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## Assessment of state of cenopopulations of the *Erysimum croceum* of the Trans-Ili Alatau

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The population of *Erysimum croceum* in the Trans-Ili Alatau was studied for the first time. This study was carried out in a comprehensive manner using modern geobotanical and floristic methods. Age states and density of individuals within the population were determined. The article describes three cenopopulations in two populations of *E. croceum* M. Pop.

The protection of rare, endemic plants is currently given great attention. One of such rare, endemic plants registered in the Red Data Book of Kazakhstan is *E. croceum*. However, to date, there are no special studies devoted to the study of the population of this unique plant. The aim of the work was to find the location of *E. croceum* and study its population using modern methods of geobotanical and floristic research and to assess its current state.

The ecological-cenotic confinement of *E. croceum* cenopopulations was revealed. The floristic composition of plant communities with its participation was also studied.

The first population of *E. croceum* was found at the foot of a high hill in one of the left branches of the Small Almaty Gorge. It is located on the southeastern exposure of the middle part of the hill. The area is small, length - 150-200 m, width - no more than 100-150 m. Within the population, we described two cenopopulations (CP 1 and CP 2).

CP 1. The vegetation cover is represented by a bulb-catchment and mixed herb association (ass. *Hedysarum flavum*, *Alchemilla sibirica*, *Silene wallichiana*, *Cerastium tianschanicum*, *Aquilegia atrovinosa*, *Allium atosanguineum*, *A. turkestanicum*, *A. schoenoprasoides*). The total projective cover is 95-100%. The vegetation cover has a three-tier structure. The first tier is *A. turkestanica*, *A. atrovinosa*, *H. flavum* 70-90 cm high, the second tier is *C. tianschanicum*, *P. stepposa*, *Potentilla evestita*, *Myosotis palustris* 30-60 cm high, the third tier is *Polygala hybrida*, *Sedum hybridum*, *Alchemilla sibirica* 15-25 cm high. CP 2. The vegetation cover is represented by a mixed herb and cereal association (ass. *Alopecurus pratensis*, *Festuca supina*, *P. stepposa*, *Dactylis glomerata* - *H. flavum*, *Alchemilla sibirica*, *A. atrovinosa*, *C. tianschanicum*). The total projective cover is 85-90%. The vegetation cover has a four-tier structure. The first tier is *Trisetum sibiricum*, *Dactylis glomerata*, *Rheum wittrockii*, *Rumex acetosa* 100-130 cm high, the second tier is *Chamaenerion angustifolium*, *A. atrovinosa*, *Polygonum songoricum*, *Erysimum croceum*, *Valeriana turkestanica* 60-90 cm high, the third tier is *Potentilla nervosa*, *A. atosanguineum*, *P. stepposa* 30-55 cm high, fourth tier - *Thymus marschellianus*, *M. palustris*, *Potentilla nivea*, *S. hybridum* 15-25 cm high.

CP 3. The vegetation cover is represented by a mixed herb and cereal association with the participation of *Picea schrenkiana* (ass. *Poa nemoralis*, *Poa pretense*, *D. glomerata*, *C. tianschanicum*, *Silene pseudotenius*, *Solidago virgaurea*, *Lamium album*, *Geranium collinum*, *Chamaenerion angustifolium*). The total projective cover is 95-100%. In the vegetation cover, a five-tier structure is observed. The first layer is *P. schrenkiana* up to 50 m high, the second tree layer is *Sorbus tianschanica* 3-5 m high. The third shrub layer is *Rosa alberti*, *Lonicera hispida*, *Spiraea hypericifolia* 100-140 cm high. The fourth layer is *Milium effusum*, *D. glomerata*, *A. atrovinosa*, *Lathyrus gmelinii* 70-90 cm high. Fifth tier – *Solidago virgaurea*, *Eriogon seravschanicus*, *G. collinum*, *H. flavum* 35-65 cm high.

34



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РЕГИОНАЛНО РАЗВИТИЕ



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ИНТЕЛИГЕНТЕН РАСТЕК

Of the life forms, hemicryptophytes predominate - 62 species (60.2%). In second place are therophytes - 12 species (11.6%). Nanomicrophanerophytes are represented by 9 species (8.7%). Of the macrophanerophytes, there are 2 species - *P. schrenkiana* and *S. tianschanica*. Lianas are represented by one species - *Atragea sibirica*.

Of the ecological types, mesophytes predominate - 90-95% of the floristic composition. Xeromesophytes are represented by single species. There are petrophilous species, these include *S. hybridum*. Xerophytes, hydrophytes absent.

Within population 2, we identified 13 groups of useful plants. The first place among them is occupied by anti-erosion plants. Second place is occupied by fodder plants - more than half of the floristic composition. Of these, 22 species (21.4%) are eaten excellently by livestock, 20 species (19.4%) - quite well, 33 species (32.0%) - satisfactorily. 16 species (15.5%) are badly eaten by livestock (only when there is no food). 12 species (11.6%) of plants are not eaten by livestock. In third place is the group of medicinal and honey plants with 13 species each (25.2% taken together). The fourth place is occupied by groups of weeds and