, screes, rocks, moraines. Alpine zone. North Turkestan. Fodder.

326. Festuca arundinacea Schreb.

Perennial. Saline lands, banks of rivers, lakes and canals, gardens, meadows, fields, fallow lands, cliffs. Plain, foothills, montane zone. Nuratau, Malguzar, North Turkestan, Mirzachul. Fodder.

327. Festuca griffithiana (St.-Yves) Krivot. [*Leucopoa karatavica* (Bunge) V. Krecz. & Bobrov].

Perennial. Stony slopes, screes, rocks. Montane and alpine zones. North Turkestan. Fodder.

328. Festuca olgae (Regel) Krivot. [*Leucopoa olgae* (Regel) V. Krecz. & Bobrov]

Perennial. Stony slopes, screes, rocks. Montane and alpine zones. North Turkestan. Fodder.

329. Festuca pratensis Huds.

Perennial. Wet places, gardens, banks of rivers and canals, wet slopes. Plain, foothills, montane zone. North Turkestan. Fodder.

330. Festuca rubra L.

Perennial. River valleys, pebbles, meadows, swamps, fine-earth and stony slopes. Montane and alpine zones. Malguzar, North Turkestan. Fodder.

331. Festuca rupicola Heuff.

Perennial. Stony slopes, rocks. Montane and alpine zones. Malguzar, North Turkestan. Fodder.

332. Festuca valesiaca Schleich. & Gaudin. Figure 99

Perennial. Fine-earth, gravelly and stony slopes, rocks, screes, pebbles, moraines. Montane and alpine zones. Nuratau, Aktau, Malguzar, North Turkestan. Fodder.



Figure 99 *Festuca valesiaca* (photography by Natalya Beshko)

Genus 104. *Lolium* V. Krecz. & Bobrov

333. *Lolium subulatum* (Banks & Sol.) Eig.

Annual. Piedmont plains, fine-earth, gravelly and stony slopes. Plain, foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan.

Genus 105. *Vulpia* C. C. Gmel.

334. *Vulpia ciliata* Dumort.

Annual. Sandy, clayey, gravelly and saline soils, banks of rivers. Plain, foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, weed.

335. *Vulpia myuros* (L.) C. C. Gmel.

Annual. Fine-earth and stony slopes, pebbles, river valleys, saline lands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, weed

336. *Vulpia persica* (Boiss. & Buhse) V. Krecz. & Bobrov

Annual. Clay deserts, fine-earth and gravelly slopes, pebbles, river valleys, saline depressions. Plain, foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, weed.

337. *Vulpia unilateralis* (L). Stace [*Nardurus krausei* (Regel) V. Krecz. & Bobrov]

Annual. Fine-earth and stony slopes, piedmont plains, sandy and clay deserts, pebbles, river valleys. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, weed.

Genus 106. *Bromus* L.

338. *Bromus danthoniae* Trin. Figure 100

Annual. Clay deserts, piedmont plains, fine-earth, gravelly and stony slopes, fallow lands, pebbles. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Fodder, weed.



Figure 100 *Bromus danthoniae* (photography by Natalya Beshko)

339. Bromus inermis Leyss.

Perennial. Meadows, fine-earth and gravelly slopes, river valleys. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Fodder.

340. Bromus japonicus Thung.

Annual. Meadows, fine-earth slopes, roadsides, fallow lands, banks of rivers and canals. Foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Fodder, weed.

341. Bromus lanceolatus Roth.

Annual. Sandy and clay deserts, piedmont plains, fine-earth, gravelly and stony slopes, fields, fallow lands, banks of rivers, pebbles. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, weed.

342. Bromus oxyodon Schrenk

Annual. Fine-earth, gravelly and stony slopes, fields, fallow lands. Plain, foothills, montane zone. Nuratau, Malguzar, North Turkestan, Mirzachul. Fodder, weed.

343. Bromus paulsenii Hack.

Perennial. Stony slopes, banks of rivers, screes. Montane and alpine zones. Malguzar, North Turkestan. Fodder.

344. Bromus popovii Drobow

Annual. Saline lands, river valleys. Plain. Mirzachul. Fodder.

345. Bromus scoparius L.

Annual. Fine-earth, gravelly and stony slopes, fields, fallow lands, river valleys, roadsides, gardens. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Fodder, weed.

346. Bromus sericeus Drobow

Annual. Sandy deserts, fine-earth and stony slopes, river valleys. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, weed.

347. Bromus sewerzowii Regel

Annual. River valleys, fields, fallow lands, fine-earth and stony slopes. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, weed.

348. Bromus scoparius L.

Annual. Sandy and clay deserts, piedmont plains, fine-earth, gravelly and stony slopes, meadows, pebbles, fields, fallow lands, gardens. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, weed.

349. Bromus sterilis L.

Annual. River valleys, ravines, fine-earth slopes, meadows, gardens, roadsides, fields. Foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Fodder, weed.

350. Bromus tectorum L.

Annual. Sandy and clay deserts, piedmont plains, fine-earth, gravelly and stony slopes, fields, fallow

lands, settlements, river valleys. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, weed.

Genus 107. *Boissiera* Hochst & Steud.

351. *Boissiera squarrosa* (Sol.) Nevski. Figure 101

Annual. Sandy and clay desert, piedmont plains, fine-earth, gravelly and stony slopes, fields, fallow lands, roadsides. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, weed.



Figure 101 *Boissiera squarrosa* (photography by Natalya Beshko)

Genus 108. *Brachypodium* P. Beauv.

352. *Brachypodium sylvaticum* P. Beauv.

Perennial. Fine-earth wet slopes, river valleys, ravines. Montane zone. Nuratau, Malguzar, North Turkestan. Fodder.

Genus 109. Lolium L.

353. *Lolium perenne L.

Perennial. Gardens, fields, fallow lands, banks of canals, dry slopes. Plain, foothills, montane zone. Malguzar, North Turkestan, Mirzachul. Fodder, medicinal.

354. Lolium persicum Boiss. & Hohen.

Annual. Fallow lands, fields, stony slopes, river valleys. Foothills, montane zone. Malguzar, North Turkestan. Fodder, weed.

355. *Lolium temulentum L.

Annual. Fallow lands, gardens, wet meadows, banks of canals, river valleys, fine-earth slopes. Foothills, montane zone. Malguzar, North Turkestan. Fodder, medicinal.

Genus 110. Henrardia Hubb.

356. Henrardia persica (Boiss.) C. E. Hubb.

Annual. Dry fine-earth, gravelly and stony slopes. Foothills. Nuratau, Malguzar, North Turkestan. Fodder, weed.

Genus 111. Psilurus Trin.

357. Psilurus incurvus (Gouan) Schinz & Thell.

Annual. Piedmont plains, fine-earth, gravelly and stony slopes. Plain, foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Fodder.

Genus 112. Agropyron Gaertn.

358. Agropyron badamense Drobow

Perennial. Stony slopes. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Fodder.

359. Agropyron setuliferum (Nevski) Nevski

Perennial. Fine-earth and stony slopes. Montane zone. Malguzar, North Turkestan. Fodder.

Genus 113. Eremopyrum Jaub. & Spach.

360. Eremopyrum bonaepartis (Spreng.) Nevski Figure 102

Annual. Sandy, clayey and gravelly soils, fallow lands. Plain, foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, weed.



Figure 102 *Eremopyrum bonaepartis* (photography by Natalya Beshko)

361. *Eremopyrum distans* (K. Koch) Nevski Figure 103

Annual. Sandy, clayey, gravelly and saline soils, pebbles, fallow lands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, weed.



Figure 103 *Eremopyrum distans* (photography by Natalya Beshko)

362. *Eremopyrum orientale* (L.) Jaub. & Spach.

Annual. Sandy, clayey, gravelly and saline soils, pebbles, fallow lands. Plain, foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum.

363. *Eremopyrum triticeum* (Gaertn.) Nevski

Annual. Sandy, clayey, gravelly and saline soils, river valleys, fallow lands. Plain, foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, weed.

Genus 114. *Secale* L.

364. **Secale cereale* L.

Annual. Fields, fallow lands, river valleys, banks of canals, roadsides. Foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, food.

365. *Secale segetale* (Zhuk.) Roshev.

Annual. Fields, fallow lands, river valleys, banks of canals, roadsides. Plain, foothills. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, food.

366. *Secale sylvestre* Host.

Annual. Sandy and clayey soils. Plain, Mirzachul, Kyzylkum. Fodder, food.

Genus 115. *Aegilops* L.

367. *Aegilops crassa* Boiss.

Annual. Fine-earth and stony slopes, fields, fallow lands, river valleys. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, weed.

368. *Aegilops cylindrica* Host.

Annual. Fine-earth and stony slopes, fields, fallow lands, river valleys. Plain, foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Fodder, weed.

369. *Aegilops juvenalis* (Thell.) Eig.

Annual. Fine earth slopes. Foothills. Nuratau, Aktau, Nuratau Relic Mountains. Fodder, weed.

370. *Aegilops triuncialis* L. [*Aegilops squarrosa* L.] Figure 104

Annual. Piedmont plains, fine-earth and stony slopes, fields, fallow lands, river valleys. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, weed.



Figure 104 *Aegilops triuncialis* (photography by Natalya Beshko)

Genus 116. *Heteranthelium* Hochst. ex Jaub. & Spach.

371. *Heteranthelium piliferum* (Sol.) Hochst. ex Jaub. & Spach.

Annual. Stony slopes, piedmont plains. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Fodder.

Genus 117. Taeniatherum Nevski

372. Taeniatherum caput-medusae (L.) Nevski [*Taeniatherum asperum* (Simonk.) Nevski; *Taeniatherum crinitum* (Schreb.) Nevski]

Annual. Fallow lands, fields, roadsides, piedmont plain, fine-earth, gravelly and stony slopes. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, weed.

Genus 118. Hordeum L.

373. Hordeum bogdanii Wilensky

Perennial. Swamp meadows, saline lands, banks of rivers, lakes and canals. Plain, foothills, montane zone. Mirzachul, Kyzylkum. Fodder.

374. Hordeum brevisubulatum (Trin.) Link.

Perennial. Banks of rivers and lakes, swamp meadows, stony slopes. Plain, foothills, montane and alpine zones. Nuratau, Malguzar, North Turkestan, Mirzachul. Fodder.

375. Hordeum bulbosum L. Figure 105

Perennial. Fine-earth, gravelly and stony slopes, river valleys, fields, gardens, banks of canals. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Fodder, food.



Figure 105 *Hordeum bulbosum* (photography by Natalya Beshko)

376. *Hordeum marinum* subsp. *gussoneanum* (Parl.) Thell. [*Hordeum geniculatum* All.]

Annual. River valleys. Plain, foothills. Nuratau, North Turkestan, Mirzachul. Fodder, weed.

377. *Hordeum murinum* subsp. *leporinum* (Link.) Arcang. [*Hordeum leporinum* Link.]

Annual. River valleys, gardens, fields, fallow lands, wastelands, settlements, sandy and clay deserts, fine-earth, gravelly and stony slopes. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, weed.

378. *Hordeum spontaneum* K. Koch Figure 106

Annual. Fields, fallow lands, banks of canals, fine-earth, gravelly and stony slopes. Plain, foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, weed.



Figure 106 *Hordeum spontaneum* (photography by Natalya Beshko)

Genus 119. *Elymus* L.

379. *Elymus bungeanus* (Trin.) Melderis [*Agropyron ferganense* Drobow]

Perennial. Fine-earth and stony slopes. Montane zone. Malguzar, North Turkestan. Fodder.

380. *Elymus dentatus* (Hook. f.) Tzvelev [*Agropyron lachnophyllum* (Ovcz. & Sidorenko) Bondarenko; *Agropyron ugamicum* Drobow]

Perennial. Fine-earth and stony slopes. Montane and alpine zones. Malguzar, North Turkestan.

Fodder.

381. *Elymus drobovii* (Nevski) Tzvelev [*Agropyron drobovii* Nevski]

Perennial. Stony slopes. Montane zone. Nuratau. Fodder.

382. *Elymus hispidus* (Opiz) Melderis [*Agropyron intermedium* (Host) Beauv.; *Agropyron trichophorum* (Link.) K. Richt.] Figure 107

Perennial. Fine-earth, gravelly and stony slopes. The species is dominant of so-called savannoids (dry herbaceous steppes), a vegetation type endemic to the Central Asian mountains. Foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Fodder.



Figure 107 *Elymus hispidus* (photography by Natalya Beshko)

383. *Elymus lolioides* (P. Candargy) Melderis [*Agropyron lolioides* (Kar. & Kir.) Roshev.]

Perennial. Meadows, fine-earth slopes, banks of rivers and canals. Plain, foothills, montane zone. Nuratau, Malguzar, North Turkestan. Fodder.

384. *Elymus repens* (L.) Gould. [*Agropyron repens* (L.) P. Beauv.]

Perennial. Wet slopes, meadows, river valleys, gardens. Plain, foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan, Mirzachul. Fodder, medicinal, weed.

385. *Elymus uralensis* (Nevski) Tzvelev [*Agropyron tianschanicum* Drobow]

Perennial. Stony slopes, screes. Montane zone. Malguzar, North Turkestan. Fodder.

Genus 120. *Leymus* Hochst.

386. *Leymus alaicus* (Korsch.) Tzvelev

Perennial. Stony slopes. Montane zone. North Turkestan. Fodder.

387. *Leymus angustus* (Trin.) Pilg. Figure 108

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. Nuratau. Fodder.



Figure 108 *Leymus angustus* (photography by Natalya Beshko)

388. *Leymus multicaulis* (Kar. & Kir.) Tzvelev

Perennial. River valleys, wet meadows, banks of canals. Plain, foothills, montane zone. North Turkestan. Fodder.

MAGNOLIOPSIDA
[EUDICOTS]

Family 30. Ceratophyllaceae

Genus 121. *Ceratophyllum* L.

389. *Ceratophyllum demersum* L.

Perennial. Standing and slowly flowing water. Plain, foothills. Nuratau, Mirzachul, Kyzylkum. Fodder (for fish), ornamental.

Family 31. Papaveraceae

Genus 122. *Papaver* L.

390. *Papaver dubium* L. [*Papaver litwinowii* Fedde ex Bornm.] Figure 109

Annual. Fine-earth, gravelly and stony slopes, rocks, screes, pebbles, dry riverbeds. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Alkaloid-bearing.



Figure 109 *Papaver dubium* (photography by Natalya Beshko)

391. *Papaver nudicaule* L. [*Papaver croceum* Ledeb.] Figure 110

Perennial. Fine-earth, gravelly and stony slopes, rocks, screes, alpine meadows. Montane and alpine zones. North Turkestan. Ornamental, poisonous, alkaloid-bearing.



Figure 110 *Papaver nudicaule* (photography by Natalya Beshko)

392. *Papaver pavoninum* C. A. Mey. Figure 111

Annual. Sandy and clay deserts, piedmont plains, fine-earth, gravelly and stony slopes, fallow lands, roadsides, wastelands, settlements, fields. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, dye, ornamental, weed, poisonous, alkaloid-bearing.



Figure 111 *Papaver pavoninum* (photography by Natalya Beshko)

Genus 123. *Roemeria* Medik.

393. *Roemeria hybrida* (L.) DC. Figure 112

Annual. Sandy and clay deserts, saline depressions, pebbles, fine-earth, gravelly and stony slopes. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Weed.



Figure 112 *Roemeria hybrida* (photography by Natalya Beshko)

394. *Roemeria refracta* DC. Figure 113

Annual. Sandy and clay deserts, fine-earth, gravelly and stony slopes, fallow lands, roadsides, gardens, settlements, fields. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, dye, ornamental, weed, poisonous, alkaloid-bearing.



Figure 113 *Roemeria refracta* (photography by Natalya Beshko)

Genus 124. *Glaucium* Adans.

395. *Glaucium elegans* Fisch. & C. A. Mey. Figure 114

Annual. Fine-earth, gravelly and stony slopes, screens, pebbles, fallow lands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Medicinal, ornamental, poisonous, alkaloid-bearing.



Figure 114 *Glaucium elegans* (photography by Natalya Beshko)

396. *Glaucium fimbrilligerum* (Trautv.) Boiss. Figure 115

Biennial. Fine-earth, gravelly and stony slopes, dry riverbeds, pebbles, screes, cliffs, fallow lands. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Medicinal, ornamental, poisonous, alkaloid-bearing.



Figure 115 *Glaucium fimbrilligerum* (photography by Natalya Beshko)

397. *Glaucium squamigerum* Kar. & Kir.

Perennial. Stony slopes, rocks, screes, pebbles, ravines, banks of rivers. Montane and alpine zones. Malguzar, North Turkestan. Poisonous, alkaloid-bearing.

Genus 125. *Hypecoum* L.

398. *Hypecoum pendulum* L. [*Hypecoum parviflorum* Kar. & Kir.] Figure 116

Annual. Sandy and clay deserts, fine-earth, gravelly and stony slopes, fallow lands, fields. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Weed, alkaloid-bearing.



Figure 116 *Hypecoum pendulum* (photography by Natalya Beshko)

399. *Hypocoum trilobum* Trautv.

Annual. Fine-earth and stony slopes, sandy and clay deserts, saline depressions, wastelands, fallow lands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Weed, alkaloid-bearing.

Genus 126. *Corydalis* DC.

400. *Corydalis aitchisonii* Popov [*Corydalis sewerzowii* Regel] Figure 117

Perennial. Fine-earth, gravelly and stony slopes, rocks, screes. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Ornamental, alkaloid-bearing.



Figure 117 *Corydalis aitchisonii* (photography by Natalya Beshko)

401. *Corydalis glaucescens* Regel Figure 118

Perennial. Fine-earth and stony slopes, shady wet places. Montane zone. Malguzar, North Turkestan. Ornamental, medicinal, alkaloid-bearing.



Figure 118 *Corydalis glaucescens* (photography by Natalya Beshko)

402. *Corydalis gortschakovii* Schrenk

Perennial. Stony slopes, rocks, screes, subalpine and alpine meadows. Alpine zone. North Turkestan. Ornamental, alkaloid-bearing.

403. *Corydalis ledebouriana* Kar. & Kir. Figure 119

Perennial. Fine-earth, gravelly and stony slopes, places near melting snow. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Ornamental, medicinal, alkaloid-bearing.



Figure 119 *Corydalis ledebouriana* (photography by Natalya Beshko)

404. *Corydalis nudicaulis* Regel

Perennial. Fine-earth, gravelly slopes, rocks, places near melting snow. Montane and alpine zones. North Turkestan.

405. *Corydalis schelesnowiana* Regel & Schmalh.

Perennial. Stony slopes, rocks, screes. Montane zone. North Turkestan.

Genus 127. *Fumaria* L.

406. *Fumaria vaillantii* Loisel

Annual. Fine-earth, gravelly and stony slopes, screes, fallow lands, wastelands, roadsides, settlements, gardens, fields. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal weed, alkaloid-bearing, poisonous.

Family 32. Berberidaceae

Genus 128. *Berberis* L.

407. *Berberis integerrima* Bunge

Shrub. Fine-earth, gravelly and stony slopes, river valleys. Montane zone. Malguzar, North Turkestan. Medicinal, food, dye, ornamental, meliferous, afforestation.

408. *Berberis nummularia* Bunge Figure 120

Shrub. Stony and gravelly slopes, rocks, screes, river valleys. Foothills, montane zone. Malguzar, North Turkestan. Medicinal, food, dye, ornamental, melliferous, afforestation.



Figure 120 *Berberis nummularia* (photography by Natalya Beshko)

409. *Berberis oblonga* C. K. Schneid Figure 121

Shrub. Stony slopes, screes, river valleys. Montane zone. Malguzar, North Turkestan. Medicinal, food, dye, ornamental, melliferous, afforestation.



Figure 121 *Berberis oblonga* (photography by Natalya Beshko)

Genus 129. *Gymnospermium* Spach

410. *Gymnospermium albertii* (Regel) Takht.

Perennial. Fine-earth, gravelly and stony slopes, screes. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Ornamental, alkaloid-bearing, saponin-bearing.

Genus 130. *Leontice* L.

411. *Leontice eversmannii* Bunge

Perennial. Fine-earth, gravelly and stony slopes, piedmont plains, river valleys, fallow lands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Ornamental, alkaloid-bearing, saponin-bearing, poisonous.

Genus 131. *Bongardia* C. A. Mey.

412. *Bongardia chrysogonum* (L.) Boiss. Figure 122

Perennial. Fine-earth, gravelly and stony slopes, piedmont plains, fallow lands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Alkaloid-bearing, saponin-bearing, ornamental.



Figure 122 *Bongardia chrysogonum* (photography by Natalya Beshko)

Family 33. Ranunculaceae

Genus 132. *Aquilegia* L.

413. *Aquilegia lactiflora* Kar. & Kir.

Perennial. Fine-earth and stony slopes, rocks, shady wet places, swamps, river valleys, places near melting snow. Montane and alpine zones. North Turkestan. Ornamental, poisonous.

414. *Aquilegia vicaria* Nevski Figure 123

Perennial. Shady wet places, rocks, banks of rivers, swamps, wet places near springs. Montane and alpine zones. Malguzar, North Turkestan. Ornamental, poisonous.



Figure 123 *Aquilegia vicaria* (photography by Natalya Beshko)

Genus 133. *Isopyrum* L.

415. *Isopyrum anemonoides* Kar. & Kir. Figure 124

Perennial. Shady wet places, fine-earth and stony slopes, rocks, alpine meadows, swamps, banks of rivers, places near melting snow. Montane and alpine zones. North Turkestan.



Figure 124 *Isopyrum anemonoides* (photography by Natalya Beshko)

Genus 134. *Paraquilegia* Drumm. & Hutch.

416. *Paraquilegia caespitosa* J. R. Drumm. & Hutch.

Perennial. Stony slopes, rocks, screes. Alpine zone. North Turkestan.

Genus 135. *Thalictrum* L.

417. *Thalictrum isopyroides* C. A. Mey.

Perennial. Fine-earth, gravelly and stony slopes, rocks, screes. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Medicinal, alkaloid-bearing.

418. *Thalictrum minus* L. Figure 125

Perennial. River valleys, fine-earth, gravelly and stony slopes. Montane zone. Nuratau, Malguzar, North Turkestan. Medicinal, alkaloid-bearing.



Figure 125 *Thalictrum minus* (photography by Natalya Beshko)

419. *Thalictrum sultanabadense* Stapf.

Perennial. Fine-earth, gravelly and stony slopes, rocks, screes. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Alkaloid-bearing.

Genus 136. *Adonis* L.

420. **Adonis aestivalis* L. Figure 126

Annual. Fine-earth, gravelly and stony slopes, wastelands, fields, fallow lands, roadsides. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Medicinal, weed, poisonous.



Figure 126 *Adonis aestivalis* (photography by Natalya Beshko)

421. *Adonis turkestanica* (Korsh.) Adolf. Figure 127

Perennial. Fine-earth, gravelly and stony slopes, subalpine meadows. Montane and alpine zones. North Turkestan. Medicinal, weed, poisonous.



Figure 127 *Adonis turkestanica* (photography by Natalya Beshko)

Genus 137. Trollius L.

422. Trollius komarovii Pachom. Figure 128

Perennial. Stream banks, swamps, places near melting snow. Alpine zone. North Turkestan.



Figure 128 *Trollius komarovii* (photography by Natalya Beshko)

Genus 138. Aconitum L.

423. Aconitum zeravschanicum Steinb

Perennial. Fine-earth and stony slopes, screes, subalpine and alpine meadows, places near melting snow. Montane and alpine zones. Malguzar, North Turkestan. Alkaloid-bearing, medicinal, poisonous, ornamental.

424. Aconitum talassicum Popov Figure 129

Perennial. Banks of rivers, ravines, wet places. Montane and alpine zones. Malguzar, North

Turkestan. Ornamental, alkaloid-bearing, medicinal, poisonous. UzbRDB 3.



Figure 129 *Aconitum talassicum* (photography by Natalya Beshko)

Genus 139. *Consolida* S. F. Gray.

425. *Consolida camptocarpa* (Fisch. & C. A. Mey. ex Ledeb.) Nevski [*Delphinium camptocarpum* Fisch. & C. A. Mey.] Figure 130

Annual. Sandy and clay deserts. Plain. Kyzylkum. Poisonous, alkaloid-bearing.



Figure 130 *Consolida camptocarpa* (photography by Natalya Beshko)

426. *Consolida leptocarpa* Nevski [*Delphinium leptocarpum* Nevski] Figure 131

Annual. Sandy and clay deserts, river valleys, fine-earth and stony slopes. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Kyzylkum. Poisonous,

alkaloid-bearing.



Figure 131 *Consolida leptocarpa* (photography by Natalya Beshko)

427. *Consolida rugulosa* (Boiss.) Schrödinger [*Delphinium rugulosum* Boiss.]

Annual. Sandy and clay deserts, saline lands, fine-earth and stony slopes, fallow lands. Plain, foothills. Nuratau Relic Mountains, Kyzylkum. Alkaloid-bearing, poisonous.

Genus 140. *Delphinium* L.

428. *Delphinium barbatum* Bunge Figure 132

Annual. Fine-earth and stony slopes, screes, river valleys, fallow lands, fields, roadsides. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Dye, alkaloid-bearing.



Figure 132 *Delphinium barbatum* (photography by Natalya Beshko)

429. Delphinium batalinii Huth Figure 133

Perennial. Fine-earth and stony slopes, screes, banks of rivers, pebbles. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Alkaloid-bearing.



Figure 133 *Delphinium batalinii* (photography by Natalya Beshko)

430. *Delphinium biternatum* Huth Figure 134

Perennial. Fine-earth, gravelly and stony slopes, rocks, screes, banks of rivers, subalpine meadows. Montane and alpine zones. Nuratau, Malguzar. Dye, poisonous, alkaloid-bearing.



Figure 134 *Delphinium biternatum* (photography by Natalya Beshko)

431. *Delphinium confusum* Popov

Perennial. Fine-earth, gravelly and stony slopes, alpine meadows, banks of rivers. Montane and alpine zones. North Turkestan. Dye, alkaloid-bearing, poisonous.

432. *Delphinium longipedunculatum* Regel & Schmalh. Figure 135

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Dye, alkaloid-bearing, poisonous.



Figure 135 *Delphinium longipedunculatum* (photography by Natalya Beshko)

433. *Delphinium oreophilum* Huth

Perennial. Fine-earth and stony slopes, rocks, screes, pebbles, moraines, banks of rivers, swamps, subalpine and alpine meadows. Montane and alpine zones. Malguzar, North Turkestan. Alkaloid-bearing.

434. *Delphinium poltoratzkii* Rupr.

Perennial. Fine-earth and stony slopes, rocks, screes, ravines, banks of rivers. Montane and alpine zones. Malguzar, North Turkestan. Alkaloid-bearing.

435. *Delphinium propinquum* Nevski

Perennial. Fine-earth and stony slopes, places near melting snow. Alpine zone. North Turkestan. Alkaloid-bearing.

436. *Delphinium semibarbatum* Bien. ex Boiss. Figure 136

Perennial. Clay deserts, relic mountains, piedmont plains, foothills, fine-earth and stony slopes, screes, ravines, fallow lands, gardens. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Dye, medicinal, ornamental, poisonous, alkaloid-bearing.



Figure 136 *Delphinium semibarbatum* (photography by Natalya Beshko)

Genus 141. *Nigella* L.

437. *Nigella integrifolia* Regel Figure 137

Annual. Sandy and clay deserts, relic mountains, foothills, fine-earth and stony slopes, screes, fallow lands, fields. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum.



Figure 137 *Nigella integrifolia* (photography by Natalya Beshko)

Genus 142. *Eranthis* Salisb.

438. *Eranthis longistipitata* Regel Figure 138

Perennial. Fine-earth, gravelly and stony slopes, river valleys, places near melting snows. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan.



Figure 138 *Eranthis longistipitata* (photography by Natalya Beshko)

Genus 143. Callianthemum C. A. Mey.

439. Callianthemum alatavicum Freyn.

Perennial. Fine-earth and stony slopes, screes, rocks, moraines, pebbles, alpine meadows, banks of rivers, wet places, places near melting snow. Alpine zone. North Turkestan. Alkaloid-bearing.

Genus 144. Anemone L.

440. Anemone biflora DC. var. **petiolulosa** (Juz.) S. Ziman [*Anemone petiolulosa* Juz.] Figure 139

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan.



Figure 139 *Anemone biflora* var. **petiolulosa** (photography by Natalya Beshko)

441. Anemone narcissiflora subsp. **protracta** (Ulbr.) Ziman & Fedor. [*Anemone protracta* (Ulbr.) Juz.] Figure 140

Perennial. Fine-earth and stony slopes, alpine meadows, places near melting snow. Montane and alpine zones. Malguzar, North Turkestan. Ornamental, poisonous.



Figure 140 *Anemone narcissiflora* subsp. **protracta** (photography by Natalya Beshko)

442. *Anemone tschernaewii* (Czern.) Regel

Perennial. Fine-earth and stony slopes, shady wet places. Montane zone. Malguzar, North Turkestan.

Genus 145. *Clematis* L.

443. *Clematis orientalis* L. Figure 141

Shrub or liana. Banks of rivers, canals and lakes, fine-earth and stony slopes. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Ornamental, alkaloid-bearing, poisonous.



Figure 141 *Clematis orientalis* (photography by Natalya Beshko)

Genus 146. *Pulsatilla* Adans.

444. *Pulsatilla campanella* Fisch. ex Krylov.

Perennial. Fine-earth and stony slopes, moraines. Alpine zone. North Turkestan. Ornamental, alkaloid-bearing.

Genus 147. Ceratocephala Moench

445. Ceratocephala falcata (L.) Pers. Figure 142

Annual. Sandy and clay desert, pebbles, fine-earth and stony slopes, screes, wastelands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Weed, poisonous.



Figure 142 *Ceratocephala falcata* (photography by Natalya Beshko)

446. Ceratocephala testiculata (Crantz) Besser

Annual. Sandy and clay deserts, pebbles, fine-earth and stony slopes, screes, wastelands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Weed, poisonous.

Genus 148. Halerpestes Green

447. Halerpestes sarmentosa (Adams) Kom.

Perennial. Swamps, banks of rivers. Montane and alpine zones. North Turkestan.

Genus 149. Ranunculus L.

448. *Ranunculus arvensis L.

Annual. Clayey soils, banks of rivers and canals, wastelands, gardens, fields, fallow lands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Weed, poisonous.

449. *Ranunculus baldshuanicus* Regel & Kom. Figure 143

Perennial. Wet places, meadows, banks of rivers and canals. Plain, foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Alkaloid-bearing.



Figure 143 *Ranunculus baldshuanicus* (photography by Natalya Beshko)

450. *Ranunculus brevirostris* Edgew

Perennial. Banks of rivers, wet places. Plain, foothills, montane zone. Nuratau, Malguzar, North Turkestan. Alkaloid-bearing.

451. *Ranunculus komarovii* Freyn

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau. Alkaloid-bearing.

452. *Ranunculus linearilobus* Bunge

Perennial. Sandy, clayey and skeleton soils. Plain, foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, Kyzylkum. Medicinal, poisonous.

453. *Ranunculus mindshelkensis* B. Fedtsch. Figure 144

Perennial. Fine-earth and stony slopes. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Alkaloid-bearing.



Figure 144 *Ranunculus mindshelkensis* (photography by Natalya Beshko)

454. *Ranunculus natans* C. A. Mey.

Perennial. Standing and slowly flowing water. Montane and alpine zones. North Turkestan.

455. *Ranunculus olgae* Regel

Perennial. Fine-earth and stony slopes, places near melting snow. Montane and alpine zones. Malguzar, North Turkestan. Alkaloid-bearing.

456. *Ranunculus oxyspermus* Willd.

Perennial. River valleys, banks of canals, fields, gardens, roadsides, fallow lands, fine-earth and gravelly slopes. Plain, foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Weed, alkaloid-bearing.

457. *Ranunculus paucidentatus* Schrenk Figure 145

Perennial. Fine-earth and stony slopes, places near melting snow. Montane and alpine zones. Nuratau, Aktau, Malguzar, North Turkestan. Alkaloid-bearing.



Figure 145 *Ranunculus paucidentatus* (photography by Natalya Beshko)

458. *Ranunculus pinnatisectus* Popov Figure 146

Perennial. Sandy and clay deserts, piedmont plains, fine-earth, gravelly and stony slopes, banks of canals. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Weed, alkaloid-bearing.



Figure 146 *Ranunculus pinnatisectus* (photography by Natalya Beshko)

459. *Ranunculus pulchellus* C. A. Mey.

Perennial. Wet places, swamps, alpine meadows, banks of rivers. Alpine zone. North Turkestan. Alkaloid-bearing.

460. *Ranunculus repens* L.

Perennial. Wet places, banks of rivers and canals, swamps, gardens. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Medicinal, alkaloid-bearing, poisonous.

461. *Ranunculus rionii* Lager [*Batrachium rionii* (Lager) Nym.]

Perennial. Standing and slowly flowing water. Plain, foothills, montane and alpine zones. Nuratau, North Turkestan, Mirzachul, Kyzylkum.

462. *Ranunculus rubrocalyx* Regel ex Kom.

Perennial. Fine-earth and stony slopes, rocks, alpine meadows, banks of rivers, swamps, places near melting snow. Alpine zone. North Turkestan.

463. *Ranunculus rufosepalus* Franch. Figure 147

Perennial. Fine-earth and stony slopes, screes, moraines, alpine meadows, places near melting snow. Montane and alpine zones. Malguzar, North Turkestan.



Figure 147 *Ranunculus rufosepalus* (photography by Natalya Beshko)

464. *Ranunculus sceleratus* L.

Annual or biennial. Wet places, swamps, banks of rivers and canals. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan. Weed, poisonous, alkaloid-bearing, weed.

465. *Ranunculus sewerzowii* Regel Figure 148

Perennial. Fine-earth and stony slopes, piedmont plains, sandy and clay deserts. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Alkaloid-bearing.



Figure 148 *Ranunculus sewerzowii* (photography by Natalya Beshko)

466. *Ranunculus songaricus* Schrenk

Perennial. Fine-earth, gravelly and stony slopes, subalpine meadows. Montane and alpine zones. Malguzar, North Turkestan.

467. *Ranunculus sphaerospermus* Boiss. & C. I. Blanche [*Batrachium pachycaulon* Nevski]

Perennial. Standing and slowly flowing water. Plain, foothills, montane and alpine zones. Nuratau, North Turkestan.

468. *Ranunculus tenuilobus* Regel & Kom.

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. Nuratau, Malguzar, North Turkestan.

469. *Ranunculus trichophyllus* Chaix [*Batrachium divaricatum* (Schrank) Schur; *Batrachium trichophyllum* (Chaix) Bosch]

Perennial. Standing and slowly flowing water. Plain, foothills, montane and alpine zones. Nuratau, North Turkestan, Mirzachul, Kyzylkum.

Family 34. Platanaceae

Genus 150. *Platanus* L.

470. *Platanus orientalis* L.

Tree. River valleys. Montane zone. Nuratau, Malguzar, North Turkestan, Mirzachul (planted). Industrial, ornamental, medicinal, afforestation.

Family 35. Paeoniaceae

Genus 151. *Paeonia* L.

471. *Paeonia tenuifolia* L. [*Paeonia hybrida* Pall.] Figure 149

Perennial. Fine-earth, gravelly and stony slopes, subalpine and alpine meadows, places near melting snow. Montane and alpine zones. North Turkestan. Ornamental. UzbRDB 3.



Figure 149 *Paeonia tenuifolia* (photography by Natalya Beshko)

Family 36. Grossulariaceae

Genus 152. Ribes L.

472. Ribes meyeri Maxim. Figure 150

Shrub. Wet slopes, banks of rivers. Montane zone. Malguzar, North Turkestan. Food, ornamental.



Figure 150 *Ribes meyeri* (photography by Natalya Beshko)

Family 37. Saxifragaceae

Genus 153. Saxifraga L.

473. Saxifraga hirculus L.

Perennial. Banks of rivers, wetstony slopes, screes, moraines, alpine meadows, places near melting

snow. Alpine zone. North Turkestan. UzbRDB 2.

474. *Saxifraga sibirica* L.

Perennial. Stony slopes, screes, rocks, moraines, alpine meadows. Alpine zone. North Turkestan. Meliferous.

Family 38. Crassulaceae

Genus 154. *Clemensia* Rose

475. *Clemensia semenovii* (Regel & Herder) Boriss. Figure 151

Perennial. Wet stony slopes, pebbles, swamps, banks of rivers. Alpine zone. North Turkestan. Medicinal, ornamental, dye.



Figure 151 *Clemensia semenovii* (photography by Natalya Beshko)

Genus 155. *Rhodiola* L.

476. *Rhodiola heterodonta* (Hook f. & Thomson) Boriss. Figure 152

Perennial. Stony slopes, rocks, alpine meadows. Alpine zone. North Turkestan. Medicinal, ornamental.



Figure 152 *Rhodiola heterodonta* (photography by Natalya Beshko)

Genus 156. *Sedum* L.

477. *Sedum hispanicum* L. [*Sedum pentapetalum* Boriss.] Figure 153
Annual. Stony slopes. Montane zone. Malguzar.



Figure 153 *Sedum hispanicum* (photography by Natalya Beshko)

478. *Sedum tetramerum* Trautv. Figure 154

Annual. Stony, slopes, clay deserts, piedmont plain, pebbles. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar.



Figure 154 *Sedum tetramerum* (photography by Natalya Beshko)

Genus 157. *Pseudosedum* (Boiss.) A. Berger

479. *Pseudosedum bucharicum* Boriss.

Perennial. Stony slopes, rocks. Montane zone. Malguzar, North Turkestan. Ornamental.

480. *Pseudosedum campanuliflorum* Boriss. Figure 155

Perennial. Stony slopes, rocks. Montane zone. Malguzar, North Turkestan. Ornamental, threatened species. UzbRDB 1.



Figure 155 *Pseudosedum campanuliflorum* (photography by Natalya Beshko)

481. *Pseudosedum lievenii* (Ledeb.) A. Berger.

Perennial. Stony slopes, rocks. Foothills, montane zone. Nuratau, Malguzar. Ornamental.

482. *Pseudosedum longidentatum* Boriss. Figure 156

Perennial. Stony slopes, rocks, screes. Foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Ornamental.



Figure 156 *Pseudosedum longidentatum* (photography by Natalya Beshko)

Genus 158. *Rosularia* (DC.) Stapf.

483. *Rosularia radicata* (Boiss. & Hohen.) Eggli [*Rosularia paniculata* (Regel & Schmalh.) A. Berger]

Perennial. Stony slopes. Montane and alpine zones. Nuratau, Malguzar, North Turkestan.

484. *Rosularia subspicata* (Freyn & Sint.) Boriss.

Perennial. Stony slopes. Montane zone. Nuratau.

Family 39. Haloragaceae

Genus 159. *Myriophyllum* L.

485. *Myriophyllum spicatum* L.

Perennial. Standing and slowly flowing water. Plain, foothills, montane zone. Nuratau, Mirzachul. Medicinal, fodder, dye, ornamental, industrial.

Family 40. Vitaceae

Genus 160. *Vitis* L.

486. *Vitis vinifera* L. Figure 157

Shrub. Ravines, mountain valleys. Montane zone, Nuratau. Food, medicinal, ornamental, melliferous. UzbRDB 2.



Figure 157 *Vitis vinifera* (photography by Natalya Beshko)

Family 41. Zygophyllaceae

Genus 161. *Zygophyllum* L.

487. *Zygophyllum jaxarticum* Popov

Perennial. Saline lands. Plain. Mirzachul.

488. *Zygophyllum macrophyllum* Regel & Schmalh. Figure 158

Perennial. Saline lands, banks of canals, fields, fallow lands, wastelands. Plain. Mirzachul.



Figure 158 *Zygophyllum macrophyllum* (photography by Natalya Beshko)

489. *Zygophyllum miniatum* Cham. Figure 159

Perennial. Clay deserts, relic mountains. Plain, foothills. Nuratau Relic Mountains, Mirzachul.



Figure 159 *Zygophyllum miniatum* (photography by Natalya Beshko)

490. *Zygophyllum oxianum* Boriss. Figure 160

Perennial. Saline lands, sandy soils, river valleys, banks of canals, fields, fallow lands, wastelands. Plain, foothills. Nuratau, Nuratau Relic Mountains, Mirzachul, Kyzylkum. Weed, medicinal, poisonous.



Figure 160 *Zygophyllum oxianum* (photography by Natalya Beshko)

Genus 162. *Tribulus* L.

491. **Tribulus terrestris* L.

Annual. Sandy, clayey and saline soils, pebbles, fields, fallow lands, wastelands, roadsides. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan,

Mirzachul, Kyzylkum. Weed, medicinal, poisonous.

Family 42. Fabaceae [Leguminosae]

Genus 163. **Gleditsia* L.

492. **Gleditsia caspia* Desf.

Tree. River valleys, fine-earth slopes (cultivated and naturalized). Foothills, montane zone. Nuratau. Ornamental, afforestation, industrial, fodder.

Genus 164. *Sophora* L.

493. *Sophora alopecuroides* L. [*Vexibia alopecuroides* (L.) Yakovlev] Figure 161

Perennial. Fine-earth and gravelly slopes, river valleys, meadows, swamps, wet places, fields, fallow lands, roadsides, banks of canals. Plain, foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Weed, poisonous.



Figure 161 *Sophora alopecuroides* (photography by Natalya Beshko)

494. *Sophora lehmanni* (Bunge) Yakovlev [*Ammothamnus lehmanni* Bunge]

Semishrub. Sandy deserts. Plain. Kyzylkum. Poisonous, ornamental, afforestation, melliferous, insecticide.

495. *Sophora pachycarpa* C. A. Mey. [*Vexibia pachycarpa* (C. A. Mey.) Yakovlev] Figure 162

Perennial. Sandy, clayey and saline soils, fine-earth and gravelly slopes, banks of canals, fields, fallow lands, roadsides. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, Mirzachul, Kyzylkum. Weed, poisonous.



Figure 162 *Sophora pachycarpa* (photography by Natalya Beshko)

Genus 165. *Ammodendron* Fisch.

496. *Ammodendron conollyi* Bunge ex Boiss. Figure 163

Tree or shrub. Sandy deserts, saline lands. Plain. Kyzylkum. Dye, ornamental, industrial, afforestation, melliferous.



Figure 163 *Ammodendron conollyi* (photography by Natalya Beshko)

497. *Ammodendron lehmannii* Bunge ex Boiss.

Tree or shrub. Sandy deserts. Plain. Kyzylkum, Mirzachul. Ornamental, afforestation, melliferous.

Genus 166. *Ononis* L.

498. *Ononis spinosa* subsp. *antiquorum* (L.) Briq.

Perennial. Fine-earth and stony slopes, river valleys, banks of canals, roadsides, fields. Foothills, montane zone. Nuratau. Fodder.

Genus 167. *Trigonella* L.

499. *Trigonella adscendens* (Nevski) Afan. & Gontsch. [*Melissitus adscendens* (Nevski) Ikonn.]

Perennial. Fine-earth and stony slopes, pebbles. Montane and alpine zones, Malguzar, North Turkestan. Fodder.

500. *Trigonella aristata* (Vassilcz.) Sojak [*Melissitus aristatus* (Vass.) Latsch.]

Perennial. Stony slopes, dry riverbeds, river valleys. Montane zone. Malguzar, North Turkestan. Fodder.

501. *Trigonella cancellata* Desf.

Annual. Fine-earth and stony slopes, pebbles, fallow lands, dry riverbeds. Foothills, montane zone. North Turkestan. Fodder.

502. *Trigonella geminiflora* Bunge Figure 164

Annual. Fine-earth and stony slopes, sandy and clay deserts, fallow lands, roadsides, banks of rivers, dry riverbeds. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder.



Figure 164 *Trigonella geminiflora* (photography by Natalya Beshko)

503. *Trigonella gontscharovii* Vassilcz. [*Melissitus gontscharovii* (Vassilcz.) Latsch.]

Perennial. Stony slopes. Montane and alpine zones. Malguzar, North Turkestan. Fodder.

504. *Trigonella grandiflora* Bunge Figure 165

Annual. Fine-earth and stony slopes, banks of canals, roadsides, dry riverbeds, fallow lands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder.



Figure 165 *Trigonella grandiflora* (photography by Natalya Beshko)

505. *Trigonella popovii* Korovin [*Melissitus popovii* (Korovin) Golosk.]

Perennial. Fine-earth, gravelly slopes, river valleys. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Fodder.

506. *Trigonella verae* Sirj.

Annual. Fine-earth, gravelly and stony slopes. Montane zone. North Turkestan. Fodder.

Genus 168. *Melissitus* Medik.

507. *Melissitus pamiricus* (Boriss.) Golosk

Perennial. Stony slopes, rocks, screes, pebbles. Montane and alpine zones. Malguzar, North Turkestan. Fodder.

Genus 169. *Medicago* L.

508. *Medicago lupulina* L.

Annual or biennial. Fine-earth, gravelly and stony slopes, river valleys, banks of canals, pebbles, meadows, gardens, fields. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, medicinal, melliferous.

509. *Medicago medicaginoides* (Retz.) E. Small [*Trigonella arcuata* C. A. Mey.]

Annual. Fine-earth and stony slopes, fallow lands, banks of rivers, dry riverbeds. Foothills, montane zone. Malguzar, North Turkestan.

510. *Medicago minima* (L.) L.

Annual or biennial. Clay deserts, fine-earth, gravelly and stony slopes, dry riverbeds, river valleys, fallow lands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, melliferous, weed.

511. *Medicago monantha* (C. A. Mey.) Trautv. [*Trigonella noeana* Boiss.]

Annual. Fine-earth and stony slopes, fields, fallow lands, dry riverbeds. Foothills, montane zone. Malguzar. Fodder, melliferous, weed.

512. *Medicago orbicularis* (L.) Bartal

Annual. Fine-earth, gravelly and stony slopes, river valleys, pebbles, fields, fallow lands. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, melliferous, weed.

513. *Medicago orthoceras* (Kar. & Kir.) Trautv. [*Trigonella orthoceras* Kar. & Kir.]

Annual. Fine-earth and stony slopes, fields, fallow lands, dry riverbeds, roadsides. Plain, foothills, montane zone. Nuratau, Malguzar. Fodder, medicinal, dye.

514. *Medicago polymorpha* L. [*Medicago denticulata* Willd.]

Annual. Piedmont plains, fine-earth and gravelly slopes, gardens, fields. Plain, foothills, montane zone. North Turkestan. Fodder, medicinal, melliferous.

515. *Medicago rigidula* (L.) All.

Annual. Fine-earth, gravelly and stony slopes, piedmont plains, clay deserts, river valleys, pebbles. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, melliferous, weed.

516. **Medicago sativa* L.

Perennial. Fine-earth, gravelly and stony slopes, meadows, screes, river valleys, pebbles, gardens, pastures, fields, fallow lands, roadsides (naturalized). Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, medicinal, melliferous.

Genus 170. *Melilotus* Mill.

517. *Melilotus albus* Medik.

Biennial. Meadows, river valleys, banks of canals, fine-earth slopes, pebbles, wet places, fallow lands, fields, gardens. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, medicinal, melliferous, insecticide.

518. *Melilotus officinalis* (L.) Pall.

Biennial. Fine-earth slopes, meadows, river valleys, roadsides, gardens, fields, fallow lands. Plain, foothills. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Fodder, medicinal, melliferous, insecticide.

Genus 171. *Trifolium* L.

519. *Trifolium campestre* Schreb. [*Chrysaspis campestris* (Schreb.) Desv.]

Annual. River valleys, meadows, fine-earth slopes, fields. Foothills, montane zone. Malguzar. Fodder, melliferous.

520. *Trifolium fragiferum* L. [*Trifolium neglectum* C. A. Mey.; *Amoria bonannii* (C. Presl.) Roskov; *Amoria fragifera* (L.) Roskov]

Perennial. Wet places, meadows, banks of rivers and canals, swamps, pebbles, fields, fallow lands. Plain, foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Fodder, melliferous.

521. *Trifolium pratense* L. Figure 166

Perennial. River valleys, banks of canals, fine-earth slopes, wet places, meadows, fields, fallow lands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Fodder, medicinal, essential oil, dye, melliferous.



Figure 166 *Trifolium pratense* (photography by Natalya Beshko)

522. *Trifolium repens* L.

Perennial. Wet places, meadows, banks of rivers and canals, swamps, pebbles, fields, fallow lands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Fodder, medicinal, melliferous.

Genus 172. *Lotus* L.

523. *Lotus krylovii* Schischkin & Serg. [*L. sergievskiae* Kamelin & Kovalevsk.]

Perennial. River valleys, banks of rivers, lakes and canals, fallow lands, meadows, fields, gardens, saline lands. Plain, foothills, montane zone. Nuratau, Malguzar, North Turkestan. Fodder, weed.

Genus 173. *Cullen* Medik.

524. *Cullen drupaceum* (Bunge) C. H. Stirt. [*Psoralea drupacea* Bunge] Figure 167

Perennial. Fine-earth slopes, piedmont plain, sandy and clay deserts, banks of rivers, lakes and canals, fallow lands, fields. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, essential oil,

meliferous, weed.



