MINISTRY OF EDUCATION AND SCIENCE
OF THE REPUBLIC OF KAZAKHSTAN
COMMITTEE OF SCIENCE
INSTITUTE OF BOTANY AND PHYTOINTRODUCTION

"CONSERVATION AND SUSTAINABLE USE OF GENEFUND OF PLANT WORLD IN EURASIA AT THE PRESENT STAGE"

INTERNATIONAL SCIENTIFIC CONFERENCE
within "Day of Kazakhstan"
(September 3, 2016, EXPO-2016 Antalya, Turkey)

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Annotation. Proceedings of the International scientific conference "Conservation and sustainable use of gene pool of plant world in Eurasia at the present stage" are devoted to memory of Baitenov Muslim Smailovich, the outstanding Kazakhstan scientist, who made the significant contribution into studying the botanical variety of Kazakhstan. Proceedings contain articles reflecting the results of scientific researches in the field of study and protection (ex-situ and in situ) of biological diversity of Eurasian flora. The edition can be used by a wide range of experts of the general-biological direction.
The Conference is organized within implementation of the scientific-technical programme: "Sustainable management of the genetic resources of the state botanical gardens of Southeast and Central Kazakhstan especially protected natural territories of the republican value, in the conditions of transition to the 'green economy' ". Its results are reflected in the International exhibition EXPO-2016. (Antalya, Turkey).

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CENOPOPULATION AGE STRUCTURE OF NARROWLY ENDEMIC OF TRANS-ILI ALATAU MOUNTAINS OXYTROPIS ALMAATENSIS BAJT.

K.T. Abdikulova, N.M. Mukhitdinov[1], A.A. Ivaschenko2, A.A. Ametov[1], Sh.S. Almerekova[1], A. Idirys[1], D.M. Abidkulova[1]

[1] *Al-Farabi Kazakh National University, Republic of Kazakhstan, Almaty*
[2] *Ile-Alatau State National Park, Republic of Kazakhstan, Almaty*
e-mail: Karime.Abidkulova@kaznu.kz

Oxytropis is one of the largest genus of *Fabaceae* family, which belongs to the *Astragalinae* subtribe and *Galegeae* tribe with about 300 species in total [1, 2]. The majority of them are widespread in temperate and arctic zones of the Northern hemisphere, where the main centers of specific variety are located in Middle and Central Asia, in the south of Siberia, on Altai and the utmost northeast of Asia [3]. Oxytropes grow, mainly, on mountain meadows and steppes, stony slopes, in the Arctic and Alpine tundra. They can be met on stony slopes of Northern Tien Shan, the Central Sayan Mountains and the mountain steppes of Northeast Yakutia. [3]. The genus *Oxytropis* includes not only arctic-alpine species dated for stony habitats, rocks and the tundra of the Arctic region and the Alpine zone of mountains, but also the steppe forms dated for steppe groups.

Many species of *Oxytropis* have practical value as fodder, melliferous, poisonous, medicinal and ornamental plants [4, 5].

In Kazakhstan there are 119 species from 15 section, from which 36 species (32,5%) are endemic, and 10 species are listed in the Red List [6, 7]. In Northern Tien Shan, where also Trans-Ili Alatau mountains belongs, this genus is on the second place after *Astragal* by quantity of species [8].

Oxytropis almaatensis Bajt. belongs to the subgenus *Euxotropis* (Boiss.) Bunge section *Eumorpha* Bunge. The species has been described by M. S. Baytenov from the gorge Turgen of Trans-Ili Alatau mountains, as a rare, narrowly endemic species [7, 9].

Focused specialization is often typical for endemic species of plants, they are adapted to strictly certain living conditions, and, as a result, have faltering distribution even within the main area. Usually such endemics represent more vulnerable part of regional flora at which change of biotopes owing to an anthropogenous stress leads to a bigger reduction of their area. For such species, which exist in the forms of small isolated populations, there is a threat of a total disappearance. Research of small populations, clarification of mechanisms of their existence gets great value because the amplifying anthropogenous influence leads to a bigger dispersion and reduction of areas even of earlier widespread species of plants. Similar researches are necessary also for the organization of monitoring and development of measures for protection of endemic species.

