

Annotated list of vascular plants of Zarafshan National Natural Park (Uzbekistan)

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Abstract

The article provides an annotated list of vascular plants growing since the beginning of the formation of the Zarafshan State Reserve in 1975 and then in 2018 transferred to another category of protected area – Zarafshan National Natural Park. The list includes 416 plant species belonging to 229 genera and 61 families. One of the serious problems of our time is the degradation of ecosystems, the reduction of biological diversity and the irreparable loss of the gene pool of the plant world. Therefore, protection of the natural environment, accounting and rational use of biological resources is the basis for the development of any state.

Keywords

Zarafshan, river, flora, soil cover, tugays, native species, shrubs, herbaceous, vascular plants

Introduction

Zarafshan National Natural Park is located in the Samarkand region, in the center of Uzbekistan, occupying seventh place in terms of area and first in terms of population (Zakirov 1962).

Many famous botanists of the republic, as well as teachers and students of Samarkand University, contributed to the knowledge of the flora of this territory. Re-

search of this period had an applied focus and its main goal was the study of pastures and resource plant species (Kabulova et al. 2011). During these expeditions, a huge amount of herbarium material was collected, the main part of which is now stored in the funds of the National Herbarium of Uzbekistan and Samarkand State University named after Sh. Rashidov.

In 2019, under the leadership of employees of the Institute of Botany of the Academy of Sciences of the Republic of Uzbekistan, based on field expeditions and herbarium collections, a summary of the flora of vascular plants of the Samarkand region and an inventory of rare and endangered species were published (Kabulova et al. 2014). It should be noted that the work of remains an important source of information about the flora of this botanical-geographical region (Tozhiboev et al. 2018). The new cadastral list compiled for the Samarkand part of the Zeravshan valley contains 790 species. The fairly high level of species richness is due to the fact that many typical mountainous Middle Asian species enter the Zeravshan valley from the surrounding ridges; on the other hand, there is a very diverse range of weeds and adventitious plants (Kabulova 2020).

However, a complete list of plants that grew on the territory of the Zarafshan State Reserve, organized in 1975 and existed until 2018, was formed in its place, the Zarafshan National Natural Park has not yet been published (Flora of Uzbekistan 2017). It should be noted that the territory of the Zarafshan National Natural Park is located in the valley of the Zarafshan River, which was formed on the site of a synclinal trough, the sides of which are composed of Paleozoic and Mesozoic rocks, and the bottom is filled with a thick layer of younger pebbles (Fig. 1).

Here is the Samarkand oasis, one of the oldest agricultural oases in Middle Asia (Tashpulatov 2020). This part of the Samarkand region is almost completely occupied by an anthropogenic landscape, with minor fragments of floodplain tugai and degraded ephemeral vegetation in the remaining unplowed areas of the ancient terrace (Kholbutayeva et al. 2020). In the south-eastern part of the Samarkand region in the floodplain of Zeravshan there are areas of tugai, for the conservation of which the Zarafshan State Reserve was created in 1975, on the basis of which the Zarafshan National Natural Park was organized in 2018. The total area is 2426 hectares and stretches in a narrow strip with a width of 300 to 1500 m along the right bank of the Zarafshan River (Kabulova et al. 2020; Tashpulatov et al. 2024) The national park is divided into 3 zones: a recreational zone, a protected area and a economic activities area.

The natural park is characterized by valley introzonal landscapes, the leading role in the formation of which is played by floodplain processes, which differentiate the territory into pebble, treeless in the upper reaches and tugai in the lower reaches of the river.

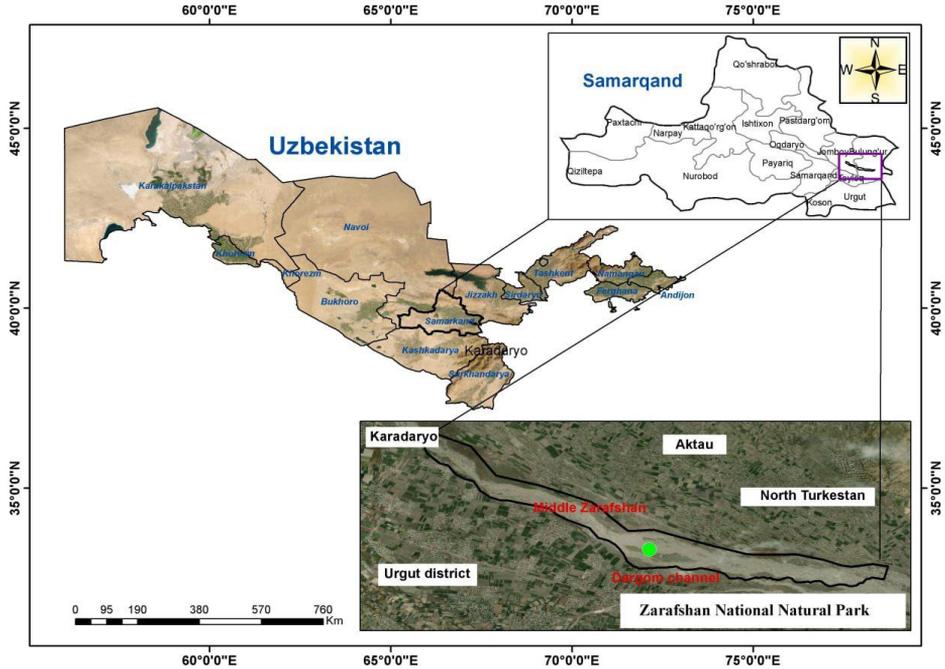


Figure 1. Location map of Zarafshan National Park in Uzbekistan.

Materials and methods

The natural park is located in the east of the Zarafshan valley between the Zarafshan and Turkestan ranges (Rakhimov 2023). The valley was formed due to a synclinal trough, the bottom of which is filled with Quaternary sediments carried by the river from the Pamir-Alai. The terrain of the territory is flat. The macrorelief shows a slope along the course of the Zarafshan River and towards its bed with a height difference from 900 to 620 m (Kabulova et al. 2017). Tertiary deposits are represented by red clays, which are overlapped by pebble deposits closer to the river. Downstream of the river, layers of sand and silt are included in the pebble strata (Kabulova et al. 2020).

The climate is subtropical continental, characterized by a significant amplitude of daily and annual fluctuations in air temperature and precipitation. The average monthly air temperature varies from -0.9°C in January to $+27.4^{\circ}\text{C}$ in July. The duration of the frost-free period is 209 days (Tashpulatov et al. 2020; Ruziyev et al. 2023). The average annual temperature is 13.8°C . No more than 400 mm of precipitation falls per year. The maximum amount of precipitation in the form of rain falls in winter and spring. In autumn and spring, southeast winds predominate; in summer and winter they change to easterly winds (Kabulova et al. 2014; Valiyev et al. 2024).

The soil cover belongs to the Zarafshan district to the belt of gray earth and desert floodplain-alluvial soils.

The leading factor in soil formation is the depth of groundwater. Almost half of the natural park is occupied by areas with unformed soils (pebbles) with deep groundwater. Soil formation occurs in several stages. Meadow floodplain-alluvial soils are formed on fresh sediments, which are replaced by alluvial-meadow and meadow-takyr soils. Alluvial meadow soils are characterized by a high humus content and lack of salinity. The final stage of soil formation is light sierozems, which are typically characterized by low humus content and low salinity. The largest area in the park is occupied by floodplain-alluvial soils and alluvial-meadow soils. Meadow-marsh and bog soils are rare.

The main waterway of the natural park is the Zarafshan River and its tributaries. The average long-term river flow is 165 m³/s. The full flow of Zarafshan is significantly affected by water intake for irrigation in the summer, which leads to drying out of the riverbed. During the flood period, the river floods about 30% of the park. Groundwater in the upper part of the valley lies at a depth of 20–50 m, gradually approaching the surface in the lower part.