Figure 167 *Cullen drupaceum* (photography by Natalya Beshko)

Genus 174. *Smirnowia* Bunge

525. *Smirnowia turkeстана* Bunge

Shrub. Sandy deserts. Plain. Kyzylkum. Medicinal.

Genus 175. *Colutea* L.

526. *Colutea paulsenii* Freyn Figure 168

Shrub. Fine-earth and stony slopes. Montane zone. Malguzar, North Turkestan. Ornamental, afforestation, melliferous.



Figure 168 *Colutea paulsenii* (photography by Natalya Beshko)

Genus 176. *Halimodendron* Fisch. ex DC.

527. *Halimodendron halodendron* (Pall.) Voss. Figure 169

Shrub. Saline lands, banks of rivers, lakes and canals, pebbles. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Dye, fodder, ornamental, afforestation, melliferous.



Figure 169 *Halimodendron halodendron* (photography by Natalya Beshko)

Genus 177. *Caragana* Fabr.

528. *Caragana alaica* Pojark.

Shrub. Stony slopes, ravines, river valleys. Montane zone. Malguzar, North Turkestan. Melliferous.

529. *Caragana turkestanica* Kom.

Shrub. Fine-earth, gravelly and stony slopes. Montane zone. Malguzar, North Turkestan. Melliferous.

Genus 178. *Chesneya* Lindl.

530. *Chesneya ternata* (Korsh.) Popov Figure 170

Perennial. Fine-earth, gravelly and stony slopes, rocks, screes, pebbles, banks of rivers. Foothills, montane zone. Nuratau, Malguzar, North Turkestan.



Figure 170 *Chesneya ternata* (photography by Natalya Beshko)

531. *Chesneya turkestanica* Franch.

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. Malguzar, North Turkestan.

Genus 179. *Astragalus* L.

532. *Astragalus adpressipilosus* Gontsch.

Perennial. Stony slopes, pebbles. Montane and alpine zones. Malguzar, North Turkestan.

533. *Astragalus alabugensis* B.

Fedtsch. Perennial. Stony slopes. Montane zone. Nuratau.

534. *Astragalus alopecias* Pall. Figure 171

Perennial. Fine-earth slopes, piedmont plains, sandy and clay deserts, screes, fallow lands, banks of rivers and canals, roadsides. Plain, foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan, Mirzachul. Fodder, ornamental.



Family 171 *Astragalus alopecias* (photography by Natalya Beshko)

535. *Astragalus alpinus* L.

Perennial. Fine-earth and gravelly slopes, banks of rivers, subalpine and alpine meadows. Montane and alpine zones. North Turkestan. Fodder, ornamental, melliferous.

536. *Astragalus ammotrophus* Bunge

Perennial. Stony and gravelly slopes, clay deserts. Plain, foothills. Nuratau Relic Mountains.

537. *Astragalus angreni* Lipsky

Perennial. Fine-earth slopes. Montane zone. Malguzar, North Turkestan.

538. *Astragalus aphanassjievii* Gontsch.

Perennial. Fine-earth and gravelly slopes. Montane and alpine zones. Malguzar, North Turkestan.

539. *Astragalus aschuturi* B. Fedtsch.

Perennial. Fine-earth, gravelly and stony slopes, screes, dry riverbeds. Montane and alpine zones, Malguzar, North Turkestan.

540. *Astragalus bactrianus* Bunge Figure 172

Shrub. Fine-earth, gravelly and stony slopes, pebbles, fallow lands. Foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan.



Figure 172 *Astragalus bactrianus* (photography by Natalya Beshko)

541. *Astragalus bakaliensis* Bunge

Annual. Sandy deserts, stony slopes, fields, fallow lands. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan. Fodder, melliferous.

542. *Astragalus belolipovii* Kamelin ex F. O. Khas. & N. Sulajm.

Perennial. Fine-earth and stony slopes, among juniper forests. Montane zone. Malguzar, North Turkestan. UzbRDB 1.

543. *Astragalus camptoceras* Bunge

Annual. Fine-earth, gravelly and stony slopes, piedmont plains. Plain, foothills, montane zone.

Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan.

544. *Astragalus campylorrhynchus* Fisch. & C. A. Mey. Figure 173

Annual. Fine-earth, gravelly and stony slopes, sandy and clay deserts. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder.



Figure 173 *Astragalus campylorrhynchus* (photography by Natalya Beshko)

545. *Astragalus campylotrichus* Bunge

Annual. Fine-earth, gravelly and stony slopes, sandy and clay deserts. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Fodder.

546. *Astragalus chodshenticus* B. Fedtsch.

Semishrub. River valleys, saline lands. Plain, foothills. Malguzar.

547. *Astragalus commixtus* Bunge

Annual. Sandy, clayey and sceleron soils. Plain, foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder.

548. *Astragalus compositus* Pavlov

Annual. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. Fodder, weed.

549. *Astragalus contortuplicatus* L.

Annual. Saline lands, banks of rivers, lakes and canals, fields. Plain. Mirzachul. Fodder, weed.

550. Astragalus cornu-bovis Lipsky

Annual. Sandy and clay deserts. Plain. Kyzylkum. Fodder.

551. Astragalus dendroides Kar. & Kir.

Shrub. Fine-earth, gravelly and stony slopes. Montane zone. Malguzar, North Turkestan.

552. Astragalus dictamnoides Gontsch.

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. North Turkestan.

553. Astragalus dipelta Bunge

Annual. Fine-earth and stony slopes, fields, fallow lands. Foothills, montane zone. Malguzar, North Turkestan. Fodder.

554. Astragalus dolichocarpus Popov

Semishrub. Fine-earth and gravelly slopes. Foothills, montane zone. Nuratau, Malguzar.

555. Astragalus eximius Bunge Figure 174

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. Ornamental.



Figure 174 *Astragalus eximius* (photography by Natalya Beshko)

556. Astragalus falcigerus Popov

Semishrub. Gravelly and stony slopes. Montane zone. Nuratau.

557. Astragalus farctissimus Lipsky

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. Nuratau, Aktau, Malguzar, North Turkestan.

558. Astragalus ferganensis (Popov) B. Fedtsch. ex A. S. Korol.

Perennial. Stony slopes, pebbles. Foothills. North Turkestan.

559. Astragalus filicaulis Fisch. & C. A. Mey.

Annual. Sandy, clayey and skeleton soils, fields, fallow lands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder.

560. Astragalus flexus Fisch. Figure 175

Perennial. Sandy deserts. Plain. Kyzylkum. Fodder.



Figure 175 *Astragalus flexus* (photography by Natalya Beshko)

561. Astragalus floccosifolius Sumnev. Figure 176

Perennial. Fine-earth and stony slopes, river valleys, fallow lands. Montane zone. Malguzar, North Turkestan.



Figure 176 *Astragalus floccosifolius* (photography by Natalya Beshko)

562. Astragalus globiceps Bunge Figure 177

Perennial. Fine-earth, gravelly and stony slopes, fields, fallow lands. Foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Fodder, ornamental.



Figure 177 *Astragalus globiceps* (photography by Natalya Beshko)

563. Astragalus guttatus Bans & Solander [*Astragalus striatellus* M. Bieb.]

Annual. Fine-earth, gravelly and stony slopes. Foothills. Nuratau. Fodder.

564. Astragalus harpilobus Kar. & Kir.

Annual. Sandy deserts. Plain. Kyzylkum. Fodder, weed.

565. Astragalus inaequalifolius Basil.

Perennial. Stony slopes, rocks, screes. Montane zone. Nuratau.

566. Astragalus intarrensis Franch.

Perennial. Stony slopes. Montane zone. Malguzar, North Turkestan.

567. Astragalus iskanderi Lipsky

Shrub. Fine-earth and stony slopes, river valleys. Montane zone. Nuratau, Malguzar, North Turkestan.

568. Astragalus isfahanicus Boiss.

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. Malguzar, North Turkestan.

569. Astragalus jagnobicus Lipsky

Perennial. Fine-earth, gravelly and stony slopes, pebbles. Montane and alpine zones. Malguzar, North Turkestan.

570. Astragalus juratzkanus Freyn & Sint. [*Astragalus maverranagri* Popov]

Semishrub. Fine-earth, gravelly and stony slopes, roadsides. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan.

571. Astragalus kelleri Popov Figure 178

Perennial. Fine-earth and stony slopes. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar. UzbRDB 2.



Figure 178 *Astragalus kelleri* (photography by Natalya Beshko)

572. *Astragalus knorringianus* Boriss. Figure 179

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. UzbRDB 2.



Figure 179 *Astragalus knorringianus* (photography by Natalya Beshko)

573. *Astragalus lasiosemius* Boiss.

Semishrub. Fine-earth, gravelly and stony slopes, screes. Montane and alpine zones. Malguzar, North Turkestan.

574. *Astragalus lasiostylus* Fisch. [*Astragalus vladimiri* Sirj.]

Shrub. Fine-earth and stony slopes, rocks, screes. Montane and alpine zones. Nuratau, Malguzar, North Turkestan.

575. *Astragalus leiophysa* Bunge

Perennial. Sandy deserts. Plain. Kyzylkum.

576. *Astragalus lentilobus* Kamelin & Kovalevsk.

Perennial. Fine-earth and gravelly slopes, screes, moraines, subalpine and alpine meadows. Montane and alpine zones. Malguzar, North Turkestan. Fodder.

577. *Astragalus leptophysus* Vved. Figure 180

Perennial. Stony slopes, screes. Montane zone. Nuratau, North Turkestan, Nuratau Reserve. UzbRDB 2.



Figure 180 *Astragalus leptophysus* (photography by Natalya Beshko)

578. *Astragalus leptostachys* Pall. Figure 181

Perennial. Fine-earth, gravelly and stony slopes, pebbles. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Fodder.



Figure 181 *Astragalus leptostachys* (photography by Natalya Beshko)

579. *Astragalus lipskyi* Popov Figure 182

Perennial. Fine-earth and gravelly slopes. Montane zone. Nuratau, Malguzar, North Turkestan.



Figure 182 *Astragalus lipskyi* (photography by Natalya Beshko)

580. *Astragalus lithophilus* Kar. & Kir.

Perennial. Fine-earth, gravelly and stony slopes, pebbles, moraines, screes, alpine meadows. Montane and alpine zones, North Turkestan.

581. *Astragalus macrocladus* Bunge Figure 183

Semishrub. Sandy deserts. Plain. Kyzylkum. Fodder, melliferous.



Figure 183 *Astragalus macrocladus* (photography by Natalya Beshko)

582. *Astragalus macronyx* Bunge Figure 184

Perennial. Fine-earth, gravelly and stony slopes. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan.



Figure 184 *Astragalus macronyx* (photography by Natalya Beshko)

583. Astragalus macropetalus Schrenk

Perennial. Fine-earth, gravelly slopes, Clay deserts. Plain, foothills. Nuratau.

584. Astragalus macrotropis Bunge

Perennial. Fine-earth, gravelly and stony slopes, fallow lands, rocks, banks of rivers, pebbles. Foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan.

585. Astragalus marguzaricus Lipsky

Perennial. Fine-earth and stony slopes, banks of rivers, pebbles. Montane zone. Nuratau, Malguzar, North Turkestan.

586. Astragalus masenderanus Bunge [*Astragalus kurdaicus* Saposhn. ex Sumn.; *Astragalus skorniakovii* B. Fedtsch.] Figure 185

Perennial. Fine-earth, gravelly and stony slopes. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Fodder.



Figure 185 *Astragalus masenderanus* (photography by Natalya Beshko)

587. Astragalus mucidus Bunge ex Boiss. Figure 186

Perennial. Fine-earth, gravelly and stony slopes, piedmont plains. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan.



Figure 186 *Astragalus mucidus* (photography by Natalya Beshko)

588. Astragalus nematodes Bunge

Perennial. Fine-earth, gravelly and stony slopes, rocks. Foothills. Nuratau.

589. Astragalus nivalis Kar. & Kir.

Perennial. Gravelly and stony slopes, pebbles, banks of rivers, moraines. Montane and alpine zones. North Turkestan.

590. Astragalus nobilis Bunge ex B. Fedtsch. Figure 187

Perennial. Fine-earth, gravelly and stony slopes, rocks. Montane zone. Nuratau, Aktau, Malguzar, North Turkestan.



Figure 187 *Astragalus nobilis* (photography by Natalya Beshko)

591. Astragalus nuciferus Bunge Figure 188

Perennial. Fine-earth and stony slopes, screes. Montane zone. Malguzar, North Turkestan.



Figure 188 *Astragalus nuciferus* (photography by Natalya Beshko)

592. Astragalus ophiocarpus Benth. ex Boiss.

Annual. Sandy and clay deserts, banks of rivers. Plain. Mirzachul. Fodder.

593. Astragalus orbiculatus Ledeb.

Perennial. Sandy deserts, saline lands, wet places, banks of rivers. Plain. Malguzar, Mirzachul, Kyzylkum.

594. Astragalus oxyglottis Stev. ex M. Bieb.

Annual. Fine-earth, skeleton, rarely sandy soils. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, Mirzachul. Fodder.

595. Astragalus patentipilosus Kitam. [*Astragalus korovinianus* Barneby]

Perennial. Clayey soils, among sagebrush vegetation. Plain, foothills. Nuratau, Mirzachul. Fodder.

596. Astragalus patentivillosus Gontsch.

Perennial. Fine-earth and gravelly slopes, moraines. Montane and alpine zone. North Turkestan.

597. Astragalus paucijugus Schrenk

Shrub. Sandy deserts. Plain. Kyzylkum. Fodder, meliferous.

598. Astragalus pauper Bunge

Perennial. Fine-earth and gravelly slopes, alpine meadows. Alpine zone. North Turkestan. Fodder.

599. Astragalus peduncularis Benth. [*Astragalus corydalinus* Bunge]

Perennial. Stony slopes, pebbles, screes, wet meadows. Montane and alpine zone. Malguzar, North Turkestan.

600. Astragalus persipolitanus Boiss. [*Astragalus ammophilus* Kar. & Kir.]

Annual. Sandy, clayey and skeleton soils, screes. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Mirzachul, Kyzylkum. Fodder.

601. Astragalus petunnikovii Litv.

Perennial. Sandy deserts. Plain. Kyzylkum.

602. *Astragalus platyphyllus* Kar. & Kir.

Perennial. Stony slopes. Montane zone. Malguzar, North Turkestan.

603. *Astragalus pterocephalus* Bunge [*Astragalus stipulosus* Boriss.]

Shrub. Fine-earth, gravelly and stony slopes, screes, rocks. Montane and alpine zones. Nuratau, Malguzar, North Turkestan.

604. *Astragalus pulcher* Korovin Figure 189

Perennial. Stony slopes, rocks. Montane zone. Nuratau.



Figure 189 *Astragalus pulcher* (photography by Natalya Beshko)

605. *Astragalus quisqualis* Bunge

Perennial. Fine-earth, gravelly and stony slopes, screes. Montane zone. Malguzar, North Turkestan.
Fodder.

606. *Astragalus retamocarpus* Boiss. & Hohen.

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Malguzar. Fodder.

607. *Astragalus rubromarginatus* Czerniak.

Perennial. Sandy deserts. Plain. Kyzylkum.

608. *Astragalus rusanovii* F. O. Khass., Sarybaeva & Esankulov

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. Malguzar, North Turkestan.

609. *Astragalus saratagius* Bunge

Perennial. Stony slopes, screes. Montane and alpine zones. North Turkestan.

610. *Astragalus sarytavicus* Popov

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. Malguzar, North Turkestan.

611. *Astragalus schachimardanus* Basil.

Perennial. Stony slopes, rocks, screes. Montane zone. Malguzar, North Turkestan.

612. *Astragalus schmalhausenii* Bunge

Annual. Fine-earth, gravelly and stony slopes, fields, fallow lands. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Fodder, weed.

613. *Astragalus schrenkianus* Fisch. & C. A. Mey.

Perennial. Stony slopes, rocks, screes. Montane zone. Nuratau.

614. *Astragalus schugnanicus* B. Fedtsch.

Perennial. Fine-earth, gravelly and stony slopes, alpine meadows, stream banks. Alpine zone. North Turkestan. Fodder.

615. *Astragalus sesamoides* Boiss.

Annual. Fine-earth, gravelly and stony slopes, pebbles, river valleys, fields, fallow lands. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Fodder.

616. *Astragalus sewerzowii* Bunge [*Astragalus subbarbellatus* Bunge]

Perennial. Fine-earth slopes, subalpine meadows. Montane and alpine zones. Nuratau, Aktau, Malguzar, North Turkestan. Fodder.

617. *Astragalus sieversianus* Pall. Figure 190

Perennial. Fine-earth, gravelly and stony slopes, fallow lands. Foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Fodder, medicinal, ornamental.



Figure 190 *Astragalus sieversianus* (photography by Natalya Beshko)

618. Astragalus sogdianus Bunge Figure 191

Perennial. Fine-earth, gravelly and stony slopes, piedmont plain. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul.



Figure 191 *Astragalus sogdianus* (photography by Natalya Beshko)

619. Astragalus stalinskyi Širj.

Annual. Fine-earth, gravelly and stony slopes, piedmont plain. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Fodder.

620. Astragalus stenanthus Bunge

Perennial. Fine-earth, gravelly and stony slopes, river valleys. Foothills, montane zone. Nuratau, Malguzar.

621. Astragalus stenocystis Bunge

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan.

622. Astragalus subinduratus Gontsch.

Perennial. Stony slopes, banks of rivers. Montane and alpine zones. North Turkestan.

623. Astragalus subscaposus Popov ex Boriss.

Perennial. Fine-earth, gravelly and stony slopes, wet places near springs, meadows. Montane and alpine zones. North Turkestan. Fodder.

624. Astragalus substipitatus Gontsch.

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau, Malguzar, North

Turkestan.

625. *Astragalus subverticillatus* Gontsch.

Perennial. Fine-earth, gravelly slopes. Montane zone. Malguzar, North Turkestan.

626. *Astragalus tibetanus* Benth. ex Bunge

Perennial. Fine-earth, gravelly and stony slopes, river valleys. Montane and alpine zones. Malguzar, North Turkestan. Fodder.

627. *Astragalus titovii* Gontsch.

Perennial. Stony slopes, swamps, places near melting snow. Montane and alpine zones. Malguzar, North Turkestan. Fodder.

628. *Astragalus transoxanus* Fisch. ex Bunge

Shrub. Fine-earth, gravelly and stony slopes. Montane zone. Nuratau.

629. *Astragalus turbinatus* Bunge

Perennial. Sandy deserts. Plain. Kyzylkum.

630. *Astragalus turczaninovii* Kar. & Kir. Figure 192

Perennial. Sandy deserts. Plain. Kyzylkum.



Figure 192 *Astragalus turczaninovii* (photography by Natalya Beshko)

631. Astragalus turkestanus Bunge Figure 193

Perennial. Fine-earth and gravelly slopes. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Fodder.



Figure 193 *Astragalus turkestanus* (photography by Natalya Beshko)

632. *Astragalus unifoliolatus* Bunge

Semishrub. Sandy deserts. Plain. Kyzylkum. Fodder, melliferous.

633. *Astragalus uninodus* Popov & Vved.

Annual. River valleys, stony slopes. Montane zone. Malguzar, North Turkestan.

634. *Astragalus urgutinus* Lipsky

Shrub. Fine-earth, gravelly and stony slopes, rocks, cliffs. Foothills, montane and alpine zones. Nuratau, Aktau, Malguzar, North Turkestan.

635. *Astragalus variegatus* Franch. Figure 194

Shrub. Fine-earth, gravelly and stony slopes, banks of rivers, fallow lands. Montane and alpine zones. Nuratau, Malguzar, North Turkestan.



Figure 194 *Astragalus variegatus* (photography by Natalya Beshko)

636. *Astragalus vicarius* Lipsky

Annual. Fine-earth, gravelly and stony slopes, fallow lands, fields. Foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Fodder.

637. *Astragalus villosissimus* Bunge

Semishrub. Sandy and clay deserts, saline lands. Plain, foothills. Nuratau Relic Mountains, Mirzachul, Kyzylkum. Fodder, melliferous.

638. *Astragalus xanthomeloides* Korovin & Popov Figure 195

Perennial. Stony slopes, screes, pebbles. Montane zone. Nuratau, Malguzar, North Turkestan.



Figure 195 *Astragalus xanthomeloides* (photography by Natalya Beshko)

Genus 180. *Oxytropis* DC.

639. *Oxytropis aspera* Gontsch. Fedtsch.

Perennial. Stony slopes, places near melting snow. Montane and alpine zones. North Turkestan.

640. *Oxytropis capusii* Franch. Figure 196

Perennial. Fine-earth, gravelly and stony slopes. Montane and alpine zones. Malguzar, North Turkestan.



Figure 196 *Oxytropis capusii* (photography by Natalya Beshko)

641. *Oxytropis chesneyoides* Gontsch.

Perennial. Rocks, stony slopes. Foothills, montane zone. Nuratau, Malguzar.

642. *Oxytropis humifusa* Kar. & Kir.

Perennial. Fine-earth, gravelly and stony slopes, moraines, alpine meadows, places near melting snow. Alpine zone. North Turkestan.

643. *Oxytropis immersa* (Baker) B. Fedtsch.

Perennial. Fine-earth, gravelly and stony slopes, rocks, moraines, alpine meadows. Alpine zone. North Turkestan.

644. *Oxytropis integripetala* Bunge

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane zone. North Turkestan.

645. *Oxytropis kamelinii* Vassilcz.

Perennial. Stony slopes. Montane zone. Malguzar. Endemic.

646. *Oxytropis lehmanni* Bunge

Perennial. Fine-earth and stony slopes, rocks, alpine meadows. Montane and alpine zones. Malguzar, North Turkestan.

647. *Oxytropis leucocyanea* Bunge

Semishrub. Stony slopes, screes. Montane and alpine zones. North Turkestan.

648. *Oxytropis lipskyi* Gontsch.

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. North Turkestan.

649. *Oxytropis macrocarpa* Kar. & Kir. Figure 197

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. Nuratau, Malguzar, North Turkestan.



Figure 197 *Oxytropis macrocarpa* (photography by Natalya Beshko)

650. *Oxytropis michelsonii* B. Fedtsch.

Perennial. Stony slopes, places near melting snow. Montane and alpine zones. North Turkestan.

651. *Oxytropis microsphaera* Bunge

Perennial. Stony slopes, rocks, places near melting snow. Montane and alpine zones. Malguzar, North Turkestan.

652. *Oxytropis platonychia* Bunge

Perennial. Stony slopes, screes, pebbles, alpine meadows. Alpine zone. North Turkestan.

653. *Oxytropis pseudorosea* Filim. Figure 198

Perennial. Stony slopes. Montane zone. Nuratau, UzBRDB 2.



Figure 198 *Oxytropis pseudorosea* (photography by N. Yu. Beshko)

654. *Oxytropis riparia* Litv.

Perennial. Meadows, river valleys, wet slopes. Montane zone. North Turkestan. Endemic to the Nuratau Mountains.

655. *Oxytropis rosea* Bunge Figure 199

Perennial. Dry riverbeds, pebbles, gravelly and stony slopes, rocks. Foothills, montane zone. Malguzar, North Turkestan.



Figure 199 *Oxytropis rosea* (photography by Natalya Beshko)

656. *Oxytropis savellanica* Bunge

Semishrub. Stony slopes, screes, rocks, alpine meadows, stream banks. Montane and alpine zones. North Turkestan.

657. *Oxytropis seravschanica* Gontsch.

Perennial. Stony slopes, dry riverbeds. Montane and alpine zones. Malguzar, North Turkestan.

658. *Oxytropis tachtensis* Franch.

Perennial. Fine-earth and stony slopes. Montane zone. Nuratau, Malguzar, North Turkestan.

659. *Oxytropis trichocalycina* Bunge Figure 200

Perennial. Stony slopes, rocks, screes. Montane and alpine zones. Nuratau, Malguzar, North Turkestan.



Figure 200 *Oxytropis trichocalycina* (photography by Natalya Beshko)

Genus 181. *Glycyrrhiza* L.

660. *Glycyrrhiza aspera* Pall.

Perennial. Banks of rivers, saline lands, fine-earth slopes, fallow lands, fields. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, Mirzachul. Medicinal, fodder, melliferous.

661. *Glycyrrhiza glabra* L.

Perennial. Fine-earth slopes, meadows, fields, fallow lands, river valleys, banks of canals. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Medicinal, food, fodder, dye, industrial, melliferous, weed.

662. *Glycyrrhiza triphylla* Fisch. & C. A. Mey. [*Meristotropis triphylla* Fisch. & C. A. Mey.]

Perennial. Fine-earth, gravelly and stony slopes, river valleys, pebbles, fallow lands. Foothills, montane zone. Nuratau. Medicinal, fodder, melliferous.

Genus 182. *Hedysarum* L.

663. *Hedysarum flavescens* Regel & Schmalh.

Perennial. Fine-earth, gravelly and stony slopes, screes, rocks, river valleys, alpine meadows. Montane and alpine zones. North Turkestan. Fodder, ornamental, meliferous.

664. *Hedysarum jaxarticum* Popov & Kir.

Perennial. Clayey soils. Plain, foothills. North Turkestan. Fodder, ornamental, meliferous.

665. *Hedysarum mogianicum* (B. Fedtsch.) B. Fedtsch.

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. Nuratau. Fodder, ornamental, melliferous.

666. *Hedysarum montanum* (B. Fedtsch.) B. Fedtsch.

Perennial. Pebbles, fine-earth and stony slopes, fallow lands, roadsides. Foothills, montane zone. Malguzar, North Turkestan. Fodder, ornamental, melliferous.

667. *Hedysarum nuratense* Popov Figure 201

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. Nuratau, Malguzar, North Turkestan. Fodder, ornamental, melliferous.



Figure 201 *Hedysarum nuratense* (photography by Natalya Beshko)

668. *Hedysarum plumosum* Boiss. & Hausskn. Figure 202

Perennial. Stony slopes, screes, rocks, pebbles. Montane and alpine zones. Malguzar, North Turkestan. Fodder, ornamental, melliferous.



Figure 202 *Hedysarum plumosum* (photography by Natalya Beshko)

Genus 183. *Onobrychis* Hill

669. *Onobrychis chorassanica* Bunge Figure 203

Perennial. Fine-earth, gravelly slopes, fallow lands. Foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Fodder, melliferous.



Figure 203 *Onobrychis chorassanica* (photography by Natalya Beshko)

670. *Onobrychis echidna* Lipsky

Shrub. Stony slopes, screes. Montane and alpine zones. Malguzar, North Turkestan. Fodder, melliferous.

671. *Onobrychis gontscharovii* Vassilcz.

Perennial. Rocks, stony slopes. Montane zone. Nuratau. Fodder, melliferous.

672. *Onobrychis grandis* Lipsky Figure 204

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. Malguzar, North Turkestan. Fodder, melliferous.



Figure 204 *Onobrychis grandis* (photography by Natalya Beshko)

673. *Onobrychis micrantha* Schrenk

Annual. Sandy and clay deserts, fine-earth, gravelly and stony slopes, fields, fallow lands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, meliferous, weed.

674. *Onobrychis pulchella* Schrenk Figure 205

Annual. Fine-earth and stony slopes, pebbles, fields, fallow lands, piedmont plains, clay deserts. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Fodder, meliferous, weed.



Figure 205 *Onobrychis pulchella* (photography by Natalya Beshko)

675. *Onobrychis saravschanica* B. Fedtsch.

Perennial. Fine-earth and stony slopes, screes. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Fodder, melliferous.

Genus 184. *Alhagi* Hill

676. *Alhagi canescens* (Regel) B. Keller & Shap.

Perennial. Sandy and clay deserts, roadsides, fallow and saline lands, banks of canals. Plain, foothills. Nuratau, Nuratau Relic Mountains, Mirzachul, Kyzylkum. Fodder, medicinal, melliferous.

677. *Alhagi kirghisorum* Schrenk Figure 206

Perennial. Sandy and clay deserts, fine-earth, gravelly and stony slopes, roadsides, fallow lands, fields, banks of canals. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, medicinal, melliferous.



Figure 206 *Alhagi kirghisorum* (photography by Natalya Beshko)

678. *Alhagi pseudalhagi* (M. Bieb.) Desv. ex B. Keller & Shap.

Perennial. Saline wet places, sandy deserts, river valleys, banks of lakes and canals, fallow lands, fields. Plain, foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, medicinal, melliferous.

Genus 185. *Cicer* L.

679. *Cicer flexuosum* Lipsky

Perennial. Stony slopes, screes, pebbles. Montane zone. Nuratau, Malguzar, North Turkestan. Fodder.

680. *Cicer grande* (Popov) Korotkova Figure 207

Perennial. Fine-earth and stony slopes. Montane zone. Nuratau, Nuratau Reserve. UzbRDB 2. Fodder, food, threatened species.



Figure 207 *Cicer grande* (photography by N. Yu. Beshko)

681. *Cicer macracanthum* Popov

Perennial. Fine-earth and stony slopes, pebbles. Montane and alpine zones. Malguzar, North Turkestan.

682. *Cicer paucijugum* (Popov) Nevski.

Perennial. Fine-earth and stony slopes. Montane and alpine zones. North Turkestan. Fodder.

683. *Cicer pungens* Boiss.

Perennial. Fine-earth and stony slopes, pebbles. Montane and alpine zones. Nuratau, Malguzar, North Turkestan.

684. *Cicer songaricum* DC. Figure 208

Perennial. Fine-earth and stony slopes. Montane and alpine zones. Malguzar, North Turkestan. Fodder, food.



Figure 208 *Cicer songaricum* (photography by Natalya Beshko)

Genus 186. *Vicia* L.

685. *Vicia anatolica* Turrill [*Vicia hajastana* Grossh.]

Annual. Stony slopes. Foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan. Fodder.

686.Vicia ervilia* (L.) Willd.**

Annual. Fine-earth, gravelly and stony slopes, fallow lands, fields. Foothills, montane zone, Nuratau, Aktau, Malguzar, North Turkestan. Fodder, food, weed.

687. *Vicia hyrcanica* Fisch. & C. A. Mey.

Annual. Fine-earth slopes, meadows, river valleys, wastelands, gardens, fields, fallow lands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Fodder, weed.

688. *Vicia kokanica* Regel & Schmalh.

Perennial. Fine-earth and stony slopes, screes, river valleys. Montane zone. Nuratau, Malguzar, North Turkestan. Fodder.

689. *Vicia michauxii* Spreng. Figure 209

Annual. Fine-earth, gravelly and stony slopes, river valleys, meadows, fallow lands, fields, gardens. Plain, foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Fodder, weed.



Figure 209 *Vicia michauxii* (photography by Natalya Beshko)

690. *Vicia peregrina L. [*Vicia gracilior* (Popov) Popov ex B. Fedtsch.]

Annual. Fine-earth, gravelly and stony slopes, river valleys, meadows, screes, fallow lands, fields, roadsides. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar. Fodder, weed.

691. *Vicia sativa subsp. **nigra** (L). Ehrh. [*Vicia angustifolia* L.]

Annual. Fine-earth slopes, meadows, river valleys, wastelands, gardens, fields, fallow lands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Fodder, melliferous.

692. Vicia subvillosa (Ledeb.) Boiss. Figure 210

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Fodder.



Figure 210 *Vicia subvillosa* (photography by Natalya Beshko)

693. Vicia tenuifolia Roth.

Perennial. Fine-earth, gravelly slopes, river valleys, meadows, fallow lands. Foothills, montane zone. Malguzar, North Turkestan. Fodder, melliferous.

694. *Vicia villosa Roth.

Annual. Meadows, gardens, fallow lands, river valleys, fine-earth slopes. Plain, foothills, montane zone. Nuratau, Malguzar, North Turkestan. Fodder, weed, melliferous.

Genus 187. *Lens* Mill.

695. *Lens culinaris* subsp. *orientalis* (Boiss.) Ponert [*Lens orientalis* (Boiss.) Schmalh.]

Annual. Fine-earth, gravelly slopes, fallow lands. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Fodder, food, weed.

Genus 188. *Lathyrus* L.

696. *Lathyrus aphaca* L.

Annual. Fine-earth, gravelly and stony slopes, river valleys, banks of canals, pebbles, fallow lands, gardens, fields, meadows. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Fodder, medicinal, dye, melliferous.

697.Lathyrus cicera* L.**

Annual. Fine-earth and stony slopes, river valleys, meadows, pebbles, banks of streams and canals, fields. Plain, foothills, montane zone. Nuratau, Malguzar. Fodder, medicinal, melliferous.

698. *Lathyrus inconspicuus* L.

Annual. Fine-earth, gravelly slopes, ravines, fallow lands, fields, gardens, banks of rivers, dry riverbeds. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Fodder.

699. *Lathyrus pratensis* L. Figure 211

Perennial. Fine-earth and stony slopes, ravines, banks of rivers, lakes and canals, pebbles, wet meadows. Plain, foothills, montane and alpine zones. Nuratau, Malguzar, North Turkestan, Mirzachul. Fodder, medicinal, melliferous.



Figure 211 *Lathyrus pratensis* (photography by Natalya Beshko)

700. **Lathyrus sativus* L. [*Lathyrus asiaticus* (Zalkind) Kudr.]

Annual. River valleys, fields, fallow lands, wastelands, ravines. Plain, foothills, montane and alpine zones. Nuratau, Nuratau Relic Mountains. Fodder, food, weed.

701. *Lathyrus tuberosus* L.

Perennial. Fine-earth and stony slopes, river valleys, wet meadows, banks of canals, fallow lands, fields. Foothills, montane zone. North Turkestan. Fodder, food, medicinal.

Family 43. Polygalaceae**Genus 189. *Polygala* L.****702. *Polygala hybrida* DC.**

Perennial. Fine-earth and stony slopes, banks of streams, wet places, subalpine meadows, gardens. Foothills, montane and alpine zones. Malguzar, North Turkestan. Medicinal, ornamental, melliferous.

Family 44. Rosaceae**Genus 190. *Spiraea* L.****703. *Spiraea hypericifolia* L. Figure 212**

Shrub. River valleys, fine-earth, gravelly and stony slopes, screes, rocks, pebbles. Montane zone. Malguzar, North Turkestan. Medicinal, afforestation, ornamental, melliferous.



Figure 212 *Spiraea hypericifolia* (photography by Natalya Beshko)

704. *Spiraea pilosa* Franch. Figure 213

Shrub. Stony slopes, banks of rivers, rocks, ravines. Montane zone. North Turkestan. Ornamental, melliferous.



Figure 213 *Spiraea pilosa* (photography by Natalya Beshko)

Genus 191. *Cotoneaster* Medik.

705. *Cotoneaster goloskokovii* Pojark.

Shrub. Stony slopes, screes, ravines. Montane zone. North Turkestan. Industrial, afforestation, ornamental, melliferous.

706. *Cotoneaster multiflorus* Bunge Figure 214

Shrub. Rocks, stony slopes, ravines. Montane zone. Nuratau, North Turkestan. Industrial, afforestation, ornamental, melliferous.



Figure 214 *Cotoneaster multiflorus* (photography by Natalya Beshko)

707. *Cotoneaster nummularioides* Pojark. Figure 215

Shrub. Fine-earth, gravelly and stony slopes, rocks, screes, pebbles, banks of rivers, ravines. Montane zone. Nuratau, Malguzar, North Turkestan. Industrial, afforestation, ornamental, melliferous.



Figure 215 *Cotoneaster nummularioides* (photography by Natalya Beshko)

708. *Cotoneaster nummularius* Fisch. & C.A. Mey.

Shrub. Fine-earth, gravelly and stony slopes, rocks, subalpine meadows. Montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Industrial, afforestation, ornamental, melliferous.

709. *Cotoneaster oliganthus* Pojark. Figure 216

Shrub. Fine-earth, gravelly and stony slopes, rocks. Montane zone. Malguzar, North Turkestan. Industrial, afforestation, ornamental, melliferous.



Figure 216 *Cotoneaster oliganthus* (photography by Natalya Beshko)

710. *Cotoneaster songaricus* (Regel & Herder) Popov Figure 217

Shrub. Fine-earth, gravelly and stony slopes, rocks. Montane and alpine zones. Nuratau, North Turkestan. Industrial, afforestation, ornamental, melliferous.



Figure 217 *Cotoneaster songaricus* (photography by Natalya Beshko)

711. *Cotoneaster suavis* Pojark.

Shrub. Fine-earth, gravelly and stony slopes, river valleys. Montane zone. Malguzar, North Turkestan. Industrial, afforestation, ornamental, melliferous.

Genus 192. *Pyrus* L.

712. **Pyrus communis* L.

Tree River valleys (planted and naturalized). Montane zone. Nuratau. Food, ornamental, industrial, dye, melliferous.

713. *Pyrus korshinskyi* Litv.

Tree. Fine-earth and stony slopes, river valleys. Montane zone. Malguzar. Ornamental, melliferous. IUCN CR.

714. *Pyrus regelii* Rehd. Figure 218

Shrub. Fine-earth, gravelly and stony slopes, river valleys. Montane zone. Nuratau, Malguzar, North Turkestan. Ornamental, melliferous.



Figure 218 *Pyrus regelii* (photography by Natalya Beshko)

715. *Pyrus turcomanica* Maleev.

Tree. Fine-earth, gravelly and stony slopes, river valleys. Foothills, montane zone. Nuratau. Food, ornamental, industrial, dye, melliferous.

Genus 193. *Malus* Mill.

716. *Malus sieversii* (Ledeb.) M. Roem Figure 219

Tree. Fine-earth, gravelly and stony slopes, ravines, river valleys. Foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Food, fodder, industrial, dye, ornamental, melliferous. IUCN VU.

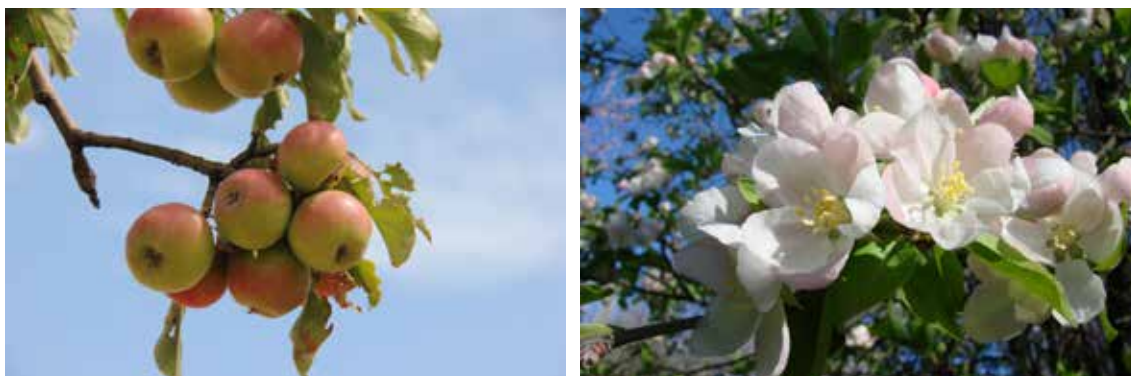


Figure 219 *Malus sieversii* (photography by Natalya Beshko)

Genus 194. *Sorbus* L.

717. *Sorbus persica* Hedl. Figure 220

Tree. Fine-earth, gravelly and stony slopes. Montane zone. Nuratau, Malguzar, North Turkestan. Afforestation, industrial, ornamental, melliferous.



Figure 220 *Sorbus persica* (photography by Natalya Beshko)

718. *Sorbus tianschanica* Rupr. Figure 221

Tree. Fine-earth, gravelly and stony slopes. Montane zone. Malguzar, North Turkestan. Medicinal, food, afforestation, industrial, ornamental, melliferous.



Figure 221 *Sorbus tianschanica* (photography by Natalya Beshko)

Genus 195. *Crataegus* L.

719. *Crataegus pontica* C. Koch Figure 222

Tree. Fine-earth slopes, stream banks. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. Food, afforestation, industrial, ornamental, melliferous.



Figure 222 *Crataegus pontica* (photography by Natalya Beshko)

720. *Crataegus songarica* C. Koch Figure 223

Tree. Fine-earth, gravelly and stony slopes, screes, banks of rivers. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. Food, medicinal, afforestation, industrial, ornamental, melliferous.



Figure 223 *Crataegus songarica* (photography by Natalya Beshko)

721. *Crataegus turkestanica* Pojark. Figure 224

Tree. Fine-earth, gravelly and stony slopes, rocks, screes, river valleys. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. Food, medicinal, afforestation, industrial, ornamental, melliferous.



Figure 224 *Crataegus turkestanica* (photography by Natalya Beshko)

Genus 196. *Rubus* L.

722. *Rubus caesius* L. Figure 225

Shrub. Woodlands, wet stony slopes, screes, pebbles, fallow lands, river valleys, banks of canals, gardens. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Malguzar, North Turkestan. Medicinal, food, dye, ornamental, fodder, meliferous.



Figure 225 *Rubus caesius* (photography by Natalya Beshko)

Genus 197. *Potentilla* L.

723. *Potentilla asiatica* (Th. Wolf) Juz.

Perennial. Fine-earth, gravelly and stony slopes, river valleys. Montane and alpine zones. Malguzar, North Turkestan. Medicinal, melliferous.

724. *Potentilla asiae-mediae* Ovcz. & Kocz.

Perennial. Fine-earth, gravelly and stony slopes. Montane and alpine zones. Malguzar, North Turkestan. Melliferous.

725. *Potentilla desertorum* Bunge

Perennial. Fine-earth, gravelly and stony slopes, rocks. Montane and alpine zones. Nuratau, Malguzar. melliferous.

726. *Potentilla flabellata* Regel & Schmalh.

Perennial. Wet fine-earth and stony slopes. Alpine zone. North Turkestan. Melliferous.

727. *Potentilla gelida* C. A. Mey. Figure 226

Perennial. Fine-earth and stony slopes, rocks, moraines, alpine meadows. Montane and alpine zones. North Turkestan. Medicinal, fodder, melliferous.



Figure 226 *Potentilla gelida* (photography by Natalya Beshko)

728. *Potentilla hololeuca* Boiss. ex Lehm.

Perennial. Fine-earth, gravelly and stony slopes, river valleys, alpine meadows. Alpine zone. North Turkestan. melliferous.

729. *Potentilla inclinata* Vill. [*Potentilla impolita* Wahlenb.]

Perennial. Fine-earth and stony slopes, fallow lands. Montane and alpine zones. North Turkestan. melliferous.

730. *Potentilla orientalis* Juz. Figure 227

Perennial. Fine-earth, gravelly and stony slopes, river valleys. Foothills, montane and alpine zones. Nuratau, Malguzar, North Turkestan. Fodder, melliferous.



Figure 227 *Potentilla orientalis* (photography by Natalya Beshko)

731. *Potentilla pamiroalaica* Juz.

Perennial. Fine-earth and stony slopes, rocks, pebbles, alpine meadows. Alpine zone. Malguzar, North Turkestan. Melliferous.

732. *Potentilla pedata* Willd. ex Hornem

Perennial. Fine-earth and stony slopes. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Medicinal, melliferous.

733. *Potentilla reptans* L. Figure 228

Perennial. Meadows, banks of rivers, lakes and canals, wet places. Plain, foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Medicinal, melliferous.



Figure 228 *Potentilla reptans* (photography by Natalya Beshko)

734. *Potentilla soongorica* Bunge

Perennial. Fine-earth, gravelly slopes. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. Melliferous.

735. *Potentilla supina* L.

Perennial. River valleys, swamps, wet places, banks of canals, roadsides, wastelands, fields, fine-earth and stony slopes. Plain, foothills, montane zone. Nuratau, Malguzar, North Turkestan. Medicinal, fodder, melliferous.

736. *Potentilla vvedenskyi* Botsch.

Perennial. Rocks, alpine meadows, moraines, stony slopes. Alpine zone. North Turkestan. Melliferous.

Genus 198. *Pentaphylloides* Duham.

737. *Pentaphylloides parvifolia* (Fisch. ex Lehm.) Soják

Shrub. Fine-earth and stony slopes, rocks, pebbles, river valleys, alpine meadows. Montane and alpine zones. North Turkestan. Medicinal, fodder, ornamental, meliferous.

Genus 199. *Sibbaldia* L.

738. *Sibbaldia tetrandra* Bunge

Shrub. Moraines, fine-earth and stony slopes, screes, rocks, alpine meadows, places near melting snow. Alpine zone. North Turkestan.

Genus 200. Geum L.

739. *Geum heterocarpum* Boiss. [*Orthurus heterocarpus* (Boiss.) Juz.] Figure 229
Perennial. Fine-earth, gravelly and stony slopes, stream banks, shady wet places. Montane zone. Nuratau, Malguzar, North Turkestan. Medicinal, meliferous.



Figure 229 *Geum heterocarpum* (photography by Natalya Beshko)

Genus 201. Orthurus Juz.

740. *Orthurus kokanicus* (Regel & Schmalh. ex Regel) Juz.
Perennial. Fine-earth and stony slopes, rocks. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Medicinal, meliferous.

Genus 202. Alchemilla L.

- 741. *Alchemilla fontinalis* Juz.**
Perennial. Stream banks, alpine meadows. Alpine zone. North Turkestan.
- 742. *Alchemilla krylovii* Juz.**
Perennial. Alpine meadows, stream banks, swamps. Alpine zone. North Turkestan.
- 743. *Alchemilla sibirica* Zamelis**
Perennial. Wet places, stream banks. Montane and alpine zones. North Turkestan.

Genus 203. Agrimonia L.

744. *Agrimonia asiatica* Juz.

Perennial. Fine-earth and stony slopes, river valleys, meadows, gardens, banks of canals, roadsides. Foothills, montane zone. Nuratau, Malguzar, North Turkestan.

Genus 204. Sanguisorba L.

745. **Sanguisorba minor* Scop. [*Poterium lasiocarpum* Boiss. & Hausskn.]

Perennial. Fine-earth and stony slopes, river valleys, fallow lands, fields, meadows, gardens, roadsides. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Fodder, meliferous.

746. **Sanguisorba minor* subsp. *balearica* (Bourg. & Nyman) Muoz Garm. & C. Navarro [*Poterium polygamum* Waldst. & Kitag.]

Perennial. Fine-earth and stony slopes, river valleys, fallow lands, fields, meadows, gardens, roadsides. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Fodder, meliferous.

Genus 205. Rosa L.

747. *Rosa beggeriana* Schrenk & Fisch. ex C. A. Mey. Figure 230

Shrub. Fine-earth slopes, river valleys, banks of canals, roadsides. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Medicinal, ornamental.



Figure 230 *Rosa beggeriana* (photography by Natalya Beshko)

748. *Rosa canina* L. Figure 231

Shrub. River valleys, fine-earth, gravelly and stony slopes. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Medicinal, food, tanniferous, ornamental, afforestation, meliferous.



Figure 231 *Rosa canina* (photography by Natalya Beshko)

749. *Rosa corymbifera* Borkh

Shrub. River valleys, fine-earth and stony slopes. Montane zone. Nuratau. Medicinal, food, ornamental, afforestation, meliferous.

750. *Rosa ecae* Aitch. Figure 232

Shrub. Fine-earth, gravelly and stony slopes. Montane and alpine zones. Malguzar, North Turkestan. Medicinal, food, ornamental, meliferous, weed.



Figure 232 *Rosa ecae* (photography by Natalya Beshko)

751. *Rosa fedtschenkoana* Regel Figure 233

Shrub. Fine-earth, gravelly and stony slopes, ravines, river valleys. Montane and alpine zones. Malguzar, North Turkestan. Medicinal, food, ornamental, afforestation, meliferous.



Figure 233 *Rosa fedtschenkoana* (photography by Natalya Beshko)

752. *Rosa hissarica* Slobodova

Shrub. Stony slopes, screes, rocks. Montane and alpine zones. North Turkestan. Medicinal, ornamental, meliferous.

753. *Rosa lehmanniana* Bunge

Shrub. Ravines, river valleys, wet fine-earth slopes. Montane zone. Nuratau. Medicinal, ornamental, meliferous.

754. *Rosa kokanica* (Regel) Regel ex Juz. Figure 234

Shrub. Fine-earth, gravelly and stony slopes, ravines, river valleys. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Medicinal, ornamental, afforestation, meliferous.



Figure 234 *Rosa kokanica* (photography by Natalya Beshko)

755. *Rosa maracandica* Bunge Figure 235

Shrub. Fine-earth, gravelly and stony slopes, rocks, pebbles, river valleys. Foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Medicinal, ornamental, meliferous.



Figure 235 *Rosa maracandica* (photography by Natalya Beshko)

756. *Rosa nanothamnus* Boulenger

Shrub. Fine-earth, gravelly and stony slopes. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Medicinal, ornamental, meliferous.

757. *Rosa transturkestanica* N. F. Russanov.

Shrub. Fine-earth, gravelly and stony slopes. Montane zone. North Turkestan. Ornamental, meliferous.

Genus 206. *Hulthemia* Dumort.

758. *Hulthemia persica* (Michx. & Juss.) Bornm.

Shrub. Wastelands, pebbles, sandy soils, piedmont plains, gravelly and stony slopes, fallow lands, fields. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Ornamental, weed, meliferous.

Genus 207. *Prunus* L.

759. *Prunus armeniaca* L. [*Armeniaca vulgaris* Lam.]

Tree. Fine-earth slopes, river valleys. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. Food, oil, medicinal, tanniferous, dye, afforestation, industrial, ornamental, meliferous. IUCN EN.

