

G.J. Sultangazina<sup>1\*</sup>, A.N. Kuprijanov<sup>2</sup><sup>1</sup>A. Baitursynov Kostanay Regional University, Kostanay, Kazakhstan<sup>2</sup>Kuzbass Botanical Garden Federal Research Center of Coal and Coal Chemistry SB RAS, Kemerovo, Russian Federation

\*Corresponding author: gul\_sultan@mail.ru

## Floral composition of the botanical natural monument “Kamenny lake tract” (Kostanay region)

**Abstract.** There are 15 specially protected natural areas in the Kostanay region. The total area: more than 818 ha. The state natural monument of local importance ‘Kamenny Lake tract’ floristic diversity was studied. Floristic studies were carried out by the route method in 2019–2022. The research task was to study the natural monument floristic composition, identify rare and endangered plants of the Kazakhstani Red Book. During the floristic study, five main ecotopes were identified: shrub thickets on slopes, birch forest on steep slopes, upland meadows with shrub thickets, meadow-marsh communities on coasts, and meadow-steppe communities. Protected natural area flora summary was compiled: for each species the habitat within the protected areas is indicated. In a small area (2.5 ha), 177 species of higher plants belonging to 132 genera and 48 families were found. Higher spore plants are represented by 6 species: *Equisetum arvense* L., *E. Hyemale* L., *E. pratense* Ehrh., *Athyrium filix-femina* (L.) Roth., *Cystopteris fragilis* (L.) Bernh., *Matteuccia struthiopteris* (L.) Tod, gymnosperm - *Ephedra Distachia* L., angiosperms: 171 species belonging to 44 families. Among them, Asteraceae - 31 species (18%), Rosaceae - 20 species (11.2%), Poaceae - 17 species (10%), Fabaceae - 10 species (6.0%), Lamiaceae - 9 species (5.1%), Caryophyllaceae - 8 species (5.0%). Three species (*Adonis wolgensis*, *Stipa pennata* and *Tulipa biebersteiniana*) are in the Kazakhstan Red Book (2014). The state of rare and endangered species populations is satisfactory.

**Keywords:** Kostanay region, natural monument “Kamenny Lake tract”, flora, rare and endangered plants.

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### Introduction

In 1992, in Rio de Janeiro, at the UN Conference on Environment and Development at the level of heads of government of fifty countries, it was announced that the greatest value that humanity should preserve for future generations is biological diversity. Relevant provisions have been enshrined in the Convention on Biological Diversity. The CBD Strategic Plan provides for “the desire of the world community to ensure the conservation, restoration and wise use of biodiversity by 2050...” (Convention, 1992). The main direction of biodiversity conservation is *in situ* - the conservation of biological diversity in natural habitats (reserves, sanctuaries, natural monuments) [1].

Kazakhstan has adopted the Concept for the conservation and sustainable use of the biological diversity of the Republic of Kazakhstan until 2030. Within the framework of this concept, it is recognized that the conservation of biodiversity is a priority [2].

On the territory of the Kostanay region there are 15 specially protected natural areas (SPNA), including: the state natural reserve ‘Naurzumsky’; state natural reserve ‘Altyn Dala’; three

state natural (zoological) reserves: Tounsorsky, Zharsor-Urkashsky, Mikhailovsky; 10 botanical monuments of nature. The total area of protected areas in the Kostanay region is more than 818 hectares [3].

In 1971-1973, on the initiative of Professor P.G. Pugachev, by a special decision of the regional executive committee and the Kostanay branch of the Kazakh Society for the Protection of Nature, a botanical natural monument "Kamenny Lake tract" was created [4]. The botanical monument of nature belongs to the Pritobolsky steppe pine forest region of high floodplain terraces (Tobol-Ubagansky subdistrict) of the Pritobolsk district. According to natural conditions, this territory is included in the subzone of arid forb-feather grass steppes on low-humus southern chernozems and dark chestnut soils, plowed up to 80% [5]. On a very small area – 100 hectares, there are several rather well-preserved types of vegetation [6]. First of all, these are ravine birch forests, splitting, occupying the northwestern slope (steepness 500) of a high floodplain. The stand consists of birch *Betula pendula* with a small admixture of aspen. The soils under the forest are dark gray loamy and sandy, fresh and moist. The undergrowth is sparse and consists of *Crataegus sanguinea*, *Padus avium*, *Ribes nigrum*, *Rosa majalis*, *Rubus idaeus*.