Typical vegetation is represented by tugai communities occupying an area of 868 hectares (Fig. 2).

Tugai plants are characterized by a powerfully developed, sometimes multi-tiered, root system and are resistant to flooding and salinity. This allows them to adapt to changes in hydrothermal factors. The vegetation includes turanga and eaghorn tree tugai, sea buckthorn, comb and willow shrub tugai, as well as groups of herbaceous tugai (erianthus, reed grass, cattail-reed, licorice, amber). The dominant families include Poaceae, Compositae, Legumes and Brassicas. There are 13 formations and 46 vegetation associations in the reserve. Depending on the nature of moisture, groups of floodplain, above-floodplain and desertified phytocenoses are distinguished. Based on the predominant life form of plants, three types of tugai are distinguished: woody, shrubby and herbaceous (Fig. 3).

Information on the species composition of the flora of this territory is “*Conspetus florum Asiae Mediae*” (Kamelin et Khassanov 2015), “*Flora of Uzbekistan*” (1941–1962), monograph by academician K.Z. Zakirov “*Flora and vegetation of the Zeravshan River basin*” (1955, 1961), works by P.K. Zakirov (1969, 1971). However, these sources are outdated and cannot provide an objective picture of the state of rare and endangered plant species. In this regard, compiling an inventory of objects of the natural gene pool of the Samarkand region is very relevant.

However, the work of Zakirov K.Z. is devoted to the study of the flora of the Zarafshan River basin, which he divided into three regions: lower Zarafshan - part of the basin to the west of the meridian of Khatyrchi, middle Zarafshan - part of the basin located between Khatyrchi and Penjikent and upper Zarafshan - the eastern part of the basin, lying to the east of the meridian of Penjikent. He established the growth of 2588 species in this territory, belonging to 706 genera and 97 families. Unfortunately, this list concerns the entire Zarafshan River basin and does not pro-

vide an opportunity to evaluate the flora of its individual parts, one of which is the territory of the Zarafshan National Nature Park. Our work is devoted to filling this gap.

As a result of expeditionary research, analysis of the herbarium collections of the Zarafshan National Natural, literary and departmental sources, a complete list of the flora of the Zarafshan National Natural Park was prepared, including 416 species of vascular plants from 229 genera and 61 families.



Figure 2. Tugays in Zarafshan National Park.

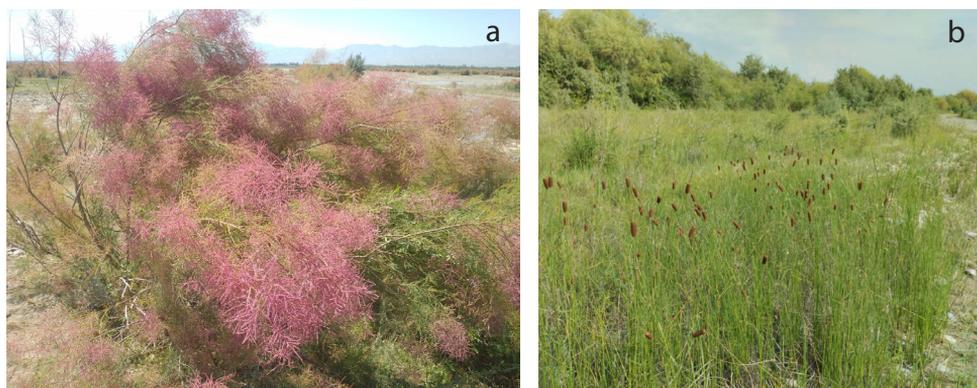


Figure 3. Typical plants of Zarafshan Natural park: a – *Tamarix ramosissima* Ledeb.; b – *Typha augustifolia* L.).

The families in the list are arranged according to the modern plant system: Angiosperms (Angiospermae) are arranged according to the APG IV system (2016). Scientific names are given in accordance with the International Plant Names Index (www.ipni.org) and The Plant List (www.theplantlist.org).

Results

The list of leading families and genera of the flora of Zarafshan National Natural Park is given below.

Annotated list of vascular plants of Zarafshan National Natural Park

Family Equisetaceae

Equisetum arvensis L. – River banks, ditches, damp places, occasionally.

Equisetum ramosissimum Desf. – River banks, ditches, damp places, occasionally.

Family Pinaceae Spreng. ex F. Rudolphi

Pinus silvestris L. – In open places, rarely.

Family Potamogetonaceae

Potamogeton pectinatus L. – Standing, slow-moving water, usually.

Potamogeton natans L. – Standing, slow-moving water, usually.

Potamogeton perfoliatus L. – Standing, slow-moving water, usually.

Family Colchicaceae DC.

Colchicum kesselringii Regel. – Damp places, fine-earth and gravelly areas of the river valley, often.

Family Liliaceae Juss.

Gagea graminifolia Vved. – Green-leaved goose onion. Fine earthy places, often.

Gagea olgae Regel. – Plain places, often.

Gagea stipitata Merckl. ex Bunge. – Rocky, gravelly flat places, often.

Family Ixioliriaceae Nakai

Ixiolirion tataricum (Pall.) Schult. – Sandy, rocky, gravelly places, river valleys, usually.

Family Typhaceae Juss.

Typha augustifolia L. – Banks of reservoirs, canals, rivers, flat places, rarely.

Typha minima Funk. – Banks of reservoirs, canals, flat places, rarely.

Typha elephantina Roxb. – The banks of reservoirs and canals are very rare.

Typha angustata Bory & Chaub. – The cattail is narrowed. Banks of reservoirs, flat places, very rare.

Typha latifolia L. – Banks of reservoirs, flat places, very rare.

Typha laxmannii Lepech. – Banks of reservoirs, flat places, very rare.

Family Juncaceae Juss.

Juncus bufonius L. – Damp meadows, tugai banks of reservoirs, dry riverbeds, flat places, often.

Juncus compressus Jacq. – Banks of water bodies, fields, damp places, flat places, often.

Juncus inflexus L. – Damp places, banks of water bodies, often.

Family Cyperaceae Juss.

Baeothryon pumilum (Vahl.) A. Love & D. Love. – The downy nose is squat. River banks and ditches, damp places, occasionally.

Bolboschoenus planiculmis (Fr. Schmidt) T.V. Egorova – Flat-stemmed reed tuber. Banks of reservoirs, flat places, very rare.

Carex diluta M. Bieb. – Swampy places, banks of water bodies, damp places, often.

Carex divisa Huds. – Damp places, banks of water bodies, tugai forests, flat places, often.

Carex melanostachya M. Bieb. ex Willd. – Plain places, usually.

Carex pachystilis J. Gay. – Sandy, gravelly and flat places, often.

Carex physodes M. Bieb. – Sandy and flat places, often.

Cyperus longus L. – The banks of water bodies, pebbles, marshy places, damp and flat places, often.

Cyperus rotundus L. – Banks of reservoirs, pebbles, swampy, damp and flat places, often.

Eleocharis quinqueflora (Hartmann) O. Schwarz. – Swampy and damp places, banks of water bodies, rarely.

Fimbrililic dichotoma (L.) Vahl. – Damp and flat places, banks of reservoirs, very rarely.

Juncellus serotinus (Rottb.) Clarke. – Sitnichek is late. Banks of reservoirs, flat places, often.

Pycreus globosus (All.) Reichenb. – Slovakia globular. The banks of reservoirs, swampy and flat places, often.

Schoenoplectiella juncooides (Roxb.) Lye – Banks of reservoirs, flat places, rare.

Schoenoplectus lacustris (L.) – Banks of reservoirs, flat places, usually.

