

NOTES ON SOME THREATENED MONOCOTYLEDONES IN THE FLORA OF REPUBLIC OF MOLDOVA

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Rezumat: În lucrare sunt aduse date privind unele specii de plante vasculare amenințate cu dispariția din flora Republicii Moldova: *Allium guttatum*, *Allium montanum*, *Allium podolicum*, *Juncus negrui*, *Ornithogalum boucheanum*, *Ornithogalum flavescens*, *Luzula pallescens*, *Gagea ucrainica*, *Allium inaequale*, *Luzula multiflora*, *Stipa tirsia*, *Stipa dasphylla*, în vederea includerii acestora în Cartea Roșie a Republicii Moldova (ediția 3).

Cuvinte-cheie: flora, Republica Moldova, plante rare

INTRODUCTION

The conservation status of plants is one of most widely used indicators for assessing the condition of ecosystems and their biodiversity. It also provides an important tool in establishing priorities for species conservation. The flora of the Republic of Moldova comprises over 1850 species [2, 3, 5, 12, 14]. The Red List of vascular plants from the flora of Republic of Moldova comprises 464 species [7, 13]. A number of 456 species are protected by law in the Republic of Moldova and included in the Operational List [15]. During preparation of the 3rd edition of the Red Book of the Republic of Moldova a number of threatened (categories Critically Endangered [CR], Endangered [EN] and Vulnerable [VU]) monocotyledonous species were identified, which have to be included in the 3rd edition of the Red Book of Republic of Moldova.

MATERIAL AND METHODS

For the period of 2005-2013, during investigation on local flora concerning rare vascular plants and the preparation of the 3rd edition of the Red Book of the Republic

of Moldova a number of threatened species of *Liliopsida* were identified. The list of rare species was compiled on the base of the literature study [1, 2, 4, 12-15] as well as on the results of our own research

data. All herbarium materials on presented data are deposited in the Herbarium of the Botanical Garden (Institute) of the Academy of Sciences of Moldova. All selected plant species are native to local flora and



the taxonomy followed by the recent taxonomical literature [12, 16]. The subsequent taxa grouped by the categories of threat (categories [CR], [EN] and [VU]) are given in alphabetical order, within the group with the indication of the category [9, 10], number of localities, floristic element, factors that threaten population existence and *ex-situ* conservation measures – grown in the Botanical Garden (I) of ASM (Collection of Medicinal Plants) [6].

RESULTS AND DISCUSSION

At present under the state protection are taken 224 species [11], in the 2nd edition of the Red Book of Republic of Moldova [1] are included 98 of the rarest plants. During preparation of the 3rd edition of the Red Book some other 12 threatened species of high vascular plants were identified, which have to be taken under state protection.

Critically threatened taxa (CR). This group includes taxa that are very rare in the country and occur only at 1–5 localities and includes strongly declining species in that, if recent and past recorded occurrences are compared, at least 90% of the populations have become extinct, and new localities are only seldom colonized.

Allium guttatum Stev. – *Alliaceae* (fig. 1). In the local flora is collected from 5 localities, nevertheless it is known only one extant location (vill. Slobozia Mare, district Cahul). East-Mediterranean-Pontic element. In the region is at the northern limit of distribution area. Limitative factors: grows in extreme conditions at the boundary of the area of distribution, habitat destruction, sand extraction, overgrazing steppe slopes. Grown in the Botanical Garden.

Allium montanum F. W. Schmidt (= *A. senescens* L. p.p., *A. senescens* L. subsp. *montanum* (F. W. Schmidt) Holub) – *Alliaceae* (fig. 2).





A new species for the flora of the Republic of Moldova. In the republic is found only in the vicinity of the Naslavcea village, Ocnitsa district [5]. Grows in groups of 5-7 plants (rhizomatous clusters), forming patches of 1-2 m² on a top of stony hill, in forest clearings. The subpopulation is represented by mature and juvenile individuals and total area is about 1,5 ha. European element. Limitative factors: grows in extreme conditions at the boundary of the area of distribution, reduction of particular habitats, increasing habitat destruction due to afforestation activity on limestone slopes with alien tree species (*Robinia*, *Pinus* etc.). Grown in the Botanical Garden.



Allium podolicum (Aschers. et Graebn.) Blocki ex Racib. – *Alliaceae* (fig. 3). In the flora of Republic of Moldova is growing for 2 localities (vill. Varatic and Horodishte, Rashcani district). Pontic endemic. Limitative factors: extreme isolated and poor subpopulations, reduction of specific habitats, increasing habitat destruction due to afforestation activity on limestone slopes. Grown in the Botanical Garden.