In steppe areas, there are feather grasses: *Stipa capillata* L., *S. lessingiana* Trin. et Rupr., *S. pennata* L. and forbs (*Achillea millefolium*, *Adonis wolgensis*, *Artemisia vulgaris*, *Calamagrostis epigeios*, *Filipendula vulgaris*, *Potentilla argentea*, *P. bifurca*, *Veronica spuria*). Meadow-marsh communities with the presence of macrophytes (*Agrostis stolonifera*, *Hydrocharis morsus-ranae*, *Lysimachia vulgaris*, *Ptarmica salicifolia*, *Ranunculus repens*, *R. sceleratus*, *R. lingua*, etc.) are formed along the coast. P.G. Pugachev noted only the boreal elements of the floristic diversity of the natural monument, and it was extremely interesting to compile a complete list of plants growing in this area.

### Methodology

The object of the study was the botanical natural monument 'Kamenny Lake tract', located 3 km from the village Zarechnoe. The soils under the birch forest are dark gray, loamy and sandy, on the slopes they are formed by leached chernozem, near the shore - meadow-marsh soils. The studies were carried out in spring and summer (2019-2022).

More than 500 herbarium sheets stored in the funds of A. Baitursynov of Kostanay Regional University. The collected herbarium material was supplemented with literature data [7-10].

The families of flowering plants are arranged according to the system of A.L. Takhtadzhyan [11]. Species in genera and genera in families are arranged alphabetically, the Latin and Russian names of the species are given according to S.A. Abdulina [12], taking into account modern data.

### Discussion

During the floristic study, five main ecotopes were identified: shrub thickets on the slope (St), birch forest on a steep slope (Bf), upland meadows with shrub thickets (Um), meadow-marsh communities on the coast (Mm), meadow-steppe communities (Ms) (table 1).

**Table 1**  
**Characteristics of the cenofloras of the specially protected natural area 'Kamenny Lake tract'**

Ecotopes	Coordinates	Habitat
St	N 53.28013°, W 63.76616°, h=134 m above sea level	Shrubs on the slope. TPC – 100%, Dominants: <i>Amygdalus nana</i> , <i>Calamagrostis epigeios</i> , <i>Filipendula vulgaris</i> , <i>Potentilla bifurca</i> , <i>Rosa acicularis</i> , <i>R. spinosissima</i> , <i>Spiraea hypericifolia</i> , <i>Stipa capillata</i> , <i>S. pennata</i>
Bf	N53.28597°, W63.77815°, h=141 m above sea level	Birch forest on a steep slope. 10B, fullness 04-05, ground cover TPC – 30%, Dominants: <i>Betula pendula</i> , <i>Fritillaria ruthenica</i> , <i>Equisetum hyemale</i> , <i>Polygonatum odoratum</i> , <i>Padus avium</i>

Um	N 53.28138°, W 63.76820°, h=139 m above sea level	Upland meadows with shrub thickets. TPC – 90%, Dominants: <i>Cerasus ommutate</i> , <i>Adonis wolgensis</i> , <i>Achillea millefolium</i> , <i>Artemisia vulgaris</i> , <i>Stipa lessingiana</i> , <i>Potentilla argentea</i> , <i>Veronica spuria</i>
Mm	N 53.28138°, W 63.76820°, h=137 m above sea level	Meadow-marsh communities on the coast. TPC – 90%, Dominants: <i>Typha angustifolia</i> , <i>Urtica dioica</i> , <i>Artemisia proceriformis</i> , <i>Artemisia vulgaris</i> , <i>Humulus lupulus</i>
Ms	N 53.58026°, W 63.76741°, h=105 m above sea level	Meadow-steppe communities. TPC – 90%, Dominants: <i>Falcaria vulgaris</i> , <i>Artemisia austriaca</i> , <i>Artemisia ommutate</i> , <i>Centaurea sibirica</i> , <i>Echinops ritro</i>