Oxytropis almaatensis Bajt., as a vital form, is a taproot perennial, almost acaules cent plant up to 45 cm long, glaucous from the pressed downiness. Leaves are up to 20 cm long, with many pairs of elliptic or oblong and ovoid leaflets, up to 15 mm wide. Flowers are in long friable brushes, a cup is tubular-campanulate, 10-12 mm long, a nimbus is pink-purple, up to 20 mm long. Beans are oblong-bladed, 18-20 mm long, leather-like is on long (5-7 mm) fruit stems. It is used in traditional medicine [5].

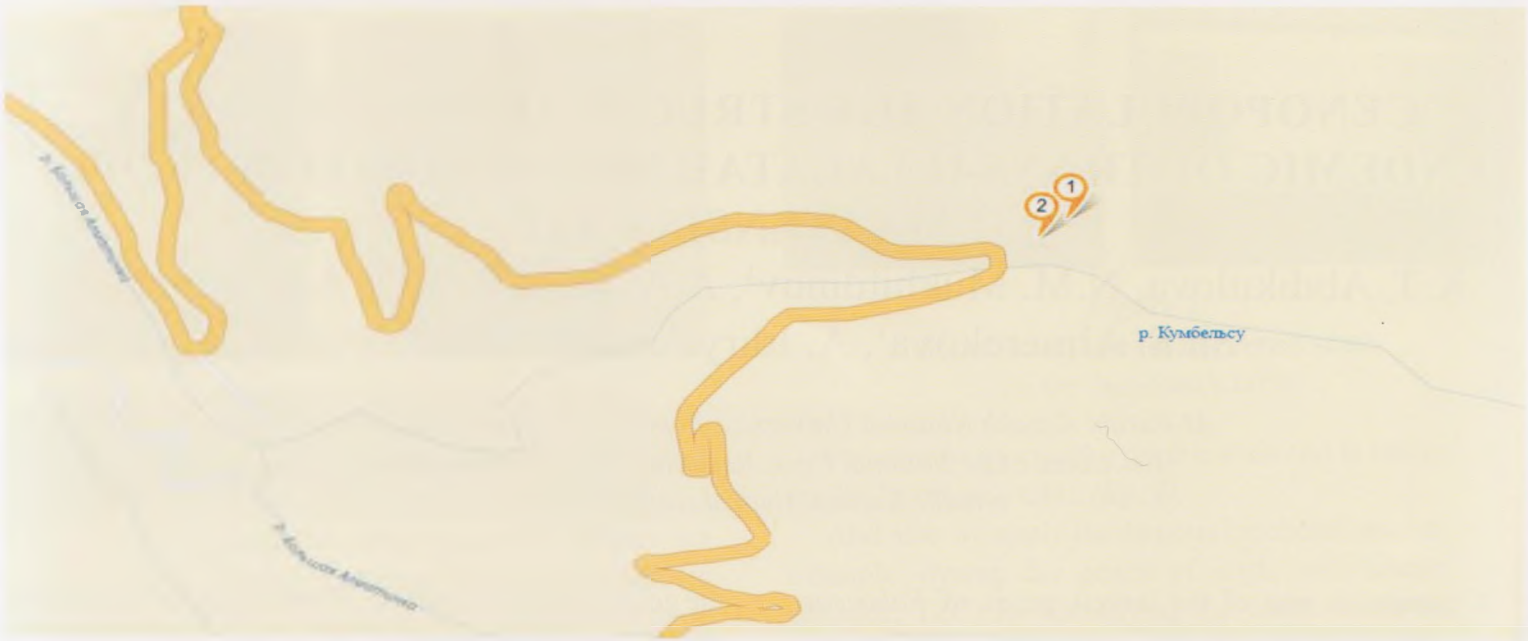

Figure 1.
Location index map of cenopopulations 1, 2 *Oxytropis almatensis* (the Big Almaty Gorge, Trans-Ili Alatau mountains)

It can be found in Trans-Ili Alatau mountains (gorges of the rivers of Kargaly, Talgar, Chilik, Syugaty's mountains). It propagates by seeds, blossoms in May-June, fructifies in July-August. Species habitats - cobble-earthy slopes, forest glades, among meadow, steppe wild grasses and bushes on mountain middle zone [7].