760. *Prunus bucharica* (Korsh.) B. Fedtsch. ex Rehder [*Amygdalus bucharica* Korsh.] Figure 236

Tree or shrub. Fine-earth and stony slopes, rocks, screes, river valleys. Foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Medicinal, food, oil, ornamental, dye, afforestation, industrial, meliferous. IUCN VU.



Figure 236 *Prunus bucharica* (photography by Natalya Beshko)

761. *Prunus cerasus L. [*Cerasus vulgaris* Mill.]

Tree. River valleys (naturalized). Nuratau. Food, medicinal, ornamental, meliferous.

762. Prunus divaricata Ledeb. Figure 237

Tree. Fine-earth, gravelly and stony slopes, screes, river valleys, ravines. Montane zone. Nuratau, Malguzar, North Turkestan. Medicinal, food, oil, ornamental, afforestation, meliferous.



Figure 237 *Prunus divaricata* (photography by Natalya Beshko)

763. *Prunus domestica L.

Tree. Fine-earth slopes, river valleys (naturalized). Montane zone. Nuratau. Medicinal, food, oil, ornamental, afforestation, meliferous.

764.Prunus dulcis*** (Mill.) D.A. Webb [*Amygdalus communis* L.]

Tree. Fine-earth and stony slopes, screes, banks of rivers. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. Medicinal, food, oil, ornamental, afforestation, industrial, meliferous.

765. *Prunus erythrocarpa* (Nevski) Gilli [*Cerasus erythrocarpa* Nevski] Figure 238

Shrub. Fine-earth and stony slopes, rocks, screes, ravines, banks of rivers. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. Ornamental, industrial, afforestation, meliferous.



Figure 238 *Prunus erythrocarpa* (photography by Natalya Beshko)

766. Prunus mahaleb L. [*Cerasus mahaleb* (L.) Mill.] Figure 239

Tree. Fine-earth and stony slopes, rocks, screes, ravines, banks of rivers. Montane zone. Nuratau, Malguzar, North Turkestan. Food, ornamental, afforestation, meliferous.



Figure 239 *Prunus mahaleb* (photography by Natalya Beshko)

767. *Prunus spinosissima* (Bunge) Franch. [*Amygdalus spinosissima* Bunge] Figure 240
Shrub. Fine-earth, gravelly and stony slopes, rocks. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Oil, dye, ornamental, afforestation, meliferous.



Figure 240 *Prunus spinosissima* (photography by Natalya Beshko)

768. *Prunus verrucosa* Franch. [*Cerasus amygdaliflora* Nevski, *Cerasus verrucosa* (Franch.) Nevski] Figure 241

Shrub. Stony slopes, rocks, screes. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Ornamental, afforestation, meliferous.



Figure 241 *Prunus verrucosa* (photography by Natalya Beshko)

Family 45. Elaeagnaceae

Genus 208. *Hippophae* L.

769. *Hippophae rhamnoides* L. Figure 242

Shrub. River valleys, ravines. Montane zone. North Turkestan. Medicinal, dye, food, ornamental, meliferous, afforestation.



Figure 242 *Hippophae rhamnoides* (photography by Natalya Beshko)

Genus 209. *Elaeagnus* L.

770. *Elaeagnus angustifolia* L. Figure 243

Tree. Banks of lakes and canals, river valleys. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Food, medicinal, afforestation, industrial, tanniferous, dye, ornamental, meliferous.



Figure 243 *Elaeagnus angustifolia* (photography by Natalya Beshko)

Family 46. Rhamnaceae

Genus 210. *Sageretia* Brongn.

771. *Sageretia thea* (Osbeck) M. S. Johnst. [*Sageratia laetevirens* (Kom). Gontsch.]
Shrub. Fine-earth and stony slopes, rocks. Montane zone. Nuratau, Malguzar, North Turkestan. Ornamental, afforestation.

Genus 211. *Rhamnus* L.

772. *Rhamnus cathartica* L.
Tree or shrub. Stony and gravelly slopes, river valleys, ravines. Montane zone. Nuratau, Malguzar, North Turkestan. Medicinal, ornamental, afforestation, industrial, dye, oil, meliferous.

773. *Rhamnus coriacea* (Regel) Kom. Figure 244
Shrub. Fine-earth, gravelly and stony slopes, screes, cliffs, ravines. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. Ornamental, afforestation.



Figure 244 *Rhamnus coriacea* (photography by Natalya Beshko)

Family 47. Ulmaceae

Genus 212. *Ulmus* L.

774. **Ulmus glabra* Huds.

Tree. Fine-earth and stony slopes, river valleys (naturalized), settlements, forest belts, cemeteries (planted). Foothills, montane zone. Nuratau, Malguzar, North Turkestan. Industrial, ornamental, afforestation.

775. **Ulmus laevis* Pall.

Tree. Fine-earth and stony slopes, river valleys (naturalized), settlements, forest belts, cemeteries (planted). Plain, foothills, montane zone. Nuratau, North Turkestan. Industrial, ornamental, afforestation.

776. **Ulmus minor* Mill

Tree. Fine-earth and stony slopes, river valleys (naturalized), settlements, forest belts, cemeteries (planted). Plain, foothills, montane zone. Nuratau, Malguzar. Industrial, ornamental, afforestation.

777. *Ulmus pumila* L.

Tree or shrub. Fine-earth and stony slopes, river valleys, ravines, rocks. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Mirzachul, Kyzylkum. Industrial, ornamental, afforestation.

Genus 213. *Celtis* L.

778. *Celtis australis* subsp. ***caucasica*** (Willd.) C. C. Towns. [*Celtis caucasica* Willd.]

Tree. Fine-earth and stony slopes, screes, rocks, river valleys. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. Industrial, ornamental, afforestation, medicinal, tanniferous.

Family 48. Cannabaceae

Genus 214. *Cannabis* L.

779. **Cannabis sativa* L.

Annual. Roadsides, fallow lands, wastelands, banks of canals. Plain, Mirzachul (naturalized). Narcotic, industrial, oil, weed.

Family 49. *Moraceae

Genus 215. *Morus L.

780. *Morus alba L.

Tree. Fine-earth and stony slopes, river valleys (naturalized), settlements, gardens, forest belts, burials (planted). Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan. Food, fodder, medicinal, ornamental, industrial, dye, tanniferous.

781. *Morus nigra L.

Tree. Fine-earth and stony slopes, river valleys (naturalized), settlements, gardens (planted). Plain, foothills, montane zone. Nuratau, Malguzar, North Turkestan. Food, medicinal, ornamental, industrial, dye, tanniferous.

Family 50. Urticaceae

Genus 216. Urtica L.

782. Urtica dioica L.

Perennial. River valleys, roadsides, wastelands, gardens, riparian forests, banks of canals. Plain, foothills, montane and alpine zones. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Medicinal, food, dye.

Genus 217. Parietaria L.

783. Parietaria debilis G. Forst [*Parietaria micrantha* Ledeb.]

Annual. Rocks, ravines, shady wet places. Montane and alpine zones, Nuratau, Malguzar. Alkaloid-bearing.

784. Parietaria lusitanica subsp. serbica (Pančić) P. W. Ball [*Parietaria serbica* Pančić]

Annual. Ravines, screes, rocks. Montane zone. Malguzar, North Turkestan. Alkaloid-bearing.

Family 51. Juglandaceae

Genus 218. Juglans L.

785. Juglans regia L.

Tree. River valleys, wet slopes. Montane zone. Nuratau, Malguzar, North Turkestan. Food, industrial,

oil, afforestation, ornamental, medicinal, dye. IUCN NT.

Family 52. Betulaceae

Genus 219. *Betula* L.

786. *Betula pendula* Roth. Figure 245

Tree. River valleys, wet slopes. Montane zone. North Turkestan. Industrial, ornamental, afforestation.



Figure 245 *Betula pendula* (photography by Natalya Beshko)

Family 53. Cucurbitaceae

Genus 220. *Bryonia* L.

787. **Bryonia cretica* subsp. *dioica* (Jacq.) Tutin [*Bryonia dioica* Jacq.] Figure 246

Perennial. Stony slopes, ravines, shady places. Foothills, montane zone. Nuratau. Medicinal,

essential oil, ornamental, poisonous.



Figure 246 *Bryonia cretica* subsp. *dioica* (photography by Natalya Beshko)

788. *Bryonia melanocarpa* Nabiev Figure 247

Perennial. Sandy deserts. Plain. Kyzylkum. Medicinal, poisonous. Threatened species, UzbRDB 2. Endemic to the South-eastern Kyzylkum.



Figure 247 *Bryonia melanocarpa* (photography by N. Yu. Beshko)

Family 54. Datisceae

Genus 221. *Datisca* L.

789. *Datisca cannabina* L. Figure 248

Perennial. Banks of rivers, swamp meadows, pebbles, wet slopes. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. Medicinal, dye, ornamental.



Figure 248 *Datisca cannabina* (photography by Natalya Beshko)

Family 55. Celastraceae

Genus 222. *Parnassia* L.

790. *Parnassia laxmannii* Pall. ex Schult.

Perennial. Meadows, stony slopes, rocks, ravines, banks of rivers, swamps. Montane and alpine zones. North Turkestan.

Family 56. Hypericaceae

Genus 223. *Hypericum* L.

791. *Hypericum elongatum* Ledeb. ex Rchb. Figure 249

Perennial. Fine-earth, gravelly and stony slopes, rocks, screes. Montane and alpine zones. Malguzar,

North Turkestan. Medicinal.



Figure 249 *Hypericum elongatum* (photography by Natalya Beshko)

792. *Hypericum perforatum* L. Figure 250

Perennial. Fine-earth, gravelly and stony slopes, river valleys, dry riverbeds. Foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Medicinal, dye, essential oil, meliferous.



Figure 250 *Hypericum perforatum* (photography by Natalya Beshko)

793. *Hypericum scabrum* L. Figure 251

Perennial. Fine-earth, gravelly and stony slopes, screes, rocks, dry riverbeds. Foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Medicinal, dye,

essential oil, meliferous.



Figure 251 *Hypericum scabrum* (photography by Natalya Beshko)

Family 57. Violaceae

Genus 224. *Viola* L.

794. *Viola alaica* Vved.

Perennial. Screes, wet stony slopes, rocks, shady places. Montane zone. Malguzar, North Turkestan.

795. *Viola occulta* Lehm. Figure 252

Annual. Fine-earth, gravelly and stony slopes, meadows, fallow lands. Foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan.



Figure 252 *Viola occulta* (photography by Natalya Beshko)

796. *Viola suavis* M. Bieb. Figure 253

Perennial. Fine-earth, gravelly and stony slopes, stream banks, shady places, gardens. Foothills, montane zone. Nuratau, North Turkestan. Medicinal, ornamental, meliferous.



Figure 253 *Viola suavis* (photography by Natalya Beshko)

797. *Viola turkestanica* Regel & Schmalh.

Perennial. Fine-earth and stony slopes, rocks, screes, shady wet places, meadows. Montane and alpine zones. Malguzar, North Turkestan.

Family 58. Salicaceae

Genus 225. *Populus* L.

798. *Populus afghanica* (Aitch. & Hemsl.) C. K. Schneid. Figure 254

Tree. River valleys. Foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Industrial, ornamental, afforestation, tanniferous.



Figure 254 *Populus afghanica* (photography by Natalya Beshko)

799. *Populus alba* L. Figure 255

Tree. River valleys, banks of canals. Plain, foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan, Mirzachul. Industrial, ornamental, afforestation, tanniferous, meliferous.



Figure 255 *Populus alba* (photography by Natalya Beshko)

800. *Populus euphratica* Oliv. Figure 256

Tree. River valleys, banks of lakes and canals, riparian forests. Plain, foothills. Kyzylkum, Mirzachul. Industrial, ornamental, afforestation, tanniferous, meliferous.



Figure 256 *Populus euphratica* (photography by Natalya Beshko)

801. **Populus nigra* L.

Tree. River valleys. Plain, foothills, montane zone (naturalized). Nuratau. Industrial, ornamental, afforestation, tanniferous, medicinal, meliferous.

802. *Populus pruinosa* Schrenk Figure 257

Tree. River valleys, banks of lakes and canals, riparian forests. Plain. Kyzylkum, Mirzachul. Industrial, ornamental, afforestation, tanniferous, dye.



Figure 257 *Populus pruinosa* (photography by Natalya Beshko)

803. *Populus talassica* Kom.

Tree. River valleys, fine-earth and stony slopes. Montane and alpine zones. Malguzar, North

Turkestan. Industrial, ornamental, afforestation.

Genus 226. *Salix* L.

804. *Salix alba* L.

Tree. Banks of rivers. Plain, foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Industrial, ornamental, afforestation, tanniferous, medicinal, meliferous.

805. *Salix blakii* Goerz.

Tree or shrub. Banks of rivers. Foothills, montane zone. Nuratau, Malguzar, North Turkestan, Kyzylkum.

806. *Salix olgae* Regel

Shrub. Banks of rivers, pebbles. Plain, foothills, montane zone. Malguzar, North Turkestan.

807. *Salix pycnostachya* Andersson.

Tree or Shrub. Banks of rivers. Montane and alpine zones. Nuratau, Malguzar, North Turkestan.

808. *Salix rosmarinifolia* L.

Shrub. Wet places, river valleys. Montane zone. Nuratau.

809. *Salix songarica* Andersson

Tree or shrub. River valleys. Plain. Mirzachul. Industrial, ornamental, afforestation, tanniferous, dye, meliferous.

810. *Salix wilhelmsiana* M. Bieb.

Shrub. River valleys. Plain, foothills, montane and alpine zones. North Turkestan, Mirzachul. Industrial, ornamental, afforestation, tanniferous, meliferous.

Family 59. Euphorbiaceae

Genus 227. *Andrachne* L.

811. *Andrachne fedtschenkoi* Kossinsky

Semishrub. Stony slopes, rocks. Montane zone, Nuratau, Aktau, Malguzar.

812. *Andrachne telephioides* L.

Semishrub. Stony slopes, fields. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Medicinal, alkaloid-bearing, dye, fodder.

Genus 228. *Chrozophora* Neck.

813. *Chrozophora tinctoria* (L.) A. Juss. [*Chrozophora hierosolymitana* Spreng.; *Chrozophora obliqua* (Vahl.) A. Juss. ex. Spreng.]

Annual. Sandy deserts, wastelands, fine-earth, gravelly and stony slopes, fields, fallow lands,

wastelands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Dye, poisonous.

814. *Chrozophora sabulosa* Kar. & Kir. [*Chrozophora gracilis* Fisch. & C. A. Mey. ex Ledeb.] Annual. Sandy deserts, banks of rivers, lakes and canals. Plain. Mirzachul, Kyzylkum. Dye, fodder.

Genus 229. *Euphorbia* L.

815. *Euphorbia chamaesyce* L. [*Chamaesyce canescens* (L.) Prokh.] Figure 258 Annual. Pebbles, river valleys, dry riverbeds, fine-earth and stony slopes, fields, wastelands. Foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Weed.



Figure 258 *Euphorbia chamaesyce* (photography by Natalya Beshko)

816. *Euphorbia cheirolepis* Fisch. & C. A. Mey. ex Karelin [*Cystidospermum cheirolepis* (Fisch. & C. A. Mey. ex Ledeb.) Prokh.]

Annual. Sandy deserts. Plain. Mirzachul, Kyzylkum. Fodder.

817. *Euphorbia densa* Schrenk

Annual. Sandy deserts, stony slopes. Plain, foothills. Nuratau, Nuratau Relic Mountains, Mirzachul, Kyzylkum.

818. *Euphorbia esula* L. [*Euphorbia jaxartica* Prokh.; *Euphorbia glomerulans* (Prokh.) Prokh.] Figure 259

Perennial. River valleys, banks of canals, wet stony slopes, screes, pebbles, fallow lands. Plain, foothills, montane and alpine zones. Nuratau, Malguzar, North Turkestan. Dye, poisonous.



Figure 259 *Euphorbia esula* (photography by Natalya Beshko)

819. *Euphorbia falcata* L. Figure 260

Annual. Stony, fine-earth slopes, pebbles, fields. Foothills, montane and alpine zones. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Medicinal, weed.



Figure 260 *Euphorbia falcata* (photography by Natalya Beshko)

820. *Euphorbia franchetii* B. Fedtsch.

Annual. Stony slopes, clay deserts, fields, fallow lands. Foothills, montane and alpine zones. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul.

821. *Euphorbia granulata* Forssk. [*Chamaesyce turcomanica* (Boiss.) Prokh.]

Annual. Gravelly slopes, pebbles, sandy and clay deserts, saline lands. Plains, foothills, montane zone. Nuratau, Malguzar, North Turkestan, Mirzachul.

822. **Euphorbia helioscopia* L. Figure 261

Annual. Stony slopes, roadsides, banks of canals, gardens, fallow lands, wastelands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Poisonous, dye, weed.



Figure 261 *Euphorbia helioscopia* (photography by Natalya Beshko)

823. *Euphorbia humilis* C. A. Mey. ex Ledeb.

Perennial. Stony slopes, rocks, screes. Montane and alpine zones. Malguzar, North Turkestan.

824. *Euphorbia inderiensis* Less. ex Kar. & Kir. Figure 262

Annual. Fine-earth and stony slopes, sandy soils, saline lands. Plain, foothills, montane zone. Nuratau, Malguzar, Mirzachul, Kyzylkum.



Figure 262 *Euphorbia inderiensis* (photography by Natalya Beshko)

825. *Euphorbia kanaorica* Boiss. [*Euphorbia polytimetica* (Prokh.) Prokh.]

Perennial. Rocks, screes, fine-earth and stony slopes. Alpine zone. North Turkestan.

826. *Euphorbia rapulum* Kar. & Kir. Figure 263

Perennial. Fine-earth, gravelly and stony slopes. Plain, foothills, montane zone. Nuratau, Malguzar. Medicinal, poisonous, rubber-bearing.



Figure 263 *Euphorbia rapulum* (photography by Natalya Beshko)

827. *Euphorbia rosularis* Fed.

Perennial. Stony slopes, screes. Montane and alpine zones, Malguzar, North Turkestan.

828. *Euphorbia sarawschanica* Regel Figure 264

Perennial. Stony slopes, rocks. Montane and alpine zones. Malguzar, North Turkestan. Medicinal, poisonous.



Figure 264 *Euphorbia sarawschanica* (photography by Natalya Beshko)

829. *Euphorbia sororia* Schrenk

Annual. Clayey hills. Foothills. Malguzar.

830. *Euphorbia szowitsii* Fisch. & C. A. Mey.

Annual. Fine-earth, gravelly slopes, screes, pebbles. Montane zone. Nuratau, Malguzar, North Turkestan.

831. *Euphorbia turczaninowii* Kar. & Kir. Figure 265

Annual. Sandy deserts. Plain. Kyzylkum.



Figure 265 *Euphorbia turczaninowii* (photography by Natalya Beshko)

Family 60. Linaceae

Genus 230. *Linum* L.

832. *Linum corymbulosum* Rchb.

Annual. gardens, fallow lands, river valleys, meadows, fine-earth, gravelly and stony slopes. Plain, foothills, montane zone. Nuratau, Malguzar, North Turkestan.

833. *Linum macrorhizum* Juz.

Perennial. Fine-earth and stony slopes, screes, fallow lands. Foothills, montane zone. Nuratau, Malguzar, North Turkestan.

834. *Linum olgae* Juz.

Perennial. Fine-earth and stony slopes, rocks. Montane and alpine zones. North Turkestan. Ornamental, oil.

835. **Linum usitatissimum* L. [*Linum humile* Mill.]

Annual. Roadsides, gardens, fallow lands, fields. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. Food, medicinal, industrial, oil.

Family 61. Geraniaceae

Genus 231. *Geranium* L.

836. *Geranium collinum* Stephan ex Willd. [*Geranium regelii* Nevski] Figure 266

Perennial. Meadows, river valleys, stream banks, wet places near springs, fine-earth and stony slopes, rocks. Foothills, montane and alpine zones. Nuratau, Malguzar, North Turkestan. Medicinal, dye, tanniferous, fodder, ornamental.



Figure 266 *Geranium collinum* (photography by Natalya Beshko)

837. *Geranium divaricatum* Ehrh. Figure 267

Annual. Shady wet places, fine-earth and stony slopes, screes, wastelands, gardens. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Tanniferous, ornamental, weed.



Figure 267 *Geranium divaricatum* (photography by Natalya Beshko)

838. *Geranium kotschyi* subsp. *charlesii* (Aitch. & Hemsl.) P. H. Davis [*Geranium charlesii* (Aitch. & Hemsl.) Vved. ex Nevski] Figure 268

Perennial. Fine-earth and stony slopes. Montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan.



Figure 268 *Geranium kotschyi* subsp. *charlesii* (photography by Natalya Beshko)

839. *Geranium linearilobum* DC. [*Geranium transversale* (Kar. & Kir.) Vved. ex Pavlov]

Perennial. Fine-earth, gravelly and stony slopes, piedmont plains. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Ornamental.

840. **Geranium pusillum* L.

Annual. Fields, fallow lands, roadsides, gardens, wastelands, fine-earth and stony slopes. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan.

841. *Geranium robertianum* L.

Annual. Ravines, banks of rivers, shady wet places. Montane zone. Nuratau. Medicinal, ornamental.

842. *Geranium rotundifolium* L. Figure 269

Annual. Pebbles, fine-earth, gravelly slopes, shady places, gardens. Foothills, montane zone.

Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Medicinal, tanniferous.



Figure 269 *Geranium rotundifolium* (photography by Natalya Beshko)

843. *Geranium saxatile* Kar. & Kir. Figure 270

Perennial. Wet places, stony slopes, rocks. Montane and alpine zones. Malguzar, North Turkestan. Ornamental.



Figure 270 *Geranium saxatile* (photography by Natalya Beshko)

Genus 232. *Erodium* L'Her.

844. *Erodium ciconium* (Jusl.) L'Her.

Annual. Sandy and clay deserts, piedmont plains, clayey hills. Plain, foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, weed.

845. *Erodium cicutarium* (L.) L'Her. Figure 271

Annual. Fine-earth, gravelly and stony slopes, river valleys, gardens, banks of canals, fallow lands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Medicinal, fodder, weed, meliferous.



Figure 271 *Erodium cicutarium* (photography by Natalya Beshko)

846. *Erodium hoefftianum* C. A. Mey.

Annual. Clayey and skeleton soils. Plain, foothills. Nuratau, Malguzar.

847. *Erodium oxyrhynchum* M. Bieb.

Annual or biennial. Stony slopes, sandy soils, pebbles. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, Mirzachul, Kyzylkum.

Family 62. Lythraceae

Genus 233. *Lythrum* L.

848. *Lythrum hyssopifolia* L.

Annual. Saline lands, banks of rivers, lakes and canals. Plain, foothills, montane zone. Nuratau. Medicinal, ornamental, meliferous.

849. *Lythrum nanum* Kar. & Kir.

Annual. Saline lands. Plain. Mirzachul.

Family 63. Onagraceae

Genus 234. *Epilobium* L.

850. *Epilobium angustifolium* L. [*Chamaenerion angustifolium* (L.) Scop.] Figure 272

Perennial. Wet fine-earth and stony slopes, river valleys, places near melting snow and springs. Montane and alpine zones. Malguzar, North Turkestan. Medicinal, ornamental, meliferous.



Figure 272 *Epilobium angustifolium* (photography by Natalya Beshko)

851. *Epilobium hirsutum* L. (*Epilobium velutinum* Nevski) Figure 273

Perennial. Banks of rivers and canals, wet places, swamps, meadows. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Medicinal, ornamental, fodder, meliferous.



Figure 273 *Epilobium hirsutum* (photography by Natalya Beshko)

852. *Epilobium komarovii* Ovcz.

Perennial. Banks of rivers, swamps, wet places near springs. Montane and alpine zones. Nuratau, Malguzar, North Turkestan.

853. *Epilobium minutiflorum* Hausskn. Figure 274

Perennial. Banks of rivers and canals, pebbles, wet places near springs, swamps, alpine meadows. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul.



Figure 274 *Epilobium minutiflorum* (photography by Natalya Beshko)

854. *Epilobium palustre* L.

Perennial. Meadows, banks of rivers, swamps. Plain, foothills, montane and alpine zones. North Turkestan. Medicinal, fodder, meliferous.

855. *Epilobium roseum* subsp. *subsessile* (Boiss.) P. H. Raven [*Epilobium nervosum* Boiss.]

Perennial. Wet slopes, banks of rivers. Montane and alpine zones. Malguzar, North Turkestan.

856. *Epilobium tetragonum* L.

Perennial. Wet meadows, banks of rivers and canals, wet screes, swamps, saline lands, gardens, fields, fallow lands. Plain, foothills, montane zone. Nuratau, North Turkestan. Medicinal, fodder, meliferous.

857. *Epilobium tianschanicum* Pavlov

Perennial. Banks of rivers, wet places near springs, swamps, wet rocks and screes, alpine meadows. Montane and alpine zones. Nuratau, Malguzar, North Turkestan.

858. *Epilobium turkestanicum* Pazij & Vved.

Perennial. Wet stony slopes and rocks, wet places near melting snow, swamps, alpine meadows, pebbles, banks of rivers. Montane and alpine zones. Nuratau, Malguzar, North Turkestan.

Family 64. Biebersteiniaceae

Genus 235. *Biebersteinia* Steph.

859. *Biebersteinia multifida* DC. Figure 275

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Medicinal.



Figure 275 *Biebersteinia multifida* (photography by Natalya Beshko)

Family 65. Nitrariaceae

Genus 236. *Peganum* L.

860. *Peganum harmala* L. Figure 276

Perennial. Saline lands, sandy and clay deserts, roadsides, surroundings of settlements, wells and sheepyards, wastelands. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, weed, poisonous.

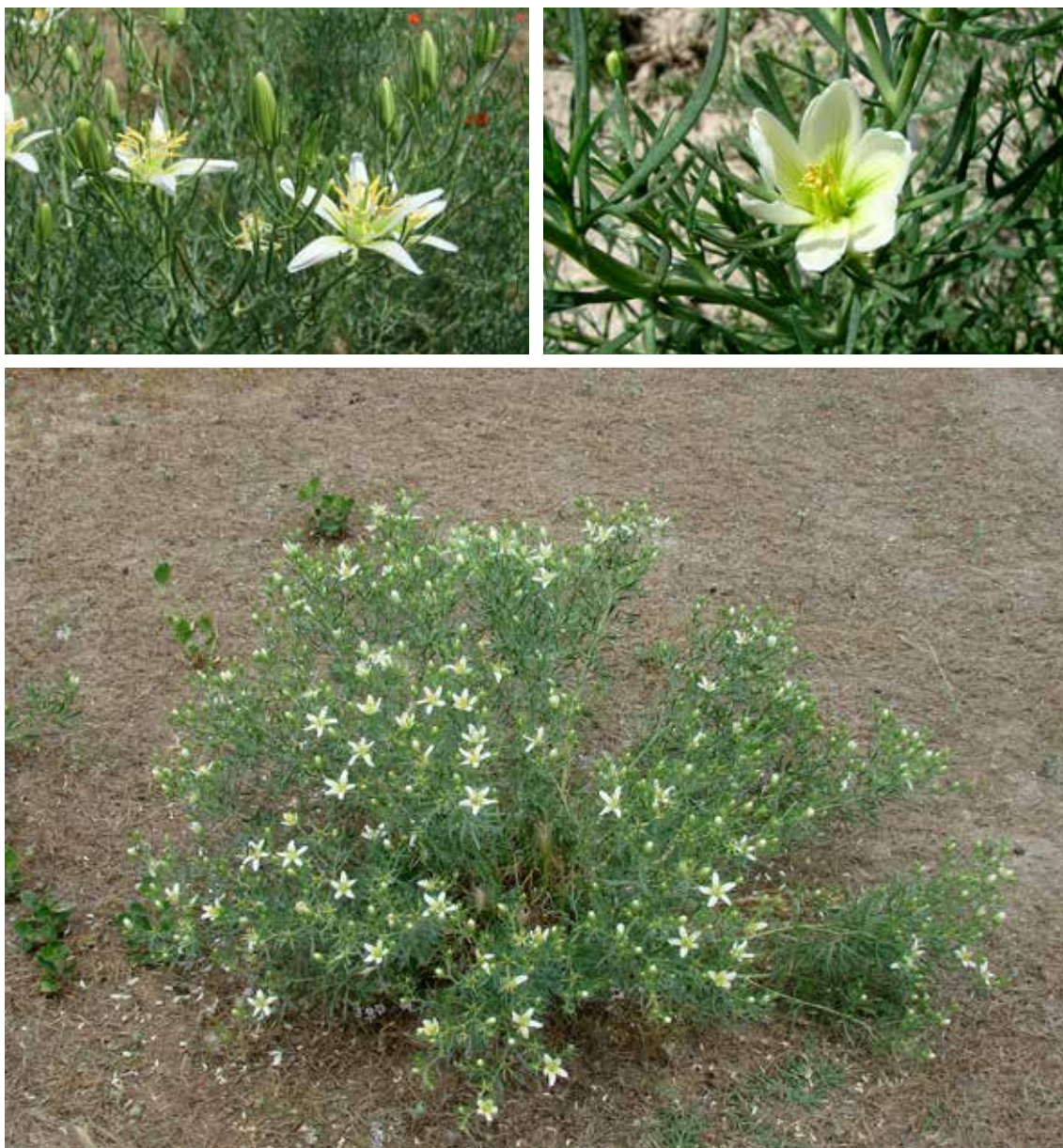


Figure 276 *Peganum harmala* (photography by Natalya Beshko)

Family 66. Anacardidaceae

Genus 237. Pistacia L.

861. *Pistacia vera* L. Figure 277

Tree or shrub. Fine-earth, gravelly and stony slopes, rocks, screes. Foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan. Food, medicinal, ornamental, industrial, oil, dye, afforestation.



Figure 277 *Pistacia vera* (photography by Natalya Beshko)

Family 67. Sapindaceae

Genus 238. Acer L.

862. *Acer pubescens* Franch Figure 278

Tree. Fine-earth, gravelly and stony slopes, river valleys. Montane zone. Nuratau, Malguzar, North

Turkestan. Ornamental, industrial, afforestation.



Figure 278 *Acer pubescens* (photography by Natalya Beshko)

863. *Acer semenovii* Regel & Herder Figure 279

Tree. Fine-earth, gravelly and stony slopes, river valleys. Montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Ornamental, industrial, afforestation.



Figure 279 *Acer semenovii* (photography by Natalya Beshko)

864. *Acer turkestanicum* Pax

Tree. Fine-earth, gravelly and stony slopes, river valleys. Montane zone. Malguzar, North Turkestan. Ornamental, industrial, afforestation.

Family 68. Rutaceae

Genus 239. *Haplophyllum* Juss.

865. *Haplophyllum acutifolium* (DC.) G. Don. [*Haplophyllum perforatum* (M. Bieb.) Vved.]

Perennial. Sandy and clay deserts, fine-earth, gravelly and stony slopes, pebbles, rocks, fields, fallow

lands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, dye.

866. *Haplophyllum bungei* Trautv.

Perennial. Sandy and clay deserts. Plain. Kyzylkum. Medicinal, dye.

867. *Haplophyllum lasianthum* Bunge [*Haplophyllum versicolor* Fisch. & C. A. Mey.]

Perennial. Sandy and clay deserts, fine-earth, gravelly and stony slopes, pebbles, fallow lands, fields. Plain, foothills. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, weed.

868. *Haplophyllum latifolium* Kar. & Kir. Figure 280

Perennial. Fine-earth, gravelly and stony slopes, fallow lands. Foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Medicinal.



Figure 280 *Haplophyllum latifolium* (photography by Natalya Beshko)

869. *Haplophyllum pedicellatum* Bunge ex Boiss. Figure 281

Perennial. Sandy and clay deserts, saline lands, fallow lands, fine-earth slopes. Plain, foothills. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, poisonous.



Figure 281 *Haplophyllum pedicellatum* (photography by Natalya Beshko)

870. *Haplophyllum ramosissimum* (Paulsen) Vved.

Semishrub. Sandy deserts. Plain. Kyzylkum.

871. *Haplophyllum robustum* Bunge

Perennial. Sandy and clay deserts. Plain. Mirzachul, Kyzylkum. Medicinal.

Genus 240. *Dictamnus* L.

872. *Dictamnus angustifolius* G. Don. f. & Sweet Figure 282

Perennial. Fine-earth, gravelly and stony slopes, river valleys, stream banks, screes, meadows. Montane and alpine zones. Malguzar, North Turkestan. Poisonous, medicinal, ornamental, meliferous.



Figure 282 *Dictamnus angustifolius* (photography by Natalya Beshko)

Family 69. *Simaroubaceae

Genus 241. **Ailanthus* Desf.

873. **Ailanthus altissima* (Mill.) Swingle

Tree. Introduced alien species. Settlements, forest belts (planted), river valleys, fine-earth slopes

(naturalized). Plain, foothills, montane zone. Nuratau, Malguzar, North Turkestan, Mirzachul. Ornamental, industrial, afforestation.

Family 70. Malvaceae

Genus 242. *Malva* L.

874.**Malva neglecta* Wallr

Perennial. Fine-earth and skeleton soils, pebbles, wastelands, dry riverbeds. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, food, fodder, meliferous, weed.

Genus 243. *Alcea* L.

875. *Alcea litvinovii* (Iljin) Iljin Figure 283

Perennial. Fine-earth, gravelly slopes, river valleys. Plain, foothills, montane zone. Nuratau. Medicinal, ornamental, meliferous.



Figure 283 *Alcea litvinovii* (photography by Natalya Beshko)

876. *Alcea nudiflora* (Lindl.) Boiss. Figure 284

Perennial. Fine-earth, gravelly and stony slopes, screes, fallow lands, roadsides. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan. Medicinal, ornamental, meliferous.



Figure 284 *Alcea nudiflora* (photography by Natalya Beshko)

877. *Alcea rhyticarpa* (Trautv.) Iljin

Perennial. Sandy and clayey soils, fine-earth, gravelly and stony slopes. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Mirzachul, Kyzylkum. Medicinal, ornamental, meliferous.

Genus 244. *Althaea* L.

878. *Althaea armeniaca* Ten.

Perennial. River valleys, banks of canals, fields. Plain, foothills. Nuratau, Mirzachul. Medicinal, ornamental, meliferous.

879. *Althaea officinalis* L.

Perennial. River valleys, fields, fallow lands. Plain, foothills, montane zone. North Turkestan. Medicinal, ornamental, meliferous.

Genus 245. **Abutilon* Mill.

880. **Abutilon therophrasti* Medik

Annual. River valleys, fallow lands, banks of canals, roadsides, fields, gardens. Plain, foothills,

montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Medicinal, oil, fiber, weed.

Genus 246. **Hibiscus* L.

881. **Hibiscus trionum* L.

Annual. Banks of canals, fallow lands, fields. Plain. Mirzachul. Medicinal, oil, fiber, weed, meliferous.

Family 71. Thymelaceae

Genus 247. *Thymelaea* Mill.

882. *Thymelaea passerina* (L.) Coss. & Germ.

Annual. Fine-earth and stony slopes, banks of rivers and canals, fields, fallow lands, wastelands. Montane zone. Nuratau, Malguzar, North Turkestan. Weed, poisonous.

Genus 248. *Diarthron* Turcz.

883. *Diarthron arenaria* (Pobed.) Kit Tan [*Dendrostellera arenaria* Pobed.]

Shrub. Sandy deserts. Plain. Kyzylkum. Fodder, industrial, afforestation.

884. *Diarthron vesiculosum* (Fisch. & C. A. Mey.) C. A. Mey.

Annual. Stony slopes, fallow lands, fields, piedmont plains, sandy and clay deserts. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Weed, poisonous.

Family 72. Cistaceae

Genus 249. *Helianthemum* Adans.

885. *Helianthemum songaricum* Schrenk ex Fisch. & C. A. Mey.

Semishrub. Stony slopes, rocks, screens, pebbles, banks of rivers. Foothills, montane and alpine zones. North Turkestan. Dye, meliferous.

Family 73. *Resedaceae

Genus 250. *Reseda L.

886. *Reseda lutea L.

Biennial or perennial. Fine-earth, gravelly and stony slopes, fields, fallow lands, dry riverbeds, banks of rivers, roadsides, wastelands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Dye, oil, weed.

887. *Reseda luteola L.

Biennial. Fine-earth slopes, fields, roadsides, fallow lands, wastelands. Plain, foothills, montane zone. Aktau, Malguzar, North Turkestan. Dye, oil, fodder, weed.

Family 74. Capparaceae

Genus 251. Capparis L.

888. Capparis spinosa L.

Perennial. Sandy, clayey, gravelly soils, banks of rivers, lakes and canals, fallow lands, screes, wastelands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, food, dye, fodder, ornamental, meliferous, weed.

Family 75. Cleomaceae

Genus 252. Cleome L.

889. Cleome fimbriata Vicary

Annual. Gypsiferous grey soils, limestones, pebbles, dry riverbeds, fallow lands. Foothills. Nuratau, Aktau.

Family 76. Brassicaceae [Cruciferae]

Genus 253. *Alliaria* Scop.

890. *Alliaria petiolata* (M. Bieb.) Cavara & Grande

Biennial. Fine-earth and stony slopes, ravines, river valleys, shady wet places, gardens. Montane and alpine zones, Nuratau, Malguzar, North Turkestan. Medicinal, food.

Genus 254. *Sisymbrium* L.

891. **Sisymbrium altissimum* L.

Annual or biennial. Saline lands, wastelands, fallow lands, wastelands, stony slopes, river valleys. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Food, oil, weed.

892. *Sisymbrium brassiciforme* C. A. Mey.

Biennial. Stony and gravelly slopes, rocks, screes, dry riverbeds, moraines. Foothills, montane and alpine zones. Nuratau, Malguzar, North Turkestan.

893. *Sisymbrium loeselii* L.

Annual. Fine-earth slopes, pebbles, meadows, river valleys, settlements, gardens, fields, banks of canals. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Food, fodder, oil, weed, meliferous.

Genus 255. *Neotorularia* Hedge & J. Leonard

894. *Neotorularia torulosa* (Desf.) Hedge & J. Leonard [*Torularia torulosa* (Desf.) O. E. Schulz.]

Annual. Roadsides, fields, fallow lands, wastelands, saline lands, sandy deserts. Plain. Mirzachul, Kyzylkum. Fodder, weed.

Genus 256. *Schrenkiella* D. A. German & Al-Shehbaz

895. *Schrenkiella parvula* (Schrenk) D.A. German & Al-Shehbaz [*Arabidopsis parvula* (Schrenk) O. E. Schulz.]

Annual. Clayey soils, saline lands. Plain. Mirzachul, North Turkestan.

Genus 257. Olimarabidopsis Al-Shehbaz, O'Kane & Price

896. *Olimarabidopsis pumila* (Stephan) Al-Shehbaz, O'Kane & R. A. Price [*Arabidopsis pumila* (Steph.) N. Busch]

Annual. Clayey soils, hills, limestones, saline lands, banks of canals, gardens, stony slopes, ravines. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum.

897. *Olimarabidopsis umbrosa* (Botsch. & Vved.) Al-Shehbaz, O'Kane & R. A. Price [*Trichochiton umbrosum* (Kom.) Botsch. & Vved.]

Annual. Shady wet places, stream banks, screes, rocks. Montane and alpine zones. North Turkestan.

Genus 258. Arabidopsis Heynh.

898. *Arabidopsis thaliana* (L.) Heynh.

Annual or biennial. Pebbles, banks of rivers, shady places, rocks. Plain, foothills, montane zone. Malguzar, North Turkestan. Food, weed.

Genus 259. Descurainia Webb & Berth.

899. *Descurainia sophia* (L.) Webb. & Prantl

Annual. Wastelands, settlements, banks of canals, ravines, fields, fallow lands, gardens, saline lands, roadsides. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Weed.

Genus 260. Smelowskia C. A. Mey. ex Ledeb.

900. *Smelowskia sisymbrioides* (Regel & Herder) Lipsky ex Paulsen [*Sophiopsis sisymbrioides* (Regel & Herder) O. E. Schulz]

Biennial. Stony and gravelly slopes, rocks, ravines. Montane zone, Malguzar, North Turkestan.

Genus 261. Erysimum L.

901. *Erysimum cyaneum* Popov

Biennial. Stony slopes. Montane zone. Malguzar. Poisonous.

902. *Erysimum marschallianum* Andrz. ex DC.

Biennial. Gardens, fallow lands, fine-earth slopes. Foothills, montane and alpine zones. North Turkestan. Poisonous.

903. *Erysimum violascens* Popov [*Erysimum nuratense* Popov ex Botsch. & Vved.]

Biennial. Stony slopes. Montane zone. Nuratau. Medicinal, poisonous.

Genus 262. *Barbarea* Beck.

904. *Barbarea brachycarpa* subsp. **minor** (K. Koch) Parolly & Eren [*Barbarea minor* C. Koch]

Perennial. Wet stony slopes, meadows, banks of rivers. Alpine zone. North Turkestan.

905. *Barbarea vulgaris* R. Br.

Biennial. Wet places, banks of rivers and canals, pebbles, meadows, fields, gardens. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachel, Kyzylkum. Medicinal, food, fodder, dye, meliferous, weed.

Genus 263. *Rorippa* Scop.

906. *Rorippa palustris* (L.) Besser

Annual or biennial. Swamp meadows, banks of rivers, lakes and canals. Plain. Mirzachel. Food, weed.

Genus 264. *Nasturtium* R. Br.

907. *Nasturtium officinale* W. T. Aiton [*Nasturtium fontanum* (Lam.) Aschers.]

Perennial. Swamps, banks of rivers and canals. Plain, foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachel. Medicinal, food, fodder, meliferous.

Genus 265. *Turrastis* L.

908. *Turrastis glabra* L.

Annual. Fine-earth, gravelly and stony slopes, fallow lands, fields, roadsides, settlements. Foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Fodder, weed.

Genus 266. *Scapiarabis* M. A. Koch, R. Karl, D. A. German & Al-Shehbaz

909. *Scapiarabis saxicola* (Edgew) M. A. Koch, R. Karl, D. A. German & Al. Shehbaz [*Arabis kokanica* Regel & Schmalh.]

Perennial. Stony slopes, rocks. Montane and alpine zones. Nuratau, Malguzar, North Turkestan.

Genus 267. *Arabis* L.

910. *Arabis auriculata* Lam

Annual or biennial. Stony slopes, rocks. Foothills, montane zone. Nuratau, Malguzar. Fodder.

911. *Arabis montbretiana* Boiss.

Annual, biennial. Stony slopes, rocks. Foothills, montane zone. Nuratau, Aktau, Malguzar. Fodder.

Genus 268. *Isatis* L.

912. *Isatis brevipes* (Bunge) Jafri [*Pachyterygium brevipes* Bunge]

Annual. Stony slopes. Foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan.

913. *Isatis emarginata* Kar. & Kir. [*Isatis violascens* Bunge]

Annual. Sandy deserts. Plain. Kyzylkum.

914. *Isatis minima* Bunge

Annual. Sandy deserts. Plain. Kyzylkum.

915. *Isatis multicaulis* (Kar. & Kir.) Jafri [*Pachyterygium densiflorum* Bunge]

Annual. Stony slopes. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan.

916. **Isatis tinctoria* L.

Biennial. River valleys, pebbles, fallow lands, fields, surroundings of settlements (escaped from culture). Plain, foothills. Nuratau, Malguzar, North Turkestan. Fodder, dye, meliferous.

Genus 269. *Tauscheria* Fisch.

917. *Tauscheria lasiocarpa* Fisch. & DC.

Annual. Sandy and clay deserts, fine-earth slopes, banks of rivers, lakes and canals. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachel, Kyzylkum. Weed.

Genus 270. *Goldbachia* DC.

918. *Goldbachia laevigata* (M. Bieb.) DC.

Annual. Sandy deserts, saline lands, fine-earth, gravelly and stony slopes. Plain, foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachel, Kyzylkum. Fodder, oil.

919. *Goldbachia sabulosa* (Kar. & Kir.) D. A. German & Al-Shehbaz [*Spirorrhynchus sabulosus* Kar. & Kir.]

Annual. Sandy deserts. Plain. Kyzylkum. Fodder.

920. *Goldbachia torulosa* DC.

Annual. Wastelands, fallow lands, fine-earth, gravelly and stony slopes. Foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, oil, weed.

921. *Goldbachia verrucosa* Kom.

Annual. Fine-earth, gravelly slopes. Foothills, montane zone. Nuratau. Fodder, oil, weed.

Genus 271. *Hesperis* L.

922. *Hesperis sibirica* L. Figure 285

Biennial or perennial. Shady wet places, banks of rivers, subalpine and alpine meadows. Montane and alpine zones. Malguzar, North Turkestan. Fodder, essential oil, ornamental, meliferous.



Figure 285 *Hesperis sibirica* (photography by Natalya Beshko)

Genus 272. Parrya R. Br.

923. Parrya fruticulosa Regel & Schmalh. [*Neuroloma fruticosum* (Regel & Schmalh.) Botsch.]

Semishrub. Stony slopes, rocks, screes. Montane and alpine zones. Nuratau, Malguzar.

924. Parrya hispida (Regel) D. A. German & Al. Shehbaz [*Pseudoclausia hispida* (Regel) Popov ex A.V. Vassil.]

Biennial. Stony slopes, rocks, screes, pebbles. Foothills, montane and alpine zones. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan.

925. Parrya khorasanica (Rech. f. & Aellen) D. A. German & Al. Shehbaz [*Pseudoclausia turkestanica* (Lipsky) A.V. Vassil.] Figure 286

Biennial. Fine-earth and stony slopes, shady places, screes, pebbles, banks of rivers, subalpine meadows. Foothills, montane and alpine zones. Nuratau, Aktau, Malguzar, North Turkestan.



Figure 286 *Parrya khorasanica* (photography by Natalya Beshko)

926. Parrya nuratensis Botsch. & Vved. [*Neuroloma nuratense* (Botsch. & Vved.) Botsch.] Figure 287

Semishrub. Fine-earth and stony slopes, rocks. Montane zone. Nuratau. Endemic to the Nuratau Mountains.



Figure 287 *Parrya nuratensis* (photography by Natalya Beshko)

927. *Parrya olgae* (Regel & Schmalh.) D. A. German & Al. Shehbaz [*Pseudoclausia olgae* (Regel & Schmalh.) Botsch.] Figure 288

Biennial. Rocks, Fine-earth and stony slopes. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. UzBRDB 2.



Figure 288 *Parrya olgae* (photography by Natalya Beshko)

928. *Parrya sarawschanica* (Regel & Schmalh.) D. A. German & Al-Shehbaz [*Pseudoclausia sarawschanica* (Regel & Schmalh.) Botsch.]

Biennial. Stony slopes. Montane zone. Nuratau. UzbRDB 2.

Genus 273. *Leiospora* (C. A. Mey.) Dvorak.

929. *Leiospora subscapigera* Botsch & Pachom.

Perennial. Moraines, screes, gravelly slopes. Alpine zone. North Turkestan.

Genus 274. *Strigosella* Boiss.

930. **Strigosella africana* (L.) Botsch.

Annual. Sandy and clay deserts, saline lands, ravines, fine-earth and stony slopes, screes, wastelands, fields, fallow lands, gardens. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachel, Kyzylkum. Poisonous, weed.

931. *Strigosella brevipes* (Bunge) Botsch.

Annual. Sandy and clay deserts, fallow lands. Plain. Kyzylkum.

932. *Strigosella grandiflora* (Bunge) Botsch.

Annual. Sandy soils, fine-earth and stony slopes, fields. Plain, foothills. Nuratau, Kyzylkum.

933. *Strigosella intermedia* (C. A. Mey.) Botsch.

Annual. Banks of canals, gravelly slopes, fallow lands, saline lands, sandy and clay deserts. Foothills. Nuratau, Mirzachel, Kyzylkum.

934. *Strigosella scorpioides* (Bunge) Botsch.

Annual. Sandy and clay deserts, dry riverbeds, saline lands, pebbles, fine-earth and stony slopes. Plain, foothills, montane zone. Nuratau Relic Mountains, Malguzar, Mirzachel, Kyzylkum.

935. *Strigosella stenopetala* (Fisch. & C. A. Mey.) Botsch.

Annual. Sandy and clay deserts, saline lands, fields, banks of canals. Plain, foothills. Nuratau Relic Mountains, Mirzachel, Kyzylkum. Weed.

936. *Strigosella trichocarpa* (Boiss. & Buhse) Botsch.

Annual. Pebbles, Sandy and clay deserts, fine-earth, gravelly and stony slopes, ravines, fields. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachel, Kyzylkum. Weed.

937. *Strigosella turkestanica* (Litv.) Botsch. Figure 289

Annual. Sandy and clay deserts, fine-earth and stony slopes, rocks, pebbles, fields, fallow lands, dry riverbeds. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, Mirzachel, Kyzylkum. Fodder, weed.



Figure 289 *Strigosella turkestanica* (photography by Natalya Beshko)

Genus 275. *Cryptospora* Kar. & Kir.

938. *Cryptospora falcata* Kar. & Kir. [*Cryptospora omissa* Botsch.]

Annual. Sandy and clay deserts, roadsides, fine-earth and stony slopes, fields, fallow lands. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, Mirzachul, Kyzylkum.