## Results

Despite the proximity of the settlement (the village of Zarechnoye), a large number of species are concentrated in a relatively small area, and plant communities retain their natural structure. The flora of the botanical reserve "Kamenny Lake tract" includes 177 species belonging to 132 genera and 48 families. In shrub thickets on the slope (St), 43 species were found; in a birch forest on a steep slope (Bf) – 54 species, in a dry meadow with shrubs (Um) – 54 species, in meadow-marsh communities (Mm) – 51 species, and in meadow-steppe communities (Ms) – 50 species.

**Equisetaceae** Rich. ex DC.: *Equisetum arvense* L., Mm; *E. hyemale* L., Bf, Mm; *E. pratense* Ehrh. Mm.

**Athyriaceae** Alston: *Athyrium filix-femina* (L.) Roth., Bf; *Cystopteris fragilis* (L.) Bernh., Bf.

**Onocleaceae** Pichi-Sermoli: *Matteuccia struthiopteris* (L.) Tod, Bf.

**Ephedraceae** Dumort.: *Ephedra distachya* L., Bf.

**Nymphaeaceae** Salisb.: *Nuphar lutea* (L.) Smith, Mm.

**Ceratophyllaceae** S.F. Gray: *Ceratophyllum demersum* L. Mm.

**Ranunculaceae** Juss.: *Adonis wolgensis* Steven., Bf, Um; *Ranunculus lingua* L., Mm; *R. repens* L., Bf, Mm; *R. sceleratus* L., Mm; *Thalictrum collinum* Wallr., Um; *Th. simplex* L., Ms.

**Caryophyllaceae** Juss.: *Elisanthe viscosa* (L.) Rupr, St; *Eremogone koriniana* (Fisch. ex Fenzl) Ikonn., Um; *E. longifolia* (M.Bieb.) Fenzl., Bf, Ms; *Gypsophila paniculata* L., St, Mm; *Melandrium album* (Mill.) Garcke, Bf; *Otites wolgensis* (Hornem.) Bess. ex Spreng., Um; *Silene nutans* L. St; *Stellaria graminea* L., Um, Ms.

**Chenopodiaceae** Vent.: *Chenopodium album* L., Ms.

**Polygonaceae** Juss.: *Persicaria lapathifolia* (L.) Gray, Ms; *Polygonum aviculare* L. Bf; *Rumex confertus* Willd. Mm; *R. crispus* L., Ms.

**Limoniaceae** Ser.: *Limonium gmelinii* (Willd.) Kuntze, Um.

**Betulaceae** Gray: *Betula pendula* Roth., St, Bf, Mm, Ms.

**Primulaceae** Vent.: *Androsace filiformis* Retz., Ms; *Lysimachia vulgaris* L., Bf, Mm; *Naumburgia thyrsoflora* (L.) Rchb., Mm.

**Salicaceae** Mirb.: *Populus tremula* L. St, Bf, Mm, Ms.; *Salix caprea* L., Bf; *S. triandra* L., Bf, Ms.

**Brassicaceae** Burnett: *Alyssum tortuosum* Waldst. & Kit. ex Willd., Um; *Capsella orientalis* Klokov, St; *Lepidium ruderales* L., St; *Sisymbrium loeselii* L., Um.