Schoenoplectus tabernaemontani (C. C. Gmel.) Pall. – Banks of reservoirs, flat places, rare.

Schoenoplectus triqueter (L.) Palla – Banks of reservoirs, flat places, often.

Schoenus nigricans L. – The banks of reservoirs, swampy and flat places, very rarely.

Family Poaceae (Gramineae) Barnhart

Aegilops cylindrical Host. – Rocky and flat places, fields, river valley, usually.

Aegilops triuncialis L. – Sandy plains, rocky places, fields, river valleys, often.

Aeluropus repens (Desf.) Parl. – Salt marshes, damp meadows, banks of reservoirs, plains, occasionally.

Agropyron repens (L.) P.B. – Damp places, along the banks of water bodies, often.

Agrostis gigantea Roth. – Damp places, banks of rivers, streams, meadows, often.

Alopecurus arundinaceus Poir. – Damp places, banks of water bodies, usually.

Apera interrupta (L.) P. Beauv. – Saline areas, river valley, plain, occasionally.

Avena fatua L. – Fields, deposits, plain, often.

Boissiera squarrosa (Sol.) – Sandy, fine-earth, gravelly and rocky places, fields, deposits, roadsides, rarely.

Bothriochloa ischaemum (L.) H. Keng – Fine-earth, rocky places, banks of irrigation ditches, roadsides, rare.

Bromus japonicus Thung. – Fine-earth, gravelly places, roadsides, deposits, banks of rivers, ditches, plains, often.

Bromus lanceolatus Roth – Sandy, clayey, rocky places, fields, fallow lands, banks of rivers and streams, pebbles, plains, usually.

Bromus oxyodon Schrenk – Fine-earth, gravelly and rocky places, fields, plains, rarely.

Bromus popovii Drobow. – Saline areas, river valley, plain, occasionally.

Bromus scoparius L. – Sandy, clayey and gravelly places, fields, fallow lands, roadsides, gardens, wastelands, plains, often.

Bromus sterilis L. – River valleys, waste places, gardens, roadsides, fields, rarely.

Bromus tectorum L. – Sandy, clayey and gravelly places, fields, fallow lands, roadsides, gardens, wastelands, river valley, rarely.

Calamagrostis epigeios (L.) Roth. – Banks of water bodies, damp places, plains, usually.

Calamagrostis pseudophragmites (Haller f.) Koeler – Banks of water bodies, tugai forests, pebbles, meadows, plains, often.

Catabrosa aquatic (L.) Beauv. – Damp places, banks of water bodies, usually.

Centropodia forsskalii (Vahl.) Cope – Sandy and damp places, plains, occasionally.

Cynodon dactylon (L.) Pers. – Deposits, banks of canals, ditches, roadsides, plains, often.

Dactylis glomerata L. – Meadows, river valleys, fine earth, rocky places, plains, usually.

Digitaria ischaemum (Schreb.) Muehl. – Banks of rivers and ditches, waste places, plains, occasionally.

Digitaria sanguinalis (L.) Scop. – Bloody crabgrass. Banks of rivers and irrigation ditches, waste places, plains, occasionally.

Echinochloa crus-galli (L.) P. Beauv. – Deposits, waste places, banks of rivers and ditches, pebbles, plains, usually.

Echinochloa oryzoides (Ard.) Fritsch. – Damp places, often.

Elymus repens (L.) Gould. – Wet places, river valleys, plains, often.

Eragrostis cilianensis (All.) Janch. – Damp, weedy places, fields, fallow lands, banks of water bodies, plains, usually.

Eragrostis minor Host. – Clay and sandy places, pebbles, banks of rivers and ditches, fields, damp weedy places, plains, often.

Eragrostis pilosa (L.) – The bent grass is hairy. River valleys, banks of irrigation ditches, pebbles, damp weedy places, plains, often.

Eremopyrum orientale (L.) Jaub. & Spach – Sandy, clayey, rocky and saline soils, pebbles, fallow lands, plain, rare.

Erianthus ravennae (L.) P. Beauv. – River valleys, banks of reservoirs, tugai forests, damp places, usually.

Festuca arundinacea Schreb. – Wet places, banks of reservoirs, gardens, fields, fallow lands, plains, rarely.

Glyceria plicata (Fr.) Fr. – Banks of reservoirs, plain, rare.

Hordeum murinum subsp. *leporinum* (Link) Arcang. – River valley, gardens, fields, fallow lands, weeds, sandy and clayey places.

Hordeum spontaneum C. Koch. – Fields, deposits, canal banks, fine earth, gravelly, rocky places, plain, often.

Imperata cylindrica (L.) Raeusch. – River valleys, banks of reservoirs, tugai forests, fallow lands, plains, rarely.

Leersia oryzoides (L.) Sw. – Banks of water bodies, damp places, plains, very rare.

Leymus multicaulis (Kar. & Kir.) Tzvelev – Multi-stemmed grass. River valleys, meadows, tugai, saline areas, plains, occasionally.

Lolium persicum Boiss. & Hohen. – Deposits, fields, rocky places, river valley, rare.

Lolium temulentum L. – Deposits, fields, banks of irrigation ditches, fine-earth areas, often.

Phalaris minor Retz. – River valleys, tugai, banks of irrigation ditches, fields, plains, rarely.

Phalaroides arundinacea (L.) Rauschert – Banks of water bodies, damp meadows, plains, rare.

Phleum pratense L. – Meadows, river valleys, banks of streams, irrigation ditches, often.

Phleum roshevitzii Pavlov – River valleys, damp meadows, plains, very rare.

Phragmites australis (Cav.) Trin. & Steud. – Banks of reservoirs, tugai forests, damp places, salt marshes, fields, plains, often.

Poa annua L. – Banks of water bodies, waste places, vegetable gardens, fallow lands, plains, often.

Poa bulbosa L. – Sandy, rocky places, banks of reservoirs, damp places, plains, often.

Polypogon fugax Nees ex Steud. – Damp, saline places, banks of rivers and ditches, plains, occasionally.

Polypogon monspleniensis (L.) – Damp places, banks of rivers and ditches, fields, meadows, saz, plain, rarely.

Polypogon viridis (Gouan) Breistr. – Banks of rivers and ditches, fields, saz, damp places, plains, rarely.

Saccharum spontaneum L. – Banks of reservoirs, tugai forests, pebbles, alluvial deposits, plains, often.

Sclerochloa dura (L.) P. Beauv. – Banks of rivers and ditches, roadsides, waste places, wastelands, plains, often.

Secale cereale L. – Fields, fallow lands, river valleys, banks of irrigation ditches, roadsides, often.

Secale segetale (Zhuk.) Roshev. – Fields, fallow lands, river valleys, banks of irrigation ditches, roadsides, often.

Setaria lutescens (Weig.) F.T. Hubb. – Fields, fallow lands, waste places, banks of irrigation ditches, plains, rarely.

Setaria verticillata (L.) P. Beauv. – Fields, fallow lands, waste places, banks of irrigation ditches, plains, rarely.

Setaria viridis (L.) P. Beauv. – Fields, fallow lands, weedy places, banks of irrigation ditches, rocky places, plains, often.

Sorghum halepense (L.) Pers. – Fields, deposits, river valleys, banks of irrigation ditches, plains, often.

Stipa splendens Trin. – Saline clayey and rocky places, river valleys, plains, often.

Taeniatherum caput-medusae (L.) Nevski – Fine-earth, gravelly, rocky places, deposits, fields, wastelands, roadsides, plains, rarely.

Vulpia ciliata Dumort. – Sandy, clayey, rocky and saline soils, banks of reservoirs, plains, rarely.