939. *Cryptospora inconspicua* (Kom.) O. E. Schulz [*Trichochiton inconspicuum* Kom.]

Annual. Shady wet places, rocks, screes, pebbles, wet fine-earth and stony slopes, subalpine meadows, stream banks. Montane and alpine zones. North Turkestan. Fodder.

Genus 276. *Matthiola* R. Br.

940. *Matthiola chorassanica* Bunge ex Boiss. [*Matthiola integrifolia* Kom.]

Perennial. Stony slopes. Montane and alpine zones. Nuratau, Aktau, North Turkestan.

941. *Matthiola obovata* Bunge

Perennial. Stony and gravelly slopes, rocks. Montane zone. Nuratau, Malguzar.

Genus 277. *Tetracme* Bunge

942. *Tetracme quadricornis* (Steph. ex Willd.) Bunge

Annual. Sandy deserts, saline lands, banks of lakes and canals, fallow lands. Plain. Mirzachul, Kyzylkum. Weed.

943. *Tetracme recurvata* Bunge

Annual. Sandy and clay deserts, saline lands, dry riverbeds, banks of lakes and canals, fallow lands. Plain, foothills. Mirzachul, Kyzylkum.

Genus 278. *Leptaleum* DC.

944. *Leptaleum filifolium* (Willd.) DC.

Annual. Saline lands, Sandy and clay deserts, banks of rivers, lakes and canals, stony slopes, rocks, settlements, roadsides, fallow lands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum.

Genus 279. *Streptoloma* Bunge

945. *Streptoloma desertorum* Bunge

Annual. Sandy deserts, saline lands. Plain, foothills, montane zone. Kyzylkum.

Genus 280. *Diptychocarpus* Trautv.

946. *Diptychocarpus strictus* (Fisch. ex M. Bieb.) Trautv.

Annual. Gravelly, Fine-earth slopes, rocks, dry riverbeds, banks of rivers and canals, sandy deserts, fallow lands, saline lands, fields, gardens. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Mirzachul, Kyzylkum.

Genus 281. *Chorispora* R. Br.

947. *Chorispora bungeana* Fisch. & C. A. Mey.

Perennial. Pebbles, screes, stony and gravelly slopes, rocks, moraines, alpine meadows. Alpine zone. North Turkestan.

948. *Chorispora macropoda* Trautv.

Perennial. Fine-earth and stony slopes, banks of rivers, pebbles, wet places, screes, rocks, moraines, subalpine and alpine meadows. Montane and alpine zones. North Turkestan.

949. *Chorispora sabulosa* Cambess. [*Chorispora elegans* Cambess.]

Perennial. Alpine meadows, gravelly and stony slopes. Alpine zone. North Turkestan.

950. *Chorispora tenella* (Pall.) DC.

Annual. Sandy and clay deserts, saline lands, fine-earth, gravelly and stony slopes, banks of rivers, moraines, fields, fallow lands, dry riverbeds, pebbles, roadsides. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, weed.

Genus 282. **Euclidium* R. Br.

951. **Euclidium syriacum* (L.) R. Br.

Annual. Saline lands, sandy and clay deserts, ravines, banks of rivers, lakes and canals, fine-earth and stony slopes, shady places, roadsides, fallow lands, fields, wastelands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, weed.

Genus 283. *Litwinowia* Woron.

952. *Litwinowia tenuissima* (Pall.) Woronow ex Pavlov

Annual. Saline lands, sandy and clay deserts, pebbles, fine-earth, gravelly and stony slopes, rocks, screes, meadows, settlements, roadsides, banks of canals, gardens, wastelands. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Weed.

Genus 284. *Octoceras* Bunge

953. *Octoceras lehmannianum* Bunge

Annual. Sandy desert, saline lands, wastelands. Plain. Kyzylkum.

Genus 285. *Cithareloma* Bunge

954. *Cithareloma lehmannii* Bunge

Annual. Sandy deserts. Plain. Kyzylkum. Fodder.

Genus 286. *Lachnoloma* Bunge

955. *Lachnoloma lehmannii* Bunge

Annual. Sandy and clay deserts, saline lands. Plain. Mirzachul, Kyzylkum.

Genus 287. Alyssum L.

956. *Alyssum alyssoides* (L.) L. [*Alyssum campestre* L.] Figure 290

Annual. Fine-earth and stony slopes, piedmont plains, sandy and clay deserts, roadsides, fallow lands, fields. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, weed.



Figure 290 *Alyssum alyssoides* (photography by Natalya Beshko)

957. *Alyssum dasycarpum* Stephan ex Willd. Figure 291

Annual. Sandy, clayey and skeleton soils. Plain, foothills. Nuratau, North Turkestan, Kyzylkum. Fodder.



Figure 291 *Alyssum dasycarpum* (photography by Natalya Beshko)

958. *Alyssum desertorum* Stapf.

Annual. Sandy and clay deserts, saline lands, banks of rivers, fine-earth and stony slopes, fallow lands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder.

959. *Alyssum linifolium* Stephan ex Willd. [*Meniocus linifolius* (Stephan ex Willd.) DC.]

Annual. Pebbles, gravelly and stony slopes, sandy and clay deserts, dry riverbeds. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder.

960. *Alyssum szovitsianum* Fisch. & C. A. Mey. [*Alyssum marginatum* Steud.]

Annual. Fine-earth and stony slopes, rocks. Plain, foothills, montane zone. Nuratau, Malguzar, North Turkestan. Fodder.

Genus 288. *Clypeola* L.

961. *Clypeola jonthlaspi* L.

Annual. Pebbles, stony slopes, rocks. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan.

Genus 289. *Asperuginoides* Rauschert

962. *Asperuginoides axillaris* [Boiss. & Hohen.] Rauschert [*Buchingera axillaris* Boiss.]

Annual. Stony and gravelly slopes, shady wet places. Montane zone. Nuratau, Malguzar, North Turkestan.

Genus 290. *Draba* L.

963. *Draba lanceolata* Royle

Perennial. Fine-earth and stony slopes, screes, rocks, subalpine meadows, moraines, wet places near melting snow. Montane and alpine zones. North Turkestan.

964. *Draba melanopus* Kom

Biennial or perennial. Fine-earth and stony slopes, screes, rocks, alpine meadows, wet places near melting snow. Montane and alpine zones. North Turkestan.

965. *Draba nemorosa* L.

Annual. Fine-earth, gravelly and stony slopes, pebbles, banks of rivers, subalpine meadows, fallow lands, wet places. Montane zone. Nuratau, Malguzar.

966. *Draba nuda* (Bel.) Al. Shehbaz & M. Koch [*Drabopsis nuda* (Bel.) Stapf]

Annual. Stony and fine-earth soils, pebbles. Plain, foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Fodder.

967. *Draba stenocarpa* Hook. f. & Thomson

Annual. Fine-earth, gravelly and stony slopes, subalpine and alpine meadows, stream banks. Montane and alpine zones. Nuratau, Malguzar, North Turkestan.

Genus 291. *Erophila* DC.

968. *Erophila minima* C. A. Mey.

Annual. Fine-earth and stony slopes, fallow lands, fields. Foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Fodder.

969. *Erophila verna* (L.) DC.

Annual. Fine-earth, gravelly and stony slopes, sandy and clay deserts, fallow lands, wastelands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder.

Genus 292. *Brassica* L.

970. **Brassica rapa* L. [*Brassica campestris* L.]

Annual. Fields, fallow lands, wastelands, gardens, banks of rivers and canals. Plain, foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan, Mirzachul. Oil, fodder, weed, meliferous.

971. *Brassica elongata* Ehrh.

Perennial. Fallow lands, fields, roadsides, wastelands. Plain, foothills, montane zone. Nuratau. Oil, weed.

Genus 293. **Sinapis* L.

972. **Sinapis alba* L.

Annual. Roadsides, fields, gardens, settlements. Plain, foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Food, medicinal, fodder, oil, weed, meliferous.

973. **Sinapis arvensis* L.

Annual. Roadsides, wastelands, fields, gardens, settlements. Plain, foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Food, oil, weed, meliferous.

Genus 294. **Eruca* Hill

974. **Eruca vesicaria* (L.) Cav. [*Eruca sativa* Mill.]

Annual. Fields, fallow lands, roadsides, sandy deserts, saline lands, stony slopes. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Oil, food, medicinal, weed.

Genus 295. *Crambe* L.

975. *Crambe cordifolia* subsp. *kotschyana* (Boiss.) Jafri [*Crambe kotschyana* Boiss.]

Perennial. Fine-earth, gravelly and stony slopes, fallow lands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Fodder, food, meliferous.

Genus 296. *Conringia* Heist. ex Fabr.

976. *Conringia clavata* Boiss. Figure 292

Annual. Stony slopes. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Fodder.



Figure 292 *Conringia clavata* (photography by Natalya Beshko)

977. *Conringia orientalis* (L.) Dumort.

Annual. Fields, fallow lands, roadsides, stony slopes, rocks. Plain, foothills, montane zone. North Turkestan.

978. *Conringia persica* Boiss.

Annual. Stony slopes. Montane zone. Nuratau, Malguzar, North Turkestan. Fodder.

979. *Conringia planisiliqua* Fisch. & C. A. Mey.

Annual. Fine-earth slopes, river valleys, dry riverbeds, roadsides. Foothills, montane zone. North Turkestan.

Genus 297. *Chalcanthus* Boiss.

980. *Chalcanthus renifolius* [Boiss. & Hohen.] Boiss. Figure 293

Perennial. Fine-earth and stony slopes, rocks. Montane zone. Nuratau, Malguzar, North Turkestan.



Figure 293 *Chalcanthus renifolius* (photography by Natalya Beshko)

Genus 298. *Lepidium* L.

981. *Lepidium botschantsevianum* Al-Shehbaz [*Stroganowia angustifolia* Botsch. & Vved.] Figure 294

Perennial. Stony slopes, ravines, rocks. Foothills, montane zone. Nuratau.



Figure 294 *Lepidium botschantsevianum* (photography by Natalya Beshko)

982. *Lepidium draba* subsp. *chalepense* L. (P. Fourn.) [*Cardaria repens* (Schrenk) Jarm.]

Perennial. Wet places, fallow lands, fields, wastelands, roadsides, river valleys, banks of lakes and canals. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Meliferous, weed.

983. *Lepidium ferganense* Korsh.

Perennial. Stony slopes, rocks, banks of rivers. Foothills, montane zone. Nuratau, Nuratau Relic Mountains.

984. *Lepidium lacerum* C. A. Mey.

Perennial. Fine-earth and stony slopes, rocks, banks of rivers. Foothills, montane zone. Nuratau.

985. *Lepidium latifolium* L.

Perennial. Saline lands, swamps, meadows, banks of rivers and canals, pebbles, stony slopes, fields, settlements. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Medicinal, meliferous, insecticide, weed.

986. *Lepidium lipskyi* (N. Busch) Al-Shehbaz & Mummenhoff [*Stubendorffia lipskyi* N. Busch]

Perennial. Fine-earth and stony slopes. Montane zone. Nuratau.

987. *Lepidium olgae* (R. Vinogradova) Al-Shehbaz & Mummenhoff [*Stubendorffia olgae* R. Vinogradova] Figure 295

Perennial. Stony slopes. Montane zone. Nuratau. Medicinal. Threatened species, UzBRDB 2. Endemic to the Nuratau ridge.



Figure 295 *Lepidium olgae* (photography by N. Yu. Beshko)

988. *Lepidium orientale* (Schrenk) Al-Shehbaz & Mummenhoff [*Stubendorffia orientalis* Schrenk] Figure 296

Perennial. Fine-earth and stony slopes, rocks, river valleys. Montane zone. Nuratau. Meliferous.



Figure 296 *Lepidium orientale* (photography by Natalya Beshko)

989. *Lepidium perfoliatum* L.

Annual or biennial. River valleys, saline lands, fields, roadsides, wastelands. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Mirzachul, Kyzylkum. Medicinal, poisonous, weed.

Genus 299. *Megacarpaea* DC.

990. *Megacarpaea gigantea* Regel

Perennial. Fine-earth and stony slopes, rocks. Montane zone. Nuratau, Malguzar, North Turkestan. Fodder, meliferous.

991. *Megacarpaea orbiculata* B. Fedtsch.

Perennial. Fine-earth and stony slopes, rocks, ravines, banks of rivers, subalpine meadows. Montane zone. Nuratau, Malguzar, North Turkestan. Fodder, meliferous.

Genus 300. *Hornungia* Rchb.

992. *Hornungia procumbens* (L.) Hayek [*Hymenolobus procumbens* (L.) Nutt.]

Annual. Saline lands, banks of rivers and canals, gardens, fallow lands. Plain, foothills, montane zone. Nuratau, Malguzar, North Turkestan, Mirzachul.

Genus 301. Iberidella Boiss.

993. Iberidella trinervia (DC.) Boiss. Figure 297

Perennial. Gravelly and stony slopes, rocks. Montane and alpine zones. Nuratau, Malguzar, North Turkestan.



Figure 297 *Iberidella trinervia* (photography by Natalya Beshko)

Genus 302. Didymophysa Boiss.

994. Didymophysa fedtschenkoana Regel

Perennial. Screes, pebbles, moraines, stony slopes. Alpine zone. North Turkestan.

Genus 303. Thlaspi L.

995. *Thlaspi arvense L.

Annual. Fine-earth and stony slopes, banks of rivers, wet places, fields, fallow lands, roadsides, dry riverbeds, river valleys. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, oil, weed.

996. Thlaspi perfoliatum L. [*Microthlaspi perfoliatum* (L.) F. K. Mey.]

Annual. Fine-earth and stony slopes, pebbles, rocks, saline lands, settlements, fields. Plain, foothills,

montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder.

Genus 304. *Neurotropis* (DC.) F. K. Mey.

997. *Neurotropis platycarpa* (Fisch. & C. A. Mey.) F. K. Mey. [*Thlaspi kotschyanum* Boiss. & Hohen.]

Annual. Gravelly and stony slopes, screes. Montane zone. Malguzar, North Turkestan.

Genus 305. *Aethionema* W. T. Aiton

998. *Aethionema carneum* (Banks & Soland.) B. Fedtsch. [*Campyloptera carneum* (Banks & Soland.) Botsch. & Vved.] Figure 298

Annual. Fine-earth and stony slopes, screes, pebbles, river valleys, dry riverbeds. Foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan.



Figure 298 *Aethionema carneum* (photography by Natalya Beshko)

Genus 306. *Camelina* Crantz.

999. *Camelina microcarpa* Andrz. ex DC. [*Camelina sylvestris* Wallr.]

Annual. Fine-earth and stony slopes, banks of rivers, lakes and canals, fields, fallow lands, roadsides. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, Mirzachul, Kyzylkum. Oil, weed.

1000. *Camelina rumelica* Velen

Annual. Fine-earth and stony slopes, ravines, banks of rivers, wastelands, fallow lands. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, Mirzachul. Oil, weed.

Genus 307. *Neslia* Desv.

1001. *Neslia paniculata* subsp. ***thratica*** (Velen.) Bornm. [*Neslia apiculata* Fisch. & C. A. Mey.]

Annual. Fine-earth and stony slopes, ravines, pebbles, saline lands, fields, fallow lands. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Dye, weed.

Genus 308. **Capsella* Medik.

1002. **Capsella bursa-pastoris* (L.) Medik.

Annual. Wastelands, fields, gardens, roadsides, fine-earth and stony slopes, pebbles, banks of rivers. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal.

Family 77. Santalaceae

Genus 309. *Arceuthobium* M. Bieb.

1003. *Arceuthobium oxycedri* (DC.) M. Bieb.

Shrub. Parasite of juniper. Montane zone. Malguzar, North Turkestan. Medicinal.

Family 78. Frankeniaceae

Genus 310. *Frankenia* L.

1004. *Frankenia bucharica* Basil.

Semishrub. Saline lands, banks of rivers, lakes and canals, fallow lands. Plain. Mirzachul.

1005. *Frankenia bucharica* subsp. *vvedenskyi* (Botsch.) Chrtek. [*Frankenia vvedenskyi* Botsch.]
Semishrub. Saline lands, banks of salt lakes. Plain. Mirzachul, Kyzylkum.

1006. *Frankenia hirsuta* L.

Semishrub. Saline lands, banks of rivers, lakes and canals. Plain. Kyzylkum.

1007. *Frankenia pulverulenta* L.

Annual. Saline lands, fallow lands, sandy deserts. Plain. Mirzachul, Kyzylkum.

Family 79. Tamaricaceae

Genus 311. *Reaumuria* L.

1008. *Reaumuria alternifolia* (Labill.) Britten [*Reaumuria reflexa* Lipsky; *Reaumuria sogdiana* Kom.; *Reaumuria turkestanica* Gorschk.]

Semishrub. Saline and gypsiferous soils, sandy desert. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum.

1009. *Reaumuria fruticosa* Boiss.

Shrub. Saline lands, sandy deserts. Plain. Kyzylkum.

Genus 312. *Tamarix* L.

1010. *Tamarix androssowii* var. *transcaucassica* (Bunge) Qaiser [*Tamarix litvinowii* Gorschk.]

Shrub. Banks of rivers, lakes and canals, saline lands, dry riverbeds. Plain. Mirzachul, Kyzylkum. Meliferous, ornamental, afforestation, tanniferous.

1011. *Tamarix arceuthoides* Bunge Figure 299

Shrub. River valleys, pebbles. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. Meliferous, ornamental, afforestation.



Figure 299 *Tamarix arceuthoides* (photography by Natalya Beshko)

1012. *Tamarix elongata* Ledeb.

Shrub. Saline lands, depressions, sandy deserts, dry riverbeds. Plain. Mirzachul, Kyzylkum. Meliferous, ornamental, afforestation, dye.

1013. *Tamarix hispida* Willd. Figure 300

Shrub. Saline lands, depressions, banks of rivers, lakes and canals. Plain. Mirzachul, Kyzylkum. Meliferous, ornamental, afforestation, dye.



Figure 300 *Tamarix hispida* (photography by Natalya Beshko)

1014. *Tamarix laxa* Willd. Figure 301

Shrub. Saline lands, banks of rivers, lakes and canals. Plain. Mirzachul, Kyzylkum. Meliferous, ornamental, afforestation.



Figure 301 *Tamarix laxa* (photography by Natalya Beshko)

1015. *Tamarix ramosissima* Ledeb.

Shrub. Banks of rivers, lakes and canals, saline lands, sandy and clay deserts, fallow lands. Plain. Mirzachul, Kyzylkum. Meliferous, ornamental, afforestation, dye.

1016. *Tamarix smyrnensis* Bunge [*Tamarix hohenackeri* Bunge]

Shrub. Banks of rivers. Plain. Mirzachul, Kyzylkum. Meliferous, ornamental, afforestation.

Genus 313. *Myricaria* Desv.

1017. *Myricaria germanica* (L.) Desv. [*Myricaria bracteata* Royle]

Shrub. Banks of rivers, ravines, pebbles. Foothills, montane zone. North Turkestan. Dye, tanniferous, ornamental.

Family 80. Plumbaginaceae

Genus 314. *Acantholimon* Boiss.

1018. *Acantholimon erythraeum* Bunge Figure 302

Semishrub. Stony slopes. Montane and alpine zones. Nuratau, Aktau, Malguzar, North Turkestan.



Figure 302 *Acantholimon erythraeum* (photography by Natalya Beshko)

1019. *Acantholimon nuratavicum* Zakirov ex Lincz. Figure 303

Semishrub. Stony slopes. Montane zone. Nuratau. UzBRDB 2. Endemic to the Nuratau ridge.



Figure 303 *Acantholimon nuratavicum* (photography by Natalya Beshko)

1020. *Acantholimon subavenaceum* Lincz. Figure 304

Semishrub. Stony slopes. Montane zone. Nuratau.



Figure 304 *Acantholimon subavenaceum* (photography by Natalya Beshko)

1021. *Acantholimon tataricum* Boiss. ex DC. Figure 305

Semishrub. Stony slopes, rocks. Montane and alpine zones. Nuratau, Aktau, Malguzar, North Turkistan. Endemic to the Nuratau ridge.



Figure 305 *Acantholimon tataricum* (photography by Natalya Beshko)

1022. *Acantholimon zakirovii* Beshko

Semishrub. Stony slopes. Montane zone. Nuratau. Endemic to the Nuratau ridge.

Genus 315. *Chaetolimon* (Bunge) Lincz.

1023. *Chaetolimon setiferum* (Bunge) Lincz. Figure 306

Perennial. Fine-earth and stony slopes, piedmont plains. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan.



Figure 306 *Chaetolimon setiferum* (photography by Natalya Beshko)

Genus 316. Limonium Mill.

1024. *Limonium otolepis* (Schrenk) Kuntze Figure 307

Perennial. Saline lands, banks of rivers, lakes and canals. Plain. Nuratau Relic Mountains, Mirzachul, Kyzylkum. Tanniferous, dye, meliferous, ornamental.



Figure 307 *Limonium otolepis* (photography by Natalya Beshko)

1025. *Limonium reniforme* (Girard) Lincz.

Perennial. Saline lands, banks of rivers, lakes and canals. Plain. Mirzachul. Tanniferous, weed.

1026. *Limonium suffruticosum* (L.) Kuntze Figure 308

Semishrub. Saline lands. Plain. Mirzachul. Tanniferous, dye, meliferous, fodder.



Figure 308 *Limonium suffruticosum* (photography by Natalya Beshko)

Genus 317. Eremolimon Lincz.

1027. Eremolimon sogdianum (Popov) Lincz.

Perennial. Saline lands. Plain. Mirzachul. Dye.

Genus 318. Psylliostachys (Jaub. & Spach) Nevski

1028. Psylliostachys leptostachya (Boiss.) Roshkova

Annual. Saline lands, fallow lands, fields. Plain, foothills. North Turkestan, Mirzachul. Dye.

1029. Psylliostachys × **myosuroides** (Regel) Roshkova

Annual. Saline lands. Plain. Mirzachul. Meliferous, ornamental.

1030. Psylliostachys suworowii (Regel) Roshkova

Annual. Saline lands, river valleys, banks of canals, fallow lands, fields. Plain. Mirzachul. Meliferous, ornamental.

Family 81. Polygonaceae

Genus 319. Oxyria Hill

1031. Oxyria digyna (L.) Hill Figure 309

Perennial. Banks of rivers, pebbles, wet stony slopes and screes. Alpine zone. North Turkestan. Dye, food.



Figure 309 *Oxyria digyna* (photography by Natalya Beshko)

Genus 320. Rumex L.

1032. Rumex acetosa L.

Perennial. Banks of rivers, wet places, gardens, meadows. Plain, foothills, montane zone. Nuratau, Mirzachul. Medicinal, food, fodder, dye.

1033. Rumex chalepensis Mill. [*Rumex drobovii* Korovin]

Perennial. Meadows, wet places, roadsides, banks of rivers and canals, fine-earth and stony slopes, gardens, fields, wastelands. Plain, foothills, montane zone. Nuratau, Malguzar, North Turkestan. Tanniferous, weed.

1034. *Rumex conglomeratus Murray

Perennial. Banks of rivers and canals, wet places, swamps, roadsides, wastelands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Medicinal, tanniferous, weed.

1035. *Rumex crispus L.

Perennial. Meadows, fine-earth and stony slopes, banks of rivers, lakes and canals. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Medicinal, tanniferous, weed, food.

1036. Rumex dentatus subsp. halacsyi (Rech.) Rech. f. [*Rumex halacsyi* Rech.]

Annual or biennial. River valleys, wet places, saline lands, banks of canals, fallow lands. Plain, foothills. Malguzar, Mirzachul. Weed.

1037. Rumex marschallianus Rchb.

Annual. Banks of rivers, lakes and canals, saline lands. Plain. Mirzachul.

1038. Rumex pamiricus Rech. f.

Perennial. Fine-earth and stony slopes, screes, wet places, banks of rivers and canals, ravines, fallow lands, wastelands. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Malguzar, North Turkestan. Tanniferous, weed.

1039. Rumex paulsenianus Rech. f.

Perennial. Banks of rivers, ravines, fine-earth and stony slopes, fallow lands. Montane and alpine zones. North Turkestan. Tanniferous, weed.

1040. Rumex rectinervis Rech. f.

Perennial. Banks of rivers and canals, swamps. Plain, foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Medicinal, tanniferous.

1041. *Rumex syriacus Meissn

Perennial. Banks of rivers and canals, wet places, pebbles, fallow lands, fields, gardens. Plain, foothills. Nuratau Relic Mountains, Mirzachul. Tanniferous, dye, weed.

1042. Rumex tianschanicus Losinsk.

Perennial. Fine-earth and stony slopes, meadows, banks of rivers. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Medicinal, tanniferous, fodder, weed.

Genus 321. *Rheum* L.

1043. *Rheum cordatum* Losinsk.

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. Nuratau. Food, medicinal, tanniferous, dye.

1044. *Rheum macrocarpum* Losinsk.

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. Nuratau, Malguzar, North Turkestan. Food, tanniferous, dye.

1045. *Rheum maximowiczii* Losinsk. Figure 310

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Food, medicinal, tanniferous, dye.



Figure 310 *Rheum maximowiczii* (photography by Natalya Beshko)

1046. *Rheum turkestanicum* Janisch. Figure 311

Perennial. Sandy deserts. Plain. Kyzylkum. Food, medicinal, tanniferous, dye, fodder.



Figure 311 *Rheum turkestanicum* (photography by Natalya Beshko)

Genus 322. *Atraphaxis* L.

1047. *Atraphaxis compacta* Ledeb.

Shrub. Stony slopes. Foothills. Nuratau Relic Mountains. Tanniferous, ornamental, meliferous.

1048. *Atraphaxis karataviensis* Lipsch. & Pavlov.

Shrub. Stony slopes, dry riverbeds. Montane zone. Nuratau. Tanniferous, ornamental, meliferous.

1049. *Atraphaxis pyrifolia* Bunge Figure 312

Shrub. Fine-earth and stony slopes, ravines. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Tanniferous, dye, ornamental, meliferous.



Figure 312 *Atraphaxis pyrifolia* (photography by Natalya Beshko)

1050. *Atraphaxis seravschanica* Pavlov

Shrub. Fine-earth and stony slopes, rocks, ravines. Montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Tanniferous, ornamental, meliferous.

1051. *Atraphaxis spinosa* L.

Shrub. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau. Tanniferous, dye, ornamental, fodder, meliferous.

1052. *Atraphaxis virgata* (Regel) Krasn. Figure 313

Shrub. Stony slopes, pebbles, dry riverbeds. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. Tanniferous, ornamental, meliferous.



Figure 313 *Atraphaxis virgata* (photography by Natalya Beshko)

Genus 323. *Calligonum* L.

1053. *Calligonum aphyllum* (Pall.) Gürke

Shrub. Sandy deserts. Plain. Kyzylkum. Fodder, tanniferous, dye, afforestation, meliferous.

1054. *Calligonum caput-medusae* Schrenk Figure 314

Shrub. Sandy deserts. Plain. Kyzylkum. Fodder, tanniferous, dye, afforestation, meliferous.



Figure 314 *Calligonum caput-medusae* (photography by Natalya Beshko)

1055. *Calligonum leucocladum* (Schrenk) Bunge Figure 315

Shrub. Sandy deserts. Plain. Kyzylkum. Fodder, tanniferous, dye, afforestation, meliferous.



Figure 315 *Calligonum leucocladum* (photography by Natalya Beshko)

1056. *Calligonum macrocarpum* I. G. Borshch. Figure 316
Shrub. Sandy deserts. Plain. Kyzylkum. Fodder, afforestation, meliferous.



Figure 316 *Calligonum macrocarpum* (photography by Natalya Beshko)

1057. *Calligonum microcarpum* I. G. Borshch. Figure 317

Shrub. Sandy deserts. Plain. Kyzylkum. Fodder, afforestation, meliferous.



Figure 317 *Calligonum microcarpum* (photography by Natalya Beshko)

Genus 324. Polygonum L.

1058. Polygonum acetosum M. Bieb.

Annual. Sandy deserts. Plain. Kyzylkum.

1059. Polygonum argyrocoleon Steud. ex Kunze

Annual. Sandy soils, saline lands, wet places, roadsides, fields. Plain, foothills. Nuratau, Aktau, Mirzachul, Kyzylkum. Medicinal, tanniferous, weed.

1060. Polygonum aviculare L.

Annual. Wastelands, fields, fallow lands, roadsides, banks of canals. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, dye, food, fodder, weed.

1061. Polygonum biaristatum Aitch. & Hemsl

Semishrub. Stony slopes, screes. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Fodder.

1062. Polygonum coriarium Grig. [*Aconogonon coriarum* (Grig.) Soják] Figure 318

Perennial. Fine-earth and stony slopes, subalpine meadows. Montane and alpine zones. North Turkestan. Medicinal, tanniferous, dye, food, meliferous.



Figure 318 *Polygonum coriarium* (photography by Natalya Beshko)

1063. Polygonum fibrilliferum Kom.

Perennial. Gravelly and stony slopes. Montane and alpine zones. Malguzar, North Turkestan. Fodder,

weed.

1064. *Polygonum hissaricum* Popov [*Aconogonon hissaricum* (Popov) Soják]

Perennial. Fine-earth and stony slopes. Alpine zone. North Turkestan. Medicinal, tanniferous, food, meliferous.

1065. *Polygonum inflexum* Kom.

Annual. Banks of rivers and canals, fine-earth slopes, saline lands, fallow lands, roadsides, fields. Plain, foothills. Mirzachul.

1066. *Polygonum molliiforme* Boiss.

Annual. Stony slopes, pebbles, banks of rivers. Montane and alpine zones. Malguzar, North Turkestan.

1067. *Polygonum paronychioides* C. A. Mey.

Semishrub. Stony slopes, screes, rocks, pebbles. Foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Tanniferous.

1068. *Polygonum patulum* M. Bieb.

Annual. Stony slopes, screes, saline lands, roadsides, fields, fallow lands. Plain, foothills, montane zone. Nuratau, Malguzar, North Turkestan. Fodder, weed.

1069. *Polygonum polychnemoides* Jaub. & Spach.

Annual. Stony slopes, screes, pebbles, roadsides, fields. Plain, foothills, montane and alpine zones. Nuratau, Malguzar, North Turkestan.

1070. *Polygonum pulvinatum* Kom.

Semishrub. Stony slopes. Montane zone. Nuratau.

1071. *Polygonum rottboellioides* Jaub. & Spach.

Annual. Fine-earth and stony slopes, pebbles. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains.

1072. *Polygonum subaphyllum* Sumnev.

Annual. Fine-earth and stony slopes, pebbles, fallow lands, banks of canals, fields. Foothills, montane zone. Nuratau.

1073. *Polygonum vvedenskyi* Sumnev. Figure 319

Semishrub. Stony slopes, screes. Montane and alpine zones. Nuratau, Malguzar, North Turkestan.



Figure 319 *Polygonum vvedenskyi* (photography by Natalya Beshko)

Genus 325. Persicaria Hill

1074. Persicaria amphibia (L.) Delarbre [*Polygonum amphibium* L.]

Perennial. Banks of rivers, lakes, ponds and canals. Plain, foothills, montane and alpine zones. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, tanniferous.

1075. Persicaria bistorta (L.) Samp. [*Bistortia elliptica* (Willd. ex Spreng.) Kom.; *Polygonum nitens* (Fish. & C. A. Mey.) V. Petr. ex Kom.] Figure 320

Perennial. Fine-earth and stony slopes, screes, banks of rivers, swamps, subalpine and alpine meadows. Montane and alpine zones. Malguzar, North Turkestan. Medicinal, tanniferous, dye, meliferous.



Figure 320 *Persicaria bistorta* (photography by Natalya Beshko)

1076. Persicaria hydropiper (L.) Delarbre

Annual. Banks of rivers, ponds and canals, swamps. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, dye.

1077. *Persicaria lapathifolia* (L.) Delarbre

Annual. Banks of rivers, ponds and canals, wet places, fields. Plain, foothills, montane zone. Nuratau, North Turkestan. Medicinal, tanniferous, food, fodder, meliferous.

1078. *Persicaria maculata* (Raf.) Gray.

Annual. Banks of rivers and canals, wet places, fields, wasteands. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, essential oil, dye, weed, meliferous.

1079. *Persicaria minor* (Huds.) Opiz.

Annual. Banks of rivers and canals. Plain, foothills, montane zone. Nuratau, Malguzar, North Turkestan. Medicinal, weed.

Genus 326. *Fallopia* Adans.

1080. *Fallopia convolvulus* (L.) A. Löve

Annual. Woodlands, banks of rivers, fields, gardens, wastelands. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, tanniferous, food, meliferous, weed.

Family 82. Caryophyllaceae

Genus 327. *Stellaria* L.

1081. *Stellaria alsinoides* Boiss. & Buhse [*Tythostemma alsinoides* (Boiss. & Buhse) Nevski]

Annual. Stony slopes, pebbles. Foothills, montane zone. Nuratau, Malguzar.

1082. *Stellaria brachypetala* Bunge

Perennial. Wet places, banks of rivers, pebbles, meadows, fields, fine-earth slopes. Montane and alpine zones. Malguzar, North Turkestan. Poisonous.

1083. **Stellaria media* (L.) Vill.

Annual. Roadsides, banks of rivers and canals, shady wet places, settlements, gardens, wastelands. Plain, foothills, montane zone. Nuratau. Weed, medicinal, dye, saponin-bearing.

1084. *Stellaria neglecta* Weihe

Annual. River valleys, gardens, fields, wastelands, roadsides, swamps, shady wet places. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Weed.

1085. *Stellaria pallida* (Dumort.) Crep.

Annual. Shady wet places, gardens, fields, fallow lands. Nuratau.

1086. *Stellaria turkestanica* Schischk.

Perennial. Screes, fine-earth and stony slopes. Alpine zone. Malguzar, North Turkestan.

Genus 328. Mesostemma Vved.

1087. *Mesostemma karatavica* (Schischk.) Vved. [*Stellaria karatavica* Schischk.] Figure 321
Perennial. Stony slopes, rocks. Montane zone. Nuratau, North Turkestan.



Figure 321 *Mesostemma karatavica* (photography by Natalya Beshko)

Genus 329. Cerastium L.

1088. Cerastium arvense L.

Perennial. Fine-earth slopes, meadows. Montane zone. North Turkestan. Medicinal, saponin-bearing, fodder.

1089. Cerastium cerastoides (L.) Britton.

Perennial. Fine-earth, gravelly and stony slopes, rocks, alpine meadows, places near melting snow. Alpine zone. North Turkestan. Fodder, saponin-bearing.

1090. Cerastium dichotomum L.

Annual. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan.

1091. Cerastium dichotomum subsp. **inflatum** Cullen [*Cerastium inflatum* Link. ex Desf.]

Annual. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan.

1092. Cerastium falcatum (Gren.) Bunge ex Fenzl [*Cerastium bungeanum* Vved.]

Perennial. Fine-earth, gravelly and stony slopes, rocks, saline lands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan.

1093. Cerastium fontanum subsp. **vulgare** (Hartm.) Greuter & Burdet [*Cerastium holosteoides* Fries]

Annual, biennial, perennial. Montane and alpine zones. North Turkestan. Saponin-bearing.

1094. Cerastium glomeratum Thuill

Annual. River valleys, pebbles, roadsides, gardens, fields, fallow lands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan.

1095. Cerastium lithospermifolium Fisch.

Perennial. Screes. Alpine zone. North Turkestan.

1096. Cerastium perfoliatum L.

Annual. Fine-earth and stony slopes, gardens, fields, fallow lands. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Saponin-bearing.

1097. Cerastium pusillum Ser.

Perennial. Stony slopes, banks of rivers, swamps, pebbles. Montane and alpine zones. Malguzar, North Turkestan.

1098. Cerastium semidecandrum L. [*Cerastium pentandrum* L.; *Cerastium dentatum* Möeschl.]

Annual. Clayey soils. Plain, foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul.

Genus 330. Holosteum L.

1099. Holosteum umbellatum L.

Annual. Piedmont plains, fine-earth, gravelly and stony slopes, pebbles, fallow lands, fields. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Weed, saponin-bearing.

1100. *Holosteum umbellatum* subsp. *glutinatum* (M. Bieb.) Nyman [*Holosteum glutinosum* (M. Bieb.) Fisch. & C. A. Mey.; *Holosteum polygamum* C. Koch]

Annual. Sandy and clay deserts, piedmont plains, fine-earth, gravelly and stony slopes, pebbles, fallow lands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Weed, saponin-bearing.

Genus 331. *Sagina* L.

1101. *Sagina saginoides* (L.) H. Karst.

Perennial. Stony slopes, pebbles, screes, wet places, banks of rivers, swamps. Alpine zone. North Turkestan.

Genus 332. *Bufonia* L.

1102. *Bufonia oliveriana* Ser.

Semishrub. Fine-earth and stony slopes. Foothills, montane zone. Nuratau, Aktau.

Genus 333. *Lepyrodiclis* Fenzl.

1103. *Lepyrodiclis holosteoides* (C. A. Mey.) Fenzl ex Fisch. & C. A. Mey.

Annual. River valleys, fine-earth and stony slopes, shady wet places, fallow lands, fields, gardens. Plain, foothills, montane and alpine zones, Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Weed, saponin-bearing.

1104. *Lepyrodiclis stellarioides* Fisch. & C. A. Mey.

Annual. River valleys, fine-earth and stony slopes, woodlands, shady wet places, gardens. Foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Saponin-bearing.

Genus 334. *Minuartia* L.

1105. *Minuartia hamata* (Hausskn.) Mattf. [*Queria hispanica* L.]

Annual. Pebbles, fine-earth, gravelly and stony slopes. Foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan.

1106. *Minuartia kryloviana* Schischk.

Perennial. Stony slopes, rocks. Alpine zone. North Turkestan.

1107. *Minuartia meyeri* (Boiss.) Bornm.

Annual. Fine-earth, gravelly and stony slopes, pebbles. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan.

Genus 335. Eremogone Fenzl

1108. Eremogone griffithii (Boiss.) Ikonn. [*Arenaria griffithii* Boiss.] Figure 322

Perennial. Stony slopes, rocks. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Saponin-bearing.



Figure 322 *Eremogone griffithii* (photography by Natalya Beshko)

Genus 336. Arenaria L.

1109. Arenaria rotundifolia M. Bieb.

Perennial. Stony slopes, banks of rivers, alpine meadows, swamps. Alpine zone. North Turkestan.

1110. *Arenaria serpyllifolia* L.

Annual. Fine-earth, gravelly and stony slopes, fields, fallow lands. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Fodder.

1111. *Arenaria serpyllifolia* subsp. *leptoclados* (Rchb.) Nyman [*Arenaria leptoclados* (Rchb.) Guss.]

Annual. Clay deserts, fine-earth, gravelly and stony slopes. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder.

Genus 337. *Spergularia* L.

1112. *Spergularia diandra* (Guss.) Heldr.

Annual. Saline lands. Plain. Mirzachul, Kyzylkum.

1113. **Spergularia marina* (L.) Besser [*Spergularia salina* J. Presl & C. Presl]

Annual, biennial or perennial. Saline lands, banks of rivers, lakes and canals. Plain, foothills. Nuratau, Mirzachul, Kyzylkum.

1114. *Spergularia media* (L.) C. Presl.

Annual or biennial. Saline lands, wastelands, banks of canals. Plain. Mirzachul, Kyzylkum. Weed.

1115. **Spergularia rubra* J. Presl & C. Presl.

Annual or biennial. Saline lands, wastelands, roadsides, fields, banks of rivers. Plain, foothills. Nuratau, Mirzachul, Kyzylkum. Weed.

Genus 338. *Herniaria* L.

1116. *Herniaria glabra* L.

Annual. Fine-earth, gravelly and stony slopes, banks of rivers, roadsides. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Weed, poisonous.

1117. *Herniaria hirsuta* L.

Annual. River valleys, dry riverbeds, pebbles, roadsides. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Weed, poisonous.

Genus 339. **Agrostemma* L.

1118. **Agrostemma githago* L.

Annual. Fallow lands, fields, roadsides. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Medicinal, weed, poisonous.

Genus 340. *Silene* L.

1119. *Silene brahuica* Boiss.

Perennial. Fine-earth, gravelly and stony slopes, ravines, rocks, pebbles. Foothills, montane zone, Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Medicinal, saponin-bearing.

1120. *Silene claviformis* Litv.

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau, Malguzar, North Turkestan.

1121. *Silene conica* L. Figure 323

Annual. River valleys, pebbles, fine-earth and stony slopes, fallow lands, fields. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Saponin-bearing.



Figure 323 *Silene conica* (photography by Natalya Beshko)

1122. *Silene coniflora* Nees ex Otth. Figure 324

Annual. Fine-earth, gravelly and stony slopes, river valleys, banks of canals, roadsides. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan.



Figure 324 *Silene coniflora* (photography by Natalya Beshko)

1123. *Silene conoidea* L. Figure 325

Annual. Fine-earth, gravelly and stony slopes, river valleys, banks of canals, wastelands, roadsides, gardens, fields. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Kyzylkum. Weed.



Figure 325 *Silene conoidea* (photography by Natalya Beshko)

1124. *Silene graminifolia* Otth [*Silene schischkinii* Sobolevsk.]

Perennial. Fine-earth, gravelly and stony slopes. Alpine zone. North Turkestan.

1125. *Silene guntensis* Schischk.

Perennial. Stony slopes, rocks, screes, pebbles. Montane and alpine zones. Nuratau, Aktau, Malguzar, North Turkestan.

1126. *Silene incurvifolia* Kar. & Kir.

Perennial. Stony slopes, rocks, pebbles. Foothills, montane and alpine zones. North Turkestan.

1127. *Silene kuschakewiczii* Regel & Schmalh.

Perennial. Stony slopes, rocks, screes. Montane and alpine zones. Nuratau, Malguzar, North Turkestan.

1128. *Silene latifolia* Poir. [*Melandrium album* (Mill.) Garcke]

Annual or biennial. Fine-earth slopes, river valleys, ravines. Montane zone. North Turkestan. Weed, saponin-bearing.

1129. *Silene longicalycina* Kom. Figure 326

Perennial. Stony slopes, screes. Montane and alpine zones. Nuratau, Malguzar, North Turkestan.



Figure 326 *Silene longicalycina* (photography by Natalya Beshko)

1130. *Silene nana* Kar. & Kir. Figure 327

Annual. Sandy deserts. Plain. Kyzylkum.



Figure 327 *Silene nana* (photography by Natalya Beshko)

1131. *Silene nevsckii* Schischk.

Perennial. Stony slopes, rocks. Montane and alpine zones. Nuratau, Malguzar, North Turkestan.

1132. *Silene obtusidentata* B. Fedtsch. & Popov

Perennial. Stony slopes. Montane zone. Nuratau.

1133. *Silene paranadena* Bondarenko & Vved. Figure 328

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. Nuratau, Malguzar. UzbRDB 2.



Figure 328 *Silene paranadena* (photography by N. Yu. Beshko)

1134. *Silene plurifolia* Schischk.

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. Nuratau, Malguzar.

1135. *Silene praelonga* Ovcz.

Perennial. Stony slopes, rocks. Montane zone. Nuratau.

1136. *Silene praemixta* Popov

Perennial. Sandy and clay deserts, piedmont plains, foothills, pebbles, river valleys, fine-earth, gravelly and stony slopes. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan. Saponin-bearing.

1137. *Silene pugionifolia* Popov

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau.

1138. *Silene ruinarum* Popov [*Melandrium ruinarium* Popov]

Perennial. Fine-earth, gravelly and stony slopes, river valleys, wet places. Foothills, montane zone. Nuratau.

1139. *Silene stenantha* Ovcz.

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane zone. North Turkestan.

1140. *Silene tachtensis* Franch.

Perennial. Stony slopes, rocks, screes. Montane and alpine zones. North Turkestan.

1141. *Silene turkestanica* Regel [*Melandrium turkestanicum* Vved.]

Perennial. Stony slopes, screes, woodlands. Montane zone. North Turkestan.

1142. *Silene uralensis* subsp. *apetala* (L.) Bocquet [*Gastrolychnis apetala* (L.) Tolm. & Kozhanch]

Perennial. Stony slopes, screes, swamps, pebbles. Alpine zone. North Turkestan. Saponin-bearing.

1143. *Silene vulgaris* (Moench) Garcke Figure 329

Perennial. Fine-earth, gravelly and stony slopes, screes, river valleys, ravines, subalpine meadows. Montane and alpine zones. Malguzar, North Turkestan. Medicinal, saponin-bearing, ornamental.



Figure 329 *Silene vulgaris* (photography by Natalya Beshko)

Genus 341. *Gastrolychnis* (Fenzl.) Rchb.

1144. *Gastrolychnis longicarpophora* (Kom.) Czerep. [*Silene longicarpophora* (Kom.) Bocquet]
Perennial. Stony slopes, rocks, screes, alpine meadows, places near melting snow. Alpine zone.
North Turkestan.

Genus 342. *Gypsophila* L.

1145. *Gypsophila cephalotes* (Schrenk) F. N. Williams
Perennial. Stony and gravelly slopes, pebbles, river valleys. Montane and alpine zones. Malguzar,
North Turkestan. Saponin-bearing.

1146. *Gypsophila herniarioides* Boiss.
Perennial. Moraines, screes, stony slopes, pebbles. Alpine zone. North Turkestan.

1147. **Gypsophila paniculata* L.
Perennial. Roadsides, dry riverbeds, wastelands. Plain, foothills, montane zone. Malguzar. Medicinal,
poisonous, ornamental.

Genus 343. *Bolbosaponaria* Bondar.

1148. *Bolbosaponaria sewerzowii* Bondar. Figure 330
Perennial. Stony slopes, rocks. Foothills, montane zone. North Turkestan. Saponin-bearing.



Figure 330 *Bolbosaponaria sewerzowii* (photography by Natalya Beshko)

Genus 344. *Kuhitangia* Ovcz.

1149. *Kuhitangia knorringiana* Bondarenko
Perennial. Stony slopes, rocks. Montane zone. Nuratau, Malguzar, North Turkestan. Saponin-bearing.

Genus 345. *Petrorhagia* (Ser. ex DC.) Link.

1150. *Petrorhagia alpina* (Hablitz) P. W. Ball & Heywood

Annual or biennial. Stony slopes, screes, river valleys, ravines, rocks, subalpine and alpine meadows. Montane and alpine zones. North Turkestan. Saponin-bearing.

Genus 346. *Acanthophyllum* C. A. Mey.

1151. *Acanthophyllum aculeatum* Schischk.

Perennial. Sandy deserts, piedmont plains, fine-earth and stony slopes, screes. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar. Medicinal, meliferous, saponin-bearing.

1152. *Acanthophyllum elatius* Bunge

Perennial. Sandy deserts. Plain. Kyzylkum. Saponin-bearing.

1153. *Acanthophyllum pungens* (Bunge) Boiss. Figure 331

Perennial. Sandy deserts, piedmont plains, fine-earth, gravelly and stony slopes, screes. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Medicinal, meliferous, saponin-bearing.



Figure 331 *Acanthophyllum pungens* (photography by Natalya Beshko)

Genus 347. *Allochrusa* Bunge ex Boiss.

1154. *Allochrusa gypsophiloides* (Regel) Schischk. [*Acanthophyllum gypsophiloides* Regel]

Perennial. Fine-earth, gravelly and stony slopes, dry riverbeds, fallow lands. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. Medicinal, food, saponin-bearing. UzbRDB 3.

Genus 348. **Vaccaria* Medik.

1155. **Vaccaria hispanica* (Mill.) Rauschert

Annual. Fields, fallow lands, banks of canals, meadows, wastelands. Plain, foothills, montane zone.

Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Weed, ornamental, medicinal.

Genus 349. *Dianthus* L.

1156. *Dianthus baldzhuanicus* Lincz.

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. Nuratau, Malguzar, North Turkestan.

1157. *Dianthus brevipetalus* Vved.

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. North Turkestan.

1158. *Dianthus crinitus* subsp. *tetralepis* (Nevski) Rech.f. [*Dianthus tetralepis* Nevski]

Perennial. Fine-earth, gravelly and stony slopes, river valleys, piedmont plains. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Ornamental, saponin-bearing.

1159. *Dianthus darvazicus* Lincz. Figure 332

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. Nuratau, Malguzar. Saponin-bearing.



Figure 332 *Dianthus darvazicus* (photography by Natalya Beshko)

1160. *Dianthus helenae* Vved. Figure 333

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. Nuratau, Aktau. Endemic to the Nuratau Mountains.



Figure 333 *Dianthus helenae* (photography by Natalya Beshko)

1161. *Dianthus subscabridus* Lincz.

Perennial. Stony slopes, rocks, dry riverbeds. Montane and alpine zones. Malguzar, North Turkestan.

Genus 350. *Pleioneura* Rech. f.

1162. *Pleioneura griffithiana* (Boiss.) Rech. f. [*Saponaria griffithiana* Boiss.]

Perennial. Stony slopes, rocks, screes, pebbles. Montane and alpine zones. Malguzar, North Turkestan.

Genus 351. *Velezia* L.

1163. *Velezia rigida* L.

Annual. Fine-earth and stony slopes, screes, pebbles, dry riverbeds. Foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan.

Family 83. *Amaranthaceae*

Genus 352. **Amaranthus* L.

1164. **Amaranthus albus* L.