**Cannabaceae** Endl.: *Humulus lupulus* L. Ms.

**Urticaceae** Juss.: *Urtica dioica* L., St, Bf, Um, Mm.

**Euphorbiaceae** Juss.: *Euphorbia subcordata* C.A.Mey., Ms; *E. virgata* Waldst. & Kit., Bf, Mm, Ms.

**Crassulaceae** DC.: *Sedum telephium* L., St, Bf, Um.

**Grossulariaceae** DC.: *Ribes nigrum* L., Bf.

**Rosaceae** Juss.: *Amygdalus nana* L. Bf; *Cerasus fruticosa* Pall., Um; *Cotoneaster melanocarpus* Fisch. ex Blytt., St; *Crataegus sanguinea* Pall., St, Bf; *Filipendula vulgaris* Moench, St, Um; *Fragaria viridis* (Duchesne) Weston, Bf; *Malus domestica* Borkh, Ms; *Padus avium* Mill., Bf, Mm; *Potentilla anserina* L., Mm, Ms; *P. argentea* L., Um; *P. bifurca* L., St, Um; *P. canescens* Besser, Ms; *P. humifusa* Willd. ex Schldl., Um; *Rosa acicularis* Lindl., St; *R. majalis* Herrm., St, Mm, Ms; *R. spinosissima* L., St; *Rubus caesius* L., Mm; *R. idaeus* L. Bf; *Sanguisorba officinalis* L., Bf, Mm, Ms; *Spiraea hypericifolia* L., St, Bf., Ms.

**Onagraceae** Juss.; *Chamaenerion angustifolium* (L.) Scop., Bf; *Epilobium montanum* L., Mm.

**Fabaceae** Lindl.: *Amoria repens* (L.) C. Presl, Bf, Ms; *Astragalus danicus* Retz., Ms; *A. cornutus* Pall., St; *A. onobrychis* L., Ms; *A. varius* S.G. Gmel., Ms; *Caragana frutex* (L.) K. Koch, St, Um; *Genista tinctoria* L., St; *Medicago falcata* L., Um, Mm, Ms; *Melilotus officinalis* (L.) Pall., St; *Oxytropis pilosa* (L.) DC., Um.

**Rhamnaceae** Juss.: *Rhamnus cathartica* L., Mm.

**Geraniaceae** Juss.: *Geranium collinum* Stephan ex Willd., Mm; *G. pratense* L., Ms.

**Apiaceae** Lindl.: *Falcaria vulgaris* M. Bernh., Ms; *Heracleum sibiricum* L., Bf, Mm; *Kadenia dubia* (Schkuhr) Lavrova & V.N.Tikhom., Mm, Ms.; *Seseli ledebourii* G. Don., Um; *S. strictum* Ledeb., Mm.

**Caprifoliaceae** Juss.: *Lonicera tatarica* L., Bf, Um, Mm.

**Valerianaceae** Batsch: *Valeriana tuberosa* L., Um.

**Rubiaceae** Juss.: *Galium boreale* L. St; *G. palustre* L. Bf; *G. verum* L., Um, Ms.

**Solanaceae** Juss.: *Hyoscyamus niger* L., Ms.

**Convolvulaceae** Juss.: *Calystegia sepium* (L.) R. Br., Mm; *Convolvulus arvensis* L., St, Ms.

**Boraginaceae** Juss.: *Cynoglossum officinale* L., Mm; *Nonea rossica* Steven. Ms; *Onosma simplicissima* L., St, Um.

**Scrophulariaceae** Juss. *Veronica longifolia* L., Ms; *V. spicata* L., St, Ms; *V. prostrata* L., St; *V. spuria* L., St, Um.

**Plantaginaceae** Juss.: *Plantago major* L., Bf; *P. media* L., Um; *P. urvillei* Opiz. Bf.

**Lamiaceae** Lindl.: *Dracocephalum thymiflorum* L., Um; *Glechoma hederacea* L., Bf, Um, Mm; *Hyssopus ambiguus* (Trautv.) Iljin, Um; *Leonurus glaucescens* Bunge, Um, Ms; *Phlomis tuberosa* L., Um, Ms; *Salvia stepposa* Des.-Shost., Um; *Scutellaria dubia* Taliev et Sirj. Bf; *Stachys palustris* L., Ms; *Thymus marschallianus* Willd., Um.