Family Ceratophyllaceae Gray

Ceratophyllum demersum L. – Standing and slowly flowing waters, rare.

Family Papaveraceae Juss.

Fumaria vaillantii Loisel. – Fine-earth, gravelly and rocky places, fallow lands, weedy places, plains, often.

Papaver pavoninum C.A. Mey. – Sandy and clayey deserts, fine-earth, gravelly, rocky slopes, deposits, roadsides, waste places, populated areas, fields, plains, often.

Berberis integerrima Bunge – Fine-earth, gravelly, rocky slopes, rocks, river valleys, plains, often.

Family Berberidaceae Juss.

Berberis oblonga C.K. Schneid. – Rubble, rocky places, river valley, plain, occasionally.

Berberis nummularia Bunge. – Rubble, rocky places, river valleys, tugai, plains, often.

Family Ranunculaceae Juss.

Ceratocephala testiculata (Crantz) Besser. – Sandy and clayey deserts, pebbles, fine-earth, gravelly and rocky places, screes, weedy places, plains.

Clematis orientalis L. – Banks of reservoirs, rocky and fine-earth areas, plains, often.

Ranunculus arvensis L. – Banks of rivers and ditches, weedy places, gardens, fields, plains, often.

Ranunculus baldshuanicus Regel & Kom. – Damp places, banks of ditches and streams, river valleys, plains, rarely.

Ranunculus sceleratus L. – Damp places, banks of rivers and ditches, plains, often.

Family Platanaceae t. lestib.

Platanus orientalis L. – Banks of canals, reservoirs, flat areas, often.

Family Crassulaceae J. St.-hil.

Sedum tetramerum Trautv. – Rocky, gravelly and clayey places, pebbles, often.

Family Haloragaceae R.Br.

Myriophyllum spicatum L. – Standing and slow-moving waters, often.

Family Vitaceae Juss.

Vitis vinifera L. – Rocky, gravelly places (wild), rare.

Family Zygophyllaceae R. Br.

Tribulus terrestris L. – Saline and weedy places, dry riverbeds, pebbles, fields, fallow lands, roadsides, river valleys, often.

Zygophyllum miniatum Cham. – Clay and gravelly deserts, flat places, often.

Zygophyllum oxianum Boriss. – Saline and weedy places, banks of reservoirs, fields, wastelands, deposits, often.

Family Fabaceae Lindl.

Alhagi canescens (Regel) B. Keller & Shap. – Saline places, deposits, canal banks, often.

Alhagi kirghisorum Schrenk. – Sandy, clayey and gravelly places, roadsides, wastelands, deposits, canal banks, often.

Alhagi persarum Boiss. et Buhse – Saline wet places, banks of reservoirs, tugai forests, fallow lands, often.

Alhagi pseudalhagi (M. Bieb.) Desv. ex B. Keller & Shap. – Saline humid places, sandy deserts, river valleys, banks of reservoirs, deposits, often.

Ammothamnus lehmanni Bunge. – Sandy and flat places, occasionally.

Astragalus alopecias Pall. – Fine-earthed places, screes, deposits, banks of rivers and ditches, roadsides, often.

Astragalus contortuplicatus L. – Solonchak, meadow, sandy soils, tugai, banks of reservoirs, fields, occasionally.

Astragalus turczaninovii Kar. et Kir. – Sandy and clayey deserts, river valleys, rare.

Glycyrrhiza glabra L. – Deposits, tugai, river valleys, banks of irrigation ditches, often.

Halimodendron halodendron (Pall.) Voss. – Saline areas, tugai forests, banks of reservoirs, pebbles, flat areas.

Lathyrus aphaca L. – Fine-earth, gravelly, rocky places, river valleys, banks of irrigation ditches, pebbles, deposits, occasionally.

Lathyrus cicera L. – Fine-earth, rocky, gravelly places, river valleys, meadows, pebbles, banks of streams and ditches, fields, rarely.

Lotus krylovii Schischkin & Serg. – River valleys, banks of reservoirs, deposits, rare.

Medicago lupulina L. – Fine-earth, gravelly, rocky places, river valleys, banks of reservoirs, pebbles, often.

Medicago minima (L.) L. – Clayey, gravelly places, dry riverbeds, river valleys, deposits, often.

Medicago rigidula (L.) All. – Clay deserts, fine earth, gravelly, rocky slopes, river valleys, pebbles, occasionally.

Medicago sativa L. – Fine-earth, gravelly, rocky places, river valleys and pebbles, deposits, roadsides, often.

Melilotus albus Medik. – River valleys, banks of lakes and ditches, pebbles, damp places, fallow lands, wastelands, often.

Melilotus officinalis (L.) Pall. – Fine earthy places meadows, river valleys, roadsides, fallow lands, often.

Oxytropis glabra (Lam.) DC. – Damp meadows, banks of water bodies, flat places, occasionally.

Oxytropis riparia Litv. – Meadows, river valleys, wet and flat places, occasionally.

Sophora alopecuroides L. (*Vexibia alopecuroides* (L.) Yakovlev) – Banks of water bodies, saline areas, fields, fallow lands, tugai forests, roadsides, often.

Sophora pachycarpa C. A. Mey. (*Vexibia pachycarpa* (C. A. Mey.) Yakovlev) – Sandy, clayey, gravelly places, tugai, banks of irrigation ditches, deposits, wastelands, weedy places, occasionally.

Sphaerophysa salsula (Pall.) DC. – Salt marshes, banks of rivers and irrigation ditches, tugai forests, sandy places, fields, occasionally.

Trifolium fragiferum L. – Damp places, meadows, banks of reservoirs, saz, pebbles, outskirts of fields, often.

Trifolium pratense L. – Outskirts of fields, river valleys, banks of streams and irrigation ditches, fine-earth slopes, wet places, meadows, often.

Trifolium repens L. – Damp places, meadows, banks of rivers and ditches, saz, pebbles, often.

Trigonella geminiflora Bunge. – Fine-earth, gravelly sandy and clayey places, deposits, roadsides, river banks, dry riverbeds, rarely.

Trigonella grandiflora Bunge. – Rocky, gravelly, fine-earthed places, banks of canals and ditches, roadsides, dry riverbeds, deposits, rare.

Trigonella foenum-graecum L. – Fields, fallow lands, weedy places, rarely.

Vicia hyrcanica Fisch. & C.A. Mey. – Fine earthy places, meadows, river valleys, waste places, fallow lands, very rare.

Vicia michauxii Spreng. – Meadows, fine earth, gravelly, rocky places, river valleys, fallow lands, very rare.

Vicia sativa subsp. *nigra* (L.) Ehrh. (*V. angustifolia* L.) – Fine earthy places, meadows, river valleys, waste places, fields, fallow lands, rarely.

Vicia villosa Roth. – Meadows, gardens, fallow lands, river valley, occasionally.

Family Rosaceae Juss.

Crataegus songarica C. Koch. – Fine-earth, gravelly, rocky places, screes, river banks, often.

Crataegus turkestanica Pojark. – Fine-earth, gravelly, rocky places, river and stream valleys, often.

Malus sieversii (Ledeb.) M. Roem – Fine earth Steep, gravelly, rocky places, river and stream valleys, very rare.

Potentilla orientalis Juz. – Fine earth, gravelly, rocky places, river valley, rare.

Potentilla reptans L. – Meadows, banks of lakes, rivers, ditches, damp places, usually.

Potentilla supina L. – River valleys, tugai forests, swampy areas, banks of canals, irrigation ditches, roadsides, waste places, rarely.

Prunus armeniaca L. (*Armeniaca vulgaris* Lam.) – Flat places, rare.

Prunus cerasus L. (*Cerasus vulgaris* Mill.) – Flat places, occasionally.

