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NEW CHOROLOGICAL RECORD OF *FRITILLARIA RUTHENICA* WIKSTR. (LILIACEAE) IN THE REPUBLIC OF MOLDOVA

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ABSTRACT

This paper presents the a new report of the rare species Fritillaria ruthenica Wikstr. (Liliaceae) in the flora of the "Vîșcăuți" Forest Nature Reserve, Emerald site (MD0000061), located in the center-east of the Republic of Moldova. The new resort hosts an extensive population on an area of about 1 ha and offers favorable conditions for the in situ conservation of several rare taxa. Being identified in the same habitat as Fritillaria montana Hoppe, a comparative analysis was carried out, highlighting the essential diagnostic features, which allow the definite separation of the taxa.

INTRODUCTION

Currently, in the spontaneous flora of the Republic of Moldova, the genus *Fritillaria* L. (family Liliaceae) includes two species: *Fritillaria ruthenica* Wikstr. and *Fritillaria montana* Hoppe (Gendov 2010). In some floristic works, published until 2010, the species *Fritillaria montana* was assigned the wrong nomenclature by *Fritillaria meleagroides* Patrin ex Schult. et Schult. fil. (Gheideman 1986) or *Fritillaria meleagris* L. (Negru 2007). For the territory of the Republic of Moldova, *Fritillaria ruthenica* was mentioned by T. Gheideman (1954), but without specifying chorological data or documented by collections. Later, in the subsequent editions of the identification guide published by the same author (Gheideman 1975, 1986), *Fritillaria ruthenica* is no longer listed. In 2010, the researcher V. Ghendov in the taxonomic study of the genus *Fritillaria*, cites the species *Fritillaria ruthenica,* being also confirmed by herbarium collected from the oak forest near the village of Hîrtopul Mare, Criuleni district (collected by V. Ghendov, 28.V.2006). Subsequently, in 2015, the researcher P. Pînzaru mentions a new breeding place for the species *Fritillaria ruthenica,* which was collected from the vicinity of the village of Lopatna, Orhei district, on the territory of the "Cobâleni" Forest Reserve (collected by P. Pînzaru, 12.V.1988 (previously determined as *Fritillaria meleagroides*); 10.IV.2016).

Fritillaria ruthenica is a perennial, geophytic species with disjunct area, the native range of *Fritillaria ruthenica* extends from Eastern Europe to Central Asia and the Caucasus. (Figure 1; POWO 2026). In the countries neighboring the Republic of Moldova, it is found in Ukraine, where it has a wider distribution than *Fritillaria montana* (Fedoronchuk et al. 2009, Chornei et al. 2009).



Figure 1. *Fritillaria ruthenica* – distribution worldwide (powo.science.kew.org)

MATERIAL AND METHODS

The study is based on floristic field research on the genus *Fritillaria* L., conducted during 2025-2026 within the "Vîșcăuți" Forest Nature Reserve, located in the central-eastern part of the Republic of Moldova, south of Vîșcăuți village in Orhei district. During the investigations, scientific publications were reviewed, the existing herborized collections kept in the Herbarium of the National Botanical Garden (Institute) "Alexandru Ciubotaru" were critically processed. Floristic research and critical analysis were carried out in accordance with the classical comparative-morphological method (Korovina 1986). The identification of species was carried out using regional identification keys and floras, and the nomenclature follows current databases and fundamental works in the field. (Rix 1980, Gheideman, 1986; Negru 2007, Ciocârlan 2009, Ghendov 2010, WFO 2026). For documentation, *Fritillaria ruthenica* specimens was collected and deposited in the public Herbarium of the "Al. Ciubotaru" National Botanical Garden (Institute) of the State University of Moldova. The color photos are original, taken by author.

RESULTS AND DISCUSSIONS

During the field research carried out in the 2026 growing season within the "Vîșcăuți" Forest Nature Reserve, several floristic novelties were recorded for this territory, including one of the rarest species in the flora of the Republic of Moldova – *Fritillaria ruthenica* Wikstr. thus, this newly recorded location represents the third known occurrence of the species in the country (Figure 2).