**Campanulaceae** Juss.: *Campanula wolgensis* P.A.Smirn., Bf.

**Asteraceae** Dumort: *Achillea millefolium* L., Bf, Um, Mm, Ms; *A. setacea* Waldst. & Kit. Um; *Arctium tomentosum* Mill., Bf, Mm; *Artemisia austriaca* Jacq., Bf; *A. commutata* Besser, Ms; *A. dracuncululus* L., St Ms; *A. proceraeformis* Krasch., Mm; *A. vulgaris* L., Bf, Um, Mm; *Centaurea stoebe* L. Um; *C. scabiosa* L., Um; *C. sibirica* L., Um; *Cirsium setosum* (Willd.) Besser, Mm; *Echinops ritro* L., St, Ms; *Cichorium intybus* L., St; *Helichrysum arenarium* (L.) Moench, Um; *Lactuca serriola* Torner., Mm; *Psephellus turgaicus* (Klokov) A.L. Ebel, St; *Ptarmica salicifolia* (Besser) Serg., Mm; *Scorzonera austriaca* Willd., Ms; *S. parviflora* Jacq. Bf; *S. purpurea* L., St; *Senecio jacobaea* L., Ms; *Solidago virgaurea* L., Bf; *Tanacetum vulgare* L., Ms; *Taraxacum officinale* F.H.Wigg., St, Bf, Um, Mm; *Tragopogon pratensis* L. St; *Tripleurospermum inodorum* (L.) Sch.Bip., St, Mm; *Trommsdorffia maculata* (L.) Bernh., Um, Ms;

**Butomaceae** L. C. Rich: *Butomus umbellatus* L. Mm;

**Hydrocharitaceae** Juss.: *Hydrocharis morsus-ranae* L. Mm; *Stratiotes aloides* L. Mm.

**Potamogetonaceae** Dumort: *Potamogeton lucens* L., Mm;

**Liliaceae** Juss.: *Fritillaria meleagroides* Patrin ex Schult., Um; *F. ruthenica* Wikstr., St, Bf; *Tulipa biebersteiniana* Schult. et Schult. f., St, Um;

**Alliaceae** J. Agardh: *Allium lineare* L., St, Um.

**Convallariaceae** Horaninow: *Polygonatum odoratum* (Mill.) Druce, Bf.

**Asparagaceae** Juss.: *Asparagus officinalis* L., Um.

**Cyperaceae** Juss.: *Carex riparia* Curtis, Mm; *C. supina* Willd. ex Wahlenb, Um.



**Poaceae** Barnhart: *Achnatherum splendens* (Trin.) Nevski, Um; *Agropyron cristatum* (L.) Gaertn., Ms; *Agrostis gigantea* Roth., Bf; *A. stolonifera* L., Mm; *Bromopsis inermis* (Leyss.) Holub, Um, Mm, Ms; *Calamagrostis epigeios* (L.) Roth, Ms; *Elytrigia repens* (L.) Nevski, Bf; *Festuca valesiaca* Gaudin, St, Bf, Ms; *Hierochloa odorata* (L.) Beauv., Bf; *Leymus angustus* (Trin.) Pilg., Ms; *Melica altissima* L. Bf; *Poa angustifolia* L., Bf, Um, Mm; *P. pratensis* L., Bf, Um, Mm; *Puccinellia distans* (Jacq.) Parl., Ms; *Stipa capillata* L., St; *S. lessingiana* Trin. et Rupr., Um, Ms; *S. pennata* L., St.

**Lemnaceae** S. F. Gray: *Lemna minor* L., Mm; *L. trisulca* L., Mm.

**Typhaceae** L.: *Typha angustifolia* L., Mm; *T. latifolia* L., Mm.

Higher spore plants are represented by 6 species: *Equisetum arvense* L., *E. hyemale* L., *E. pratense* Ehrh., *Athyrium filix-femina* (L.) Roth., *Cystopteris fragilis* (L.) Bernh., *Matteuccia struthiopteris* (L.) Tod, gymnosperms are represented by one species - *Ephedra distachia* L.

There are 171 species of angiosperms (28 species are monocots and 149 are dicots), belonging to 44 families. Among them, *Asteraceae* - 31 species (18%), *Rosaceae* - 20 species (11.2%), *Poaceae* - 17 species (10%), *Fabaceae* - 10 species (6.0%), *Lamiaceae* - 9 species (5.1%), *Caryophyllaceae* - 8 species (5.0%).