Prunus divaricata Ledeb. – Fine-earth, gravelly, rocky places, river valleys, often.

Prunus mahaleb L. (*Cerasus mahaleb* (L.) Mill.) – Rocky, gravelly, fine earth places, very rare.

Rosa beggeriana Schrenk & Fisch. ex C.A. Mey. – Trees and shrubs, river valleys, banks of irrigation ditches, roadsides, often.

Rosa canina L. – River valley, fine-earth, gravelly and flat places, often.

Rosa maracandica Bunge. – Fine-earth, gravelly places, pebbles, river valley, often.

Rubus caesius L. – Shrub thickets, damp rocky places, screes, pebbles, fallow lands, river and stream valleys, banks of irrigation ditches, often.

Family Elaeagnaceae Juss.

Elaeagnus angustifolia L. (*E. orientalis* L., *E. turcomanica* N. Kozlowsk.) – Banks of reservoirs, river valleys, tugai forests, usually.

Hippophae rhamnoides L. – River valley, canal banks, flat places, often.

Family Ulmaceae Mirb.

Ulmus glabra Huds. – Forest belts along roads are rare.

Family Urticaceae Juss.

Urtica dioica L. – River valley, roadsides, waste places, wastelands, gardens, tugai, banks of irrigation ditches, very rarely.

Family Juglandaceae dc. ex Perleb.

Juglans regia L. – Along roads, flat places, along the banks of irrigation ditches, often.

Family Cucurbitaceae Juss.

Bryonia cretica subsp. *dioica* (Jacq.) Tutin (*Bryonia dioica* Jacq.) – Flat places, very rare.

Family Datisceae Juss.

Datisca cannabina L. – River valley, flat places, very rare.

Family Hypericaceae

Hypericum perforatum L. – Fine-earth, gravelly, rocky places, river valleys, dry riverbeds, often.

Family Salicaceae Mirb.

Populus afghanica (Aitch. & Hemsl.) C. K. Schneid. – Rarely in the river valley, along the banks of irrigation ditches.

- Populus alba* L. – Banks of irrigation ditches, flat places, often.
Populus euphratica Oliv. – River valley, canal banks, very rare.
Populus nigra L. – Plain places, banks of irrigation ditches, often.
Populus pruinosa Schrenk. – River valley, flat places, often.
Populus pyramidalis – Plain places, often.
Salix alba L. – Banks of rivers, canals, often.
Salix olgae Regel. – River bank, pebbles, rare.
Salix wilhelmsiana M. – River bank, sand deposits, flat places, often.

Family Euphorbiaceae Juss.

- Euphorbia helioscopia* L. – Rocky, gravelly places, roadsides, banks of irrigation ditches, deposits, waste places, often.

Family Geraniaceae Juss.

- Erodium ciconium* (Jusl.) L'Her. – Sandy and clayey places, flat places, often.
Erodium cicutarium (L.) L'Her. – Fine-earth, gravelly, rocky places, banks of irrigation ditches, wastelands, deposits, often.
Erodium litvinovii Woronow – Fine-earth, gravelly soils, often.
Geranium dissectum (L.) – River banks, irrigation ditches, waste places, roadsides, rarely.

Family Lythraceae J.St.-Hil.

- Ammannia auriculata* Will. – Banks of water bodies, damp places, rarely.
Lythrum hyssopifolia L. – Banks of reservoirs, flat places, often.
Lythrum salicaria L. – The banks of water bodies, damp and swampy places, tugai forests, often.
Lythrum intermedium Ledeb. – Intermediate loosestrife. The banks of reservoirs, damp and flat places.

Family Onagraceae Juss.

- Epilobium hirsutum* L. (*E. velutinum* Nevski) – Hairy fireweed. Banks of reservoirs, tugai forests, wetlands and flat places, meadows, often.
Epilobium tetragonum L. – Banks of water bodies, wet screes, swampy places, often.

Family Anacardaceae

- Rhus coriaria* – Flat places, very rare.

Family Sapindaceae Juss.

Acer turkestanicum Pax. – Fine-earth, gravelly, rocky places, often.

Family Rutaceae Juss

Haplophyllum acutifolium (DC.) G. Don.

H. perforatum (M. Bieb.) Kar. & Kir. – Sandy and clayey deserts, fine-earth, gravelly, rocky places, pebbles, deposits, usually.

Family Malvaceae Juss.

Althea armeniaca Ten. – Banks of water bodies, damp places, edges of fields, occasionally.

Althea officinalis L. – River valley, tugai, deposits, flat places, often.

Hibiscus trionum L. – Banks of canals and ditches, deposits, fields, flat places, often.

Malva bucharica Iljin. – Deposits, roadsides, flat places, rare.

Malva neglecta Wallr. – Rubble and clayey soils, pebbles, weedy places, dry riverbeds, flat places, often.

Malva sylvestris L. – Deposits, roadsides, flat places.

Family Thymelaceae

Diarthron vesiculosum (Fisch. & C.A. Mey.) C.A. Mey. – Fine-earth, rocky, gravelly, sandy places, deposits, fields, flat places. Rarely.

Thymelaea passerina (L.) Coss. & Germ. – Banks of rivers and ditches, fields, fallow lands, waste places, often.

Family Resedaceae

Reseda lutea L. – Fine-earth, gravelly, rocky places, fields, fallow lands, dry riverbeds, river banks, roadsides, waste places, often.

Reseda luteola L. – Fine earthy places, fields, roadsides, fallow lands, waste places, occasionally.

Family Capparaceae

Capparis spinosa L. – Gray soils, clayey, gravelly, sandy soils, banks of rivers and canals, fallow lands, weedy places, often.

Family Brassicaceae Burnett

Alyssum desertorum Stapf. (*A. turkestanicum* Regel & Schmalh.) – Sandy and clayey deserts, solonchetsous areas, fine-earth, gravelly areas, pebbles, deposits, weedy areas, occasionally.

Arabidopsis thaliana (L.) Heynh. – Pebbles, river banks, shady places, rare.

Barbarea vulgaris R. Br. – Damp places, banks of rivers and ditches, pebbles, meadows, often.

Brassica juncea (L.) Czern. – Deposits, wastelands, waste places, roadsides, rarely.

Camelina microcarpa Andr. ex DC. – Fine-earth, gravelly, rocky places, banks of reservoirs, fields, deposits, roadsides, rarely.

Capsella bursa-pastoris (L.) Medik. – Weedy places, roadsides, fine-earth, gravelly places, pebbles, banks of reservoirs, usually.

Chorispora tenella (Pall.) DC. – Fine-earth, gravelly, rocky weedy places, dry riverbeds, river banks, roadsides, rarely.

Crambe cordifolia subsp. *kotschyana* (Boiss.) Jafri (*Crambe kotschyana* Boiss.) – Fine-earth, gravelly places, deposits, occasionally.

Cryptospora falcata Kar. & Kir. (*C. omissa* Botsch.) – Sandy and clayey deserts, roadsides, fine earth, rocky places, rare.

Descurainia sophia (L.) Webb. & Prantl. – Weedy places, banks of irrigation ditches, ravines, deposits, roadsides, often.

Diptychocarpus strictus (Fisch. ex M. Bieb.) Trautv. – Rubble, fine-earth places, dry riverbeds, banks of rivers, ditches, deposits, salt marshes, rarely.

Erophila verna (L.) DC. – Fine earth, gravelly, rocky slopes, hills, weedy places, often.

Erysimum sisymbrioides C.A. Mey. – Saline areas, shores of water bodies, rare.

Goldbachia laevigata (M. Bieb.) DC. – Sandy, clayey and gravelly places, salt marshes, rarely.

Isatis tinctoria L. – Flat places, occasionally.

Lepidium latifolium L. – Damp places, banks of water bodies, pebbles, rocky places, often.