Annual. Fields, fallow lands, wastelands, roadsides, banks of canals. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Weed, fodder.

1165. **Amaranthus blitoides* S. Watson

Annual. Fields, fallow lands, wastelands, roadsides. Plain, foothills, montane zone. North Turkestan. Weed, fodder.

1166. **Amaranthus deflexus* L.

Annual. Gardens, fields, fallow lands, wastelands. Plain. Mirzachul, Kyzylkum. Weed.

1167. **Amaranthus retroflexus* L.

Annual. Settlements, gardens, fields, fallow lands, roadsides, wastelands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Weed, fodder, medicinal.

Genus 353. *Polycnemum* L.

1168. *Polycnemum arvense* L.

Annual. Stony slopes, pebbles, fallow lands, wastelands. Plain, foothills, montane zone. Nuratau,

Malguzar. Weed, fodder.

1169. *Polycnemum perenne* Litv. Figure 334

Perennial. Stony slopes, rocks, screes. Foothills, montane zone. North Turkestan.



Figure 334 *Polycnemum perenne* (photography by Natalya Beshko)

Genus 354. *Chenopodium* L.

1170. *Chenopodium album* L.

Annual. Wastelands, fields, gardens, fallow lands, roadsides. Plain, foothills, montane and alpine

zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Weed, fodder, medicinal, food, dye, essential oil, meliferous.

1171. *Chenopodium botrys* L.

Annual. Dry riverbeds, pebbles, stony slopes, wastelands, fields. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, dye, essential oil.

1172. *Chenopodium chenopodioides* (L.) Aellen

Annual. Saline lands. Plain, foothills. Kyzylkum. Weed.

1173. *Chenopodium foliosum* (Moench) Aschers Figure 335

Annual. Stony slopes, pebbles, screes, rocks, wastelands, roadsides. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Food, medicinal, dye.



Figure 335 *Chenopodium foliosum* (photography by Natalya Beshko)

1174. *Chenopodium glaucum* L.

Annual. Saline lands, banks of rivers, lakes and canals, fields, wastelands. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Weed.

1175. **Chenopodium murale* L.

Annual. Wastelands. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. Food, medicinal.

1176. *Chenopodium rubrum* L.

Annual. Saline lands, wastelands, banks of rivers, lakes and canals, river valleys, fields. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Kyzylkum. Food, medicinal, weed.

1177. **Chenopodium vulvaria* L.

Annual. Gravelly slopes, pebbles, dry riverbeds, wastelands. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Kyzylkum. Weed, medicinal, dye.

Genus 355. *Spinacia* L.

1178. *Spinacia turkestanica* Iljin

Annual. Fields, fallow lands, wastelands, banks of canals. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Food, fodder, weed.

Genus 356. *Atriplex* L.

1179. *Atriplex aucherii* Moq.

Annual. Saline lands, roadsides, wastelands, surroundings of wells and sheepyards. Plain, foothills. Nuratau Relic Mountains, Kyzylkum. Fodder.

1180. *Atriplex dimorphostegia* Kar. & Kir.

Annual. Sandy deserts, saline lands. Plain. Kyzylkum. Fodder.

1181. *Atriplex flabellum* Bunge

Annual. Gravelly and fine-earth slopes, roadsides, wastelands, surroundings of wells and sheepyards. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Kyzylkum, Mirzachul. Fodder.

1182. *Atriplex micrantha* Ledeb.

Annual. Saline lands, banks of canals, wastelands, fallow lands. Plain, foothills. Malguzar, Mirzachul. Fodder, weed.

1183. *Atriplex ornata* Iljin

Annual. Saline lands, fallow lands, banks of canals, sandy deserts. Plain. Mirzachul, Kyzylkum. Fodder, weed.

1184. *Atriplex prostrata* subsp. *calothea* (Rafn) M. A. Gust. [*Atriplex hastata* L.]

Annual. Saline lands, banks of canals, roadsides, fields, fallow lands. Plain. Mirzachul. Fodder, weed.

1185. *Atriplex tatarica* L.

Annual. Saline lands, banks of canals, roadsides, surroundings of wells and sheepyards, fields, wastelands. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, food, medicinal.

Genus 357. *Krascheninnikovia* Gueldenst.

1186. *Krascheninnikovia ceratoides* (L.) Gueldenst. [*Ceratoides latens* Reveal & Holmgren; *Eurotia ceratoides* (L.) C. A. Mey.] Figure 336

Semishrub. Stony, gravelly and fine-earth slopes, sandy soils, pebbles, dry riverbeds. Plain, foothills, montane and alpine zones. Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder.



Figure 336 *Krascheninnikovia ceratoides* (photography by Natalya Beshko)

1187. *Krascheninnikovia ewersmanniana* (Stschegl. ex Losinsk.) Grubov [*Ceratoides ewersmanniana* (Stschegl. ex Losinsk.) Botsch. & Ikonn.; *Eurotia ewersmanniana* Stschegl. ex Losinsk.]

Semishrub. Stony slopes, screes, sandy soils, saline lands, dry riverbeds. Plain, foothills, montane and alpine zones. Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, oil, dye.

Genus 358. *Ceratocarpus* L.

1188. *Ceratocarpus arenarius* L. [*Ceratocarpus utriculosus* Bluket ex Krylov]

Annual. Sandy and clay deserts, saline lands, pebbles, dry riverbeds, fine-earth slopes, roadsides, wastelands, fallow lands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, Mirzachul, Kyzylkum. Weed, fodder.

Genus 359. Camphorosma L.

1189. Camphorosma monspeliaca L.

Semishrub. Sandy deserts, saline lands, banks of lakes. Plain. Kyzylkum. Fodder, essential oil, medicinal.

Genus 360. Bassia All.

1190. Bassia crassifolia (Pall.) Soldano [*Suaeda crassifolia* Pall.]

Annual. Saline lands, banks of lakes and canals. Plain. Mirzachul. Fodder.

1191. Bassia eriophora (Schrad.) Asch. [*Kirilovia eriantha* Bunge; *Londesia eriantha* Fisch. et C. A. Mey.]

Annual. Sandy and clay deserts, surroundings of wells and sheepyards. Plain. Kyzylkum.

1192. Bassia hyssopifolia (Pall.) Kuntze

Annual. Banks of canals, saline lands, wastelands, fields, surroundings of wells and sheepyards. Plain. Mirzachul, Kyzylkum. Weed.

Genus 361. Kochia Roth.

1193. Kochia iranica Bornm.

Annual. Sandy soils, saline lands. Plain. Kyzylkum. Fodder.

1194. Kochia prostrata (L.) Schrad.

Semishrub. Sandy soils, saline lands, stony and gravelly slopes. Plain, foothills, montane and alpine zones, Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Kyzylkum. Fodder.

1195. Kochia scoparia (L.) Schrad.

Annual. Fields, gardens, roadsides, wastelands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, Mirzachul, Kyzylkum. Fodder, medicinal, ornamental, weed.

Genus 362. Corispermum L.

1196. Corispermum lehmanninum Bunge

Annual. Sandy deserts. Plain. Kyzylkum. Fodder.

Genus 363. Agriophyllum M. Bieb.

1197. Agriophyllum lateriflorum (Lam.) Moq. Figure 337

Annual. Sandy deserts. Plain. Kyzylkum. Fodder.



Figure 337 *Agriophyllum lateriflorum* (photography by Natalya Beshko)

Genus 364. *Kalidium* Moq.

1198. *Kalidium caspicum* (L.) Ung.-Sternb.

Semishrub. Saline lands, banks of lakes. Plain. Kyzylkum. Industrial.

Genus 365. *Halopeplis* Bunge

1199. *Halopeplis pygmaea* (Pall.) Bunge ex Ung.-Sternb.

Annual. Saline lands, banks of lakes and canals. Plain. Mirzachul, Kyzylkum.

Genus 366. *Halostachys* C. A. Mey.

1200. *Halostachys belangeriana* (Moq.) Botsch. Figure 338

Shrub. Saline lands, banks of lakes and canals, fallow lands. Plain. Nuratau Relic Mountains, Mirzachul, Kyzylkum. Industrial.



Figure 338 *Halostachys belangeriana* (photography by Natalya Beshko)

Genus 367. *Halocnemum* M. Bieb.

1201. *Halocnemum strobilaceum* (Pall.) M. Bieb.

Semishrub. Saline lands, banks of lakes and canals. Plain. Mirzachul, Kyzylkum. Alkaloid-bearing, insecticide, industrial.

Genus 368. *Salicornia* L.

1202. *Salicornia europaea* L.

Annual. Saline lands, banks of lakes and canals, depressions, fallow lands. Plain. Nuratau Relic

Mountains, Mirzachul, Kyzylkum. Fodder, insecticide, food, medicinal, industrial.

Genus 369. Suaeda Forsk.

1203. Suaeda acuminata (C. A. Mey.) Moq.

Annual. Saline lands, wastelands, fallow lands, fields. Plain. Mirzachul, Kyzylkum. Fodder.

1204. Suaeda altissima (L.) Pall.

Annual. Wastelands, fallow lands, fields, saline lands, banks of canals, roadsides. Plain. Mirzachul, Kyzylkum. Fodder.

1205. Suaeda arcuata Bunge

Annual. Saline lands, wastelands, fallow lands, fields. Plain. Mirzachul, Kyzylkum. Fodder, alkaloid-bearing.

1206. Suaeda dendroides (C. A. Mey.) Moq.

Shrub. Saline lands, banks of lakes and canals. Plain. Mirzachul, Kyzylkum. Fodder, industrial.

1207. Suaeda heterophylla Bunge ex Boiss.

Annual. Saline lands, fallow lands, fields, roadsides, banks of canals, wastelands. Plain. Mirzachul, Kyzylkum. Fodder, weed.

1208. Suaeda linifolia Pall.

Annual. Saline lands, banks of lakes and canals, fallow lands, fields. Plain. Mirzachul, Kyzylkum. Fodder, weed.

1209. Suaeda paradoxa (Bunge) Bunge

Annual. Saline lands, wastelands, fallow lands, fields. Plain. Mirzachul, Kyzylkum. Fodder, weed.

1210. Suaeda physophora Pall.

Semishrub. Saline lands, banks of lakes and canals. Plain. Mirzachul. Industrial, poisonous.

Genus 370. Salsola L.

1211. Salsola arbuscula Pall.

Shrub. Sandy deserts, stony and gravelly slopes. Plain, foothills. Nuratau Relic Mountains, Malguzar, Mirzachul, Kyzylkum. Fodder, dye, tanniferous, afforestation.

1212. Salsola arbusculiformis Drobow

Shrub. Sandy deserts, clayey and gravelly soils, pebbles. Plain, foothills. Nuratau Relic Mountains, Malguzar, Kyzylkum. Fodder.

1213. Salsola collina Pall.

Annual. Sandy and clay deserts, piedmont plain, fallow lands, saline lands, screes, roadsides, dry riverbeds, surroundings of settlements, wells and sheepyards. Plain, foothills. Nuratau Relic Mountains, Kyzylkum. Fodder, medicinal.

1214. Salsola dendroides Pall.

Semishrub. Saline lands, gravelly slopes, river valleys, fields. Plain, foothills. Nuratau Relic

Mountains, Mirzachul, Kyzylkum. Fodder, afforestation.

1215. *Salsola foliosa* (L.) Schrad. ex Schult.

Annual. Sandy and clay deserts, saline lands. Plain. Mirzachul, Kyzylkum. Fodder.

1216. *Salsola iberica* Sennen & Pau.

Annual. Sandy, clayey and skeleton soils, saline lands, wastelands, fields. Plain, foothills. Nuratau, Aktau, Nuratau Relic Mountains, Mirzachul, Kyzylkum. Fodder.

1217. *Salsola leptoclada* Gand.

Annual. Sandy, clayey and gravelly soils. Plain. Nuratau Relic Mountains, Mirzachul, Kyzylkum. Fodder.

1218. *Salsola micranthera* Botschantz.

Annual. Saline lands, sandy and clay deserts. Plain, foothills. Nuratau Relic Mountains, Kyzylkum. Fodder.

1219. *Salsola orientalis* S. G. Gmel.

Semishrub. Clay desert, saline lands, piedmont plains, gravelly slopes. Plain, foothills. Nuratau Relic Mountains, Mirzachul, Kyzylkum. Fodder.

1220. *Salsola paletzkiana* Litv.

Tree or shrub. Sandy deserts. Plain. Kyzylkum. Dye, afforestation, ornamental.

1221. *Salsola paulsenii* Litv. Figure 339

Annual. Sandy and clay deserts, saline lands. Plain. Mirzachul, Kyzylkum. Fodder.



Figure 339 *Salsola paulsenii* (photography by Natalya Beshko)

1222. *Salsola richteri* (Moq.) Kar. ex Litv. Figure 340

Tree or shrub. Sandy deserts. Plain. Kyzylkum. Fodder, dye, afforestation, medicinal, alkaloid-bearing.



Figure 340 *Salsola richteri* (photography by Natalya Beshko)

1223. *Salsola sclerantha* C. A. Mey.

Annual. Sandy deserts, saline lands. Plain. Mirzachul, Kyzylkum. Fodder.

1224. *Salsola titovii* Botsch.

Semishrub. Stony slopes. Montane zone. Aktau. UzBRDB 1.

1225. *Salsola turkestanica* Litv.

Annual. Saline lands. Plain. Mirzachul, Kyzylkum. Fodder.

1226. *Salsola vvedenskyi* Iljin & Popov

Annual. Saline lands, sandy deserts. Plain. Kyzylkum. Fodder.

Genus 371. *Climacoptera* Botsch.

1227. *Climacoptera lanata* (Pall.) Botsch.

Annual. Saline lands, sandy and clay deserts, banks of lakes and canals, fields, fallow lands. Plain, foothills. Nuratau Relic Mountains, Mirzachul, Kyzylkum. Fodder.

1228. *Climacoptera longistylosa* (Iljin) Botsch.

Annual. Saline lands. Plain, foothills. Nuratau Relic Mountains, Mirzachul, Kyzylkum. Fodder.

1229. Climacoptera minkvitziae (Korovin) Botsch.

Annual. Saline lands. Plain. Kyzylkum. Fodder.

1230. Climacoptera obtusifolia (Schrenk) Botsch.

Annual. Saline lands. Plain. Mirzachul, Kyzylkum. Fodder.

1231. Climacoptera olgae (Iljin) Botsch.

Annual. Saline lands. Plain. Mirzachul, Kyzylkum. Fodder.

1232. Climacoptera transoxana (Iljin) Botsch.

Annual. Saline lands, roadsides, banks of lakes and canals, fallow lands, fields. Plain. Mirzachul, Kyzylkum. Fodder.

Genus 372. Halothamnus Jaub. et Spach

1233. Halothamnus glaucus (M. Bieb.) Botsch. [*Aellenia glauca* (M. Bieb.) Aellen]

Semishrub. Sandy deserts, saline lands. Plain. Kyzylkum. Fodder, medicinal.

1234. Halothamnus iliensis (Lipsky) Botsch. [*Aellenia iliensis* (Lipsky) Aellen]

Annual. Saline lands, Sandy and clay deserts. Plain. Kyzylkum. Fodder.

1235. Halothamnus subaphyllus (C.A.Mey.) Botsch. [*Aellenia subaphylla* (C.A. Mey.) Aellen]

Semishrub. Sandy soils, saline lands. Plain. Kyzylkum. Fodder, medicinal, dye.

Genus 373. Girgensohnia Bunge

1236. Girgensohnia oppositiflora (Pall.) Fenzl

Annual. Saline, sandy, clayey and gravelly soils, fields, roadsides, fallow lands, dry riverbeds. Plain, foothills. Nuratau, Aktau, Nuratau Relic Mountains, Mirzachul, Kyzylkum. Fodder.

1237. Girgensohnia diptera Bunge

Annual. Saline lands. Plain. Kyzylkum. Fodder, dye.

Genus 374. Gamanthus Bunge

1238. Gamanthus gamocarpus (Moq.) Bunge

Annual. Saline, sandy, clayey and gravelly soils, fields, roadsides, fallow lands, dry riverbeds. Plain, foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, Mirzachul, Kyzylkum. Fodder.

Genus 375. Anabasis (Schrenk) Benth.

1239. Anabasis eriopoda (Schrenk) Paulsen Figure 341

Semishrub. Gravelly and stony slopes, saline lands. Plain, foothills. Nuratau Relic Mountains, Kyzylkum. Fodder, meliferous.

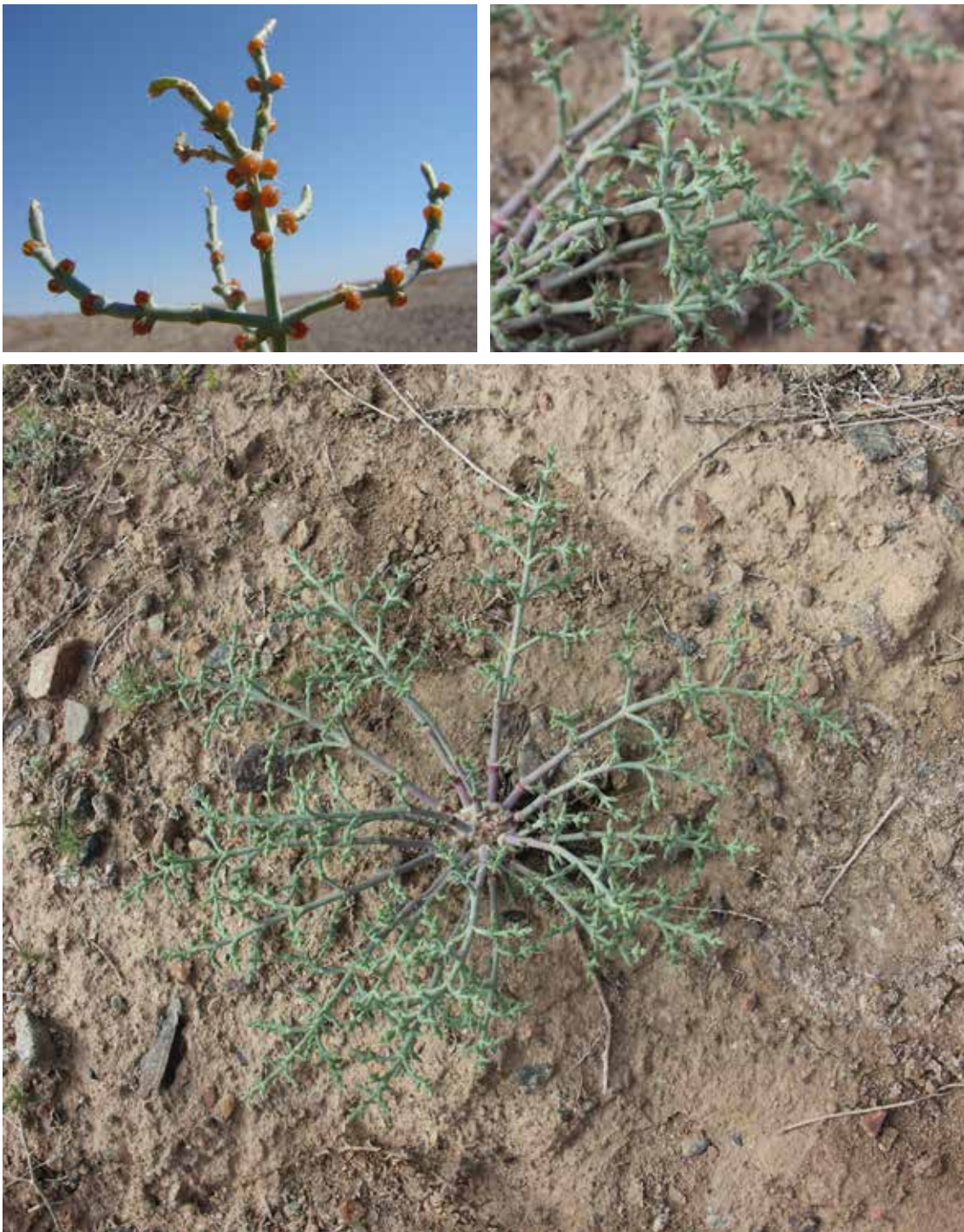


Figure 341 *Anabasis eriopoda* (photography by Natalya Beshko)

1240. *Anabasis jaxartica* (Bunge) Benth. ex Iljin
Semishrub. Saline lands. Plain. Mirzachul.

1241. *Anabasis salsa* (Ledeb.) Benth. ex Volkens Figure 342
Semishrub. Saline lands. Plain. Kyzylkum. Fodder, medicinal.



Figure 342 *Anabasis salsa* (photography by Natalya Beshko)

Genus 376. *Haloxylon* Bunge

1242. *Haloxylon ammodendron* (C. A. Mey.) Bunge ex Fenzl [*Haloxylon aphyllum* (Minkw.) Iljin] Figure 343

Tree. Saline lands, sandy and clay deserts. Plain, foothills. Kyzylkum. Fodder, afforestation.



Figure 343 *Haloxylon ammodendron* (photography by Natalya Beshko)

1243. *Haloxylon persicum* Bunge Figure 344

Tree. Sandy deserts. Plain. Kyzylkum. Fodder, afforestation, tanniferous.



Figure 344 *Haloxylon persicum* (photography by Natalya Beshko)

Genus 377. Nanophyton Botsch.

1244. Nanophyton erinaceum (Pall.) Bunge Figure 345

Semishrub. Gravelly and stony slopes, piedmont plains. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains.



Figure 345 *Nanophyton erinaceum* (photography by Natalya Beshko)

1245. Nanophyton saxatile Botsch. Figure 346

Semishrub. Gravelly and stony slopes, piedmont plains. Plain, foothills. Nuratau, Malguzar.



Figure 346 *Nanophyton saxatile* (photography by Natalya Beshko)

Genus 378. Halocharis Moq.

1246. Halocharis hispida (Schrenk) Bunge

Annual. Sandy, clayey and gravelly soils, saline lands, fields, fallow lands, banks of canals, roadsides. Plain, foothills. Nuratau, Aktau, Nuratau Relic Mountains, Mirzachul, Kyzylkum. Fodder, weed.

Genus 379. Halimocnemis C. A. Mey.

1247. Halimocnemis mollissima Bunge

Annual. Saline lands. Plain. Mirzachul, Kyzylkum. Fodder.

1248. Halimocnemis villosa Kar. & Kir.

Annual. Saline lands, sandy and clay deserts. Plain. Mirzachul, Kyzylkum. Fodder.

Genus 380. Halogeton C. A. Mey.

1249. Halogeton glomeratus (M. Bieb.) Ledeb. Figure 347

Annual. Saline lands, sandy soils, roadsides. Plain. Mirzachul, Kyzylkum.



Figure 347 *Halogeton glomeratus* (photography by Natalya Beshko)

Family 84. *Portulacaceae

Genus 381. *Portulaca L.

1250. *Portulaca oleracea L.

Annual. Fallow lands, wastelands, banks of rivers and canals, fields. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Food, medicinal, weed, alkaloid-bearing.

Family 85. Balsaminaceae

Genus 382. *Impatiens* L.

1251. *Impatiens parviflora* DC. Figure 348

Annual. Shady wet places, banks of rivers, ravines, stony slopes, screes, gardens. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. Medicinal, poisonous, weed.



Figure 348 *Impatiens parviflora* (photography by Natalya Beshko)

Family 86. Primulaceae

Genus 383. *Primula* L.

1252. *Primula algida* Adams

Perennial. Alpine meadows, swamps, moraines, stream banks, places near melting snow. Alpine zone. North Turkestan. Ornamental.

1253. *Primula fedtschenkoi* Regel Figure 349

Perennial. Fine-earth and stony slopes. Foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan. Ornamental.



Figure 349 *Primula fedtschenkoi* (photography by Natalya Beshko)

1254. *Primula iljinskii* Al. Fed. ex Schischk. & Bobrov

Perennial. Wet meadows, swamps, banks of rivers. Montane and alpine zones. North Turkestan. Ornamental.

1255. *Primula matthioli* (L.) V. A. Richt. [*Cortusa turkestanica* Losinsk.] Figure 350

Perennial. Stream banks, shady wet places, subalpine and alpine meadows, swamps. Montane and alpine zones. Malguzar, North Turkestan. Ornamental.



Figure 350 *Primula matthioli* (photography by Natalya Beshko)

1256. *Primula olgae* Regel

Perennial. Banks of rivers, swamps, subalpine and alpine meadows, moraines. Montane and alpine zones, Nuratau, Malguzar, North Turkestan. Ornamental.

1257. *Primula pamirica* Al. Fed. ex Schischk. & Bobrov

Perennial. Alpine meadows, banks of rivers. Alpine zone. North Turkestan. Ornamental.

1258. *Primula turkeviczii* V. V. Byalt [*Primula lactiflora* Turkev.]

Perennial. Rocks, places near melting snow. Montane and alpine zones. North Turkestan. Ornamental.

Genus 384. *Androsace* L.

1259. *Androsace dasyphylla* Bunge ex Ledeb.

Perennial. Stony slopes, screes, rocks. Alpine zone. North Turkestan.

1260. *Androsace maxima* L.

Annual. Pebbles, rocks, fine-earth and stony slopes, meadows, fallow lands, fields, roadsides. Foothills, montane zone. North Turkestan.

1261. *Androsace sericea* Ovcz.

Perennial. Fine-earth and stony slopes, alpine meadows, moraines, rocks, screes. Alpine zone. North Turkestan.

Genus 385. *Samolus* L.

1262. *Samolus valerandi* L.

Perennial. Wet places, banks of rivers and canals, fallow lands. Plain, foothills. Mirzachul.

Genus 386. *Lysimachia* L.

1263. *Lysimachia dubia* Soland. ex Aiton

Perennial. Wet places, banks of rivers and canals, fields. Plain. Mirzachul.

1264. *Lysimachia maritima* (L.) Galasso, Banfi & Soldano [*Glaux maritima* L.]

Perennial. Wet places, saline lands, banks of rivers, swamps, meadows. Plain, foothills, montane and alpine zones. Nuratau, Nuratau Relic Mountains, North Turkestan. Dye.

Genus 387. **Anagallis* L.

1265. **Anagallis arvensis* L. [*Anagallis foemina* Mill.] Figure 351

Annual. Banks of rivers and canals, roadsides, gardens, fields, fallow lands, wastelands, pebbles, dry riverbeds, stony slopes. Plain, foothills, montane zone. Nuratau, Aktau Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Medicinal, poisonous, weed.



Figure 351 *Anagallis arvensis* (above) and *Anagallis arvensis* subsp. *foemina* (below) (photography by Natalya Beshko)

Family 87. Ericaceae

Genus 388. *Pyrola* L.

1266. *Pyrola rotundifolia* L.

Perennial. Fine-earth, gravelly and stony slopes, screes, banks of rivers. Plain, foothills, montane and alpine zones. North Turkestan. Medicinal, ornamental.

Family 88. Rubiaceae

Genus 389. *Crucianella* L.

1267. *Crucianella chlorostachys* Fisch. & C. A. Mey.

Annual. Pebbles, stony slopes, fallow lands. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, North Turkestan.

1268. *Crucianella exasperata* Fisch. & C. A. Mey.

Annual. Fine-earth, gravelly and stony slopes, rocks, screes, pebbles. Montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan.

1269. *Crucianella filifolia* Regel & Schmalh.

Annual. Fine-earth, gravelly and stony slopes, banks of canals, pebbles, fallow lands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, North Turkestan.

Genus 390. *Asperula* L.

1270. *Asperula glabrata* Tschern.

Semishrub. Stony slopes, rocks. Montane zone. Nuratau, Malguzar, North Turkestan.

1271. *Asperula oppositifolia* Regel & Schmalh.

Semishrub. Fine-earth, gravelly and stony slopes, rocks, screes. Montane and alpine zones. North Turkestan.

1272. *Asperula setosa* Jaub. & Spach.

Annual. Stony slopes, screes, rocks, alpine meadows, wet places near springs. Montane and alpine zones. Nuratau, Malguzar, North Turkestan.

1273. *Asperula trichodes* J. Gay ex DC.

Annual. Fine-earth, gravelly and stony slopes, pebbles, dry riverbeds, banks of rivers. Foothills, montane zone. North Turkestan.

Genus 391. Galium L.

1274. Galium aparine L.

Annual. Fine-earth, gravelly and stony slopes, screes, rocks, woodlands, river valleys, gardens, fields, fallow lands, wastelands. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Medicinal, dye, fodder, weed.

1275. Galium ceratopodum Boiss.

Annual. Gravelly and stony slopes. Foothills, montane zone. Nuratau, Malguzar.

1276. Galium humifusum M. Bieb. [*Asperula humifusa* (M. Bieb.) Besser]

Perennial. Fine-earth, gravelly and stony slopes, pebbles, saline lands, meadows, swamps, banks of canals, fields, fallow lands, wastelands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Medicinal, dye, fodder, weed.

1277. Galium karakulense Pobed.

Perennial. Wet places, swamps, banks of rivers. Montane zone. Nuratau.

1278. Galium pamiroalaicum Pobed. Figure 352

Perennial. Fine-earth, gravelly and stony slopes, subalpine and alpine meadows, banks of rivers. Foothills, montane and alpine zones. Nuratau, Aktau, Malguzar, North Turkestan. Medicinal, fodder, meliferous.



Figure 352 *Galium pamiroalaicum* (photography by Natalya Beshko)

1279. *Galium pseudorivale* Tzvelev [*Asperula aparine* M. Bieb.]

Perennial. Woodlands, river valleys, gardens, fine-earth and stony slopes. Foothills, montane and alpine zones. Nuratau, Malguzar, North Turkestan.

1280. *Galium setaceum* Lam. [*Galium decaisnei* Boiss.]

Annual. Fine-earth, gravelly and stony slopes, screes, rocks, banks of rivers, fallow lands. Foothills, montane and alpine zones. Nuratau, Malguzar, North Turkestan.

1281. *Galium songaricum* Schrenk

Annual. Juniper forests, wet shady places. Montane and alpine zones. North Turkestan.

1282. *Galium spurium* L.

Annual. Fine-earth, gravelly and stony slopes, screes, rocks, river valleys, woodlands, gardens, fields, fallow lands. Plain, foothills, montane and alpine zones, Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan.

1283. *Galium spurium* subsp. ***ibicinum*** (Boiss. & Hausskn.) Ehrend. [*Galium ibicinum* Boiss. & Hausskn.]

Annual. Fine-earth slopes, river valleys, wet shady places. Montane and alpine zones. North Turkestan.

1284. *Galium tenuissimum* M. Bieb.

Annual. Fine-earth, gravelly and stony slopes, pebbles, river valleys, piedmont plains, clay deserts, fallow lands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Fodder.

1285. *Galium tianschanicum* Popov

Perennial. Gravelly and stony slopes, screes, rocks, moraines, pebbles, dry riverbeds. Montane and alpine zones. Nuratau, Malguzar, North Turkestan.

1286. *Galium tricornutum* Dandy

Annual. Gravelly and stony slopes, screes, rocks, banks of rivers and canals, fields, fallow lands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan.

1287. *Galium turkestanicum* Pobed.

Perennial. Fine-earth slopes, meadows, river valleys, woodlands. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Medicinal.

1288. *Galium verticellatum* Danthoine ex Lam

Perennial. Fine-earth, gravelly and stony slopes, screes, rocks, fields, fallow lands. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan.

1289. *Galium verum* L. [*Galium ruthenicum* Willd.]

Perennial. Fine-earth, gravelly and stony slopes, dry riverbeds, banks of rivers, subalpine and alpine meadows, banks of rivers. Foothills, montane and alpine zones. Nuratau, Malguzar, North Turkestan. Medicinal, poisonous, dye, ornamental, meliferous.

Genus 392. *Cruciata* Mill.

1290. *Cruciata pedemontana* (Bellardi) Ehrend.

Annual. Fine-earth slopes, banks of rivers, fallow lands. Foothills, montane zone. Nuratau.

Genus 393. *Rubia* L.

1291. *Rubia regelii* Pojark. Figure 353

Semishrub. Gravelly and stony slopes, screes. Montane zone. Nuratau.



Figure 353 *Rubia regelii* (photography by Natalya Beshko)

Genus 394. *Callipeltis* Stev.

1292. *Callipeltis cucularis* (L.) DC.

Annual. Gravelly and stony sloper, screes, rocks, pebbles. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan.

Family 89. Gentianaceae

Genus 395. *Centaurium* Hill

1293. *Centaurium erythraea* subsp. *turcicum* (Velen.) Melderis [*Centaurium turcicum* (Velen.) Bornm.] Figure 354

Biennial. Banks of rivers and canals, swamps, meadows. Montane zone. Nuratau. Medicinal, ornamental.



Figure 354 *Centaurium erythraea* subsp. *turcicum* (photography by Natalya Beshko)

1294. *Centaurium pulchellum* (Sw.) Druce

Annual. Meadows, saline lands, wet places, banks of rivers and canals, sandy deserts, fallow lands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, ornamental.

1295. *Centaurium spicatum* (L.) Fritsch

Annual. Meadows, saline lands, wet places, banks of rivers and canals, fallow lands. Plain. Mirzachul. Medicinal, ornamental.

Genus 396. *Gentiana* L.

1296. *Gentiana leucomelaena* Maxim.

Annual or biennial. Meadows, swamps, banks of rivers. Montane and alpine zones. Malguzar, North Turkestan.

1297. *Gentiana olivieri* Griseb. Figure 355

Perennial. Fine-earth slopes, piedmont plains, clay deserts, banks of rivers, fallow lands. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Medicinal, ornamental.



Figure 355 *Gentiana olivieri* (photography by Natalya Beshko)

1298. *Gentiana prostrata* Haenke

Annual or biennial. Subalpine and alpine meadows, swamps, wet places, juniper forests, banks of rivers. Montane and alpine zones. North Turkestan.

1299. *Gentiana riparia* Kar. & Kir.

Annual or biennial. Swamps, meadows, banks of rivers. Montane and alpine zones. North Turkestan.

Genus 397. *Gentianella* Moench

1300. *Gentianella sibirica* (Kuzn.) Holub [*Gentiana sibirica* (Kuzn.) Grossh.]

Annual or biennial. Alpine meadows, moraines, pebbles, shady wet places, banks of rivers. Montane and alpine zones. North Turkestan.

1301. *Gentianella turkestanorum* (Gand.) Holub [*Gentiana turkestanorum* Gand.]

Annual or biennial. Meadows, swamps, banks of rivers, woodlands, wet places near springs. Montane and alpine zones. Malguzar, North Turkestan. Medicinal, ornamental.

Genus 398. *Gentianopsis* Ma

1302. *Gentianopsis barbata* (Froel.) Ma [*Gentiana barbata* Froel.]

Annual or biennial. Meadows, fine-earth slopes, moraines, swamps, banks of rivers. Montane and alpine zones. North Turkestan. Medicinal, ornamental.

Genus 399. *Lomatogonium* A. Braun

1303. *Lomatogonium carinthiacum* (Wulfen) A. Braun

Annual. Wet stony slopes, alpine meadows, swamps, moraines, banks of streams. Alpine zone. North Turkestan. Medicinal, meliferous.

Genus 400. *Swertia* L.

1304. *Swertia lactea* Bunge

Perennial. Banks of rivers, wet stony slopes and rocks, woodlands, subalpine meadows, swamps, moraines. Montane and alpine zones. Malguzar, North Turkestan. Ornamental.

Family 90. Apocynaceae

Genus 401. *Cynanchum* L.

1305. *Cynanchum acutum* subsp. *sibiricum* (Willd.) Rech. f. [*Cynanchum sibiricum* Willd.] Figure 356

Perennial. Riparian forests, banks of rivers, lakes and canals, wet stony slopes, pebbles, saline lands, sandy deserts. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, weed.



Figure 356 *Cynanchum acutum* subsp. *sibiricum* (photography by Natalya Beshko)

Genus 402. *Trachomitum* Woodson

1306. *Trachomitum scabrum* (Russanov) Pobed. Figure 357

Perennial. Riparian forests, banks of rivers, lakes and canals, saline lands. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, poisonous, industrial, ornamental, meliferous.



Figure 357 *Trachomitum scabrum* (photography by Natalya Beshko)

Family 91. Boraginaceae

Genus 403. *Heliotropium* L.

1307. *Heliotropium arguzioides* Kar. & Kir.

Perennial. Sandy deserts. Kyzylkum. Poisonous, fodder, meliferous.

1308. *Heliotropium bogdanii* Czukav.

Annual. Stony banks of rivers, pebbles, conglomerates. Foothills. North Turkestan.

1309. *Heliotropium dasycarpum* Ledeb.

Perennial. Sandy, clayey and gravelly soils. Plain, foothills. Nuratau, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Poisonous, fodder, weed.

1310. *Heliotropium ellipticum* Ledeb.

Annual. Pebbles, dry riverbeds, gravelly soils, fields, fallow lands. Plain, foothills. Nuratau. Poisonous, weed.

1311. *Heliotropium lasiocarpum* Fisch. & C. A. Mey.

Annual. Sandy, clayey and gravelly soils, wastelands, roadsides, fallow lands. Foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Poisonous, weed.

1312. *Heliotropium olgae* Bunge

Annual. Sandy, clayey and gravelly soils, pebbles. Plain, foothills. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Poisonous.

Genus 404. *Lithospermum* L.

1313. *Lithospermum officinale* L.

Perennial. Fine-earth slopes, river valleys, banks of canals. Plain, foothills, montane zone. Nuratau, Malguzar, North Turkestan, Mirzachul. Medicinal, dye, weed, fodder.

Genus 405. *Buglossoides* Moench

1314. *Buglossoides arvensis* (L.) J. M. Johnst.

Annual. Fine-earth, gravelly and stony slopes, river valleys, fallow lands, fields. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Dye, weed.

Genus 406. *Arnebia* Forsk.

1315. *Arnebia coerulea* Schipcz. Figure 358

Annual. Fine-earth, gravelly and stony slopes, sandy deserts, wastelands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Dye, fodder, ornamental.



Figure 358 *Arnebia coerulea* (photography by Natalya Beshko)

1316. *Arnebia decumbens* (Vent.) Coss. & Kralik. Figure 359

Annual. Sandy and clay deserts, gravelly and stony slopes, fields, fallow lands, banks of canals. Plain, foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Dye, fodder, weed.



Figure 359 *Arnebia decumbens* (photography by Natalya Beshko)

1317. *Arnebia euchroma* (Royle) I. M. Johnst. [*Macrotomia euchroma* (Royle) Paulsen]

Perennial. Stony slopes, rocks. Alpine zone. North Turkestan. Dye.

1318. *Arnebia obovata* Bunge

Perennial. Stony slopes. Montane zone. Malguzar, North Turkestan. Dye, fodder.

1319. *Arnebia transcaspica* Popov Figure 360

Annual. Sandy, clayey and gravelly soils, stony slopes. Plain, foothills. Nuratau, Nuratau Relic Mountains, Kyzylkum. Dye, fodder.



Figure 360 *Arnebia transcaspica* (photography by Natalya Beshko)

Genus 407. *Onosma* L.

1320. *Onosma dichroanta* Boiss.

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan. Medicinal, dye, meliferous.

1321. *Onosma maracandica* Zakirov

Perennial. Rocks, screes, stony slopes. Montane zone. North Turkestan.

Genus 408. *Echium* L.

1322. *Echium biebersteinii* Lacaita

Biennial. Fields, wastelands, fallow lands, roadsides, fine-earth and stony slopes, river valleys. Foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, dye, weed, meliferous.

1323. **Echium vulgare* L.

Biennial. Wastelands, fallow lands, roadsides, fine-earth and stony slopes. Foothills. Malguzar, North Turkestan. Medicinal, dye, weed, meliferous.

Genus 409. **Anchusa* L.

1324. **Anchusa arvensis* subsp. *orientalis* (L.) Nordh. [*Lycopsis orientalis* L.]

Annual. Fine-earth, gravelly and stony slopes, wastelands, fallow lands, fields, roadsides. Plains, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Weed.

1325. **Anchusa azurea* Mill. [*Anchusa italica* Retz.] Figure 361

Perennial. Ravines, river valleys, fine-earth, gravelly and stony slopes, pebbles, wastelands, fallow lands, fields, roadsides, banks of canals. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Dye, medicinal, weed, meliferous, ornamental.



Figure 361 *Anchusa azurea* (photography by Natalya Beshko)

Genus 410. *Nonea* Medik.

1326. *Nonea caspica* (Willd.) G. Don. Figure 362

Annual. Sandy and clay deserts, gravelly and stony slopes, roadsides, fallow lands. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Weed.



Figure 362 *Nonea caspica* (photography by Natalya Beshko)

1327. *Nonea melanocarpa* Boiss.

Annual. Fields, fallow lands, fields. North Turkestan, Mirzachul. Weed.

1328. *Nonea pulla* (L.) DC.

Perennial. Fallow lands, wastelands, roadsides, river valleys. North Turkestan (this species can be found in the Zaamin National Park, in basin of the river Uriklisay, because it was reported from the neighbouring area of Tajikistan, from the basin of the river Kusavli). Medicinal, meliferous.

Genus 411. *Myosotis* L.

1329. *Myosotis alpestris* F. W. Schmidt

Perennial. Subalpine and alpine meadows, gravelly and stony slopes, moraines. Montane and alpine zones, North Turkestan. Fodder, ornamental.

1330. *Myosotis laxa* subsp. *caespitosa* (Schultz) Hyl. ex Nordh. [*Myosotis caespitosa* Schultz]

Perennial. River valleys, swamps, wet places near springs. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan.

1331. *Myosotis refracta* Boiss.

Annual. Shady wet places, fine-earth, gravelly and stony slopes, pebbles. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Weed.

1332. *Myosotis stricta* Link. ex Roem. & Schult. [*Myosotis micrantha* Pall. & Lehm.]

Annual. River valleys, fine-earth, gravelly and stony slopes, pebbles, rocks, fallow lands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Weed.

Genus 412. *Lappula* Moench

1333. *Lappula brachycentra* (Ledeb.) Gürke

Annual or biennial. Gravelly and stony slopes. Foothills, montane and alpine zones. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan.

1334. *Lappula microcarpa* (Ledeb.) Gürke

Annual or biennial. Sandy and clay deserts, piedmont plains, fine-earth, gravelly and stony slopes, fallow lands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Weed.

1335. *Lappula myosotis* Moench

Annual or biennial. Wastelands, roadsides, fallow lands, surroundings of wells and sheepyards, fine-earth, gravelly and stony slopes. Plain, foothills. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Weed.

1336. *Lappula nuratavica* Nabiev & Zakirov Figure 363

Annual. Stony slopes, rocks. Montane zone. Nuratau. Endemic to the Nuratau ridge. UzbRDB 2.



Figure 363 *Lappula nuratavica* (photography by Natalya Beshko)

1337. *Lappula occultata* Popov

Annual. Gravelly and stony slopes, screes, rocks. Foothills, montane zone. Malguzar, North Turkestan.

1338. *Lappula marginata* (M. Bieb.) Gürke [*Lappula patula* (Lehm.) Asch. ex Gürke; *Lappula semiglabra* (Ledeb.) Gürke]

Annual. Gardens, fields, wastelands, roadsides, fallow lands, pebbles, fine-earth and gravelly slopes, river valleys, sandy and clay deserts. Plain, foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Weed.

1339. *Lappula sarawschanica* (Lipsky) Nabiev

Perennial. Stony slopes, screes, rocks. Montane and alpine zones. Malguzar, North Turkestan.

1340. *Lappula semialata* Popov

Biennial. Gravelly and stony slopes. Foothills, montane and alpine zones. Malguzar, North Turkestan.

1341. *Lappula sessiliflora* Gürke

Annual. Gravelly and stony slopes. Foothills, montane zone. Nuratau, Nuratau Relic Mountains.

1342. *Lappula sinaica* (A. DC.) Asch. & Schweinf.

Annual. Fine-earth, gravelly and stony slopes, rocks, fallow lands. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Weed.

1343. *Lappula spinocarpos* (Forssk.) Asch. ex Kuntze

Annual. Sandy and clay deserts, piedmont plains, gravelly and stony slopes. Plain, foothills. North Turkestan, Mirzachul, Kyzylkum.

1344. *Lappula squarrosa* (Retz.) Dumort. [*Lappula consanguinea* (Fisch. & C. A. Mey.) Gürke]

Annual or biennial. Fields, fallow lands, wastelands. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Weed.

Genus 413. *Asperugo* L.

1345. *Asperugo procumbens* L.

Annual. Fields, river valleys, wastelands, roadsides, settlements, surroundings of wells and sheepyards, gardens, banks of rivers, lakes and canals, fallow lands, shady wet places. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Medicinal, weed.

Genus 414. *Heterocaryum* DC.

1346. *Heterocaryum laevigatum* (Kar. & Kir.) A. DC.

Annual. Gravelly and stony slopes, river valleys. Foothills. Nuratau. Weed.

1347. *Heterocaryum macrocarpum* Zakirov

Annual. Fine-earth and stony slopes, wastelands, roadsides, fallow lands. Foothills, montane zone. Malguzar, North Turkestan. Weed.

1348. *Heterocaryum subsessile* Vatke

Annual. Gravelly slopes, wastelands. Foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan, Mirzachul. Weed.

1349. *Heterocaryum szovitsianum* (Fisch. & C. A. Mey.) A. DC. [*Heterocaryum rigidum* A. DC.]

Annual. Fine-earth, gravelly and stony slopes, wastelands, fallow lands, roadsides. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Weed.

Genus 415. *Rochelia* Rchb.

1350. *Rochelia bungei* Trautv.

Annual. Fine-earth, gravelly and stony slopes, dry riverbeds, sandy deserts, fields, fallow lands. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Kyzylkum. Weed.

1351. *Rochelia cardiosepala* Bunge

Annual. Fine-earth, gravelly and stony slopes, fallow lands, fields, dry riverbeds, sandy deserts. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Weed.

1352. *Rochelia disperma* subsp. *retorta* (Pall.) Kotejowa [*Rochelia retorta* (Pall.) Lipsky]

Annual. Clay deserts, river valleys, piedmont plains, fine-earth, gravelly and stony slopes, fields, fallow lands, wastelands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Weed.

1353. *Rochelia leiocarpa* Ledeb.

Annual. Fine-earth, gravelly and stony slopes, pebbles. Plain, foothills, montane zone. Nuratau,

Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Weed.

1354. *Rochelia peduncularis* Boiss.

Annual. Fine-earth, gravelly and stony slopes. Plain, foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Weed.

Genus 416. *Rindera* Pall.

1355. *Rindera tetraspis* Pall. Figure 364

Perennial. Rocks, fine-earth, gravelly and stony slopes, piedmont plains. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan.



Figure 364 *Rindera tetraspis* (photography by Natalya Beshko)

Genus 417. *Hackelia* Opiz.

1356. *Hackelia uncinata* (Benth.) C. E. C. Fisch. [*Paracaryum glochidiatum* (A. DC.) Benth. & Hook. f.]

Annual. Clayey and gravelly soils. Mirzachul.

Genus 418. *Mattiastrum* Brand

1357. *Mattiastrum himalayense* (Klotzsch) Brand [*Paracaryum himalayense* (Klotzsch) C. B. Clarke]

Perennial. Stony slopes, screes. Montane and alpine zones. North Turkestan.

Genus 419. *Lindelofia* Lehm.

1358. *Lindelofia olgae* Brand

Perennial. Fine-earth, gravelly and stony slopes. Alpine zone. North Turkestan. Dye.

1359. *Lindelofia macrostyla* (Bunge) Popov Figure 365

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Dye, weed.



Figure 365 *Lindelofia macrostyla* (photography by Natalya Beshko)

1360. *Lindelofia stylosa* (Kar. & Kir.) Brand

Perennial. Fine-earth, gravelly and stony slopes. Montane and alpine zones. North Turkestan. Ornamental.

Genus 420. *Solenanthus* Ledeb.

1361. *Solenanthus circinatus* Ledeb.

Perennial. Fine-earth, gravelly and stony slopes, shady wet places. Montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Ornamental, meliferous.

Genus 421. *Kuschakewiczia* Regel & M. Smirn.

1362. *Kuschakewiczia turkestanica* Regel & Smirn. [*Solenanthus turkestanicus* (Regel & Smirn.) Kuzn.]

Perennial. Clayey and fine-earth soils. Foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Meliferous.

Genus 422. **Cynoglossum* L.

1363. **Cynoglossum creticum* Mill.

Annual or biennial. Banks of rivers and canals, fallow lands, fields, wastelands. Plain, foothills, montane zone. Nuratau, North Turkestan. Medicinal, meliferous, weed.

Genus 423. *Trichodesma* R. Br.

1364. *Trichodesma incanum* (Bunge) A. DC.

Perennial. Fine-earth, gravelly and stony slopes, pebbles, river valleys, fields, fallow lands, settlements. Foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Weed, poisonous, medicinal.

Family 92. Convolvulaceae

Genus 424. *Cuscuta* L.

1365. *Cuscuta approximata* Bab. [*Cuscuta cupulata* Engelm.]

Annual. Fields, fallow lands, gardens. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Poisonous. Parasite. Host plants are *Medicago sativa*, *Setaria viridis*, *Cynodon dactylon*, *Convolvulus arvensis*, *Lactuca scariola*. Quarantine invasive weed.

1366. *Cuscuta brevistyla* A. Braun ex A. Rich.