The largest number of species is represented by the genera *Artemisia* and *Potentilla*, 5 species each, *Astragalus* and *Veronica*, 4 species each.

Three species of plants listed in the Red Book of Kazakhstan were found on the territory of the natural monument (Krasnaya kniga, 2014). A small population of *Stipa pennata* is located in the bushes on the slope (St). The population area is 300-500 m<sup>2</sup>, the plants are represented mainly by generative individuals, the vitality of plants is normal. The population of *Tulipa biebersteiniana* is located in upland meadows with shrubs (Um). The population area is 300 m<sup>2</sup>, the plants are represented by generative individuals, the vitality of plants is normal. A population of *Adonis wolgensis* was also found there. The population area is 400 m<sup>2</sup>, the fractional projective cover of *A. wolgensis* is 1.0%, the density of individuals is 155 pcs/100 m<sup>2</sup>, in total there are about 600 individuals in the population. The state of the population is satisfactory [14, 15].

## Conclusion

177 species of higher plants belonging to 132 genera and 48 families, including three species of *Stipa pennata*, *Tulipa biebersteiniana* and *Adonis wolgensis*, of the Red Book of Kazakhstan, were found on the territory of the botanical natural monument 'Kamenny Lake tract'. The state of the population of rare and endangered species is satisfactory.

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### Г.Ж. Сұлтанғазина<sup>1</sup>, А.Н. Куприянов<sup>2</sup>

<sup>1</sup>А. Байтұрсынов атындағы Қостанай өңірлік университеті, Қостанай, Қазақстан  
<sup>2</sup>Қузбас ботаникалық бағы, РҒА СБ көмір және көмір химиясы Федеральді зерттеу орталығы, Кемерово, Ресей Федерациясы

#### «Каменное» көлі шапқалындағы ботаникалық табиғи ескерткішінің флористикалық құрамы (Қостанай облысы)

**Аңдатпа.** Қостанай облысының аумағында 15 ерекше қорғалатын табиғи аумақтар бар. Жалпы ауданы 818 гектардан астам. Жергілікті маңызы бар «Урочище Каменное озеро» мемлекеттік табиғи ескерткішінің флористикалық әртүрлілігі зерттелді. Флористикалық зерттеулер маршруттық әдіспен 2019-2022 жылдар аралығында жүргізілді. Зерттеу жұмысының міндеті табиғат ескерткішінің флористикалық құрамын зерттеу, Қазақстанның Қызыл кітабына енген сирек кездесетін және жойылып бара жатқан өсімдіктерді анықтау болды. Флористикалық зерттеу кезінде бес негізгі экотоптар анықталды: беткейдегі бұталы өсімділер, тік беткейдегі қайың орманы, бұталы құрғақ шалғындар, жағалаудағы шалғынды-батпақты қауымдастықтар, шалғынды-дала қауымдастығы. Ерекше қорғалатын табиғи аумақтың флорасының қысқаша мазмұны жасалды, онда әрбір түр үшін ерекше қорғалатын табиғи аумақтар шегінде тіршілік ету ортасы көрсетілген. Шағын аумақта (2,5 га) жоғары сатыдағы өсімдіктердің 132 туыс пен 48 тұқымдасқа жататын 177 түрі табылды. Жоғары споралы өсімдіктер 6 түрмен ұсынылған: *Equisetum arvense* L., *E. hyemale* L., *E. pratense* Ehrh., *Athyrium filix-femina* (L.) Roth., *Cystopteris fragilis* (L.) Bernh., *Matteuccia struthiopteris* (L.) Tod, ашық тұқымдыларда бір түр - *Ephedra distachia* L., жабық тұқымдылардың 44 тұқымдасқа жататын 171 түрі бар. Олардың ішінде *Asteraceae* – 31 түрі (18%), *Rosaceae* – 20 түрі (11,2%), *Poaceae* – 17 түрі (10%), *Fabaceae* – 10 түрі (6,0%), *Lamiaceae* – 9 түрі (5,1%), *Caryophyllaceae* – 8 түрі (5,0%) жетекші маңызға ие. Зерттелетін аумақта Қазақстанның Қызыл кітабына (2014) енгізілген үш түрі (*Adonis wolgensis*, *Stipa pennata* және *Tulipa biebersteiniana*) кездеседі. Сирек кездесетін және жойылып бара жатқан түрлер популяциясының жағдайы қанағаттанарлық.