Leptaleum filifolium (Willd.) DC. – Sandy and clayey places, banks of reservoirs, saline places, roadsides, deposits, often.

Nasturtium officinale W.T. Aiton (*Nasturtium fontanum* (Lam.) Aschers.) – Wetlands, banks of water bodies, often.

Neslia paniculata subsp. *thracica* (Velen.) Bornm. (*N. apiculata* Fisch. & C.A.Mey.) – Fine-earth, rocky places, pebbles, saline places, fields, fallow lands, very rare.

Rorippa palustris (L.) Besser. – Damp meadows, wetlands, banks of water bodies, very rare.

Rorippa silvestris (L.) Besser. – Damp places, banks of water bodies, very rarely.

Sinapis arvensis L. – Roadsides, waste places, rarely.

Sisymbrium altissimum L. – Salt marshes, wastelands, fallow lands, weedy, rocky places, river valleys, often.

Sisymbrium irio L. – River valleys, roadsides, rarely.

Sisymbrium loeselii L. – Fine-earth places, pebbles, river valleys, fallow lands, banks of irrigation ditches, wastelands, often.

Strigosella grandiflora (Bunge) Botsch. – Sandy, fine-earth, rocky, gravelly places, deposits, often.

Strigosella turkestanica (Litv.) Botsch. – Sandy deserts, gravelly, rocky places, pebbles, deposits, dry riverbeds, rarely.

Thlaspi arvense L. – Rocky, gravelly, fine-earth places, river banks, wet places, fallow lands, roadsides, dry riverbeds, often.

Thlaspi ceratocarpum (Pall.) Murray (*Carpoceras ceratocarpum* (Pall.) N. Busch) – Banks of reservoirs, tugai forests, saline areas, often.

Family Tamaricaceae Juss.

Tamarix ramosissima Ledeb. – The genera within each family and the species within each genus are arranged alphabetically. Banks of reservoirs, salt marshes, wastelands, deposits, often.

Tamarix arceuthoides Bunge. – River valley, pebbles, flat places, often.

Tamarix hispida Willd. – Salt marshes, saline areas, banks of reservoirs, tugai forests, saline fields, often.

Family Polygonaceae Juss.

Atraphaxis pyrifolia Bunge. – Rocky, gravelly, fine earth places, rare.

Atraphaxis seravschanica Pavlov – Rocky, gravelly, fine earth places, often.

Persicaria amphibia (L.) Delarbre (*Polygonum amphibium* L.) – Rocky, gravelly, fine-earth places are rare.

Persicaria hydropiper (L.) Delarbre (*Polygonum hydropiper* L.) – Banks of water bodies, swampy places, often.

Persicaria lapathifolia (L.) Delarbre – Banks of water bodies, damp places, fields, often.

Persicaria maculata (Raf.) Gray (*Polygonum persicaria* L.) – Banks of water bodies, damp places, often.

Persicaria minor (Huds.) Opiz. (*Polygonum minus* Huds.) – The banks of water bodies, often.

Polygonum aviculare L. – Wastelands, waste places, fallow lands, roadsides, banks of irrigation ditches, usually.

Rumex conglomeratus Murray. – Banks of rivers and irrigation ditches, damp places, swamps, roadsides, waste places, rarely.

Rumex crispus L. – The banks of water bodies, often.

Rumex pamiricus Rech. f. – Damp places, banks of rivers and ditches, deposits, weedy places, rarely.

Rumex tianschanicus Losinsk. – Meadows, rocky, gravelly, fine-earth places, banks of rivers and streams, often.

Family Caryophyllaceae

Lepyrodictis holosteoides (C.A. Mey.) Fenzl ex Fisch. & C.A. Mey. – River valleys, damp shady places, fallow lands, rare.

Lepyrodictis stellarioides Fisch. & C.A. Mey. – Along the banks of canals, often.

Silene conoidea L. (*Pleconax conoidea* (L.) Šourková) – Fine-earth, gravelly and rocky places, river valleys, banks of irrigation ditches, wastelands, waste places, roadsides, often.

Stellaria media (L.) Vill. – Roadsides, banks of rivers and irrigation ditches, wet shady and weedy places, often.

Stellaria neglecta Weihe. – River valleys, weedy places, roadsides, damp shady places, usually.

Family Amaranthaceae Juss.

Amaranthus albus L. – Fields, wastelands, waste places, roadsides, banks of irrigation ditches, often.

Amaranthus blitoides S. Watson. – Fields, waste places, roadsides, often.

Amaranthus retroflexus L. – Roadsides, waste places, often.

Amaranthus thellungianus Nevski – Fields, waste places, roadsides, rarely.

Atriplex aucherii Moq. – Clay areas, salt marshes, roadsides, waste places, rarely.

Atriplex micrantha Ledeb. – Banks of water bodies, weedy places, usually.

Atriplex prostrata subsp. *calotheca* (Rafn) M.A. Gust. (*A. hastata* L.) – Banks of water bodies, waste places, roadsides, fields, rarely.

Atriplex patula L. – Banks of water bodies, waste places, roadsides, rarely.

Atriplex tatarica L. – Saline areas, banks of water bodies, roadsides, waste places, rarely.

Bassia hyssopifolia (Pall.) Kuntze – Banks of water bodies, saline, weedy places, wastelands, fields, rarely.

Chenopodium album L. – Waste areas, deposits, wastelands, roadsides, often.

Chenopodium botrys L. – Dry riverbeds, pebbles, weedy places, rarely.

Chenopodium chenopodioides (L.) – Salty places, often.

Chenopodium foliosum (Moench) Aschers. – Rocky, gravelly places, pebbles, wastelands, roadsides, often.

Chenopodium glaucum L. – Salty places, banks of water bodies, weedy places, often.

Chenopodium rubrum L. – Weedy places, banks of reservoirs, fields, rarely.

Chenopodium serotinum L. – Weedy places, banks of water bodies, roadsides, often.

Chenopodium vulvaria L. – Rubble places, pebbles, dry riverbeds, weedy places, often.

Climacoptera intricata (Iljin) Botsch. – Saline places, deposits, often.

Climacoptera lanata (Pall.) Botsch. – Sandy, clayey, gravelly places, saline places, banks of reservoirs, deposits, occasionally.

Kochia prostrata (L.) Schrad. – Sandy, clayey and saline, rocky, gravelly places, occasionally.

Kochia scoparia (L.) Schrad. – Vacant lots, roadsides, waste places, often.

Spinacia turkestanica Iljin. – Fields, fallow lands, weedy places, banks of irrigation ditches, often.

Family Portulacaceae Juss.

Portulaca oleracea L. – Deposits, waste places, banks of rivers and ditches, fields, vegetable gardens, often.

Family Primulaceae Batsch ex Borkh.

Anagallis arvensis L. – Banks of reservoirs, roadsides, fallow lands, wastelands, pebbles, dry riverbeds, fine earth, rocky places, often.

Anagallis arvensis subsp. *foemina* (Mill.) Schinz & Thell. (*A. foemina* Mill.) – Banks of reservoirs, roadsides, fallow lands, wastelands, pebbles, dry riverbeds, fine earth, rocky places, rarely.

Anagallis foemina Mill. – Banks of reservoirs, roadsides, fallow lands, wastelands, pebbles, dry riverbeds, fine earth, rocky places, very rare.

Family Rubiaceae Juss.

Galium aparine L. – Wet rocky, fine-earthed slopes, wastelands, fallow lands, weedy places, often.

Galium ceratopodum Boiss. – Rubble and rocky places, often.

Galium humifusum M. Bieb. (*Asperula humifusa* (M. Bieb.) Besser) – Rocky, gravelly, fine-earthed places, pebbles, tugai, banks of reservoirs, fallow lands, fields, weedy places, often.