Annual. Fine-earth, gravelly and stony slopes. Foothills, montane and alpine zones. Nuratau, Malguzar, North Turkestan. Poisonous. Parasite. Host plants are different wild herbs and semishrubs. Quarantine invasive weed.

1367. **Cuscuta campestris* Yunck.

Annual. Gardens, fields, vineyards. Plain, foothills. Nuratau, Aktau, Malguzar, North Turkestan, Mirzachul. Parasite. Host plants are different crops, vegetables and ornamentals, as well as weeds

and wild species of *Polygonum*, *Zygophyllum*, etc. Quarantine invasive weed.

1368. *Cuscuta europaea* L.

Annual. Woodlands, wet places, banks of rivers, lakes and canals, fine-earth, gravelly and stony slopes. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Medicinal, poisonous. Parasite. Host plants are different wild herbs, semishrubs and shrubs (*Glycyrrhiza glabra*, *Ferula* sp., *Artemisia dracunculus*, etc.). Quarantine invasive weed.

1369. *Cuscuta lehmanniana* Bunge

Annual. Riparian forests, banks of rivers, lakes and canals, gardens, fields, vineyards. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal. Parasite. Host plants are different cultivated and wild herbs, semishrubs, shrubs and trees (more than 200 species). Quarantine invasive weed.

1370. *Cuscuta monogyna* Vahl.

Annual. Woodlands, gardens, vineyards, river valleys, banks of lakes and canals. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Parasite. Host plants are different cultivated and wild herbs, shrubs and trees (species of genera *Rhamnus*, *Salix*, *Ziziphus*, *Paliurus*, *Tamarix*, *Berberis*, *Rosa*, *Fraxinus*, *Pistacia*, *Vitis*, etc.). Quarantine invasive weed.

1371. *Cuscuta pedicellata* Ledeb.

Annual. Sandy and clay deserts, piedmont plains, fine-earth, gravelly and stony slopes. Plain, foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal. Parasite. Host plants are different wild herbs and shrubs (*Poa bulbosa*, *Peganum harmala*, *Alhagi* sp., *Trifolium* sp., *Trigonella* sp., *Galium* sp., *Artemisia* sp., etc.). Quarantine invasive weed.

1372. *Cuscuta pellucida* Butkov

Annual. Piedmont plains, fine-earth, gravelly and stony slopes. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, North Turkestan. Parasite. Host plants are different wild herbs and semishrubs (*Alhagi* sp., *Artemisia* sp., *Origanum* sp., etc.). Quarantine invasive weed.

Genus 425. *Convolvulus* L.

1373. **Convolvulus arvensis* L.

Perennial. A weed widespread in different habitats. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, alkaloid-bearing, weed, fodder, meliferous.

1374. *Convolvulus fruticosus* Pall. Figure 366

Semishrub. Sandy deserts. Plain. Mirzachul, Kyzylkum. Meliferous.



Figure 366 *Convolvulus fruticosus* (photography by Natalya Beshko)

1375. *Convolvulus hamadae* (Vved.) V. Petrov

Semishrub. Sandy and clay deserts, gravelly and stony slopes of relic mountains. Plain, foothills. Nuratau Relic Mountains, Mirzachul, Kyzylkum. Fodder, meliferous.

1376. *Convolvulus korolkowii* Regel & Schmalh.

Perennial. Sandy deserts. Plain. Kyzylkum. Meliferous.

1377. *Convolvulus lineatus* L. Figure 367

Perennial. Fine-earth, gravelly and stony slopes, fallow lands, roadsides, banks of rivers and canals, wet places. Foothills, montane and alpine zones. Nuratau, Aktau, Malguzar, North Turkestan. Fodder, weed, meliferous.



Figure 367 *Convolvulus lineatus* (photography by Natalya Beshko)

1378. *Convolvulus pilosellifolius* Desr.

Perennial. Fallow lands, clayey and skeleton soils, banks of canals. Plain. Mirzachul. Fodder, meliferous.

1379. *Convolvulus pseudocantabricus* Schrenk ex Fisch. & C. A. Mey.

Perennial. Piedmont plains, fine-earth, gravelly and stony slopes. Foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Medicinal, poisonous, meliferous.

1380. *Convolvulus subhirsutus* Regel & Schmalh.

Perennial. Piedmont plains, fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Medicinal, fodder, weed, meliferous.

Genus 426. *Calystegia* R. Br.

1381. *Calystegia sepium* (L.) R. Br.

Perennial. Riparian forests, gardens, banks of rivers and canals, stony wet places, settlements. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, poisonous, ornamental, meliferous.

Family 93. Solanaceae

Genus 427. *Solanum* L.

1382. **Solanum americanum* Mill. (*Solanum nigrum* L.)

Annual. Gardens, fields, fallow lands, settlements, river valleys, wastelands. Plain. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, alkaloid-bearing, oil, poisonous, food, weed, meliferous.

1383. *Solanum asiae-mediae* Pojark.

Semishrub. Riparian forests, ravines, stream banks. Plain, foothills, montane zone. Nuratau, Malguzar, North Turkestan, Mirzachul.

1384. *Solanum kitagawae* Schonb.-Tem.

Semishrub. Riparian forests, stony slopes, ravines, banks of rivers, lakes and canals. Plain, foothills, montane zone. Nuratau, North Turkestan, Mirzachul.

1385. *Solanum olgae* Pojark.

Annual. Fields, fallow lands, wastelands, gardens, banks of rivers, lakes and canals, stony slopes. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum.

Genus 428. *Lycium* L.

1386. *Lycium dasystemum* Pojark.

Shrub. Sandy and clay deserts, saline lands, banks of rivers, lakes and canals. Plain, foothills. Nuratau Relic Mountains, Mirzachul, Kyzylkum. Medicinal, oil, afforestation, meliferous.

1387. *Lycium ruthenicum* Murray Figure 368

Shrub. Sandy and clay deserts, saline lands, banks of rivers, lakes and canals. Nuratau Relic Mountains, Mirzachul, Kyzylkum. Medicinal, oil, afforestation, weed, meliferous.



Figure 368 *Lycium ruthenicum* (photography by Natalya Beshko)

Genus 429. *Hyoscyamus* L.

1388. **Hyoscyamus niger* L. Figure 369

Biennial. Fine-earth, gravelly and stony slopes, wastelands, fallow lands, fields, gardens, settlements, roadsides. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, poisonous, insecticide, weed, alkaloid-bearing.



Figure 369 *Hyoscyamus niger* (photography by Natalya Beshko)

1389. *Hyoscyamus pusillus* L. Figure 370

Annual. Fine-earth, gravelly and stony slopes, screes, rocks, sandy and clay deserts, saline lands, wastelands, fallow lands. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Poisonous, alkaloid-bearing, weed.



Figure 370 *Hyoscyamus pusillus* (photography by Natalya Beshko)

Genus 430. **Datura* L.

1390. **Datura stramonium* L.

Annual. Settlements, wastelands, fields, fallow lands, roadsides, banks of canals. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, poisonous, insecticide, weed, alkaloid-bearing.

Genus 431. **Nicandra* Adans.

1391. **Nicandra physaloides* (L.) Gaertn

Annual. Settlements, wastelands, fields, fallow lands, roadsides, banks of canals. Mirzachul, North

Turkestan. Medicinal, oil, fodder, weed.

Family 94. Oleaceae

Genus 432. *Fraxinus* L.

1392. *Fraxinus sogdiana* Bunge

Tree. River valleys, fine-earth slopes. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. IUCN NT. Industrial, afforestation, ornamental, medicinal.

1393. **Fraxinus angustifolia* subsp. *syriaca* (Boiss.) Yalt. [*Fraxinus syriaca* Boiss.]

Tree. River valleys. Montane zone. Nuratau. Industrial, afforestation, ornamental, medicinal.

Family 95. Plantaginaceae

Genus 433. **Kickxia* Dumort.

1394. **Kickxia elatine* (L.) Dumort.

Annual. Fine-earth slopes, pebbles, riparian forests, fields, fallow lands. Plain, foothills, montane zone. North Turkestan, Mirzachul. Medicinal.

Genus 434. *Veronica* L.

1395. **Veronica anagallis-aquatica* L.

Perennial. Wet places near springs, banks of rivers and canals. Plain, foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Medicinal, meliferous.

1396. *Veronica anagalloides* Guss

Perennial. Banks of rivers, lakes and canals, swamps, meadows, fallow lands, pebbles, saline lands. Plain, foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan, Mirzachul, Kyzylkum.

1397. *Veronica arguteserrata* Regel & Schmalh.

Perennial. Fine-earth and stony slopes, screes, rocks, piedmont plains, fields, fallow lands. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul.

1398. *Veronica arvensis* L.

Annual. Fine-earth slopes, wet meadows, river valleys, roadsides, fields, fallow lands. Foothills, montane zone. North Turkestan. Medicinal.

1399. *Veronica beccabunga* L.

Perennial. Banks of rivers and canals, swamps, wet places near springs. Plain, foothills, montane and alpine zones. Nuratau, Malguzar, North Turkestan. Medicinal.

1400. *Veronica biloba* Schreb. ex L.

Annual. Sandy and clay deserts, fine-earth, gravelly and stony slopes, pebbles, rocks, scree, moraines. Plain, foothills, montane and alpine zones. Nuratau, Malguzar, North Turkestan, Mirzachul, Kyzylkum.

1401. *Veronica campylopoda* Boiss.

Annual. Sandy and clay deserts, piedmont plains, fine-earth, gravelly and stony slopes, rocks, pebbles, fields, fallow lands, saline lands, river valleys. Plain, foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan, Mirzachul, Kyzylkum.

1402. *Veronica capillipes* Nevski

Annual. Fine-earth, gravelly and stony slopes, scree, rocks, river valleys. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan.

1403. *Veronica cardiocarpa* (Kar. & Kir.) Walp.

Annual. Sandy and clay deserts, fine-earth, gravelly and stony slopes, rocks, scree. Plain, foothills, montane zone. Nuratau, Malguzar, North Turkestan, Mirzachul, Kyzylkum.

1404. *Veronica hederifolia* L.

Annual. Settlements, fields, fallow lands, gardens, wastelands, roadsides, river valleys, banks of canals, stony slopes. Plain, foothills, montane and alpine zones. Nuratau, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Weed.

1405. *Veronica intercedens* Bornm.

Annual. Fine-earth and stony slopes, scree. Foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan.

1406. *Veronica oxycarpa* Boiss.

Perennial. Banks of rivers, lakes and canals, wet places near springs, gardens, meadows. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul.

1407. **Veronica persica* Poir.

Annual. Settlements, fields, fallow lands, wastelands, gardens, banks of canals, river valleys. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Weed.

1408. **Veronica polita* Fr.

Annual. Settlements, banks of rivers and canals, fields, fallow lands, fine-earth slopes, pebbles, river valleys. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum.

1409. *Veronica verna* L.

Annual. Roadsides, pebbles, meadows, gravelly and fine-earth slopes. Foothills, montane and alpine zones. Nuratau, North Turkestan.

Genus 435. *Lagotis* Gaertn.

1410. *Lagotis korolkowii* (Regel & Schmalh.) Maxim. Figure 371

Perennial. Fine-earth and stony slopes, alpine meadows. Montane and alpine zones. North Turkestan.



Figure 371 *Lagotis korolkowii* (photography by Natalya Beshko)

Genus 436. *Plantago* L.

1411. *Plantago gentianoides* Sm.

Perennial. Swamps, stream banks. Alpine zone. North Turkestan.

1412. *Plantago lagocephala* Bunge

Annual. Sandy and clay deserts, saline lands. Plain. Kyzylkum.

1413. *Plantago lanceolata* L.

Perennial. Fine-earth slopes, river valleys, banks of lakes and canals, roadsides, wastelands, gardens, wet places. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, fodder.

1414. *Plantago major* L.

Biennial or perennial. Wet places, swamps, meadows, banks of rivers, lakes and canals, riparian forests, roadsides, settlements, fields, gardens. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, fodder.

Genus 437. Hippuris L.

1415. Hippuris vulgaris L.

Perennial. Standing and slowly flowing water. Nuratau Relic Mountains, North Turkestan, Mirzachul, Kyzylkum. Medicinal, fodder.

Family 96. Scrophulariaceae

Genus 438. Verbascum L.

1416. Verbascum blattaria L.

Annual or biennial. Fine-earth slopes, piedmont plains, sandy and clay deserts, banks of rivers, lakes and canals, saline lands, riparian forests, fallow lands, fields, gardens, meadows. Plain, foothills. Nuratau, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, meliferous, weed, insecticide.

1417. Verbascum erianthum Benth. [*Verbascum bactrianum* Bunge]

Biennial. Fields, fallow lands, banks of rivers and canals, saline lands, stony slopes, pebbles. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Malguzar, North Turkestan, Mirzachul. Medicinal, meliferous, insecticide.

1418. Verbascum songaricum Schrenk Figure 372

Biennial. Sandy deserts, roadsides, banks of canals, dry riverbeds, river valleys, ravines, fallow lands, fields, fine-earth, gravelly and stony slopes. Plain, foothills, montane and alpine zones. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, meliferous, insecticide.



Figure 372 *Verbascum songaricum* (photography by Natalya Beshko)

1419. *Verbascum turkestanicum* Franch.

Annual or biennial. Fine-earth and stony slopes. Montane zone. North Turkestan.

Genus 439. *Linaria* Mill.

1420. *Linaria popovii* Kuprian. Figure 373

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Medicinal.



Figure 373 *Linaria popovii* (photography by Natalya Beshko)

1421. *Linaria sessilis* Kuprian.

Perennial. Stony slopes, screens, pebbles. Montane and alpine zones. Malguzar, North Turkestan.

Genus 440. *Scrophularia* L.

1422. *Scrophularia gontscharovii* Gorschk.

Perennial. Stony slopes. Montane and alpine zones. North Turkestan.

1423. *Scrophularia griffithii* Benth. ex DC.

Perennial. Fine-earth, gravelly and stony slopes. Montane and alpine zones. North Turkestan.

1424. *Scrophularia heucheriiflora* Schrenk

Perennial. Stony and gravelly slopes, meadows, river valleys. Foothills, montane zone. North Turkestan.

1425. *Scrophularia incisa* Weinm.

Perennial. Stony slopes, pebbles, screes. Plain, foothills, montane and alpine zones. North Turkestan. Medicinal.

1426. *Scrophularia integrifolia* Pavlov

Perennial. Gravelly and stony slopes, rocks. Montane zone. North Turkestan.

1427. *Scrophularia kiriloviana* Schischk.

Perennial. Fine-earth, gravelly and stony slopes, screes, ravines, river valleys. Montane zone. North Turkestan.

1428. *Scrophularia leucoclada* Bunge

Perennial. Sandy soils, stony and gravelly slopes, dry riverbeds, saline lands. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Mirzachul, Kyzylkum.

1429. *Scrophularia scoparia* Pennell

Perennial. Stony and gravelly slopes, pebbles. Foothills, montane and alpine zones. Nuratau, Malguzar, North Turkestan.

1430. *Scrophularia striata* Boiss.

Perennial. Fine-earth, gravelly and stony slopes, dry riverbeds, pebbles. Foothills, montane zone. North Turkestan.

1431. *Scrophularia umbrosa* Dumort.

Perennial. Fine-earth, gravelly and stony slopes, stream banks, wet places, meadows. Montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Medicinal, poisonous, meliferous.

1432. *Scrophularia vvedenskyi* Bondarenko & Filatova

Biennial. Rocks, fine-earth, gravelly and stony slopes, pebbles. Foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan.

1433. *Scrophularia xanthoglossa* Boiss.

Perennial. Rocks, stony slopes. Montane and alpine zones. Nuratau, Malguzar, North Turkestan.

Family 97. Lentibulariaceae

Genus 441. *Utricularia* L.

1434. *Utricularia minor* L.

Perennial. Standing and slowly flowing water. Montane zone. North Turkestan.

Family 98. Verbenaceae

Genus 442. *Verbena* L.

1435. *Verbena officinalis* L.

Perennial. River valleys, ravines, gardens, meadows, banks of rivers, lakes and canals, fallow lands, fine-earth slopes, roadsides. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, poisonous, weed.

Family 99. Lamiaceae [Labiatae]

Genus 443. *Teucrium* L.

1436. *Teucrium scordium* subsp. *scordioides* (Schreb.) Arcang. [*Teucrium scordioides* Schreb.]
Perennial. Wet places, banks of rivers, lakes and canals. Plain. Mirzachul. Medicinal, essential oil, poisonous, insecticide.

Genus 444. *Scutellaria* L.

1437. *Scutellaria adenostegia* Briq.

Perennial. Fine-earth and stony slopes, rocks, screes, dry riverbeds. Montane zone. Nuratau, North Turkestan.

1438. *Scutellaria comosa* Juz. Figure 374

Semishrub. Stony slopes, rocks, screes. Montane zone. Nuratau, Aktau, Malguzar, North Turkestan.



Figure 374 *Scutellaria comosa* (photography by Natalya Beshko)

1439. *Scutellaria cordifrons* Juz. Figure 375

Semishrub. Stony slopes, rocks, screes, ravines. Montane and alpine zones. Malguzar, North Turkestan.



Figure 375 *Scutellaria cordifrons* (photography by Natalya Beshko)

1440. *Scutellaria galericulata* L.

Perennial. Banks of rivers, riparian forests, fields, wet slopes. Plain, foothills, montane zone. Nuratau, Malguzar, North Turkestan. Medicinal, essential oil, dye, meliferous.

1441. *Scutellaria glabrata* Vved.

Semishrub. Stony slopes, screes. Montane and alpine zones. Nuratau, Malguzar, North Turkestan.

1442. *Scutellaria immaculata* Nevski ex Juz. Figure 376

Semishrub. Stony slopes, rocks. Montane zone. Nuratau, Malguzar, North Turkestan.

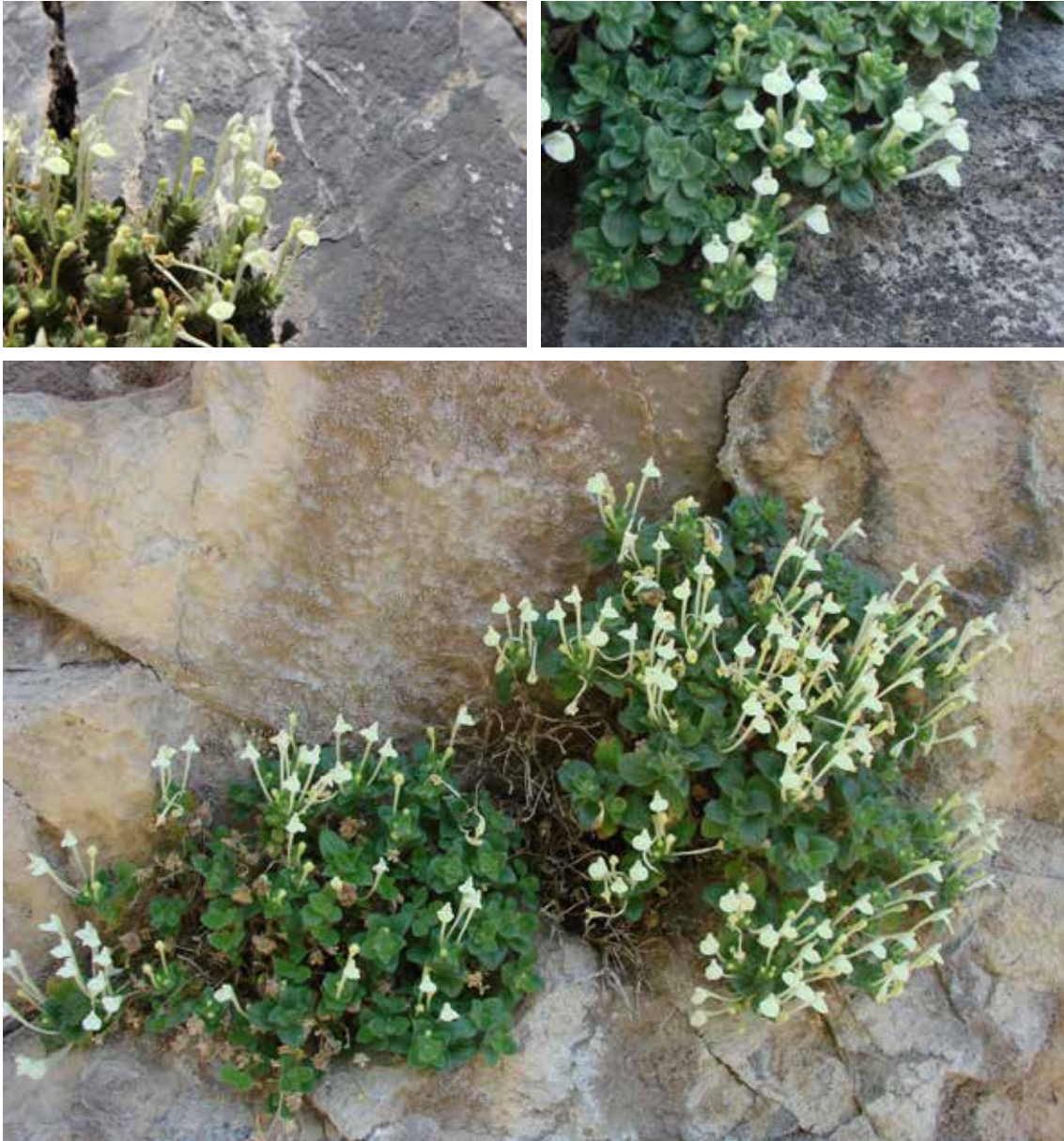


Figure 376 *Scutellaria immaculata* (photography by Natalya Beshko)

1443. *Scutellaria intermedia* Popov

Semishrub. Stony and gravelly slopes, rocks. Montane zone. Aktau, Malguzar, North Turkestan.

1444. *Scutellaria oxystegia* Juz.

Semishrub. Fine-earth and stony slopes, rocks, screes, banks of rivers. Montane zone. Nuratau, Aktau, Malguzar. Essential oil, meliferous, alkaloid-bearing.

1445. *Scutellaria phyllostachya* Juz.

Semishrub. Stony slopes, banks of rivers. Montane and alpine zones. North Turkestan.

1446. *Scutellaria ramosissima* Popov Figure 377

Semishrub. Stony slopes, screes, dry riverbeds. Montane zone. Nuratau, Malguzar, North Turkestan.



Figure 377 *Scutellaria ramosissima* (photography by Natalya Beshko)

1447. *Scutellaria schachristanica* Juz.

Perennial. Gravelly and stony slopes, screes. Alpine zone. Malguzar, North Turkestan.

1448. *Scutellaria squarrosa* Nevski

Semishrub. Rocks, stony slopes, screes. Montane zone. Malguzar, North Turkestan.

Genus 445. *Drepanocaryum* Pojark.

1449. *Drepanocaryum sewerzowii* (Regel) Pojark.

Annual. Fine-earth, gravelly and stony slopes, rocks, screes, shady places, gardens. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Weed.

Genus 446. *Marrubium* L.

1450. *Marrubium anisodon* K. Koch

Perennial. Fine-earth and stony slopes, rocks, screes, pebbles, fallow lands, roadsides, banks of canals, wastelands, fields, surroundings of wells and sheepyards. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, essential oil, meliferous, weed.

Genus 447. *Sideritis* L.

1451. *Sideritis montana* L.

Annual. Fine-earth and stony slopes, screes, rocks, pebbles, fields. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Medicinal, essential oil, food, meliferous.

Genus 448. *Lophanthus* Adans.

1452. *Lophanthus ouroumitanensis* (Franch.) Kochk. & Zuckerw.

Perennial. Fine-earth and stony slopes, river valleys, juniper forests. Montane zone. Malguzar, North Turkestan. Essential oil, meliferous.

1453. *Lophanthus schtschurowskianus* (Regel) Lipsky Figure 378

Perennial. Fine-earth, gravelly and stony slopes, dry riverbeds. Montane zone. Nuratau, Malguzar, North Turkestan. Essential oil, meliferous.



Figure 378 *Lophanthus schtschurowskianus* (photography by Natalya Beshko)

1454. *Lophanthus subnivalis* Lipsky

Perennial. Rocks, stony slopes, pebbles, moraines. Montane and alpine zone. North Turkestan. Essential oil, meliferous.

Genus 449. *Nepeta* L.

1455. *Nepeta alatavica* Lipsky

Perennial. Stony slopes, screes, pebbles. Montane and alpine zones. North Turkestan. Essential oil, meliferous.

1456. *Nepeta bracteata* Benth.

Annual. Stony and gravelly slopes. Montane and alpine zones. North Turkestan. Essential oil,

meliferous.

1457. *Nepeta cataria* L.

Perennial. Meadows, banks of rivers and canals, stony slopes. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Essential oil, meliferous.

1458. *Nepeta kokanica* Regel

Perennial. Stony slopes, screes, rocks. Alpine zone. North Turkestan. Essential oil, meliferous.

1459. *Nepeta mariae* Regel

Perennial. Stony slopes, screes, banks of rivers. Montane and alpine zones. Malguzar, North Turkestan. Essential oil, meliferous.

1460. *Nepeta maussarifii* Lipsky

Perennial. Stony slopes. Montane zone. North Turkestan. Essential oil, meliferous.

1461. *Nepeta micrantha* Bunge

Annual. Gravelly and stony slopes. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Essential oil, meliferous.

1462. *Nepeta nuda* L. (*Nepeta pannonica* L.)

Perennial. Meadows, pebbles, fine-earth slopes. Foothills, montane zone. North Turkestan. Essential oil, medicinal, meliferous.

1463. *Nepeta olgae* Regel

Perennial. Stony slopes, pebbles, rocks. Foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Essential oil, medicinal, meliferous.

1464. *Nepeta podostachys* Benth.

Perennial. Stony slopes, rocks, screes, pebbles. Montane and alpine zones. Malguzar, North Turkestan. Essential oil, meliferous.

1465. *Nepeta pungens* (Bunge) Benth.

Annual. Stony and gravelly slopes, dry riverbeds. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. Essential oil, meliferous.

1466. *Nepeta saturejoides* Boiss.

Annual. Stony slopes, rocks, screes, pebbles. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. Essential oil, meliferous.

1467. *Nepeta ucranica* L.

Perennial. Pebbles, banks of rivers. Montane zone. Malguzar, North Turkestan. Essential oil, meliferous.

Genus 450. *Dracocephalum* L.

1468. *Dracocephalum diversifolium* Rupr.

Perennial. Fine-earth and stony slopes, screes, pebbles. Montane and alpine zones. Malguzar, North Turkestan. Medicinal, meliferous.

1469. *Dracocephalum imberbe* Bunge

Perennial. Rocks, screes, moraines, stony slopes, wet places near melting snow. Alpine zone. North

Turkestan.

1470. *Dracocephalum nodulosum* Rupr.

Semishrub. Rocks, stony slopes, screes, moraines. Montane and alpine zones, Nuratau, North Turkestan. Medicinal, meliferous.

1471. *Dracocephalum nuratavicum* Adylov Figure 379

Semishrub. Stony and gravelly slopes, rocks. Montane zone. Nuratau. Ornamental. Endemic to the Nuratau Mountains.



Figure 379 *Dracocephalum nuratavicum* (photography by N. Yu. Beshko)

1472. *Dracocephalum scrobiculatum* Regel

Semishrub. Stony slopes, moraines. Alpine zone. North Turkestan.

Genus 451. *Kudrjaschevia* Pojark.

1473. *Kudrjaschevia jacubi* (Lipsky) Pojark.

Annual. Fine-earth, gravelly and stony slopes, screes. Montane zone. Nuratau, Malguzar, North Turkestan.

Genus 452. *Lallemantia* Fisch. & C. A. Mey.

1474. *Lallemantia royleana* (Benth.) Benth. Figure 380

Annual. Sandy and clay deserts, fine-earth, gravelly and stony slopes, fields, fallow lands. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, essential oil.



Figure 380 *Lallelantia royleana* (photography by Natalya Beshko)

Genus 453. Hypogomphia Bunge

1475. Hypogomphia turkeстана Bunge [*Hypogomphia turkestanica* Regel] Figure 381
Annual. Clay deserts, fine-earth, gravelly and stony slopes, river valleys, fields, fallow lands. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul.



Figure 381 *Hypogomphia turkestanica* (photography by Natalya Beshko)

Genus 454. Prunella L.

1476. Prunella vulgaris L.

Perennial. Swamps, meadows, banks of rivers, lakes and canals, pebbles, stony and gravelly slopes, wet places. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains,

Malguzar, North Turkestan, Mirzachul. Medicinal, essential oil, fodder, ornamental, meliferous.

Genus 455. *Phlomoides* Moench

1477. *Phlomoides ambigua* (Popov ex Pazij & Vved.) Adylov, Kamelin & Makhm. Figure 382
Perennial. Fine-earth, gravelly and stony slopes. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Meliferous, ornamental.



Figure 382 *Phlomoides ambigua* (photography by Natalya Beshko)

1478. *Phlomoides anisochila* (Pazij & Vved.) Salmaki Figure 383

Perennial. Stony slopes. Montane zone. Nuratau. Endemic to the Nuratau ridge. UzbRDB 1.



Figure 383 *Phlomoides anisochila* (photography by N. Yu. Beshko)

1479. *Phlomoides canescens* (Regel) Adylov, Kamelin & Makhm. Figure 384
Perennial. Fine-earth, gravelly and stony slopes. Montane and alpine zones. Malguzar, North Turkestan. Meliferous, ornamental.



Figure 384 *Phlomoides canescens* (photography by Natalya Beshko)

1480. *Phlomoides eriocalyx* (Regel) Adylov, Kamelin & Makhm. Figure 385

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar. Meliferous, ornamental.



Figure 385 *Phlomoides eriocalyx* (photography by Natalya Beshko)

1481. *Phlomoides kaufmanniana* (Regel) Adylov, Kamelin & Makhm. Figure 386

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Meliferous, ornamental.



Figure 386 *Phlomoides kaufmanniana* (photography by Natalya Beshko)

1482. *Phlomoides labiosa* (Bunge) Adylov, Kamelin & Makhm.

Perennial. Sandy and clay deserts. Plain. Mirzachul, Kyzylkum. Meliferous, ornamental.

1483. *Phlomoides napuligera* (Franch.) Adylov, Kamelin & Makhm. Figure 387

Perennial. Piedmont plains, gravelly, fine-earth and stony slopes. Plain, foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Meliferous, ornamental.



Figure 387 *Phlomoides napuligera* (photography by Natalya Beshko)

1484. *Phlomoides oreophila* (Kar. & Kir.) Adylov, Kamelin & Makhm. [*Phlomoides dszumrutensis* (Afan.) Adylov, Kamelin & Makhm.]

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. North Turkestan. Meliferous, ornamental.

1485. *Phlomoides sogdiana* (Pazij & Vved.) Salmaki Figure 388

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. Meliferous, ornamental.



Figure 388 *Phlomoides sogdiana* (photography by Natalya Beshko)

1486. *Phlomoides speciosa* (Rupr.) Adylov, Kamelin & Makhm. Figure 389

Perennial. Fine-earth, gravelly and stony slopes. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Meliferous, ornamental.



Figure 389 *Phlomoides speciosa* (photography by Natalya Beshko)

1487. *Phlomoides uniflora* (Regel) Adylov, Kamelin & Makhm. Figure 390

Perennial. Sandy, clayey and gravelly soils. Plain, foothills. Nuratau, Nuratau Relic Mountains, Mirzachul, Kyzylkum. Meliferous, ornamental.



Figure 390 *Phlomoides uniflora* (photography by Natalya Beshko)

Genus 456. *Phlomis* L.

1488. *Phlomis linearifolia* Zakirov Figure 391

Perennial. Fine-earth, gravelly and stony slopes, rocks. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. Essential oil, meliferous.



Figure 391 *Phlomis linearifolia* (photography by Natalya Beshko)

1489. *Phlomis nubilans* Zakirov Figure 392

Perennial. Fine-earth, gravelly and stony slopes. Montane zone, Nuratau. Essential oil, meliferous. Threatened species, UzbRDB 2. Endemic to the Nuratau Mountains.



Figure 392 *Phlomis nubilans* (photography by N. Yu. Beshko)

1490. *Phlomis olgae* Regel

Perennial. Fine-earth and stony slopes. Montane zone. Malguzar, North Turkestan. Essential oil, meliferous.

1491. *Phlomis salicifolia* Regel

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. Essential oil, meliferous.

1492. *Phlomis thapsoides* Bunge Figure 393

Perennial. Piedmont plains, fine-earth, gravelly and stony slopes. Foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Essential oil, meliferous.



Figure 393 *Phlomis thapsoides* (photography by Natalya Beshko)

Genus 457. *Stachyopsis* Popov & Vved.

1493. *Stachyopsis oblongata* (Schrenk) Popov & Vved. Figure 394

Perennial. Stony slopes. Montane and alpine zones. North Turkestan.



Figure 394 *Stachyopsis oblongata* (photography by Natalya Beshko)

Genus 458. *Lamium* L.

1494. *Lamium album* L. Figure 395

Perennial. Shady wet places, banks of rivers and canals, gardens, stony slopes, rocks. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Medicinal, essential oil, ornamental, meliferous.



Figure 395 *Lamium album* (photography by Natalya Beshko)

1495. *Lamium amplexicaule* L. Figure 396

Annual or biennial. Stony slopes, rocks, screes, fallow lands, fields, gardens, roadsides, banks of rivers and canals. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, meliferous.



Figure 396 *Lamium amplexicaule* (photography by Natalya Beshko)

Genus 459. Leonurus L.

1496. Leonurus glaucescens Bunge

Perennial. Fine-earth, gravelly and stony slopes, rocks, ravines, banks of rivers. Montane zone. North Turkestan.

1497. Leonurus turkestanicus V. I. Krecz. & Kuprian. Figure 397

Perennial. Fine-earth, gravelly and stony slopes, ravines, river valleys, shady wet places. Montane zone. Nuratau, Malguzar, North Turkestan. Medicinal, meliferous.



Figure 397 *Leonurus turkestanicus* (photography by Natalya Beshko)

Genus 460. *Lagochilus* Bunge ex Benth.

1498. *Lagochilus inebrians* Bunge Figure 398

Semishrub. Clay deserts, piedmont plains, stony slopes, pebbles. Plain, foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar. Medicinal. Threatened species, UzbRDB 2.



Figure 398 *Lagochilus inebrians* (photography by Natalya Beshko)

1499. *Lagochilus olgae* Kamelin Figure 399

Semishrub. Stony and gravelly slopes. Montane zone. Nuratau. UzbRDB 2. Endemic to the Nuratau ridge.



Figure 399 *Lagochilus olgae* (photography by N. Yu. Beshko)

1500. *Lagochilus proskorjakovii* Ikramov Figure 400

Semishrub. Stony slopes, rocks, screes. Montane zone. Nuratau. Medicinal. Threatened species, UzbRDB 1. Endemic to the Nuratau ridge.



Figure 400 *Lagochilus proskorjakovii* (photography by N. Yu. Beshko)

1501. *Lagochilus seravschanicus* Knorring

Semishrub. Stony slopes, screes. Montane zone. Malguzar, North Turkestan. Medicinal.

Genus 461. *Stachys* L.

1502. *Stachys hissarica* Regel Figure 401

Perennial. Fine-earth, gravelly and stony slopes, screes, river valleys. Montane and alpine zones. Malguzar, North Turkestan. Medicinal, essential oil, meliferous.



Figure 401 *Stachys hissarica* (photography by Natalya Beshko)

1503. *Stachys setifera* C. A. Mey. Figure 402

Perennial. Wet places, pebbles, river valleys, fine-earth and stony slopes. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. Medicinal, essential oil, meliferous.



Figure 402 *Stachys setifera* (photography by Natalya Beshko)

Genus 462. Chamaesphacos Schrenk

1504. Chamaesphacos ilicifolius Schrenk Figure 403

Annual. Sandy deserts. Plain. Kyzylkum.



Figure 403 *Chamaesphacos ilicifolius* (photography by Natalya Beshko)

Genus 463. *Salvia* L.

1505. *Salvia aequidens* Botsch.

Perennial. Stony slopes, rocks. Montane zone. Aktau, North Turkestan.

1506. *Salvia deserta* Schangin Figure 404

Perennial. Banks of rivers and canals, fine-earth slopes, meadows. Montane zone. Nuratau, Malguzar, North Turkestan. Medicinal, essential oil, ornamental, meliferous.



Figure 404 *Salvia deserta* (photography by Natalya Beshko)

1507. *Salvia glabricaulis* Pobed.

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. North Turkestan. Essential oil, ornamental, meliferous.

1508. *Salvia macrosiphon* Boiss.

Perennial. River valleys, dry riverbeds, fine-earth, gravelly and stony slopes. Montane zone. Nuratau, Malguzar, North Turkestan. Essential oil, ornamental, meliferous.

1509. *Salvia sarawschanica* Regel & Schmalh.

Perennial. Dry riverbeds, rocks, fine-earth, gravelly and stony slopes. Montane zone. Nuratau, Malguzar, North Turkestan. Medicinal, essential oil, ornamental, meliferous.

1510. *Salvia sclarea* L. Figure 405

Perennial. River valleys, banks of canals, dry riverbeds, ravines, fine-earth, gravelly and stony slopes,

wastelands, fallow lands, gardens. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Medicinal, essential oil, food, ornamental, meliferous.



Figure 405 *Salvia sclarea* (photography by Natalya Beshko)

1511. *Salvia spinosa* L. Figure 406

Perennial. Clayey and gravelly soils, pebbles, dry riverbeds, stony slopes. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Medicinal, essential oil, ornamental, meliferous.



Figure 406 *Salvia spinosa* (photography by Natalya Beshko)

1512. *Salvia submutica* Botsch. & Vved. Figure 407

Perennial. Stony slopes, rocks. Montane zone. Nuratau. Essential oil, ornamental, meliferous. Threatened species, UzbRDB 2. Endemic to the Nuratau ridge.



Figure 407 *Salvia submutica* (photography by N. Yu. Beshko)

1513. *Salvia virgata* Jacq.

Perennial. River valleys, ravines, gardens, meadows, stream banks, fine-earth slopes. Montane zone. Nuratau, Malguzar, North Turkestan. Medicinal, essential oil, ornamental, meliferous.

Genus 464. *Perovskia* Kar.

1514. *Perovskia angustifolia* Kudrjasch.

Semishrub. Dry riverbeds, pebbles, stony slopes. Foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan. Medicinal, essential oil, dye, meliferous.

1515. *Perovskia botschantzevii* Kovalevsk. & Kocz.

Semishrub. Stony slopes, pebbles, river valleys. Foothills, montane zone. Nuratau. Medicinal, essential oil, dye, meliferous.

1516. *Perovskia kudrjashevii* Gorschk. & Pjataeva

Semishrub. Pebbles, banks of rivers, stony slopes. Foothills, montane zone. Nuratau, North Turkestan. Medicinal, essential oil, dye, meliferous.

1517. *Perovskia scrophulariifolia* Bunge

Semishrub. Banks of rivers, rocks, screes, stony slopes, pebbles, dry riverbeds. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Medicinal, essential oil, dye, meliferous.

Genus 465. *Ziziphora* L.

1518. *Ziziphora clinopodioides* Lam. Figure 408

Semishrub. Rocks, stony slopes, screes, banks of rivers, pebbles. Foothills, montane and alpine zones. Nuratau, Aktau, Malguzar, North Turkestan. Medicinal, essential oil, food (spice-aromatic), meliferous.



Figure 408 *Ziziphora clinopodioides* (photography by Natalya Beshko)

1519. *Ziziphora pamiroalaica* Juz.

Semishrub. Fine-earth and stony slopes, rocks, screes, pebbles. Plain, foothills, montane and alpine zones. Nuratau, Malguzar, North Turkestan. Medicinal, essential oil, food (spice-aromatic), meliferous.

1520. *Ziziphora suffruticosa* Pazij & Vved.

Semishrub. Stony slopes, pebbles. Montane zone. Malguzar, North Turkestan. Medicinal, essential oil, food (spice-aromatic), meliferous.

1521. *Ziziphora tenuior* L.

Annual. Sandy and clay deserts, piedmont plains, river valleys, fine-earth, gravelly and stony slopes. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, essential oil, food (spice-aromatic), meliferous.

Genus 466. Clinopodium L.

1522. Clinopodium alpinum (L.) Kuntze [*Acinos rotundiflorus* Friv. ex Walp.]

Annual. Stony slopes, pebbles. Montane zone. Malguzar, North Turkestan. Medicinal.

1523. Clinopodium debile (Bunge) Kuntze [*Antonia debilis* (Bunge) Vved.]

Annual. Stony slopes, shady wet places, dry riverbeds. Montane and alpine zones. Malguzar, North Turkestan.

Genus 467. Hyssopus L.

1524. Hyssopus seravschanicus (Dubj.) Pazij Figure 409

Semishrub. Stony slopes, rocks, pebbles, screes. Montane and alpine zones. Malguzar, North Turkestan. Medicinal, essential oil, food (spice-aromatic), meliferous.



Figure 409 *Hyssopus seravschanicus* (photography by Natalya Beshko)

Genus 468. Origanum L.

1525. Origanum vulgare subsp. **gracile** (K. Koch) Ietsw. [*Origanum tyttanthum* Gontsch.]

Perennial. Fine-earth and stony slopes, river valleys, pebbles. Montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Medicinal, essential oil, food, meliferous.

Genus 469. Thymus L.

1526. Thymus seravschanicus Klokov Figure 410

Semishrub. Stony and gravelly slopes, screes, pebbles, rocks, alpine meadows. Montane and

alpine zones. Nuratau, Malguzar, North Turkestan. Medicinal, essential oil, food (spice-aromatic), meliferous.



Figure 410 *Thymus seravschanicus* (photography by Natalya Beshko)

1527. *Thymus subnervosus* Vved., Nabiev & Tulyag.

Semishrub. Rocks, stony slopes. Montane zone. Nuratau. Essential oil, meliferous.

Genus 470. *Lycopus* L.

1528. *Lycopus europaeus* L.

Perennial. Wet places, swamps, banks of rivers and canals. Plain, foothills, montane zone. Nuratau, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, essential oil, tanniferous, dye, meliferous.

Genus 471. *Mentha* L.

1529. *Mentha longifolia* var. *asiatica* (Boriss.) Rech. f.

Perennial. Banks of rivers and canals, wet places. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Medicinal, essential oil, food, fodder,

ornamental, meliferous.

1530. *Mentha pamiroalaica* Boriss.

Perennial. Wet places, banks of rivers. Montane zone. Nuratau, Malguzar, North Turkestan. Medicinal, essential oil, food, fodder, ornamental, meliferous.

Family 100. Mazaceae

Genus 472. *Dodartia* L.

1531. *Dodartia orientalis* L. Figure 411

Perennial. Sandy and clay deserts, piedmont plains, fine-earth, gravelly and stony slopes, river valleys, wastelands, fallow lands, fields, roadsides. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, meliferous, ornamental, insecticide.



Figure 411 *Dodartia orientalis* (photography by Natalya Beshko)

Family 101. Orobanchaceae

Genus 473. *Orobanche* L.

1532. **Orobanche aegyptiaca* Pers. [*Phelipanche aegyptiaca* (Pers.) Pom.]

Perennial. Fields, gardens, fallow lands. Plain, foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan, Mirzachul. Poisonous, weed. Parasite. Host plants are different vegetables, field crops, ornamental plants, and rarely wild growing species.

1533. *Orobanche amoena* C. A. Mey. ex Ledeb.

Perennial. Piedmont plains, fine-earth and stony slopes, fallow lands, rocks, screes. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan. Weed. Parasite. Host plants are representatives of genera *Artemisia* and *Alhagi*.

1534. *Orobanche cernua* Loefl.

Perennial. Sandy deserts, piedmont plains, banks of canals, fields, roadsides, riparian forests, screes, fine-earth and stony slopes. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Weed. Parasite. Host plants are sunflowers, *Karelinia caspica*, representatives of genera *Artemisia*, *Lactuca*, *Scariola*, *Cousinia*, *Carthamus*, and species of Solanaceae.

1535. *Orobanche coelestis* (Reut.) Boiss. & Reut. ex Beck [*Phelipanche coelestis* (Reut.) Soják]

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. Weed. Parasite. Host plants are representatives of genera *Artemisia*, *Cousinia*, *Scorsonera* and *Centaurea*.

1536. *Orobanche elatior* Sutton

Perennial. Stony slopes, screes, piedmont plains. Plain, foothills, montane zone. Malguzar, North Turkestan. Weed. Parasite. Host plants are representatives of family Asteraceae (*Echinops*, *Centaurea*, *Artemisia*, etc.).

1537. *Orobanche gigantea* (Beck) Gontsch.

Perennial. Rocks, screes, fine-earth and stony slopes. Montane zone. Nuratau. Weed. Parasite. Host plants are representatives of family Apiaceae (*Ferula*, *Schrenkia*, etc.).

1538. *Orobanche hansii* A. Kern

Perennial. Piedmont plains, fallow lands, pebbles, stony slopes, sandy and clay deserts. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Weed. Parasite. Host plants are representatives of genera *Artemisia*, *Inula*, *Tussilago* and *Cousinia*.

1539. *Orobanche orientalis* Beck [*Phelipanche orientalis* (Beck) Soják]

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. Nuratau, Malguzar, North Turkestan. Weed. Parasite. Host plants are wild almonds (*Prunus bucharica*, *Prunus spinosissima*).

1540. *Orobanche pallens* F. W. Schultz [*Phelipanche pallens* (Bunge) Soják]

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. Nuratau, Malguzar, North Turkestan. Weed. Parasite. Host plants are species of *Artemisia*.

1541. *Orobanche sulphurea* Gontsch.

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau. Weed. Parasite. Host plant is *Crambe kotschyana*.

Genus 474. *Cistanche* Hoffmanns. & Link.

1542. *Cistanche mongolica* Beck

Perennial. Saline lands, banks of lakes and canals. Plain. Mirzachel, Kyzylkum. Weed. Parasite. Host plants are species of *Tamarix*.

1543. *Cistanche salsa* (C. A. Mey.) Beck Figure 412

Perennial. Saline lands, sandy deserts, fallow lands, banks of lakes and canals. Plain. Mirzachel, Kyzylkum. Medicinal, fodder, weed. Parasite. Host plants are species of *Haloxylon*, *Salsola*, *Anabasis*, *Kalidium*, *Atriplex*, *Calligonum*.



Figure 412 *Cistanche salsa* (photography by Natalya Beshko)

Genus 475. *Leptorhabdos* Schrenk ex Fisch. et C. A. Mey.

1544. *Leptorhabdos parviflora* (Benth.) Benth.

Annual. Banks of rivers, lakes and canals, sandy soils, fine-earth, gravelly and stony slopes, fallow lands, fields. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan.

Genus 476. *Euphrasia* L.

1545. *Euphrasia pectinata* Ten.

Annual. Meadows, fine-earth slopes. Montane and alpine zones. Malguzar, North Turkestan. Medicinal, meliferous.

1546. *Euphrasia regelii* Wettst.

Annual. Meadows, fine-earth slopes. Montane and alpine zones. Malguzar, North Turkestan. Medicinal, meliferous.

Genus 477. *Parentucellia* Viv.

1547. *Parentucellia flaviflora* (Boiss.) Nevski Figure 413

Annual. Fine-earth, gravelly and stony slopes, piedmont plains, clay desert. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul.



Figure 413 *Parentucellia flaviflora* (photography by Natalya Beshko)

Genus 478. Pedicularis L.

1548. Pedicularis dolichorrhiza Schrenk

Perennial. Fine-earth and stony slopes. Montane and alpine zones. North Turkestan. Medicinal.

1549. Pedicularis krylovii Bonati

Perennial. Stony slopes. Montane and alpine zones, North Turkestan.

1550. Pedicularis olgae Regel Figure 414

Perennial. Fine-earth, gravelly and stony slopes. Montane and alpine zones. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan.



Figure 414 *Pedicularis olgae* (photography by Natalya Beshko)

1551. *Pedicularis peduncularis* Popov

Perennial. Swamp meadows, swamps. Alpine zone. North Turkestan.

1552. *Pedicularis popovii* Vved. Figure 415

Perennial. Fine-earth and stony slopes. Montane and alpine zones. North Turkestan.



Figure 415 *Pedicularis popovii* (photography by Natalya Beshko)

1553. *Pedicularis rhinanthoides* Schrenk

Perennial. Swamp meadows. Alpine zone. North Turkestan.

1554. *Pedicularis sarawschanica* Regel

Perennial. Wet stony slopes. Alpine zone. North Turkestan.

1555. *Pedicularis waldheimii* Bonati

Perennial. Screes. Alpine zone. North Turkestan.

Family 102. Campanulaceae

Genus 479. *Campanula* L.

1556. *Campanula cashmeriana* Royle

Perennial. Rocks. Montane and alpine zones. Malguzar, North Turkestan. Medicinal, meliferous,

ornamental.

1557. *Campanula fedtschenkoana* Trautv.

Perennial. Wet places near melting snow, stony slopes, rocks. Montane and alpine zones. North Turkestan.

1558. *Campanula glomerata* L. Figure 416

Perennial. Fine-earth and stony slopes, river valleys, meadows. Montane and alpine zones. Malguzar, North Turkestan. Medicinal, meliferous, ornamental.



Figure 416 *Campanula glomerata* (photography by Natalya Beshko)

1559. *Campanula lehmanniana* Bunge

Perennial. Stony slopes, rocks. Montane and alpine zones. Malguzar, North Turkestan.