**Түйін сөздер:** Қостанай облысы, «Урочище Каменное озеро» табиғат ескерткіші, флора, сирек кездесетін және жойылып бара жатқан өсімдіктер.

Г.Ж. Султангазина<sup>1</sup>, А.Н. Куприянов<sup>2</sup>

<sup>1</sup>Костанайский региональный университет имени А. Байтурсынова, Костанай, Казахстан

<sup>2</sup>Кузбасский ботанический сад, Федеральный исследовательский центр угля и углекислоты СО РАН, Кемерово, Российская Федерация

### Флористический состав ботанического памятника природы «урочище Каменное озеро» (Костанайская область)

**Аннотация.** На территории Костанайской области находится 15 особо охраняемых природных территорий, общая площадь которых составляет более 818 га. Изучено флористическое разнообразие государственного памятника природы местного значения «Урочище Каменное озеро». Флористические исследования проводились маршрутным методом в период 2019–2022 гг. В задачу исследований входило изучение флористического состава памятника природы, выявление редких и исчезающих растений, внесенных в Красную книгу Казахстана. При флористическом изучении были выделены пять основных экотопов: кустарниковые заросли на склоне, березовый лес на крутом склоне, суходольные луга с кустарниковыми зарослями, лугово-болотные сообщества на берегу, лугово-степные сообщества. Составлен конспект флоры охраняемой природной территории, в котором для каждого вида указаны местообитание в пределах ООПТ. На небольшой территории (2,5 га) найдено 177 видов высших растений, относящихся к 132 родам и 48 семействам. Высшие споровые растения представлены 6 видами: *Equisetum arvense* L., *E. hyemale* L., *E. pratense* Ehrh., *Athyrium filix-femina* (L.) Roth., *Cystopteris fragilis* (L.) Bernh., *Matteuccia struthiopteris* (L.) Tod, голосеменные одним видом - *Ephedra distachia* L., покрытосеменные растения - 171 вид, относящиеся к 44 семействам. Среди них ведущее значение занимают *Asteraceae* – 31 вид (18%), *Rosaceae* – 20 видов (11,2%), *Poaceae* – 17 видов (10%), *Fabaceae* – 10 видов (6,0%), *Lamiaceae* – 9 видов (5,1%), *Caryophyllaceae* - 8 видов (5,0%). На исследуемой территории произрастают три вида (*Adonis wolgensis*, *Stipa pennata* и *Tulipa biebersteiniana*), включенные в Красную книгу Казахстана (2014). Состояние популяций редких и исчезающих видов удовлетворительное.

**Ключевые слова:** Костанайская область, памятник природы «Урочище Каменное озеро», флора, редкие и исчезающие растения.

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#### Information about authors:

**Sultangazina G.J.** – Candidate of Biological Sciences, A.Baitursynov Kostanay Regional University, 10 Abai ave., Kostanay, Kazakhstan.

**Kuprijanov A.N.** – Doctor of Biological Sciences, Professor of Kuzbass Botanical Garden, Federal Research Center of Coal and Coal Chemistry, SB RAS, 10 Leningradsky Av., Kemerovo, Russia.

**Сұлтангазина Г.Ж.** – биология ғылымдарының кандидаты, А. Байтұрсынов атындағы Қостанай өңірлік университеті, Абай даңғ. 28, Қостанай, Қазақстан.

**Куприянов А.Н.** – биология ғылымдарының докторы, Кузбас ботаникалық бағы, РФА СБ көмір және көмір химиясы Федеральді зерттеу орталығы, Ленинград даңғ. 10, Кемерово, Ресей.