Juncus negrui Ghendov – *Juncaceae* (fig. 4). A new species for the flora of the Republic of Moldova. In the republic is found only in the vicinity of the Edinets town, in a wet grassland at the forest margin. Grows in groups of 3-5 plants (rhizomatous clusters). The population is represented by mature individuals and total area is about 1 ha. [3]. Endemic. Limitative factors: very small population, specific habitat conditions (saltish meadows), increasing habitat destruction due to meadow mowing and overgrazing.

Endangered taxa [EN]. In this category species could be classified in two different ways: it whether includes species that



occur only at 5–20 localities in this country or those that disappeared from 50–90% of the localities where previously recorded. In both cases new sites are only rarely colonized.

Luzula pallescens Swartz – *Juncaceae*. In the local flora it is collected from 6 localities, all the same veraciously known 3 extant subpopulations (vill. Lozova, Capriana, Stejareni, Strasheni district).). Eurasian endemic. Limitative factors: grows in extreme conditions at the limit of the area of distribution, isolated and poor subpopulations, recreation activity, grazing forest margins and clearings.

Gagea ucrainica Klok. (= *G. taurica* auct. mold., non Stev.) – *Liliaceae* (fig. 5). In local Herbaria it is collected from 7 localities, but there is known 2 extant subpopulations (vill. Slobozia Mare and Valeni, Cahul district) [2]. Pontic endemic. Limitative factors: grows in extreme

conditions at the boundary of the area of distribution, habitat destruction, sand extraction, overgrazing steppe slopes, loess slope erosion. Grown in the Botanical Garden.

Ornithogalum boucheanum (Kunth) Aschers. (= *Myogalum boucheanum* Kunth) – *Hyacinthaceae*. There are several locations known, but most of them were not confirmed by recent investigations. Grows through glades and clearings of the subarid forest-steppe vegetation, bush thickets, rarely in river valleys. Ponto-Pannonic-Balkan element. Limitative factors: collecting as decorative by local population, recreation activity, intensive grazing.

Ornithogalum flavescens Lam. – *Hyacinthaceae*. In the local flora it is collected from 5 localities, however inadequate use of forest stands threatens populations of this species. In the region is at the

eastern limit of distribution area.). Atlantic-Mediterranean element. Limitative factors: grows in extreme conditions at the boundary of the area of distribution, isolated and poor subpopulations, recreation activity under the forest stands, collecting as decorative. Grown in the Botanical Garden.

Vulnerable taxa [VU]. Vulnerable species are no longer present at 20–50% of all localities recorded in the past. They may often have been locally common in the past, which still may be the case in some parts of the country; however, they have strongly declined or become extinct in other parts. Colonization events may occur but only to a limited extent.

Allium inaequale Janka – *Alliaceae* (fig. 6). Known from several localities in the south and eastern parts of republic. Grows on rocky, limestone steppe hills, and in steppe areas with loess soils. Eurasian element. Limitative factors: grows in extreme conditions at the limit of the area of distribution, increasing habitat destruction due to afforestation activity of steppe vegetation, overgrazing steppe slopes. Grown in the Botanical Garden.

Luzula multiflora (Ehrh.) Lej. (= *Juncus multiflorus* Ehrh.) – *Juncaceae*. In the local flora it is collected from 7 localities.). Circumboreal element. Limitative factors: grows in extreme conditions at the limit of the area of distribution, isolated and poor subpopulations, recreation activity, practice of grazing forest margins and clearings.

Stipa dasyphylla (Lindem.) Trautv. (= *S. pennata* L. γ. *dasyphylla* Czern. ex Lindem.) – *Poaceae*. The subpopulations threatened by disappearance of steppe communities. In the region is at the southern limit of distribution area [8]. Pannonic-Sarmatic element. Limitative factors: grows in extreme conditions at the limit of the area of distribution, specific habitats reduced to

a limited area, collecting as decorative by local population.

Stipa tirsia Stev. (= *S. stenophylla* (Czern. ex Lindem.) Trautv., *S. longifolia* Borb.) – *Poaceae*. The specific habitats are reduced to several localities and subpopulations threatened by overgrazing. Pannonic-Sarmatic element. Limitative factors: specific habitats reduced to a limited area, collecting as decorative by local population.

CONCLUSIONS

As the result of our investigation, we consider for the following species (threatened with regional extinction (categories [CR], [EN] and [VU]) – *Allium guttatum* Stev., *Allium montanum* F. W. Schmidt, *Allium podolicum* (Aschers. et Graebn.) Błocki ex Racib., *Juncus negrui* Ghendov, *Luzula pallescens* Swartz, *Gagea ucrainica* Klok., *Ornithogalum boucheanum* (Kunth) Aschers., *Ornithogalum flavescens* Lam., *Allium inaequale* Janka, *Luzula multiflora* (Ehrh.) Lej., *Stipa dasyphylla* (Lindem.) Trautv. and *Stipa tirsia* Stev. are to be both taken under the state protection and included in the 3rd edition of the Red Book of the Republic of Moldova.

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