Genus 480. *Asyneuma* Griseb. & Schrenk

1560. *Asyneuma argutum* (Regel) Bornm. Figure 417

Perennial. Fine-earth and stony slopes. Montane and alpine zones. Malguzar, North Turkestan. Medicinal.



Figure 417 *Asyneuma argutum* (photography by Natalya Beshko)

1561. *Asyneuma trautvetteri* (B. Fedtsch.) Bornm.

Perennial. Fine-earth and stony slopes. Montane and alpine zones. North Turkestan.

Genus 481. *Sergia* Al. Fed.

1562. *Sergia regelii* (Trautv.) Al. Fed. Figure 418

Perennial. Rocks. Montane zone. Malguzar, North Turkestan.



Figure 418 *Sergia regelii* (photography by Natalya Beshko)

Genus 482. *Cylindrocarpa* Regel

1563. *Cylindrocarpa sewerzowii* (Regel) Regel

Perennial. Gravelly and stony slopes, rocks. Montane zone. Malguzar, North Turkestan.

Genus 483. *Codonopsis* Wall.

1564. *Codonopsis clematidea* (Schrenk) C. B. Clarke

Perennial. Banks of streams, stony slopes, wet places near springs, meadows. Montane zone. Malguzar, North Turkestan. Medicinal.

Family 103. Asteraceae [Compositae]

Genus 484. **Cichorium* L.

1565. **Cichorium intybus* L.

Perennial. Fallow lands, wastelands, river valleys, pebbles, fine-earth and stony slopes, fields, gardens, banks of canals. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, fodder, food, weed, meliferous.

Genus 485. *Picris* L.

1566. *Picris nuristanica* Bornm.

Annual or biennial. Pebbles, river valleys, fine-earth, gravelly and stony slopes. Plain, foothills, montane zone. North Turkestan. Meliferous.

Genus 486. *Garhadiolus* Jaub. & Spach

1567. *Garhadiolus hedypnois* Jaub. & Spach [*Garhadiolus angulosus* Jaub. & Spach]

Annual. Sandy and clay deserts, fine-earth, gravelly and stony slopes, screes, pebbles, river valleys, fallow lands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Weed.

1568. *Garhadiolus papposus* Boiss. & Buhse

Annual. Saline lands, sandy and clay deserts, fine-earth, gravelly and stony slopes, screes, pebbles, river valleys, fallow lands, wastelands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Weed.

Genus 487. *Launaea* Cass.

1569. *Launaea korovinii* (Popov) Pavlov [*Rhabdotheca korovinii* (Popov) Kirp.]

Annual. Sandy desert. Plain. Kyzylkum.

1570. *Launaea procumbens* (Roxb.) Ramayya & Rajagopal [*Paramicrorhynchus procumbens* (Roxb.) Kipr.]

Perennial. Sandy and clay deserts, saline lands, banks of rivers, lakes and canals, fields, fallow lands, roadsides. Plain. Mirzachul, Kyzylkum. Weed.

Genus 488. *Chondrilla* L.

1571. *Chondrilla aspera* (Schrad. ex Will.) Poir.

Perennial or Biennial. Clay deserts, fine-earth, gravelly and stony slopes, rocks, screes, pebbles, banks of rivers and canals. Plain, foothills, montane and alpine zones. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Fodder.

1572. *Chondrilla lejosperma* Kar. & Kir.

Perennial. Fine-earth, gravelly and stony slopes, screes, pebbles, banks of rivers, lakes and canals. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Fodder.

Genus 489. *Heteroderis* (Bunge) Boiss.

1573. *Heteroderis pusilla* (Boiss.) Boiss.

Annual. Sandy deserts, saline lands. Plain. Kyzylkum.

Genus 490. *Lactuca* L.

1574. *Lactuca crambifolia* (Bunge) Boiss. [*Steptorhamphus crambifolius* Bunge]

Perennial. Gravelly and stony slopes, screes, rocks. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan.

1575. *Lactuca dissecta* D. Don.

Annual. Fine-earth, gravelly and stony slopes, screes, rocks, shady wet places, banks of rivers, roadsides, fallow lands, wastelands. Plain, foothills, montane and alpine zones. North Turkestan.

1576. *Lactuca glauciifolia* Boiss.

Annual. Fine-earth, gravelly and stony slopes, rocks, pebbles, fallow lands, wastelands. Plain, foothills, montane and alpine zones. North Turkestan, Mirzachul.

1577. *Lactuca orientalis* (Boiss.) Boiss. [*Scariola orientalis* (Boiss.) Soják]

Semishrub. Fine-earth, gravelly and stony slopes, screes, rocks, pebbles, dry riverbeds. Plain,

foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan.

1578. *Lactuca serriola* Torner [*Lactuca altaica* Fisch. & C. A. Mey.]

Annual or biennial. Fine-earth, gravelly and stony slopes, pebbles, roadsides, banks of rivers, lakes and canals, fallow lands, wastelands, fields, gardens, settlements. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Medicinal, food, fodder, oil, weed, rubber-bearing.

1579. *Lactuca soongorica* Regel [*Cephalorrhynchus soongoricus* (Regel) Kovalevsk.]

Perennial. Stony slopes, screes, rocks. Montane zone. Nuratau, Malguzar, North Turkestan.

1580. *Lactuca spinidens* Nevski

Annual or biennial. Stony slopes, fields, fallow lands. Nuratau.

1581. *Lactuca tatarica* (L.) C. A. Mey.

Perennial. Saline lands, pebbles, banks of rivers, lakes and canals, fields, fallow lands, roadsides. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum.

1582. *Lactuca undulata* Ledeb.

Annual. Sandy and clay deserts, banks of rivers, lakes and canals, saline lands, pebbles, fine-earth, gravelly and stony slopes, fields, gardens, fallow lands, roadsides. Plain, foothills. Nuratau Relic Mountains, Mirzachul, Kyzylkum.

Genus 491. *Kovalevskiella* Kamelin

1583. *Kovalevskiella zeravschanica* (Popov & Kovalevsk) Kamelin

Perennial. Fine-earth, gravelly and stony slopes. Montane and alpine zones. North Turkestan.

Genus 492. *Crepidifolium* Sennikov

1584. *Crepidifolium serawschanicum* (B. Fedtsch.) Sennikov [*Youngia serawschanica* (B. Fedtsch.) Babc. & Stebbins]

Perennial. Gravelly and stony slopes, screes, rocks, alpine meadows. Montane and alpine zones. North Turkestan.

Genus 493. **Sonchus* L.

1585. **Sonchus arvensis* L.

Perennial. Banks of rivers, lakes and canals, meadows, wastelands, fallow lands, fields, gardens, settlements. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Medicinal, food, fodder, weed, meliferous.

1586. **Sonchus asper* (L.) Hill

Annual. Fallow lands, fields, roadsides, wastelands, settlements. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Food, fodder, weed, meliferous.

1587. **Sonchus oleraceus* (L.) L.

Annual. Fallow lands, fields, roadsides, banks of rivers, lakes and canals, wastelands, settlements. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, food, fodder, weed, meliferous.

1588. **Sonchus palustris* L.

Perennial. Banks of rivers and canals, swamps, wet places, gardens. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Weed, meliferous.

Genus 494. *Taraxacum* F. H. Wigg.

1589. *Taraxacum bessarabicum* (Hornem.) Hand.-Mazz.

Perennial. Meadows, swamps, pebbles, banks of rivers, lakes and canals, fallow lands, wet places. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Mirzachul, Kyzylkum. Meliferous.

1590. *Taraxacum bicornne* Dahlst

Perennial. Meadows, saline lands, depressions, banks of rivers, lakes and canals, fallow lands, fields, roadsides. Plain, foothills. Nuratau Relic Mountains, Mirzachul, Kyzylkum. Meliferous, weed.

1591. *Taraxacum brevirostre* Hand.-Mazz.

Perennial. Fine-earth, gravelly and stony slopes, alpine meadows. Alpine zone. North Turkestan.

1592. *Taraxacum contristans* Kovalevsk.

Perennial. Wet places, saline lands, roadsides, banks of canals, fields, fallow lands. Plain, foothills. Malguzar, Mirzachul. Meliferous, weed.

1593. *Taraxacum ecornutum* Kovalevsk.

Perennial. Banks of rivers and canals, roadsides, fields, fallow lands, ravines. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, North Turkestan, Mirzachul. Meliferous, weed.

1594. *Taraxacum elongatum* Kovalevsk.

Perennial. Banks of rivers, meadows, swamps, fine-earth, gravelly and stony slopes. Montane zone. Malguzar, North Turkestan. Meliferous.

1595. *Taraxacum erostre* Zakirov

Perennial. Rocks, gravelly and stony slopes, screes, moraines. Montane and alpine zones. Malguzar, North Turkestan.

1596. *Taraxacum glaucivirens* Schischk.

Perennial. Fine-earth, gravelly and stony slopes, rocks, moraines. Montane and alpine zones. North Turkestan.

1597. *Taraxacum maracandicum* Kovalevsk.

Perennial. Wet places, banks of rivers and canals, meadows, fine-earth slopes, roadsides, settlements. Plain, foothills, Montane zone. Nuratau, Malguzar, North Turkestan.

1598. *Taraxacum marginatum* (Dahlst.) Raunk. [*Taraxacum reflexum* (Brenner) Hjelt]

Perennial. Stony slopes, screes, wet places, swamps, meadows. Montane zone. North Turkestan.

1599. *Taraxacum minutilobium* Popov ex Kovalevsk.

Perennial. Gravelly and stony slopes, moraines, rocks, screes, banks of rivers. Alpine zone. Malguzar, North Turkestan.

1600. *Taraxacum modestum* Schischk.

Perennial. Fine-earth, gravelly and stony slopes, wet places near melting snow. Montane and alpine zones. North Turkestan.

1601. *Taraxacum monochlamydeum* Hand.-Mazz.

Perennial. Fine-earth slopes, piedmont plains, gardens, fields, fallow lands, roadsides, wastelands, banks of rivers and canals. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Meliferous.

1602. *Taraxacum nevskii* Juz.

Perennial. Gravelly and stony slopes, screes. Montane zone. Malguzar, North Turkestan.

1603. *Taraxacum nuratavicum* Schischk.

Perennial. Wet places, swamps, banks of rivers. Montane zone. Nuratau. Meliferous.

1604. **Taraxacum officinale* (L.) Weber ex F.H. Wigg.

Perennial. Banks of rivers, lakes and canals, fallow lands, wastelands, gardens, settlements. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, food, fodder, meliferous.

1605. *Taraxacum popovii* Kovalevsk. ex Vainberg

Perennial. Gravelly and stony slopes, moraines, alpine meadows, screes, wet places near melting snow. Montane and alpine zones. Malguzar, North Turkestan.

1606. *Taraxacum repandum* Pavlov

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Malguzar, North Turkestan.

1607. *Taraxacum sonchoides* (D. Don) Sch. Bip. [*Taraxacum montanum* (C. A. Mey.) DC.]

Perennial. Fine-earth, gravelly and stony slopes, dry riverbeds, pebbles. Montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Meliferous.

1608. *Taraxacum strobilocephalum* Kovalevsk.

Perennial. Wet places, banks of rivers and canals. Malguzar.

Genus 495. *Heteracia* Fisch. & C. A. Mey.

1609. *Heteracia szovitzii* Fisch. & C. A. Mey. [*Heteracia epapposa* (Regel & Schmalh.) Popov]

Annual. River valleys, sandy and clay deserts, saline lands, piedmont plains, fine-earth, gravelly and stony slopes, rocks, fields, fallow lands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau

Relic Mountains, Malguzar, Mirzachul, Kyzylkum.

Genus 496. *Crepis* L.

1610. *Crepis kotschyana* (Boiss.) Boiss. [*Barkhausia kotschyana* Boiss.]

Annual. Gravelly and stony slopes, rocks. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan.

1611. *Crepis multicaulis* Ledeb.

Perennial. Gravelly and stony slopes, screes, pebbles, moraines, river valleys, wet places. Montane and alpine zones. North Turkestan.

1612. *Crepis pulchra* L. [*Phaeacasium pulchrum* (L.) Reich. f.] Figure 419

Annual. Fine-earth, gravelly and stony slopes, screes, rocks, banks of rivers and canals, shady wet places, gardens, roadsides, fields, fallow lands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul.



Figure 419 *Crepis pulchra* (photography by Natalya Beshko)

Genus 497. *Pilosella* Hill

1613. *Pilosella echioides* (Lumn.) F. W. Schultz & Sch. Bip. [*Hieracium echioides* Lumn.]

Perennial. Stony slopes. Montane and alpine zones. Malguzar, North Turkestan. Medicinal.

1614. *Pilosella procera* (Fr.) F. W. Schultz & Sch. Bip. [*Hieracium procerum* Fr.]

Perennial. Fine-earth, gravelly and stony slopes, meadows, ravines. Montane zone. North Turkestan.

Genus 498. *Hieracium* L.

1615. *Hieracium raddeanum* subsp. *regelianum* (Zahn) Greuter [*Hieracium regelianum* Zahn]

Perennial. Juniper forests, meadows, river valleys. Montane zone. North Turkestan.

1616. *Hieracium robustum* Fr.

Perennial. Meadows, fine-earth, gravelly and stony slopes, river valleys. Montane zone. North Turkestan. Weed.

1617. *Hieracium virosum* Pall. Figure 420

Perennial. Meadows, fine-earth, gravelly and stony slopes, river valleys. Montane zone. North Turkestan. Weed.



Figure 420 *Hieracium virosum* (photography by Natalya Beshko)

Genus 499. *Acanthocephalus* Kar. & Kir.

1618. *Acanthocephalus amplexifolius* Kar. & Kir.

Annual. Saline lands, river valleys, dry riverbeds, ravines, fine-earth, gravelly and stony slopes. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Weed.

1619. *Acanthocephalus benthamianus* Regel

Annual. River valleys, banks of canals, gardens, roadsides, ravines, fine-earth, gravelly and stony slopes. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Weed.

Genus 500. *Scorzonera* L.

1620. *Scorzonera acanthoclada* Franch.

Semishrub. Gravelly and stony slopes. Montane and alpine zones. North Turkestan. fodder, rubber-bearing.

1621. *Scorzonera bracteosa* C. Winkl. Figure 421

Perennial. Fine-earth and stony slopes. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. Rubber-bearing, meliferous.



Figure 421 *Scorzonera bracteosa* (photography by Natalya Beshko)

1622. *Scorzonera circumflexa* Krasch. & Lipsch.

Perennial. Fine-earth, gravelly and stony slopes, pebbles, clay deserts. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Rubber-bearing, meliferous.

1623. *Scorzonera hissarica* C. Winkl.

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Malguzar, North Turkestan.

1624. *Scorzonera inconspicua* Lipsch.

Perennial. Fine-earth, gravelly and stony slopes, pebbles, banks of rivers. Plain, foothills, montane zone. Malguzar, North Turkestan. Rubber-bearing, meliferous.

1625. *Scorzonera litwinowii* Krasch. & Lipsch.

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau. Rubber-bearing,

meliferous.

1626. *Scorzonera ovata* Trautv. Figure 422

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan. Rubber-bearing, meliferous.



Figure 422 *Scorzonera ovata* (photography by Natalya Beshko)

1627. *Scorzonera songarica* (Kar. & Kir.) Lipsch. & Vassilez.

Perennial. Fine-earth, gravelly and stony slopes, river valleys. Montane zone. North Turkestan.

1628. *Scorzonera tragopogonoides* Regel & Schmalh.

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane and alpine zones, Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Rubber-bearing, meliferous.

Genus 501. *Takhtajiantha* Nazarova

1629. *Takhtajiantha pusilla* (Pall.) Nazarova [*Scorzonera pusilla* Pall.] Figure 423

Perennial. Saline lands, sandy and clay deserts, dry riverbeds, stony slopes. Plain, foothills. Nuratau Relic Mountains, Mirzachul, Kyzylkum. Rubber-bearing, meliferous.



Figure 423 *Takhtajiantha pusilla* (photography by Natalya Beshko)

Genus 502. *Epilasia* (Bunge) Benth. & Hook. f.

1630. *Epilasia acrolasia* (Bunge) Lipsch.

Annual. Sandy and clay deserts, saline lands, fine-earth and stony slopes, river valleys, fallow lands. Plain, foothills. Nuratau, Nuratau Relic Mountains, Mirzachul, Kyzylkum.

1631. *Epilasia hemilasia* (Bunge) C. B. Clarke Figure 424

Annual. Sandy and clay deserts, saline lands, fine-earth, gravelly and stony slopes, roadsides, fields, fallow lands. Plain, foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum.



Figure 424 *Epilasia hemilasia* (photography by Natalya Beshko)

1632. *Epilasia mirabilis* Lipsch.

Annual. Sandy and clay deserts, fields, fallow lands. Plain. Mirzachul.

Genus 503. *Tragopogon* L.

1633. *Tragopogon capitatus* S. A. Nikitin

Biennial. Fine-earth, gravelly and stony slopes, river valleys. Foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan. Rubber-bearing, meliferous.

1634. *Tragopogon conduplicatus* S.A. Nikitin

Perennial. Gravelly and stony slopes. Montane zone. Nuratau, North Turkestan. Rubber-bearing, meliferous.

1635. *Tragopogon kultiassovii* Popov ex S. A. Nikitin

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane zone. North Turkestan. Rubber-

bearing, meliferous.

1636. *Tragopogon malikus* S. A. Nikitin

Perennial. Fine-earth, gravelly and stony slopes, river valleys. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Rubber-bearing, meliferous.

1637. *Tragopogon porrifolius* subsp. *longirostris* (Sch. Bip.) Greuter [*Tragopogon kraschennikovii* S. A. Nikitin] Figure 425

Biennial. Fine-earth, gravelly and stony slopes, river valleys, fallow lands, fields. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Rubber-bearing, meliferous.



Figure 425 *Tragopogon porrifolius* subsp. *longirostris* (photography by Natalya Beshko)

1638. *Tragopogon pseudomajor* S. A. Nikitin

Biennial. Piedmont plains, fine-earth and stony slopes, river valleys. Plain, foothills, montane zone. Nuratau, Malguzar, North Turkestan. Rubber-bearing, meliferous.

1639. *Tragopogon turkestanicus* S. A. Nikitin ex Pavlov

Biennial. Gravelly and stony slopes. Foothills, montane and alpine zones. Nuratau, Malguzar, North Turkestan. Rubber-bearing, meliferous.

1640. *Tragopogon vvedenskyi* Popov ex Pavlov

Biennial. Fine-earth, gravelly and stony slopes, ravines. Foothills, montane and alpine zones. Nuratau, Malguzar, North Turkestan. Rubber-bearing, meliferous.

Genus 504. *Koelpinia* Pall.

1641. *Koelpinia linearis* Pall.

Annual. Sandy and clay deserts, piedmont plains, fine-earth, gravelly and stony slopes. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North

Turkestan, Mirzachul, Kyzylkum. Fodder, weed, meliferous.

1642. *Koelpinia macrantha* C. Winkl.

Annual. Sandy deserts, fine-earth, gravelly and stony slopes, river valleys. Plain, foothills. Nuratau, Kyzylkum. Fodder, weed, meliferous.

1643. *Koelpinia tenuissima* Pavlov & Lipsch.

Annual. Sandy and clay deserts, saline lands, fine-earth, gravelly and stony slopes. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, weed, meliferous.

1644. *Koelpinia turanica* Vassilcz.

Annual. Sandy and clay deserts, saline lands, fine-earth, gravelly and stony slopes. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Mirzachul, Kyzylkum. Fodder, weed, meliferous.

Genus 505. *Echinops* L.

1645. *Echinops knorringianus* Iljin

Annual. Fine-earth, gravelly and stony slopes. Foothills. North Turkestan.

1646. *Echinops leucographus* Bunge

Perennial. Fine-earth, gravelly and stony slopes, piedmont plains. Plain, foothills. Nuratau, Nuratau Relic Mountains.

1647. *Echinops maracandicus* Bunge

Perennial. Fine-earth, gravelly and stony slopes, pebbles, screes. Foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan.

1648. *Echinops nanus* Bunge

Annual or biennial. Fine-earth, gravelly and stony slopes. Foothills, montane zone. North Turkestan.

1649. *Echinops nuratavicus* A. D. Li Figure 426

Perennial. Gravelly and stony slopes, rocks. Montane zone. Nuratau.



Figure 426 *Echinops nuratavicus* (photography by Natalya Beshko)

Genus 506. Chardinia Desf.

1650. Chardinia orientalis (L.) Kuntze

Annual. Clay deserts, piedmont plains, fine-earth, gravelly and stony slopes, rocks. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul.

Genus 507. Xeranthemum L.

1651. Xeranthemum longepapposum Fisch. & C. A. Mey.

Annual. Piedmont plains, fallow lands, pebbles, fine-earth, gravelly and stony slopes, rocks. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul.

Genus 508. Carduus L.

1652. Carduus pycnocephalus subsp. **albidus** (M. Bieb.) Kazmi [*Carduus albidus* M. Bieb.]

Annual. River valleys, dry riverbeds, banks of canals, gardens, roadsides, fields, fallow lands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Weed, meliferous.

1653. Carduus nutans L.

Biennial or perennial. Fine-earth, gravelly and stony slopes, rocks, banks of rivers and canals, wet places, fallow lands, wastelands, roadsides. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Medicinal, food, weed, meliferous.

Genus 509. Picnomon Adans.

1654. Picnomon acarna (L.) Cass.

Annual or biennial. Gravelly and stony slopes, fallow lands, wastelands, roadsides, banks of canals. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Weed.

Genus 510. Onopordum L.

1655. Onopordum acantium L.

Biennial. Gravelly and stony slopes, ravines, wastelands, fallow lands, river valleys, banks of canals, fields, roadsides. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Medicinal, oil, weed, fodder, meliferous.

1656. Onopordum leptolepis DC.

Biennial. Fine-earth, gravelly and stony slopes, rocks, screes, river valleys, fallow lands, fields, roadsides, banks of canals. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Weed.

Genus 511. Cirsium Mill.

1657. Cirsium alatum (S. C. Gmel.) Bobrov

Perennial. Meadows, saline lands, wet places, banks of rivers and canals, piedmont plains, ravines, fields. Plain, foothills, montane zone. Malguzar. Weed.

1658. Cirsium arvense (L.) Scop. [*Cirsium ochrolepidium* Juz.]

Perennial. Sandy deserts, fallow lands, fields, banks of rivers and canals, wet places, meadows, riparian forests, fine-earth slopes, gardens. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, poisonous, oil, weed, meliferous.

1659. Cirsium brevipapposum Czerniak.

Perennial. Swamps, wet places near springs. Montane and alpine zones. Malguzar, North Turkestan.

1660. Cirsium esculentum (Siev.) C. A. Mey.

Perennial. Wet places, banks of rivers, lakes and canals, meadows, fine-earth slopes, gardens. Plain, foothills, montane and alpine zones. Malguzar, North Turkestan. Medicinal, weed, meliferous.

1661. Cirsium semenovii Regel

Biennial or perennial. Stony slopes, pebbles, screes, moraines. Montane and alpine zones. North Turkestan.

1662. Cirsium straminispinum C. Jeffrey ex Cufod [*Cirsium polyacanthum* Hochst. ex Kar. & Kir.]

Biennial or perennial. Fine-earth slopes, ravines, wet places. Foothills, montane and alpine zones. North Turkestan. Weed, meliferous.

1663. Cirsium turkestanicum (Regel) Petr.

Perennial. Gravelly and stony slopes, rocks, screes, river valleys, swamps, banks of canals. Plain, foothills, montane and alpine zones. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Weed, meliferous.

1664. Cirsium vulgare (Savi) Ten.

Biennial. Wet places, banks of rivers and canals, fallow lands, fields, wastelands, gravelly and stony slopes. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Medicinal, food, weed, meliferous.

Genus 512. Arctium L.

1665. Arctium aureum (C. Winkl.) Kuntze [*Cousinia aurea* C. Winkl.]

Perennial. Gravelly and stony slopes, pebbles. Foothills, montane zone. Nuratau Relic Mountains,

Malguzar, North Turkestan. Fodder.

1666. *Arctium chloranthum* (Kult.) S. López, Romasch., Susanna & N.Garcia [*Cousinia chlorantha* Kult.]

Perennial. Gravelly and stony slopes. Foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan.

1667. *Arctium haesitabundum* (Juz.) S. López, Romasch., Susanna & N.Garcia [*Cousinia haesitabunda* Juz.]

Perennial. Gravelly and stony slopes. Montane zone, Nuratau, Malguzar. UzbRDB 1.

1668. *Arctium karatavicum* (Regel & Schmalh.) Kuntze [*Cousinia karatavica* Regel & Schmalh.] Figure 427

Perennial. Gravelly and stony slopes, rocks. Foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar.



Figure 427 *Arctium karatavicum* (photography by Natalya Beshko)

1669. *Arctium korolkowii* (Regel & Schmalh.) Kuntze [*Cousinia korolkowii* Regel & Schmalh.]

Perennial. Gravelly and stony slopes. Foothills, montane zone. Nuratau.

1670. *Arctium leiospermum* Juz. & Ye.V. Serg.

Biennial. River valleys, banks of canals, roadsides, wet places, gardens. Plain, foothills, montane zone. Nuratau, Malguzar, North Turkestan. Medicinal, food, weed, meliferous.

1671. *Arctium pallidivirens* (Kult.) S. Lopez, Romanschenko, Susanna & N. Garcia [*Anura pallidivirens* (Kult.) Tscherneva] Figure 428

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. Nuratau, Malguzar. UzbRDB 1. Endemic to the Nuratau Mountains.

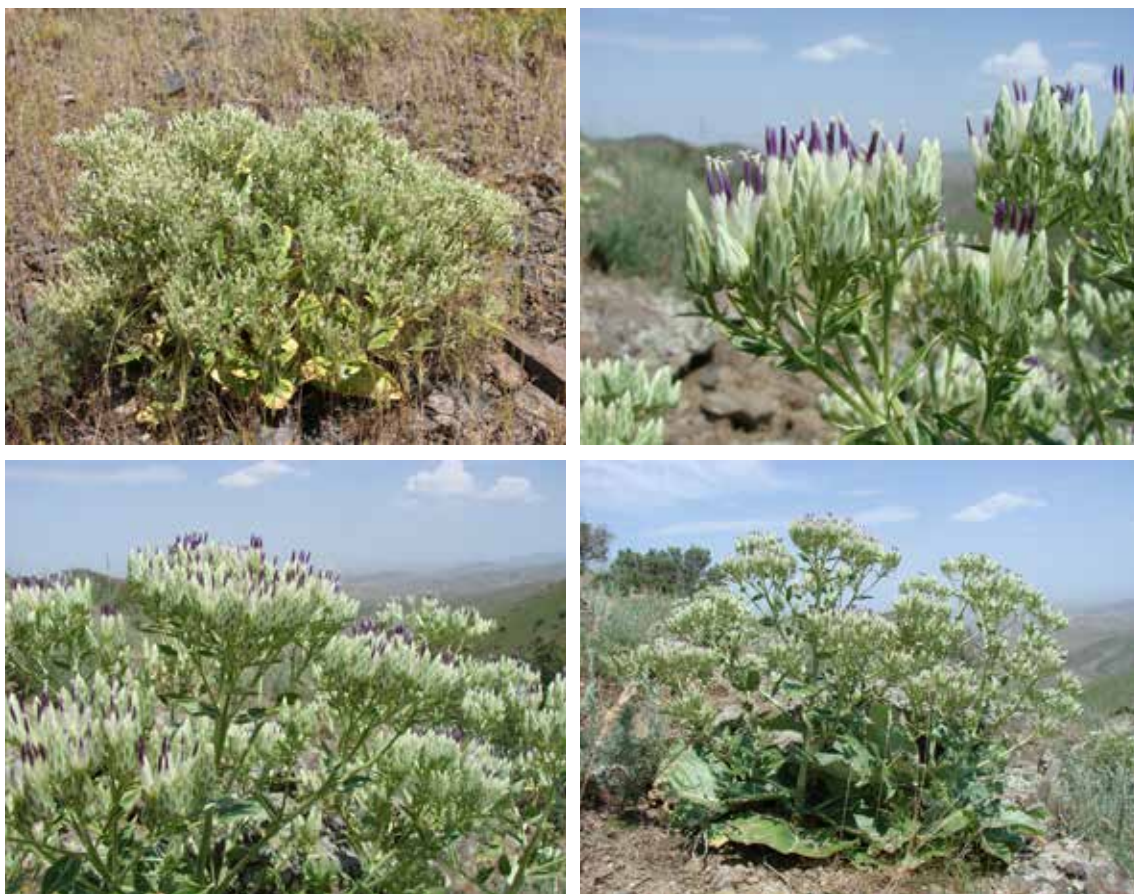


Figure 428 *Arctium pallidivirens* (photography by Natalya Beshko)

Genus 513. *Cousinia* L.

1672. *Cousinia alpina* Bunge

Biennial. Fine-earth, gravelly and stony slopes, screes, rocks. Montane and alpine zones. North Turkestan.

1673. *Cousinia ambigens* Juz.

Perennial. Gravelly and stony slopes. Foothills. Nuratau.

1674. *Cousinia botschantzevii* Juz. ex Tscherneva Figure 429

Biennial. Fine-earth, gravelly and stony slopes. Montane zone. Nuratau, Aktau. Endemic to the Nuratau Mountains.



Figure 429 *Cousinia botschantzevii* (photography by Natalya Beshko)

1675. *Cousinia bungeana* Regel & Schmalh.

Annual. Clay deserts. Plain. Mirzachul.

1676. *Cousinia coronata* Franch.

Biennial. Fine-earth, gravelly and stony slopes. Montane zone. Aktau, Malguzar, North Turkestan.

1677. *Cousinia dissectifolia* Kult.

Biennial. Fine-earth, gravelly and stony slopes. Montane zone. Nuratau.

1678. *Cousinia dshisakensis* Kult. Figure 430

Biennial. Gravelly and stony slopes. Montane zone. Nuratau, Aktau, Malguzar, North Turkestan. UzbRDB 2.



Figure 430 *Cousinia dshisakensis* (photography by Natalya Beshko)

1679. *Cousinia dubia* Popov

Biennial. Gravelly and stony slopes. Montane zone. Nuratau, Malguzar, North Turkestan.

1680. *Cousinia eriotricha* Juz. Figure 431

Perennial. Gravelly and stony slopes, screes. Montane and alpine zones. Nuratau, Malguzar, North Turkestan.



Figure 431 *Cousinia eriotricha* (photography by Natalya Beshko)

1681. *Cousinia franchetii* C. Winkl.

Perennial. Stony slopes. Montane zone. North Turkestan.

1682. *Cousinia hamadae* Juz.

Perennial. Gravelly and stony slopes. Foothills. Nuratau Relic Mountains.

1683. *Cousinia horridula* Juz.

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau, Malguzar, North Turkestan.

1684. *Cousinia integrifolia* Franch.

Biennial. Fine-earth and stony slopes. Montane zone. Malguzar, North Turkestan.

1685. *Cousinia lappacea* Schrenk

Perennial. Stony slopes, rocks. Montane zone. Malguzar, North Turkestan. Fodder, weed.

1686. Cousinia microcarpa Boiss. Figure 432

Perennial. Fine-earth, gravelly and stony slopes, river valleys, banks of canals, fallow lands, fields, roadsides, wastelands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Meliferous, weed.



Figure 432 *Cousinia microcarpa* (photography by Natalya Beshko)

1687. Cousinia mollis Schrenk

Biennial. Fine-earth, gravelly and stony slopes, screes, sandy and clay deserts, fallow lands, river valleys. Plain, foothills. Nuratau, Nuratau Relic Mountains, North Turkestan, Mirzachul, Kyzylkum.

1688. Cousinia olgae Regel & Schmalh.

Biennial. Fine-earth, gravelly and stony slopes, pebbles, piedmont plains. Plain, foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan.

1689. Cousinia outichaschensis Franch.

Biennial. Gravelly and stony slopes, rocks. Montane and alpine zones. Malguzar, North Turkestan.

1690. Cousinia oxiana Tscherneva

Biennial. Sandy deserts. Plain. Kyzylkum.

1691. Cousinia polytimetica Tscherneva

Annual. Piedmont plain, river valleys. Plain, foothills. Nuratau, Nuratau Relic Mountains, Malguzar.

1692. Cousinia prolifera Jaub. & Spach.

Annual. Sandy and clay deserts, saline lands, piedmont plains, fields, fallow lands. Plain, foothills.

Nuratau Relic Mountains, Mirzachul, Kyzylkum.

1693. *Cousinia pseudodshisakensis* Tscherneva & Vved.

Biennial. Gravelly and stony slopes, screes, rocks. Foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan.

1694. *Cousinia pygmaea* C. Winkl.

Biennial. Fine-earth and stony slopes, fallow lands. Montane zone. Malguzar, North Turkestan.

1695. *Cousinia radians* Bunge Figure 433

Biennial. Fine-earth, gravelly and stony slopes, piedmont plains, fallow lands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Weed, meliferous.



Figure 433 *Cousinia radians* (photography by Natalya Beshko)

1696. *Cousinia regelii* C. Winkl.

Biennial. Fine-earth, gravelly and stony slopes. Foothills. Aktau.

1697. *Cousinia resinosa* Juz.

Perennial. Fine-earth, gravelly and stony slopes, piedmont plains, sandy and clay deserts, roadsides, fallow lands, wastelands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, weed, meliferous.

1698. *Cousinia schtschurowskiana* Regel & Schmalh. Figure 434

Biennial. Gravelly and stony slopes. Montane zone. Nuratau, Aktau.



Figure 434 *Cousinia schtschurowskiana* (photography by Natalya Beshko)

1699. *Cousinia simulatrix* C. Winkl.

Biennial. Gravelly and stony slopes, ravines. Montane zone. Nuratau.

1700. *Cousinia sogdiana* Bornm. Figure 435

Biennial. Sandy deserts. Plain. Kyzylkum.



Figure 435 *Cousinia sogdiana* (photography by Natalya Beshko)

1701. Cousinia spiridonovii Juz.

Perennial. Clay deserts, river valleys, banks of canals, fallow lands. Plain. Nuratau Relic Mountains, Mirzachul.

1702. Cousinia tenella Fisch. & C. A. Mey.

Annual. Sandy and clay deserts, saline lands, piedmont plains, river valleys, fields, roadsides, fallow lands. Plain, foothills. Nuratau, Nuratau Relic Mountains, Mirzachul, Kyzylkum.

1703. Cousinia umbrosa Bunge

Perennial. Fine-earth slopes, river valleys, shady wet places. Foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Fodder, weed, meliferous.

1704. Cousinia verticillaris Bunge

Perennial. Gravelly and stony slopes. Alpine zone. Malguzar, North Turkestan.

1705. Cousinia xanthina Bornm.

Perennial. Fine-earth slopes. Alpine zone. North Turkestan.

Genus 514. Lipskyella Juz.

1706. Lipskyella annua (C. Winkl.) Juz.

Annual. Sandy deserts. Plain. Kyzylkum.

Genus 515. Saussurea DC.

1707. Saussurea elegans Ledeb.

Perennial. Fine-earth and stony slopes, meadows, river valleys. Foothills, montane zone. North Turkestan.

1708. Saussurea salsa (Pall. ex Pall.) Spreng.

Perennial. Saline lands, banks or rivers, lakes and canals. Plain. Mirzachul.

Genus 516. Jurinea Cass.

1709. Jurinea abramowii Regel & Herder

Perennial. Stony slopes, screes. Montane and alpine zones. North Turkestan.

1710. Jurinea androssovii Iljin

Perennial. Gravelly and stony slopes, rocks. Alpine zone. North Turkestan.

1711. Jurinea ferganica (Iljin) Iljin

Perennial. Gravelly and stony slopes, screes, rocks. Foothills, montane zone. Malguzar, North Turkestan.

1712. Jurinea helichrysifolia Popov ex Iljin Figure 436

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. Malguzar, North Turkestan.



Figure 436 *Jurinea helichrysofolia* (photography by Natalya Beshko)

1713. *Jurinea kokanica* Iljin

Perennial. Fine-earth, gravelly and stony slopes, river valleys. Foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan. Ornamental, meliferous.

1714. *Jurinea komarovii* Iljin

Perennial. Gravelly and stony slopes, pebbles, rocks. Montane and alpine zones. North Turkestan.

1715. *Jurinea lasiopoda* Trautv.

Perennial. Stony slopes, rocks. Foothills, montane zone. Nuratau, Nuratau Relic Mountains.

1716. *Jurinea maxima* C. Winkl. Figure 437

Perennial. Fine-earth and stony slopes. Montane and alpine zones. Malguzar, North Turkestan. Ornamental, meliferous.



Figure 437 *Jurinea maxima* (photography by Natalya Beshko)

1717. *Jurinea olgae* Regel & Schmalh. Figure 438

Perennial. Rocks, Fine-earth, gravelly and stony slopes, screes. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Ornamental, meliferous.



Figure 438 *Jurinea olgae* (photography by Natalya Beshko)

1718. *Jurinea suffruticosa* Regel

Semishrub. Piedmont plains, gravelly and stony slopes, rocks. Plain, foothills, montane zone. Nuratau.

1719. *Jurinea trautvetteriana* Regel & Schmalh. Figure 439

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Ornamental, meliferous.



Figure 439 *Jurinea trautvetteriana* (photography by Natalya Beshko)

1720. *Jurinea zakirovii* Iljin Figure 440

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. Nuratau. UzbRDB 1. Endemic to the Nuratau Mountains.



Figure 440 *Jurinea zakirovii* (photography by N. Yu. Beshko)

Genus 517. Amberboa (Pers.) Less.

1721. Amberboa turanica Iljin

Annual. Sandy and clay deserts, piedmont plains, fallow lands. Plain, foothills. Nuratau, Nuratau Relic Mountains, Malguzar, Mirzachul, Kyzylkum.

Genus 518. Centaurea L.

1722. *Centaurea benedicta (L.) L. [*Cnicus benedictus* L.]

Annual. Clay deserts, wastelands, fallow lands, fields, wet places, banks of rivers and canals. Plain, foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Medicinal, oil, weed.

1723. Centaurea bruguierana subsp. **belangeriana** (DC.) Bornm. [*Centaurea belangeriana* (DC.) Stapf]

Annual. Sandy, clayey and skeleton soils, fields, fallow lands, wastelands, roadsides. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, Mirzachul, Kyzylkum. Weed.

1724. *Centaurea iberica Trevir. ex Spreng.

Biennial. Wastelands, banks of canals, river valleys, roadsides, surroundings of settlements, fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, weed.

1725. *Centaurea solstitialis L.

Biennial. Fallow lands, wastelands, fields, banks of canals, surroundings of settlements, fine-earth and gravelly slopes. Plain, foothills. Nuratau, Malguzar, North Turkestan, Mirzachul. Medicinal, weed.

1726. Centaurea virgata subsp. **squarrosa** (Boiss.) Gugler [*Centaurea squarrosa* Willd.]

Perennial. Fine-earth, gravelly and stony slopes, piedmont plains, sandy and clay deserts, fields, fallow lands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, weed, meliferous.

Genus 519. Cyanus Mill.

1727. Cyanus depressus (M. Bieb.) Soják [*Centaurea depressa* M. Bieb.]

Annual. Fallow lands, wastelands, fields, banks of canals, fine-earth and gravelly slopes. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Medicinal, ornamental, meliferous, weed.

1728. *Cyanus segetum Hill [*Centaurea cyanus* L.]

Annual. Fallow lands, fields, wastelands, surroundings of settlements, banks of canals. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Medicinal, poisonous, dye, ornamental, meliferous, weed.

Genus 520. *Rhaponticum* Ludw.

1729. *Rhaponticum repens* (L.) Hidalgo [*Acroptilon repens* (L.) DC.]

Perennial. Sandy and clay deserts, saline lands, banks of rivers, lakes and canals, fine-earth, gravelly and stony slopes, fields, fallow lands, roadsides, wastelands, gardens. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, poisonous, meliferous, weed. Quarantine invasive species.

Genus 521. *Hyalea* (DC.) Jaub. & Spach

1730. *Hyalea pulchella* (Ledeb.) Koch Figure 441

Annual. Sandy desert. Plain. Kyzylkum.



Figure 441 *Hyalea pulchella* (photography by Natalya Beshko)

Genus 522. **Stizolophus* Cass.

1731. **Stizolophus balsamita* (Lam.) K. Koch

Annual. Fields, fallow lands, roadsides, gravelly and stony slopes, banks of rivers, lakes and canals. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North

Turkestan, Mirzachul. Medicinal, dye, weed.

Genus 523. *Crupina* Cass.

1732. *Crupina vulgaris* Pers. ex Cass. [*Crupina oligantha* Tscherneva]

Annual. Gravelly and stony slopes, rocks, screes, pebbles, banks of rivers, gardens, vineyards, fallow lands, fields. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Weed.

Genus 524. *Serratula* L.

1733. *Serratula algida* Iljin

Perennial. Rocks, gravelly and stony slopes, moraines. Alpine zone. North Turkestan. Medicinal.

1734. *Serratula lancifolia* Zakirov

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. Malguzar. UzBRDB 1.

Genus 525. *Carthamus* L.

1735. *Carthamus oxyacanthus* M. Bieb.

Annual. Fallow lands, wastelands, pebbles, fields, banks of rivers and canals, surroundings of settlements, stony slopes. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Weed.

1736. **Carthamus tinctorius* L.

Annual. Fields, fallow lands, wastelands, roadsides, fine-earth slopes (escaped from culture). Plain, foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan, Mirzachul. Dye, oil, food, industrial.

1737. *Carthamus turkestanicus* Popov

Annual. Fine-earth, gravelly and stony slopes, wastelands, fields, fallow lands, roadsides, banks of canals, surroundings of settlements. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Weed.

Genus 526. **Eclipta* L.

1738. **Eclipta prostrata* (L.) L.

Annual. Fields, fallow lands, banks of canals. Plain. Mirzachul. Weed.

Genus 527. *Bidens* L.

1739. *Bidens tripartita* L.

Annual. Wet places, banks of rivers, lakes and canals, fields, fallow lands. Plain, foothills, montane zone. Nuratau, Malguzar, North Turkestan, Mirzachul. Medicinal, essential oil, dye, weed.

Genus 528. *Senecio* L.

1740. *Senecio franchetii* C. Winkl.

Perennial. Fine-earth and stony slopes. Montane zone. North Turkestan.

1741. *Senecio olgae* Regel & Schmalh.

Perennial. Stony slopes. Montane zone. Malguzar, North Turkestan.

1742. *Senecio subdentatus* (Bunge) Ledeb. Figure 442

Annual. Sandy deserts, saline lands, banks of rivers and canals, pebbles, fine-earth, gravelly and stony slopes. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder.



Figure 442 *Senecio subdentatus* (photography by Natalya Beshko)

Genus 529. *Ligularia* Cass.

1743. *Ligularia alpigena* Pojark.

Perennial. Fine-earth, gravelly and stony slopes, screes, banks of rivers, swamps. Montane and alpine zones. North Turkestan. Meliferous.

1744. *Ligularia heterophylla* Rupr.

Perennial. Fine-earth, gravelly and stony slopes, banks of rivers. Montane zone. Nuratau, Malguzar, North Turkestan. Meliferous.

1745. *Ligularia thomsonii* (C. B. Clarke) Pojark. Figure 443

Perennial. Fine-earth, gravelly and stony slopes, screes, pebbles, moraines, subalpine meadows, swamps, banks of rivers. Montane and alpine zones. Malguzar, North Turkestan. Poisonous, weed, meliferous.



Figure 443 *Ligularia thomsonii* (photography by Natalya Beshko)

Genus 530. *Tussilago* L.

1746. *Tussilago farfara* L.

Perennial. River valleys, wet places, pebbles, fine-earth slopes. Montane zone. North Turkestan. Medicinal, essential oil, meliferous.

Genus 531. *Karelinia* Less.

1747. *Karelinia caspia* (Pall.) Less. Figure 444

Perennial. Saline lands, banks of rivers, lakes and canals, fields, fallow lands. Plain, foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, Mirzachul, Kyzylkum. Weed, meliferous.



Figure 444 *Karelinia caspia* (photography by Natalya Beshko)

Genus 532. *Inula* L.

1748. *Inula britannica* L.

Perennial. Fine-earth slopes, wet places, banks of rivers and canals, fields, fallow lands. Plain, foothills, montane zone. Malguzar, North Turkestan, Mirzachul. Medicinal, fodder, meliferous.

1749. *Inula caspica* F.K. Blum. ex Ledeb.

Annual or biennial. Saline lands, banks of rivers and canals, fields. Plain, foothills. Malguzar, Mirzachul. Medicinal, meliferous.

1750. *Inula glauca* C. Winkl.

Perennial. Gravelly and stony slopes, rocks. Montane zone. Malguzar, North Turkestan.

1751. *Inula helenium* L.

Perennial. Fine-earth slopes, banks of rivers, wet places. Foothills, montane zone. Malguzar, North Turkestan. Medicinal, ornamental, dye, meliferous.

1752. *Inula orientalis* Lam. [*Inula macrophylla* Kar. & Kir.]

Perennial. Fine-earth, gravelly slopes. Foothills, montane zone. Malguzar, North Turkestan. Medicinal, dye, meliferous.

1753. *Inula rhizocephala* Schrenk

Perennial. Fine-earth, gravelly and stony slopes, alpine meadows. Montane and alpine zones. Malguzar, North Turkestan. Medicinal, fodder.

Genus 533. *Pulicaria* Gaerth.

1754. *Pulicaria dysenterica* subsp. *uliginosa* Nyman [*Pulicaria uliginosa* Steven ex DC.]

Annual. Banks of rivers and canals, wet places. North Turkestan. Poisonous, insecticide.

1755. *Pulicaria gnaphalodes* (Vent) Boiss.

Perennial. Rocks, gravelly and stony slopes, pebbles, dry riverbeds. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar. Essential oil.

1756. *Pulicaria salviifolia* Bunge

Perennial. Gravelly and stony slopes, pebbles, dry riverbeds, banks of rivers and canals. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Essential oil.

Genus 534. *Pentanema* Cass.

1757. *Pentanema albertoregelia* (C. Winkl.) Gorschk. [*Vicoa albertoregelia* C. Winkl.]

Perennial. Gravelly and stony slopes, rocks. Montane zone. Nuratau, Malguzar, North Turkestan.

1758. *Pentanema divaricatum* Cass.

Annual. Gravelly and stony slopes, dry riverbeds, fields, wastelands. Plain, foothills. Nuratau.

Genus 535. *Helichrysum* Mill.

1759. *Helichrysum maracandicum* Popov Figure 445

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. Nuratau, Malguzar, North Turkestan. Medicinal, ornamental.



Figure 445 *Helichrysum maracandicum* (photography by Natalya Beshko)

1760. *Helichrysum mussae* Nevski

Perennial. Gravelly and stony slopes, rocks. Montane zone. Nuratau, Malguzar, North Turkestan.

1761. *Helichrysum nuratavicum* Krasch. Figure 446

Perennial. Gravelly and stony slopes, rocks. Montane zone. Nuratau. UzbRDB 2. Endemic to the Nuratau Mountains.



Figure 446 *Helichrysum nuratavicum* (photography by N. Yu. Beshko)

1762. *Helichrysum tianschanicum* Regel

Perennial. Gravelly and stony slopes, pebbles, banks of rivers. Foothills, montane and alpine zones. North Turkestan.

Genus 536. *Laphangium* (Hilliard & B. L. Burt) Tzvelev

1763. *Laphangium luteoalbum* (L.) Tzvelev [*Gnaphalium luteoalbum* L.]

Annual. River valleys, wet places, banks of canals, fallow lands fields. Nuratau, Malguzar, North Turkestan. Medicinal, fodder, ornamental, weed.

Genus 537. *Gnaphalium* L.

1764. *Gnaphalium supinum* L.

Perennial. Fine-earth, gravelly and stony slopes. Montane and alpine zones. Malguzar, North Turkestan.

Genus 538. *Leontopodium* R. Br. ex Cass.

1765. *Leontopodium fedtschenkoanum* Beauverd

Perennial. Fine-earth slopes, meadows, swamps. Montane and alpine zones. North Turkestan. Ornamental.

Genus 539. *Filago* L.

1766. *Filago arvensis* Lam.

Annual. Fine-earth, gravelly and stony slopes, piedmont plains, fields, fallow lands, roadsides, wastelands. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Medicinal, ornamental, weed.

1767. *Filago filaginoides* (Kar. & Kir.) Wagenitz [*Evax filaginoides* Kar. & Kir.]

Annual. Sandy deserts, saline lands, banks of lakes and canals. Plain. Kyzylkum.

1768. *Filago germanica* (L.) Huds. (*Filago vulgaris* Lam.)

Annual. Gravelly and stony slopes, fields, wastelands. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Mirzachul. Medicinal, weed.

1769. *Filago pyramidata* L.

Annual. Fine-earth, gravelly and stony slopes, piedmont plains, fields, fallow lands, roadsides, wastelands. Foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan. Medicinal, weed.

Genus 540. *Cymbolaena* Smoljan.

1770. *Cymbolaena griffithii* (A. Gray) Wagenitz

Annual. Fine-earth, gravelly and stony slopes, piedmont plains, fallow lands, wastelands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan.