Galium ghilanicum Stapf. – Fine-earth, gravelly slopes, dry riverbeds, deposits, often.

Galium karakulense Pobed. – Damp places, river banks, often.

Galium spurium L. – Rocky, gravelly, fine earth places, river banks, fields, gardens, weedy places, often.

Family Gentianaceae Juss.

Centaurium pulchellum (Sw.) Druce. – Meadows, saline and damp places, tugai forests, banks of reservoirs, fallow lands, rarely.

Gentiana olivieri Griseb – Fine-earth sandy, clayey places, banks of rivers and streams, deposits, often.

Family Apocynaceae Juss.

Cynanchum acutum subsp. *sibiricum* (Willd.) Rech. f. (*Cynanchum sibiricum* Willd.) – Tugai, banks of reservoirs, flat places, often.

Trachomitum scabrum (Russanov) Pobed. – Tugai, banks of reservoirs, flat places, often.

Family Boraginaceae Juss

Anchusa arvensis subsp. *orientalis* (L.) Nordh. (*Lycopsis orientalis* L.) – River valley, waste places, roadsides, deposits, often.

Anchusa azurea Mill. (*Anchusa italica* Retz.) – River valleys, fine-earth, rocky, gravelly places, pebbles, wastelands, fallow lands, roadsides, banks of irrigation ditches, often.

Asperugo procumbens L. – River valley, waste places, roadsides, canal banks, fallow lands, damp shady places, rarely.

Cynoglossum creticum Mill. – Banks of rivers and irrigation ditches, wastelands, fields, occasionally.

Buglossoides arvensis (L.) J.M. Johnst. (*Rhytisnermum arvense* (L.) Link) – Fine-earth, gravelly, rocky and clayey places, river valleys, fields, deposits, very rare.

Heliotropium lasiocarpum Fisch. & C.A. Mey. – Sandy, clayey, fine-earth, gravelly, rocky places, pebbles, river valley, often.

Lappula marginata (M. Bieb.) Gürke (*L. patula* (Lehm.) Asch. ex Gürke, *L. semiglabra* (Ledeb.) Gürke) – Wastelands, waste places, roadsides, fallow lands, pebbles, fine earth and gravelly places, river valleys, sandy and clayey deserts, very rare.

Lappula squarrosa (Retz.) Dumort. (*Lappula consanguinea* (Fisch. & C.A. Mey.) Gürke) – Deposits, waste places, often.

Lithospermium officinale L. – River valley, banks of irrigation ditches, often.

Myosotis stricta Link ex Roem. & Schult. (*Myosotis micrantha* Pall. ex Lehm.) – Fine-earth, gravelly, rocky places, pebbles, solonchous places, deposits, rarely.

Family Convolvulaceae Juss.

Calystegia sepium (L.) R. Br. – Tugai, banks of rivers, streams, ditches, damp shady places, often.

Convolvulus arvensis L. – Grows everywhere, often.

Convolvulus pilosellifolius Desr. – Deposits, clayey places, banks of irrigation ditches, pebbles, often.

Convolvulus subhirsutus Regel & Schmalh. – Fine-earth, gravelly, rocky places, often.

Cuscuta approximata Bab. (*C. cupulata* Engelm.) – It is a parasite on alfalfa and related weeds, occasionally.

Cuscuta brevistyla A. Braun ex A. Rich. – It parasitizes wild annual and perennial grasses, shrubs, and occasionally.

Cuscuta campestris Yunck. – Rarely a harmful parasite in vineyards.

Cuscuta europaea L. – It parasitizes many wild species, often.

Cuscuta lehmanniana Bunge. – It usually parasitizes large perennial herbaceous plants, shrubs and trees growing in tugai forests, along river banks, rarely.

Cuscuta lupuliformis Krock. – It often parasitizes trees, shrubs, and perennial grasses.

Cuscuta monogyna Vahl. – It parasitizes mainly on wild trees, shrubs, and perennial grasses in dry habitats, often.

Cuscuta pedicellata Ledeb. – It parasitizes mainly on ephemerals, ephemeroïds, less often on perennial grasses, subshrubs, rarely.

Family Solanaceae Juss.

Datura stramonium L. – In weedy places, often.

Hyoscyamus niger L. – Weedy places, fallow lands, river valleys, wastelands, roadsides, rocky, gravelly, fine-earth places, often.

Hyoscyamus pusillus L. – Rocky, gravelly, fine earth places, sandy, clayey, saline places, river banks, weedy places, deposits, often.

Lycium dasystemum Pojark. – Banks of rivers, canals, saline areas, tugai forests, rarely.

Lycium ruthenicum Murray – Salt marshes, shores of reservoirs, tugai forests, rarely.

Solanum americanum Mill. (*Solanum nigrum* L.) – Fields, fallow lands, weedy places, rarely.

Family Oleaceae Hoffmanns. & Link

Fraxinus sogdiana Bunge – Flat places, rare.

Fraxinus angustifolia subsp. *syriaca* (Boiss.) Yalt. (*Fraxinus syriaca* Boiss) – Flat places, occasionally.

Family Plantaginaceae Juss.

Plantago lanceolata L. – Fine-earthed places, river valleys, banks of reservoirs, roadsides, waste places, usually.

Plantago major L. – Damp places, banks of reservoirs, tugai forests, roadsides, often.

Veronica anagallis-aquatica L. – Damp places, banks of water bodies, often.

Veronica anagalloides Guss. – Banks of water bodies, deposits, pebbles, wet wetlands, occasionally.

Veronica arguteserrata Regel & Schmalh. – Deposits, rocky, gravelly, fine earth places, rare.

Veronica arvensis L. – Roadsides, river valleys, deposits, often.

Veronica beccabunga L. – Banks of reservoirs, tugai forests, damp places, often.

Veronica campylopoda Boiss. – Sandy and clayey, solonetzic, stony, gravelly, fine-earth places, pebbles, rare.

Veronica hederifolia L. – Settled areas, fields, fallow lands, vegetable gardens, orchards, waste places, banks of streams, rarely.

Veronica persica Poir. – Banks of irrigation ditches, river valleys, wet places, often.

Veronica polita Fr. – Banks of water bodies, fine-earthed places, pebbles, often.

Family Scrophulariaceae Juss.- Norichaceae

Verbascum blattaria L. – Fine-earth places, banks of rivers, ditches, tugai, deposits, often.

Verbascum songaricum Schrenk. – Roadsides, banks of irrigation ditches, dry riverbeds, river valleys, deposits, fine earth, rocky and gravelly places, rarely.

Family Lamiaceae

Drepanocaryum sewerzowii (Regel) Pojark. – Rocky, gravelly, shady places, rare.

Lallemantia royleana (Benth.) Benth. – Sandy, rocky, gravelly places, deposits, dry riverbeds, often.

Lamium amplexicaule L. – Rocky, gravelly places, roadsides, banks of rivers and ditches, often.

Lycopus europaeus L. – Wet places, saz, banks of rivers, irrigation ditches, occasionally.

Marrubium anisodon K. Koch. – Fine-earth, rocky, gravelly places, pebbles, fallow lands, roadsides, banks of irrigation ditches, waste places, often.

Melissa officinalis L. – Wet shady places, banks of irrigation ditches, river valleys, rarely.

Mentha longifolia var. *asiatica* (Boriss) Rech. f. – Banks of rivers, ditches, streams, often.

Mentha piperita – Wet places, banks of irrigation ditches, often.

Mentha arvensis L. – Fields, along the banks of reservoirs, in wet areas, often.

Nepeta cataria L. Catnip. – Banks of ditches, rivers and streams, rocky places, often.