In 2014 there has been started, and in 2015 continued studying of population of this species in the Big Almaty Gorge (2158-2160 m above sea-level) in a fir-tree zone on a slope of the western exposition of a right bank of the river of Kumbelsu ***(fig. 1)***. 2 cenopopulations have been allocated: cenopopulation 1 – over break above the bridge on a slope with the steepness of 70^0, the soil is dark-chestnut mountainous with stone outputs up to 30%. Coordinates: N $43^0$04.864′, E $076^0$59.604′, height above the sea level is 2160 m and cenopopulation 2 – below the first, over break about the bridge, on a slope with the steepness of 75-80^0, the soil – black earth, cobble-earthy, with higher stone outputs up to 55-60%. Coordinates: N $43^0$04.853′, E $076^0$59.578′, 2158 m above the sea level. The site of a cenopopulation 2 quite often gets under influence of landslides. According to B. A. Bykov [10], cenopopulation is set of individuals of one species within one phytocenosis occupying a certain habitat.

At the characteristic of cenopopulations classifications by an absolute maximum of ontogenetic group were used. Allocation of age states was given according to the scheme of A.A. Uranov [11]: p – sprouts and shoots; j – juvenile species; im – immature; v – virginile or adult vegetative: g_1 – young generative; g_2 – average or mature generative; g_3 – old generative; ss – subsenile; s – senile; sc – sphacelate species. At the description cenopopulations 1 and 2 we combined immature and juvenile individuals in a group of young vegetative (v1), and in the v2 – vegetative adults.

For studying of age structure of a cenopopulation, on each of the studied sites, there were put 10longitudinal transects with registration platforms of 1 sq.m in every 10-20 m . On each platform there was carried out the accounting of all individuals of this species with distribution on age states. Density of population was estimated as number of species on 1 sq.m.

In total, registration platforms in cenopopulation 1 and 2 had respectively 79 and 98 samples registered of the investigated species.

Table. NUMBER OF THE SPECIES *OXYTROPIS ALMAATENSIS* BAJT. IN DIFFERENT AGE STATES (%)

Cenopopulation	v_1	v_2	g_1	g_2	g_3
1	2,5	20,2	34,2	38,0	5,1
2	2,05	38,8	41,8	15,3	2,05

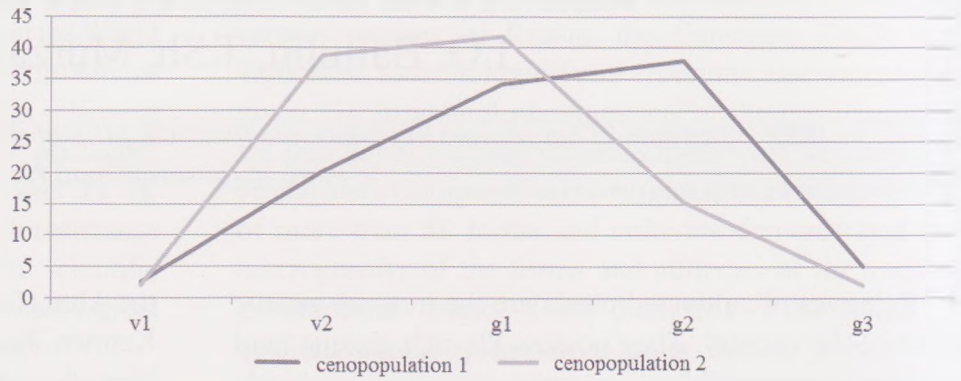

Figure 2. Age range of cenopopulations 1 and 2 *Oxytropis almaatensis* (share of species of various groups in % of total number)

Data on percentage of species of different age states in cenopopulation 1 and 2 are provided in table.

The investigated cenopopulation *O. almaatensis* with its structure belongs to full-member, with a right-lateral range ***(fig. 2)***. In cenopopulation 1, which is above the second and does not get under influence of landslides, there is maximum of middle generative species, there is a little less of young generative plants. In the lower cenopopulation, where there is maximum of young generative species, and after them, there were adult vegetative species. The age structure of cenopopulation 2 coincides with the data obtained by authors A.A. Ivashchenko and others [12] during the previous research of 2014.

Therefore, *Oxytropis almaatensis* as a rare limited locally distributed species is in need of further investigation and regular control of the population condition. Research of the authors in this direction is being conducted.

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