Genus 541. *Solidago* L.

1771. *Solidago kuhistanica* Juz.

Perennial. Fine-earth and stony slopes, rocks, banks of rivers, meadows. Montane and alpine zones. Nuratau, North Turkestan. Ornamental, meliferous.

Genus 542. *Pseudolinosyris* Novopokr.

1772. *Pseudolinosyris grimmii* (Regel & Schmalh.) Novopokr.

Semishrub. Fine-earth, gravelly and stony slopes, rocks, screes. Foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan.

Genus 543. *Galatella* Cass.

1773. *Galatella coriacea* Novopokr.

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane and alpine zones. Nuratau,

Malguzar, North Turkestan. Weed.

Genus 544. *Kalimeris* (Cass.) Cass.

1774. *Kalimeris altaica* (Willd.) Nees ex Fisch. Mey. & Avé-Lall. [*Aster canescens* (Ness) Fisjun]
Perennial. Fine-earth, gravelly and stony slopes, roadsides, banks of canals, fallow lands, fields. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul.

Genus 545. **Tripolium* L.

1775. **Tripolium pannonicum* subsp. ***tripolium*** (L.) Greuter
Annual. Saline lands, banks of canals, roadsides, fields, fallow lands. Plain. Nuratau Relic Mountains, Mirzachul, Kyzylkum. Fodder, ornamental, meliferous.

Genus 546. *Rhinactinidia* Novopokr.

1776. *Rhinactinidia popovii* (Botsch.) Botsch.
Perennial. Rocks, stony slopes. Montane and alpine zones. Nuratau, Malguzar, North Turkestan.

Genus 547. *Erigeron* L.

1777. *Erigeron acris* L.
Biennial. Meadows, fallow lands, saline lands, banks of rivers, lakes and canals, rocks, fine-earth, gravelly and stony slopes. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Medicinal, weed.

1778. *Erigeron bellidiformis* Popov
Perennial. Fine-earth, gravelly and stony slopes. Alpine zone. North Turkestan

1779. *Erigeron cabulicus* (Boiss.) Botsch. [*Psychrogeton cabulicus* Boiss.]
Perennial. Fine-earth, gravelly and stony slopes. Montane and alpine zones. Malguzar, North Turkestan. Ornamental.

1780. **Erigeron canadensis* L. [*Conyza canadensis* (L.) Cronquist]
Annual. Gardens, fields, fallow lands, wastelands, banks of rivers, lakes and canals, roadsides. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, weed, meliferous.

1781. *Erigeron khorossanicus* Boiss. [*Psychrogeton aucherii* (DC.) Grierson]
Biennial. Fine-earth slopes, banks of rivers and canals, fallow lands. Foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan.

1782. *Erigeron pallidus* Popov

Perennial. Fine-earth, gravelly and stony slopes, pebbles, moraines. Montane and alpine zones. Malguzar, North Turkestan.

1783. *Erigeron petiolaris* Vierh. [*Erigeron pseudoneglectus* Popov]

Perennial. Fine-earth slopes, subalpine and alpine meadows. Montane and alpine zones. North Turkestan.

1784. *Erigeron popovii* Botsch.

Biennial or perennial. Meadows, banks of rivers. Montane zone. North Turkestan.

1785. *Erigeron pseudoseravschanicus* Botsch.

Perennial. Fine-earth and stony slopes, banks of rivers, meadows. Foothills, montane and alpine zones. North Turkestan.

1786. *Erigeron seravschanicus* Popov

Perennial. Gravelly and stony slopes, shady wet places, subalpine meadows, moraines. Montane and alpine zones. North Turkestan.

1787. *Erigeron sogdianus* Popov

Perennial. Subalpine and alpine meadows, rocks, screes, moraines. Montane and alpine zones. North Turkestan.

1788. *Erigeron umbrosus* (Kar. & Kir.) Boiss.

Annual. Gravelly and stony slopes, screes, rocks, shady wet places. Montane and alpine zones. North Turkestan.

Genus 548. *Psychrogeton* Boiss.

1789. *Psychrogeton amorphoglossus* (Boiss.) Novopokr. [*Psychrogeton leucophyllus* (Bunge) Novopokr.]

Perennial. Gravelly and stony slopes, rocks. Montane and alpine zones. North Turkestan.

1790. *Psychrogeton pseudrigeron* (Bunge) Novopokr. ex Nevski

Perennial. Fine-earth, gravelly and stony slopes, rocks, screes, pebbles. Montane and alpine zones. North Turkestan.

Genus 549. *Symphyotrichum* Nees

1791. *Symphyotrichum ciliatum* (Ledeb.) G. L. Nesom [*Brachyactis ciliata* (Ledeb.) Ledeb.]

Annual. Saline lands, banks of rivers, lakes and canals. Plain. Mirzachul, Kyzylkum.

Genus 550. *Lachnophyllum* Bunge

1792. *Lachnophyllum gossypinum* Bunge

Annual. Fine-earth, gravelly and stony slopes, piedmont plains, clay deserts, fallow lands, pebbles,

fields. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Medicinal, essential oil, fodder.

Genus 551. *Anthemis* L.

1793. *Anthemis deserticola* Krasch. & Popov
Annual. Saline lands. Plain. Mirzachul, Kyzylkum.

Genus 552. *Achillea* L.

1794. *Achillea arabica* Kotschy [*Achillea biebersteinii* Afan.] Figure 447
Perennial. Fine-earth, gravelly and stony slopes, pebbles, river valleys, piedmont plains, fallow lands, wastelands, banks of canals. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Medicinal.



Figure 447 *Achillea arabica* (photography by Natalya Beshko)

1795. *Achillea filipendulina* Lam. Figure 448
Perennial. Fine-earth, gravelly and stony slopes, screes, pebbles, river valleys, fallow lands, banks of canals, gardens. Foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Medicinal, essential oil, ornamental.



Figure 448 *Achillea filipendulina* (photography by Natalya Beshko)

1796. *Achillea millefolium* L. Figure 449

Perennial. River valleys, fine-earth slopes, meadows. Montane and alpine zones. Malguzar, North Turkestan. Medicinal, ornamental.



Figure 449 *Achillea millefolium* (photography by Natalya Beshko)

1797. *Achillea santolinoides* subsp. *wilhelmsii* (K. Koch) Greuter [*Achillea kermanica* Gand.] Figure 450

Perennial. Sandy and clay deserts, piedmont plains, fine-earth, gravelly and stony slopes, river valleys, banks of canals, fallow lands, fields. Plain, foothills, montane zone. Nuratau, Aktau,

Nuratau Relic Mountains, Malguzar, Mirzachul, Kyzylkum. Medicinal.



Figure 450 *Achillea santolinoides* subsp. *wilhelmsii* (photography by Natalya Beshko)

Genus 553. *Handelia* Heimerl

1798. *Handelia trichophylla* Heimerl Figure 451

Perennial. Fine-earth, gravelly slopes, screes, pebbles, river valleys, fields, fallow lands. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan. Medicinal, ornamental.



Figure 451 *Handelia trichophylla* (photography by Natalya Beshko)

Genus 554. *Pseudohandelia* Tzvelev

1799. *Pseudohandelia umbellifera* (Boiss.) Tzvelev Figure 452

Biennial or perennial. Sandy and clay deserts, fine-earth and gravelly slopes, fallow lands. Plain, foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, ornamental.



Figure 452 *Pseudohandelia umbellifera* (photography by Natalya Beshko)

Genus 555. *Tanacetopsis* (Tzvelev) Kovalevsk.

1800. *Tanacetopsis karataviensis* (Kovalevsk.) Kovalevsk. Figure 453

Perennial. Stony slopes, rocks. Montane zone. Nuratau.



Figure 453 *Tanacetopsis karataviensis* (photography by Natalya Beshko)

1801. *Tanacetopsis mucronata* (Regel & Schmalh.) Kovalevsk.

Perennial. Stony slopes, rocks, pebbles. Montane and alpine zones. North Turkestan.

1802. *Tanacetopsis urgutensis* (Popov ex Tzvel.) Kovalevsk.

Perennial. Gravelly and stony slopes, rocks. Montane and alpine zones. Malguzar, North Turkestan.

Genus 556. *Lepidolopsis* Poljakov

1803. *Lepidolopsis turkestanica* (Regel & Schmalh.) Poljakov

Perennial. Fine-earth, gravelly and stony slopes, fallow lands, pebbles, banks of rivers. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan.

Genus 557. *Mausolea* Bunge

1804. *Mausolea eriocarpa* (Bunge) Poljakov ex Podlech. Figure 454

Semishrub. Sandy deserts. Plain. Kyzylkum. Essential oil.



Figure 454 *Mausolea eriocarpa* (photography by Natalya Beshko)

Genus 558. *Artemisia* L.

1805. *Artemisia absinthium* L.

Annual, perennial. River valleys, banks of canals, roadsides, fallow lands, gardens, meadows, wastelands, fine-earth, gravelly and stony slopes. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Medicinal, food (spice-aromatic), essential oil, poisonous.

1806. **Artemisia annua* L.

Annual. River valleys, banks of canals, roadsides, fields, fallow lands, wastelands, gardens, surroundings of settlements. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, essential oil, insecticide, dye, weed.

1807. *Artemisia cina* Berg ex Poljakov

Semishrub. Saline lands, dry riverbeds, sandy soils. Plain. Mirzachul. Medicinal, essential oil, poisonous.

1808. *Artemisia diffusa* Krasch. ex Poljakov

Semishrub. Sandy and clay deserts, pebbles, saline lands, fine-earth, gravelly and stony slopes. Plain, foothills. Nuratau Relic Mountains, Mirzachul, Kyzylkum. Medicinal, essential oil, fodder.

1809. *Artemisia dracunculus* L.

Perennial. Fine-earth, gravelly and stony slopes, river valleys, fallow lands, wastelands. Plain, foothills, montane zone. Nuratau, Malguzar, North Turkestan. Medicinal, essential oil, food (spice-aromatic), fodder, meliferous, weed, ornamental.

1810. *Artemisia ferganensis* Krasch. ex Poljakov

Semishrub. Sandy and clay deserts, fallow lands, fine-earth, gravelly and stony slopes, river valleys, dry riverbeds, pebbles, screes. Plain, foothills, montane and alpine zones. Nuratau, Malguzar, North Turkestan, Mirzachul. Medicinal, essential oil, fodder.

1811. *Artemisia eremophila* Krasch. & Butkov

Semishrub. Fine-earth, gravelly and stony slopes, pebbles, piedmont plains. Plain, foothills. Nuratau, North Turkestan.

1812. *Artemisia glanduligera* Krasch. ex Poljakov

Semishrub. Pebbles, cliffs, fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau, Malguzar, North Turkestan.

1813. *Artemisia glaucina* Krasch. ex Poljakov

Semishrub. Pebbles, banks of rivers and canals, fine-earth, gravelly and stony slopes, ravines. Foothills, montane zone. Nuratau, Malguzar, North Turkestan.

1814. *Artemisia juncea* Kar. & Kir. Figure 455

Semishrub. Dry riverbeds, river valleys, pebbles, fine-earth, gravelly and stony slopes, screes, rocks. Foothills, montane zone. Nuratau. Medicinal, essential oil.



Figure 455 *Artemisia juncea* (photography by Natalya Beshko)

1815. *Artemisia lehmanniana* Bunge

Semishrub. Fine-earth, gravelly and stony slopes, rocks. Montane and alpine zones. Malguzar, North Turkestan.

1816. *Artemisia leucodes* Schrenk Figure 456

Annual or biennial. Sandy and clay deserts, fine-earth, gravelly and stony slopes, river valleys, banks of canals, roadsides. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, essential oil, fodder, weed.



Figure 456 *Artemisia leucodes* (photography by Natalya Beshko)

1817. *Artemisia persica* Boiss.

Semishrub. Fine-earth, gravelly and stony slopes, pebbles, screes. Montane and alpine zones. Malguzar, North Turkestan. Medicinal, essential oil.

1818. *Artemisia porrecta* Krasch. ex Poljakov

Semishrub. Banks of canals, roadsides, fallow lands, screes, dry riverbeds, pebbles, fine-earth, gravelly and stony slopes. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan. Medicinal, essential oil.

1819. *Artemisia prolixa* Krasch. ex Poljakov

Semishrub. Fine-earth, gravelly and stony slopes, screes. Foothills, montane zone. North Turkestan.

1820. *Artemisia rutifolia* Stephan ex Spreng.

Semishrub. Gravelly and stony slopes, rocks, pebbles, screes. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Medicinal, essential oil.

1821. *Artemisia santolinifolia* Turcz. ex Krasch.

Perennial. Dry riverbeds, banks of rivers, piedmont plains, fine-earth, gravelly and stony slopes. Plain, foothills. Nuratau, North Turkestan. Medicinal, essential oil, fodder.

1822. *Artemisia scoparia* Waldst. & Kitam. Figure 457

Annual or biennial. Sandy and clay deserts, piedmont plains, river valleys, fine-earth, gravelly and stony slopes, fields, fallow lands, roadsides, wastelands. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, essential oil, insecticide, fodder, weed.



Figure 457 *Artemisia scoparia* (photography by Natalya Beshko)

1823. *Artemisia scotina* Nevski

Semishrub. Fine-earth, gravelly and stony slopes, piedmont plains. Plain, foothills, montane zone. Nuratau, Malguzar. Essential oil.

1824. *Artemisia serotina* Bunge

Semishrub. Dry riverbeds, piedmont plains, fine-earth, gravelly and stony slopes. Foothills, montane

zone. Nuratau, Malguzar, North Turkestan. Medicinal, essential oil, fodder.

1825. *Artemisia sieversiana* Ehrh.

Annual or biennial. Saline lands, banks of rivers and canals, roadsides, gardens, fields, fallow lands, wastelands. Plain. Mirzachul. Medicinal, essential oil, fodder.

1826. *Artemisia sogdiana* Bunge Figure 458

Semishrub. Piedmont plains, fine-earth, gravelly and stony slopes, dry riverbeds. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Medicinal, essential oil, fodder.



Figure 458 *Artemisia sogdiana* (photography by Natalya Beshko)

1827. *Artemisia subsalsa* Filatova

Semishrub. Saline lands, banks of rivers, lakes and canals. Plain. Mirzachul.

1828. *Artemisia tenuisecta* Nevski Figure 459

Semishrub. Fine-earth, gravelly and stony slopes, screes. Montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Essential oil, fodder.



Figure 459 *Artemisia tenuisecta* (photography by Natalya Beshko)

1829. *Artemisia tournefortiana* Rchb.

Annual or biennial. River valleys, banks of canals, roadsides, fine-earth slopes, fields, pebbles, wastelands, gardens, surroundings of settlements. Plain, foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan, Mirzachul. Weed.

1830. *Artemisia turanica* Krasch. Figure 460

Semishrub. Sandy and clay deserts, saline lands, pebbles, fine-earth, gravelly and stone slopes. Plain, foothills. Nuratau Relic Mountains, Mirzachul, Kyzylkum. Essential oil, fodder.



Figure 460 *Artemisia turanica* (photography by Natalya Beshko)

1831. *Artemisia vulgaris* L.

Perennial. River valleys, ravines, banks of canals, roadsides, fields, fine-earth and stony slopes, fallow lands, surroundings of settlements. Plain, foothills, montane and alpine zones. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Medicinal, essential oil, insecticide, fodder, weed.

Genus 559. *Trichanemis* Regel & Schmalh.

1832. *Trichanemis karataviensis* Regel & Schmalh.

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. Nuratau.

Genus 560. *Waldheimia* Kar. & Kir.

1833. *Waldheimia glabra* (Decne) Regel

Perennial. Alpine meadows, moraines, rocks. Alpine zone. North Turkestan.

1834. *Waldheimia tomentosa* (Decne) Regel

Perennial. Gravelly and stony slopes, screes, rocks, pebbles, banks of rivers. Alpine zone. North Turkestan.

Genus 561. *Pyrethrum* Zinn

1835. *Pyrethrum galae* Popov

Perennial. Fine-earth, gravelly and stony slopes, rocks. Montane zone. Nuratau.

1836. *Pyrethrum pyrethroides* (Kar. & Kir.) B. Fedtsch. ex Krasch. Figure 461

Perennial. Fine-earth, gravelly and stony slopes, screes, pebbles, moraines, rocks. Montane and alpine zones. Malguzar, North Turkestan.



Figure 461 *Pyrethrum pyrethroides* (photography by Natalya Beshko)

Genus 562. *Tanacetum* L.

1837. *Tanacetum parthenifolium* (Willd.) Sch. Bip. [*Pyrethrum parthenifolium* Willd.]

Perennial. Ravines, banks of rivers, pebbles, rocks, stony slopes. Montane zone. Malguzar, North Turkestan. Medicinal, essential oil, insecticide, ornamental.

1838. *Tanacetum pseudachillea* C. Winkl.

Perennial. Banks of rivers, fine-earth, gravelly and stony slopes. Montane and alpine zones. North Turkestan. Medicinal, essential oil.

Genus 563. *Lepidolopha* C. Winkl.

1839. *Lepidolopha komarowii* C. Winkl.

Shrub. Fine-earth and stony slopes, rocks. Montane zone. Nuratau, Malguzar. Essential oil.

1840. *Lepidolopha nuratavica* Krasch. Figure 462

Shrub. Fine-earth and stony slopes, rocks. Montane zone. Nuratau. UzbRDB 1.



Figure 462 *Lepidolopha nuratavica* (photography by N. Yu. Beshko)

Genus 564. *Microcephala* Pobed.

1841. *Microcephala lamellata* (Bunge) Pobed.

Annual. Sandy and clay deserts, saline lands, fine-earth, gravelly and stony slopes, rocks. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Essential oil.

1842. *Microcephala turcomanica* (C. Winkl.) Pobed.

Annual. Sandy and clay deserts, wastelands. Plain. Mirzachul. Essential oil.

Genus 565. **Tripleurospermum* Sch. Bip.

1843. **Tripleurospermum disciforme* (C. A. Mey.) Sch. Bip.

Biennial. Fine-earth, gravelly and stony slopes, pebbles, river valleys, banks of canals, meadows, roadsides, fallow lands, fields. Plain, foothills, montane zone. Malguzar, North Turkestan. Weed.

Genus 566. **Xanthium* L.

1844. **Xanthium spinosum* L.

Annual. Wastelands, roadsides, fallow lands, banks of canals, surroundings of settlements. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, oil, poisonous, weed.

1845. **Xanthium strumarium* L.

Annual. River valleys, banks of canals, wastelands, fields, fallow lands, roadsides, surroundings of settlements. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Medicinal, oil, poisonous, weed.

Family 104. Caprifoliaceae

Genus 567. *Lonicera* L.

1846. *Lonicera bracteolaris* Boiss. & Buhse. Figure 463

Shrub. Fine-earth, gravelly and stony slopes, river valleys, pebbles, ravines. Montane zone. Nuratau, North Turkestan. Ornamental, meliferous.



Figure 463 *Lonicera bracteolaris* (photography by Natalya Beshko)

1847. *Lonicera humilis* Kar. & Kir. [*Lonicera altmannii* Regel & Schmalh.] Figure 464

Shrub. Fine-earth, gravelly and stony slopes, river valleys, ravines. Montane and alpine zones. Malguzar, North Turkestan. Ornamental, meliferous.



Figure 464 *Lonicera humilis* (photography by Natalya Beshko)

1848. *Lonicera korolkowii* Stapf.

Shrub. Fine-earth, gravelly and stony slopes, river valleys, screes, rocks. Foothills, montane zone. North Turkestan. Ornamental, meliferous.

1849. *Lonicera microphylla* Willd. ex Schult.

Shrub. Fine-earth and stony slopes, rocks, river valleys, subalpine meadows. Montane zone. Malguzar, North Turkestan. Medicinal, meliferous, ornamental.

1850. *Lonicera nummulariifolia* Jaub. & Spach Figure 465

Shrub. Fine-earth, gravelly and stony slopes, river valleys, ravines, rocks. Montane and alpine zones. Nuratau, Aktau, Malguzar, North Turkestan. Medicinal, meliferous, ornamental.



Figure 465 *Lonicera nummulariifolia* (photography by Natalya Beshko)

1851. *Lonicera olgae* Regel & Schmalh.

Shrub. Stony slopes, rocks. Montane and alpine zones. North Turkestan. Ornamental, meliferous.

1852. *Lonicera paradoxa* Pojark.

Shrub. Stony slopes, rocks. Montane and alpine zones. North Turkestan. Ornamental, meliferous. Threatened species.

1853. *Lonicera semenovii* Regel

Shrub. Stony slopes, rocks, moraines. Montane and alpine zones. North Turkestan. Ornamental, meliferous.

1854. *Lonicera simulatrix* Pojark.

Shrub. Fine-earth, gravelly and stony slopes. Montane and alpine zones. North Turkestan.

1855. *Lonicera zeravshanica* Pojark.

Shrub. Fine-earth, gravelly and stony slopes, river valleys. Montane and alpine zones. North Turkestan. Ornamental, meliferous.

Genus 568. *Dipsacus* L.

1856. *Dipsacus dipsacoides* (Kar. & Kir.) Botsch. Figure 466

Perennial. Fine-earth, gravelly and stony slopes. Montane zone. Nuratau, Malguzar, North Turkestan, Mirzachul. Medicinal, ornamental, meliferous.



Figure 466 *Dipsacus dipsacoides* (photography by Natalya Beshko)

1857. *Dipsacus laciniatus* L.

Biennial. Fine-earth slopes, river valleys, fields, gardens, fallow lands. Plain, foothills, montane

zone. Nuratau, Malguzar, North Turkestan, Mirzachul. Medicinal, ornamental, meliferous.

Genus 569. **Cephalaria* Schrad.

1858. *Cephalaria syriaca* (L.) Schrad. ex Roem. & Schult.

Annual. Piedmont plains, fallow lands, fields. Plain, foothills, montane zone. Nuratau, Malguzar, North Turkestan, Mirzachul. Medicinal, oil.

Genus 570. *Scabiosa* L.

1859. *Scabiosa flavida* Boiss. & Hausskn.

Annual. Fine-earth, gravelly and stony slopes. Foothills. Nuratau.

1860. *Scabiosa olivierii* Coult.

Annual. Sandy and clay deserts, piedmont plains, gravelly and stony slopes. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum.

1861. *Scabiosa rhodantha* Kar. & Kir.

Annual. Fine-earth, gravelly and stony slopes, banks of rivers, piedmont plains, sandy and clay deserts, fields, fallow lands. Foothills, montane zone. Nuratau, Nuratau Relic Mountains, Kyzylkum.

1862. *Scabiosa songarica* Schrenk Figure 467

Perennial. Fine-earth, gravelly and stony slopes. Foothills, montane and alpine zones. Nuratau, Malguzar, North Turkestan. Medicinal, ornamental, meliferous.



Figure 467 *Scabiosa songarica* (photography by Natalya Beshko)

Genus 571. Valeriana L.

1863. Valeriana chionophila Popov & Kult. Figure 468

Perennial. Fine-earth and stony slopes, rocks, wet places near melting snow. Foothills, montane and alpine zones. Nuratau, Aktau, Malguzar, North Turkestan. Medicinal.



Figure 468 *Valeriana chionophila* (photography by Natalya Beshko)

1864. Valeriana fedtschenkoi Coincy

Perennial. Rocks, stony slopes, screes, banks of rivers, subalpine and alpine meadows. Montane and alpine zones. North Turkestan. Medicinal.

1865. Valeriana ficarifolia Boiss.

Perennial. Shady wet places, banks of rivers, ravines, fine-earth, gravelly and stony slopes, screes. Foothills, montane and alpine zones. Nuratau, Malguzar, North Turkestan.

Genus 572. Valerianella Mill.

1866. Valerianella coronata (L.) DC.

Annual. Fine-earth, gravelly and stony slopes, fallow lands, pebbles. Plain, Foothills. North Turkestan, Mirzachul.

1867. *Valerianella cymbocarpa* C. A. Mey.

Annual. Fine-earth, gravelly and stony slopes, dry riverbeds. Plain, foothills, montane zone. Nuratau, Malguzar, North Turkestan.

1868. *Valerianella dactylophylla* Boiss. & Hohen.

Annual. Fine-earth and stony slopes, shady places. Montane zone. Nuratau, Malguzar.

1869. *Valerianella muricata* (Steven ex M. Bieb.) W. H. Baxter

Annual. Fine-earth and stony slopes, screes, rocks, pebbles, fallow lands. Plain, foothills, montane zone. Nuratau, Malguzar, Mirzachul.

1870. *Valerianella oxyrrhyncha* Fisch. & C. A. Mey. [*Valerianella diodon* Boiss.]

Annual. Fine-earth and stony slopes, pebbles, banks of rivers, fields, fallow lands. Plain, foothills, montane and alpine zones. Nuratau, Aktau, Malguzar, North Turkestan, Mirzachul.

1871. *Valerianella plagiostephana* Fisch. & C. A. Mey.

Annual. Fine-earth and stony slopes, screes, rocks, pebbles, river valleys. Plain, foothills, montane zone. Malguzar, North Turkestan.

1872. *Valerianella szovitsiana* Fisch. & C. A. Mey.

Annual. Sandy and clay deserts, saline lands, fine-earth and stony slopes, rocks, screes. Plain, foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan, Mirzachul, Kyzylkum.

1873. *Valerianella turkestanica* Regel & Schmalh.

Annual. Fine-earth, gravelly and stony slopes, pebbles, banks of rivers, clay deserts, saline lands, fields, fallow lands. Plain, foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan, Mirzachul.

1874. *Valerianella vvedenskyi* Lincz.

Annual. Stony slopes, river valleys, pebbles. Foothills, montane zone. North Turkestan.

Family 105. Apiaceae [Umbelliferae]

Genus 573. *Eryngium* L.

1875. *Eryngium caeruleum* M. Bieb.

Perennial, monocarpic. Fine-earth, gravelly and stony slopes, river valleys, banks of canals, gardens, fallow lands, roadsides, wastelands, fields. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Medicinal, weed.

1876. *Eryngium macrocalyx* Schrenk

Perennial, monocarpic. Stony and gravelly slopes, screes, dry riverbeds, fallow lands, roadsides. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. Medicinal, essential oil.

1877. *Eryngium octophyllum* Korovin

Perennial, polycarpic. Stony slopes, rocks, dry riverbeds. Foothills, montane zone. Nuratau, Malguzar. Medicinal, essential oil.

Genus 574. Echinophora L.

1878. Echinophora tenuifolia subsp. **sibthorpiana** (Guss.) Tutin [*Echinophora sibthorpiana* Guss.] Perennial, monocarpic. Fine-earth, gravelly and stony slopes, piedmont plains, wastelands, fallow lands, fields, pebbles, gardens, roadsides, banks of canals. Plain, foothills. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar. Medicinal, essential oil, food (spice-aromatic), fodder.

Genus 575. Anthriscus Pers.

1879. Anthriscus glacialis Lipsky Perennial, polycarpic. Stony slopes, stream banks. Montane and alpine zones. Nuratau. Fodder.

Genus 576. Scandix L.

1880. Scandix nodosa L. [*Chaerophyllum nodosum* (L.) Crantz; *Myrrhoides nodosa* (L.) Cannon; *Physocaulis nodosus* (L.) W. D. J. Koch]

Annual. River valleys, shady wet places. Foothills, montane zone. Nuratau. Food, essential oil.

1881. Scandix pecten-veneris L.

Annual. Fine-earth, gravelly and stony slopes, river valleys, banks of canals, fields, gardens, fallow lands, wastelands, roadsides. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Weed, medicinal.

1882. Scandix stellata Banks & Sol.

Annual. Fine-earth, gravelly and stony slopes, screes, rocks, pebbles, dry riverbeds, roadsides, fields, fallow lands. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Weed.

Genus 577. Kozlovia Lipsky

1883. Kozlovia paleacea Lipsky

Perennial, monocarpic. Fine-earth slopes, fallow lands. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. Weed.

Genus 578. *Torilis Adans.

1884. *Torilis arvensis (Huds.) Link.

Annual. Fallow lands, fields, gardens, roadsides, wastelands, banks of rivers and canals, fine-earth, gravelly and stony slopes. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains,

Malguzar, North Turkestan, Mirzachul, Kyzylkum. Essential oil, weed.

1885. **Torilis leptophylla* (L.) Rchb. f.

Annual. Fine-earth, gravelly and stony slopes, wastelands, fallow lands, fields, roadsides, banks of rivers and canals, gardens, surroundings of settlements. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Weed, food.

Genus 579. *Turgenia* Hoffm.

1886. *Turgenia latifolia* (L.) Hoffm.

Annual. Fields, fallow lands, sandy and clay deserts, river valleys, fine-earth, gravelly and stony slopes, dry riverbeds. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Essential oil, weed.

Genus 580. **Orlaya* Hoffm.

1887. **Orlaya grandiflora* (L.) Hoffm.

Annual. Fields, fallow lands. Plain. Mirzachul. Essential oil, weed.

Genus 581. *Daucus* L.

1888. *Daucus carota* L.

Biennial. Roadsides, wastelands, fallow lands, fields, gardens, banks of canals, river valleys, meadows. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Food, essential oil, medicinal, weed.

Genus 582. **Coriandrum* L.

1889. **Coriandrum sativum* L.

Annual. Surrounds of settlements, roadsides, fallow lands, fields, river valleys (escaped from culture). Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul. Food (spice-aromatic), essential oil, meliferous.

Genus 583. *Schrenkia* Fisch. & C. A. Mey.

1890. *Schrenkia golickeana* B. Fedtsch.

Perennial, monocarpic. Fine-earth and stony slopes, pebbles, rocks. Foothills, montane and alpine zones. Nuratau, Malguzar, North Turkestan. Medicinal.

1891. *Schrenkia pungens* Regel & Schmalh.

Perennial, polycarpic. Stony slopes, rocks, screes, dry riverbeds. Foothills, montane zone. Nuratau, Malguzar.

1892. *Schrenkia vaginata* (Ledeb.) Fisch. & C. A. Mey.

Perennial, monocarpic. Stony slopes, rocks, screes, pebbles. Montane and alpine zones. Nuratau, North Turkestan.

Genus 584. *Lipskya* (K.-Pol.) Nevski

1893. *Lipskya insignis* Nevski

Perennial, monocarpic. Stony slopes, rocks. Foothills, montane zone. Malguzar. Essential oil, food (spice-aromatic). Threatened species, UzBRDB 3.

Genus 585. *Schtschurowskia* Regel & Schmalh.

1894. *Schtschurowskia meifolia* Regel & Schmalh.

Perennial, polycarpic. Stony slopes, screes, pebbles. Montane and alpine zones. Malguzar, North Turkestan.

Genus 586. *Korshinskya* Lipsky

1895. *Korshinskya olgae* Lipsky

Perennial, monocarpic. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau, Malguzar, North Turkestan.

Genus 587. *Aulacospermum* Ledeb.

1896. *Aulacospermum roseum* Korovin

Perennial, monocarpic. Gravelly and stony slopes, screes, alpine meadows, stream banks, wet places near melting snow. Montane and alpine zones. Malguzar, North Turkestan.

1897. *Aulacospermum simplex* Rupr.

Perennial, monocarpic. Fine-earth, gravelly and stony slopes, screes, rocks. Montane and alpine zones. Malguzar, North Turkestan.

1898. *Aulacospermum tenuisectum* Korovin

Perennial, monocarpic. Fine-earth, gravelly and stony slopes, screes, rocks. Montane and alpine zones. Malguzar, North Turkestan.

Genus 588. *Eremodaucus* Bunge

1899. *Eremodaucus lehmannii* Bunge

Annual. Fields, fallow lands, wastelands, roadsides, piedmont plains, fine-earth slopes. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Fodder, weed.

Genus 589. **Conium* L.

1900. **Conium maculatum* L.

Biennial. Wastelands, gardens, fields, banks of rivers and canals. Foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Medicinal, poisonous, essential oil, weed.

Genus 590. *Prangos* Lindl.

1901. *Prangos didyma* (Regel) Pimenov & V. N. Tikhom.

Perennial, monocarpic. Sandy and clay deserts, piedmont plains, dry riverbeds. Plain, foothills. Nuratau Relic Mountains, Mirzachul, Kyzylkum. Fodder, essential oil, meliferous.

1902. *Prangos fedtschenkoi* (Regel & Schmalh.) Korovin Figure 469

Perennial, monocarpic. Fine-earth, gravelly and stony slopes, dry riverbeds, pebbles, roadsides, fields. Foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Fodder, essential oil, meliferous.



Figure 469 *Prangos fedtschenkoi* (photography by Natalya Beshko)

1903. *Prangos ornata* Kuzmina Figure 470

Perennial, polycarpic. Fine-earth, gravelly and stony slopes, river valleys, dry riverbeds. Foothills, montane zone. Nuratau. Fodder, essential oil, meliferous.



Figure 470 *Prangos ornata* (photography by Natalya Beshko)

1904. *Prangos pabularia* Lindl. Figure 471

Perennial, polycarpic. Fine-earth, gravelly and stony slopes, river valleys, dry riverbeds. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Fodder, essential oil, medicinal, meliferous.



Figure 471 *Prangos pabularia* (photography by Natalya Beshko)

Genus 591. Bupleurum L.

1905. *Bupleurum falcatum* L. subsp. *exaltatum* (M. Bieb.) Rouy & Camus [*Bupleurum exaltatum* M. Bieb.]

Perennial, polycarpic. Stony slopes, screes, rocks, dry riverbeds, pebbles. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Medicinal, fodder.

Genus 592. *Elaeosticta* Fenzl

1906. *Elaeosticta allioides* (Regel & Schmalh.) Kljuykov, Pimenov & V. N. Tikhom.

Perennial, monocarpic. Fine-earth and stony slopes, dry riverbeds. Foothills, montane zone. Nuratau, Aktau, Malguzar, North Turkestan. Essential oil, fodder.

1907. *Elaeosticta hirtula* (Regel & Schmalh.) Kljuykov, Pimenov & V. N. Tikhom.

Perennial, monocarpic. Fine-earth, gravelly and stony slopes, screes. Foothills, montane and alpine zones. Nuratau, Malguzar, North Turkestan. Essential oil.

1908. *Elaeosticta polycarpa* (Korovin) Kljuykov, Pimenov & V. N. Tikhom.

Perennial, polycarpic. Fine-earth slopes. Foothills, montane zone. Nuratau Relic Mountains. Essential oil.

1909. *Elaeosticta vvedenskyi* (Kamelin) Kljuykov, Pimenov & V. N. Tikhom.

Perennial, monocarpic. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau. Essential oil.

Genus 593. *Galagania* Lipsky

1910. *Galagania fragrantissima* Lipsky

Perennial, monocarpic. Fine-earth, gravelly and stony slopes, fallow lands. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. Essential oil, food (spice-aromatic).

1911. *Galagania tenuisecta* (Regel & Schmalh.) M. G. Vassiljeva & Pimenov

Perennial, monocarpic. Fine-earth, gravelly slopes, dry riverbeds, fallow lands. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. Essential oil, weed.

Genus 594. *Hyalolaena* Bunge

1912. *Hyalolaena depauperata* Korovin

Perennial, monocarpic. Gravelly and stony slopes, rocks. Foothills, montane zone. Nuratau. Essential oil.

1913. *Hyalolaena jaxartica* Bunge

Perennial, monocarpic. Fine-earth, gravelly and stony slopes, sandy and clay deserts, dry riverbeds, pebbles, rocks. Plain, foothills. Nuratau, Mirzachul. Essential oil.

Genus 595. Oedibasis Koso.-Pol.

1914. Oedibasis apiculata (Kar. & Kir.) Koso.-Pol.

Perennial, monocarpic. Sandy deserts, piedmont plains, fine-earth, gravelly and stony slopes, rocks, fallow lands. Plain, foothills, montane and alpine zones. Nuratau, Malguzar, North Turkestan.

1915. Oedibasis tamerlanii (Lipsky) Korovin ex Nevski

Perennial, monocarpic. Fine-earth, gravelly and stony slopes, rocks. Foothills, montane zone. Nuratau, Malguzar, North Turkestan.

Genus 596. Elwendia Boiss.

1916. Elwendia capusii (Franch.) Pimenov & Kljuykov [*Bunium capusii* (Franch.) Korovin]

Perennial, polycarpic. Piedmont plains, fine-earth slopes, river valleys. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan.

1917. Elwendia chaerophylloides (Regel & Schmalh.) Pimenov & Kljuykov [*Bunium chaerophylloides* (Regel & Schmalh.) Drude]

Perennial, polycarpic. Fine-earth, gravelly and stony slopes. Foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan. Medicinal, food (spice-aromatic), essential oil.

1918. Elwendia intermedia (Korovin) Pimenov & Kljuykov [*Bunium intermedium* Korovin]

Perennial, polycarpic. Fine-earth slopes, river valleys, shady wet places. Montane zone. Nuratau, Malguzar, North Turkestan.

1919. Elwendia persica (Boiss.) Pimenov & Kljuykov [*Bunium persicum* (Boiss.) B. Fedtsch.]

Perennial, polycarpic. Fine-earth, gravelly and stony slopes, screes. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. Medicinal, food (spice-aromatic), essential oil.

Genus 597. Falcaria Fabr.

1920. Falcaria vulgaris Bernh.

Perennial, monocarpic. River valleys, banks of canals, fine-earth, gravelly slopes, wet places, gardens, roadsides. Plain, foothills, montane zone. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan. Medicinal, food, essential oil.

Genus 598. Carum L.

1921. Carum carvi L.

Biennial. Banks of rivers, wet places. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Medicinal, essential oil, food (spice-aromatic).

Genus 599. Apium L.

1922. Apium nodiflorum (L.) Lag.

Perennial, polycarpic. Banks of rivers and canals. Nuratau. Medicinal, food.

Genus 600. Cuminum L.

1923. Cuminum setifolium (Boiss.) Koso-Pol.

Annual. Sandy and clay deserts, fine-earth slopes. Nuratau, Kyzylkum. Essential oil, weed.

Genus 601. Aphanopleura Boiss.

1924. Aphanopleura capillifolia (Regel & Schmalh.) Lipsky

Annual. Sandy and clay deserts, dry riverbeds, fine-earth, gravelly and stony slopes, riparian forests, fallow lands, roadsides. Plain, foothills, montane zone. Nuratau, Aktau, Nuratau Relic Mountains, Malguzar, North Turkestan, Mirzachul, Kyzylkum. Essential oil, weed.

Genus 602. Pimpinella L.

1925. Pimpinella peregrina L.

Biennial. Banks of rivers and canals, gardens, roadsides, fields, fallow lands, riparian forests. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. Essential oil, medicinal, fodder, meliferous.

Genus 603. Sium L.

1926. Sium sisaroides DC.

Perennial, polycarpic. Banks of rivers and canals, swamps. Plain, foothills, montane zone. Nuratau. Medicinal, oil.

Genus 604. Berula W. D. J. Koch

1927. Berula erecta (Huds.) Coville

Perennial, polycarpic. Banks of rivers and canals. Foothills, montane zone. Nuratau, Malguzar, North Turkestan. Medicinal, poisonous.

Genus 605. *Seseli* L.

1928. *Seseli calycinum* (Korovin) Pimenov & Sdobnina

Perennial, polycarpic. Rocks. Montane zone. Nuratau, Malguzar, North Turkestan.

1929. *Seseli korovinii* Schischk. Figure 472

Perennial, polycarpic. Screes, rocks, gravey and stony slopes. Montane and alpine zones. Nuratau, Malguzar, North Turkestan.



Figure 472 *Seseli korovinii* (photography by Natalya Beshko)

1930. *Seseli lehmannianum* Boiss.

Perennial, polycarpic. Fine-earth, gravelly and stony slopes, rocks, pebbles. Montane and alpine zones. Malguzar, North Turkestan.

1931. *Seseli mucronatum* (Schrenk) Pimenov & Sdobnina

Perennial, polycarpic. Meadows, river valleys, fine-earth and stony slopes, rocks. Montane and alpine zones. Malguzar, North Turkestan.

1932. *Seseli seravschanicum* Pimenov & Sdobnina Figure 473

Perennial, monocarpic. Stony slopes, rocks. Montane and alpine zones. North Turkestan.



Figure 473 *Seseli seravschanicum* (photography by Natalya Beshko)

1933. *Seseli tenuisectum* Regel & Schmalh.

Perennial, polycarpic. Rocks, scree, pebbles. Montane zone. North Turkestan.

1934. *Seseli turbinatum* Korovin

Perennial, polycarpic. Stony slopes. Montane zone. Nuratau. UzbRDB 2.

Genus 606. *Libanotis* Haller ex Zinn

1935. *Libanotis schrenkiana* C. A. Mey. ex Schischk. [*Seseli schrenkianum* (C. A. Mey. ex Schischk.) Pimenov & Sdobnina]

Perennial, polycarpic. Fine-earth and stony slopes, pebbles, rocks. Montane and alpine zones. North Turkestan.

Genus 607. *Mediasia* Pimenov

1936. *Mediasia macrophylla* (Regel & Schmalh.) Pimenov Figure 474

Perennial, polycarpic. Fine-earth, gravelly and stony slopes, screes. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Medicinal, food (spice-aromatic), essential oil.



Figure 474 *Mediasia macrophylla* (photography by Natalya Beshko)

Genus 608. *Alposelinum* Pimenov

1937. *Alposelinum albomarginatum* (Schrenk) Pimenov

Perennial, monocarpic. Stony slopes, moraines, screes, pebbles, alpine meadows. Montane and alpine zones. North Turkestan.

Genus 609. *Conioselinum* Hoffm.

1938. *Conioselinum vaginatum* (Spreng.) Thell. [*Conioselinum tataricum* Fisch. ex Hoffm.]

Perennial, polycarpic. Fine-earth, gravelly and stony slopes, ravines, river valleys, pebbles, screes, shady wet places, swamp meadows. Montane and alpine zones. North Turkestan.

Genus 610. *Angelica* L.

1939. *Angelica archangelica* subsp. *decurrens* (Ledeb.) Kuvaev

Perennial, monocarpic. Stream banks, wet places near melting snow, springs, wet gravelly and fine-earth slopes, meadows, pebbles. Montane and alpine zones. Nuratau, North Turkestan. Medicinal, essential oil, meliferous.

1940. *Angelica brevicaulis* (Rupr.) B. Fedtsch. Figure 475

Perennial, monocarpic. Banks of rivers, pebbles, moraines, wet gravelly slopes, screes, swamp meadows. Montane and alpine zones. North Turkestan. Medicinal, essential oil.



Figure 475 *Angelica brevicaulis* (photography by Natalya Beshko)

1941. *Angelica ternata* Regel & Schmalh.

Perennial, polycarpic. Gravelly slopes, screes, moraines, rocks, pebbles. Montane and alpine zones. North Turkestan. Essential oil, food (spice-aromatic).

Genus 611. *Ferula* L.

1942. *Ferula angreni* Korovin Figure 476

Perennial, polycarpic. Fine-earth and gravelly slopes, river valleys, screes. Montane zone. Nuratau, Malguzar. Essential oil, fodder, meliferous.



Figure 476 *Ferula angreni* (photography by Natalya Beshko)

1943. *Ferula bucharica* (Lipsky) Koso-Pol. [*Ladyginia bucharica* Lipsky]

Perennial, polycarpic. Fine-earth, stony and gravelly slopes. Montane zone. Malguzar. Essential oil, saponin-bearing, meliferous.

1944. *Ferula diversivittata* Regel & Schmalh. Figure 477

Perennial, monocarpic. Fine-earth slopes, dry riverbeds. Foothills, montane zone. Nuratau. Medicinal, essential oil, meliferous.



Figure 477 *Ferula diversivittata* (photography by Natalya Beshko)

1945. *Ferula dshizakensis* Korovin

Perennial, polycarpic. Stony and gravelly slopes, rocks. Montane zone. Nuratau, Nuratau Relic Mountains, Malguzar. Essential oil, fodder, meliferous.

1946. *Ferula fedtschenkoana* Koso-Pol.

Perennial, polycarpic. Fine-earth, gravelly slopes. Montane and alpine zones. Malguzar, North Turkestan. Essential oil, melliferous. Threatened species, UzBRDB 2.

1947. *Ferula ferganensis* Lipsky ex Korovin

Perennial, polycarpic. Stony slopes, rocks, screes. Montane zone. Nuratau. Essential oil, meliferous.

1948. *Ferula foetida* (Bunge) Regel Figure 478

Perennial, monocarpic. Sandy and clay deserts, piedmont plains, fine-earth slopes. Plain, foothills. Nuratau, Nuratau Relic Mountains, Kyzylkum. Medicinal, essential oil, fodder, meliferous.



Figure 478 *Ferula foetida* (photography by Natalya Beshko)

1949. *Ferula helenae* Rakhm. & Melibaev

Perennial, monocarpic. Stony slopes. Foothills. Nuratau Relic Mountains. Essential oil, fodder, meliferous. Threatened species. Endemic to the Nuratau Relic Mountains.

1950. *Ferula kokanica* Regel & Schmalh. Figure 479

Perennial, monocarpic. Fine-earth, gravelly and stony slopes, screes, pebbles, rocks. Foothills, montane and alpine zones. Nuratau, Nuratau Relic Mountains, Malguzar, North Turkestan. Medicinal, essential oil, fodder, meliferous.



Figure 479 *Ferula kokanica* (photography by Natalya Beshko)

1951. *Ferula kuhistanica* Korovin Figure 480

Perennial, monocarpic. Fine-earth, gravelly and stony slopes. Montane and alpine zones. Aktau, Malguzar, North Turkestan. Medicinal, essential oil, fodder, meliferous.



Figure 480 *Ferula kuhistanica* (photography by Natalya Beshko)

1952. *Ferula lehmannii* Boiss.

Perennial, monocarpic. Sandy deserts. Plain. Kyzylkum. Essential oil, meliferous.

1953. *Ferula mollis* Korovin

Perennial, polycarpic. Fine-earth, gravelly and stony slopes. Foothills, montane zone. North Turkestan. Essential oil, fodder, meliferous.

1954. *Ferula moschata* (H. Reinsch) Koso-Pol. [*Ferula sumbul* (Kauffm.) Hook. f.] Figure 481

Perennial, polycarpic. Fine-earth and stony slopes, screes, rocks, ravines. Montane zone. Nuratau, Malguzar, North Turkestan. Medicinal, essential oil, meliferous. Threatened species, UzbRDB 2.



Figure 481 *Ferula moschata* (photography by N. Yu. Beshko)

1955. *Ferula ovczinnikovii* Pimenov

Perennial, monocarpic. Stony and gravelly slopes, screes. Montane zone. Malguzar. Essential oil, meliferous.

1956. *Ferula ovina* (Boiss.) Boiss. Figure 482

Perennial, polycarpic. Fine-earth, gravelly and stony slopes, rocks. Montane and alpine zones. Nuratau, Aktau, Malguzar, North Turkestan. Essential oil, fodder, meliferous.



Figure 482 *Ferula ovina* (photography by Natalya Beshko)

1957. *Ferula penninervis* Regel & Schmalh. Figure 483

Perennial, polycarpic. Stony slopes, screes, pebbles, dry riverbeds, rocks. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Essential oil, medicinal, fodder, meliferous.



Figure 483 *Ferula penninervis* (photography by Natalya Beshko)

1958. *Ferula samarkandica* Korovin

Perennial, monocarpic. Fine-earth, gravelly and stony slopes, dry riverbeds, rocks. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Medicinal, essential oil, fodder, meliferous.

1959. *Ferula schtschurowskiana* Regel & Schmalh.

Perennial, monocarpic. Sandy and clay, deserts, saline lands, gravelly slopes. Plain, foothills, montane zone. Nuratau, Malguzar, North Turkestan, Mirzachul. Essential oil, fodder, meliferous.

1960. *Ferula varia* (Schrenk) Trautv.

Perennial, monocarpic. Sandy deserts, fine-earth and stony slopes. Plain, foothills. Nuratau Relic Mountains. Medicinal, essential oil, fodder, meliferous.

Genus 612. *Heracleum* L.

1961. *Heracleum lehmannianum* Bunge Figure 484

Perennial or biennial, monocarpic. Subalpine meadows, river valleys, ravines, pebbles, wet screes. Montane and alpine zones. Nuratau, Malguzar, North Turkestan. Medicinal, essential oil, fodder, meliferous.



Figure 484 *Heracleum lehmannianum* (photography by Natalya Beshko)

1962. *Heracleum olgae* Regel & Schmalh. [*Tetrataenium olgae* (Regel & Schmalh.) Manden]

Perennial, monocarpic. Screes, pebbles, fine-earth slopes. Montane and alpine zones. North Turkestan. Essential oil.

Genus 613. *Semenovia* Regel & Herd.

1963. *Semenovia dasycarpa* (Regel & Schmalh.) Korovin Figure 485

Perennial, polycarpic. Fine-earth and stony slopes, ravines, stream banks, shady wet places, rocks. Montane and alpine zones. North Turkestan.



Figure 485 *Semenovia dasycarpa* (photography by Natalya Beshko)

1964. *Semenovia heterodonta* Manden

Perennial, polycarpic. Rocks, screes, stony slopes. Alpine zone. North Turkestan.

1965. *Semenovia pimpinelloides* (Nevski) Manden

Perennial, polycarpic. Stony slopes, rocks. Montane zone. Nuratau.

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