Family Mazaceae Reveal.

Dodartia ohentalis L. – Sandy, fine-earth, gravelly and rocky places, river valleys, wastelands, waste places, deposits, roadsides, often.

Family Orobanchaceae Vent.

Orobanche aegyptiaca Pers. (*Phelipanche aegyptiaca* (Pers.) Pom.) – It parasitizes mainly on cultivated plants, alfalfa, nightshade, less often on wild plants, very rarely.

Family Asteraceae Bercht. & J.Presl

Achillea arabica Kotschy (*Achillea biebersteinii* Afan.) – Fine-earth, gravelly, rocky places, river valleys, deposits, banks of ditches and canals, often.

Acroptilon repens (L.) DC. – Clayey, sandy, rocky, gravelly, fine-earth places, salt marshes, banks of reservoirs, deposits, roadsides, waste places, often.

Arctium leiospermum Juz. & Ye.V. Serg – River valley, banks of irrigation ditches, roadsides, damp places, occasionally.

Artemisia absinthium L. – Tugai, banks of irrigation ditches, roadsides, fallow lands, waste places, often.

Artemisia annua L. – Tugai, banks of reservoirs, fallow lands, and often weedy places.

Artemisia ferganensis Krasch. ex Poljakov – Deposits, pebbles, fine earth, gravelly, rocky and saline places, often.

Artemisia subsals L. – Saline areas, tugai forests, banks of reservoirs, dry riverbeds, occasionally.

Artemisia vulgaris L. – River valley, ravines, banks of irrigation ditches, damp places, roadsides, deposits, often.

Carduus pycnocephalus subsp. *albidus* (M. Bieb.) Kazmi (*Carduus albidus* M. Bieb.) – River valley, dry riverbeds, banks of irrigation ditches, roadsides, deposits, often.

Carthamus oxyacanthus M. Bieb. – Deposits, wastelands, waste places, pebbles, roadsides, often.

Carthamus turkestanicus – Deposits, waste places, often.

Centaurea cyanus L. – Deposits, weedy places, ravines, occasionally.

Centaurea depressa M. Bieb. – Deposits, fields, waste places, banks of irrigation ditches, pebbles, fine earth, gravelly places, rarely.

Centaurea iberica Trevir. ex Spreng. – Weedy places, banks of irrigation ditches, river valleys, roadsides, wastelands, fine-earth, gravelly, rocky places, occasionally.

Centaurea solstitialis L. – Deposits, wastelands, roadsides, banks of irrigation ditches, waste places, pebbles, rarely.

Centaurea virgata squarrosa (Boiss.) Gugler (*Centaurea squarrosa* Willd.) – Fine-earth, rocky, gravelly, sandy, clayey places, deposits, often.

Chondrilla juncea – Sandy soils, flat places, in the undergrowth, often.

Cichorium intybus L. – Deposits, river valleys, pebbles, fine earth, rocky, gravelly places, usually.

Cirsium alatum (S.C. Gmel.) Bobrov – Damp places, river valley, fields, deposits, often.

Cirsium arvense (L.) Scop. (*Cirsium ochrolepidium* Juz.) – Deposits, banks of irrigation ditches, damp meadows, river valleys, tugai, weedy places, often.

Cirsium vulgare (Savi) Ten. – Damp places, river valleys, banks of irrigation ditches, deposits, rocky, gravelly places, often.

Cousinia radians Bunge. – Fine-earth, gravelly, rocky places, often.

Crepis pulchra L. (*Phaeacasium pulchrum* (L.) Reich. f.) – Fine-earth, gravelly places, often.

Cymbolaena griffithii (A. Gray) Wagenitz – Rocky, gravelly, fine earth places, deposits, weedy places, very rare.

Erigeron canadensis L. (*Conyza canadensis* (L.) Cronquist) – Deposits, waste places, wastelands, roadsides, tugai, banks of reservoirs, often.

Handelia trichophylla Heimerl. – Fine-earth, gravelly places, pebbles, river valley, deposits, occasionally.

Inula britannica L. – Damp places, banks of water bodies, rarely.

Koelpinia macrantha C. Winkl. – Sandy, clayey, fine-earth areas, river valley, rare.

Lactuca serriola Torner (*Lactuca altaica* Fisch. & C.A. Mey.) – Saline and weedy places, pebbles, fine earth, rocky places, roadsides, river valleys, banks of irrigation ditches, canals, fallow lands, occasionally.

Launaea procumbens (Roxb.) Ramayya & Rajagopal (*Paramicrorhynchus procumbens* (Roxb.) Kipr.) – Sandy and clayey solonetzic areas, tugai forests, banks of reservoirs, roadsides, very rare.

Microcephala lamelata (Bunge) Pobed. – Sandy, flat, fine-earth, gravelly, rocky places, rare.

Onopordum acanthium L. – Rocky, gravelly, weedy places, fallow lands, river valleys, roadsides, often.

Onopordum leptolepis DC. – Tugai, fallow lands, rare.

Scorzonera parviflora Jacq. – Saline areas, meadows, river valleys, rare.

Sonchus arvensis L. – Banks of water bodies, damp places, waste places, deposits, often.

Sonchus asper (L.) Hill – Deposits, roadsides, waste places, often.

Sonchus oleraceus (L.) L. – Deposits, roadsides, waste places, river banks, often.

Sonchus palustris L. – Banks of water bodies, damp places, often.

Taraxacum bessarabicum (Hornem.) Hand.-Mazz. – Salty and damp places, pebbles, banks of reservoirs, often.

Taraxacum bicorne Dahlst. – Alkaline, damp places, pebbles, banks of reservoirs, deposits, roadsides, rare.

Taraxacum complicum Kovalevsk. – Roadsides, banks of irrigation ditches, damp places, rarely.

Taraxacum ecornutum Kovalevsk. – River banks, irrigation ditches, damp places, roadsides, occasionally.

Taraxacum elongatum Kovalevsk. – River banks, ditches, damp places, roadsides, often.

Taraxacum juzepczukii Schischk. – Banks of irrigation ditches, roadsides, fine-earth areas, rare.

Taraxacum macrochlamydeum Kovalevsk. – Banks of irrigation ditches, damp places, often.

Taraxacum maracandicum Kovalevsk. – Banks of irrigation ditches, damp places, roadsides, often.

Xanthium spinosum L. – Waste areas, wastelands, roadsides, fallow lands, canal banks, often.

Xanthium strumarium L. – Waste areas, wastelands, roadsides, fallow lands, canal banks, often.

Dipsacus dipsacoides (Kar. & Kir.) Botsch. – Fine-earth, gravelly places, often.
Dipsacus laciniatus L. – Fine-earth places, river valley, deposits, occasionally.

Family Apiaceae Lindl.

Conium maculatum L. – Weedy places, wastelands, banks of water bodies, often.
Daucus carota L. – Roadsides, deposits, banks of irrigation ditches, river valleys, wastelands, often.
Eremodaucus lehmannii Bunge. – Wastelands, roadsides, fine-earthed places, rare.
Eryngium caeruleum M. Bieb. – River valley, banks of irrigation ditches, fallow lands, wastelands, roadsides, waste places, occasionally.
Pimpinella peregrina L. – Banks of streams, ditches, roadsides, fallow lands, tugai, occasionally.
Scandix pecten-veneris L. – Fine-earth, gravelly, rocky places, river valleys, fallow lands, wastelands, roadsides, rarely.
Sium sisaroides DC. – Banks of water bodies, swampy places, often.
Torilis leptophylla (L.) Rchb. f. – Dry and weedy places, fallow lands, fields, roadsides, banks of rivers and ditches, rarely.
Trachyspermum ammi (L.) Sprague – Deposits, banks of irrigation ditches, rare.

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