The 'Vîșcăuți' Forest Nature Reserve is a valuable protected area established for the conservation of forest and herbaceous ecosystems on rocky substrates (Legislation..., 1998; Postolache & Lazu, 2018) and is designated as an *Emerald* site (MD0000061). *Fritillaria ruthenica Wikstr.* was identified in the northern part of the reserve on May 1, 2026, in the understory of a pedunculate oak *(Quercus robur)* forest mixed with *Carpinus betulus, Acer campestre, Tilia cordata,* and *Fraxinus excelsior,* growing scattered, either solitarily or in groups of 2-7 individuals across an area of approximately 1 ha.



Figure 2. Distribution of Fritillaria ruthenica in the Republic of Moldova

Among the shrubs, there are *Cornus mas, Corylus avellana, Staphylea pinnata, Swida sanguinea, Viburnum lantana* and others.

The ground cover included *Asparagus tenuifolius, A. verticillatus, Astragalus glycyphyllos, Campanula persicifolia, C. trachelium, Carex brevicolis*, *C. pilosa*, *Cephalanthera damasonium*, *Convallaria majalis*, *Corydalis cava, C. solida*, *Epipactis helleborine, Ficaria verna, Fritillaria montana, Galanthus nivalis, Lilium martagon, Melica uniflora, Polygonatum latifolia, Pulmonaria officinalis*, *Pyrethrum corymbosum*, *Scilla bifolia*, *Sedum maximum, Stellaria holostea*, *Tulipa biebersteiniana, Viola mirabilis*, *V. reichenbachiana, Vincetoxicum hirundinaria,* etc.

It is worth emphasizing that both *Fritillaria* species – *Fritillaria ruthenica* and *F. montana* were identified growing together in this habitat under similar ecological conditions (Figure 3). Because they share several morphological characters, they can easily be confused. However, a reliable distinction between the two species can be made during the fruiting period (Figure 4) based on key, consistent morphological features of their generative organs:

a. Uppermost leaves with a tendril-like tip at the fruiting stage; capsule winged – ***Fritillaria ruthenica.***

b. Uppermost leaves with the apex often curved or bent, but not tendril-like; capsule unwinged – ***Fritillaria montana.***

Both species, *Fritillaria ruthenica* and *Fritillaria montana*, are of great interest for the flora of the Republic of Moldova, as they are rare taxa with a limited distribution and heightened vulnerability to natural habitat changes.



A B

Figure 3. A – *Fritillaria montana,* B – *Fritillaria ruthenica*

Fritillaria montana is a species protected by law and included in the *Red Book of the Republic of Moldova*, 2nd and 3rd editions (Negru 2002, Ghendov 2015), listed in the *Red Book of Ukraine* (Chornei et al. 2009), as well as in *Annex I* of the Berne Convention, 1979.

Fritillaria ruthenica is an endangered species in the flora of the Republic of Moldova, situated at the western limit of its natural range, with few, isolated, fragmented populations, sensitive to changes in growing conditions. Being a threatened species, it was proposed both for inclusion in the *List of species protected by law*, and in the *Red Book of the Republic of Moldova* (Pînzaru 2015). Species included in the *Red Book of Ukraine* (Fedoronchuk et al. 2009).

CONCLUSIONS

Field research carried out in 2026 confirmed a new point of spread for *Fritillaria ruthenica* Wikstr. on the territory of the "Vîșcăuți" Forest Natural Reserve, thus expanding the current chorological data on the distribution of this rare species in the flora of the Republic of Moldova. The identification of the population of *Fritillaria ruthenica* in a protected habitat, *Emerald* site where it grows together with rare species such as: *Asparagus tenuifolius, A. verticillatus, Cephalanthera damasonium, Epipactis helleborine, Fritillaria montana, Galanthus nivalis, Lilium martagon, Tulipa biebersteiniana* reconfirms the high heritage value of the reserve and underlines its role as an important refuge for the *in situ* conservation of species. *Fritillaria ruthenica* exhibits a marked vulnerability, stemming from the limited number of isolated populations and the impact of human activities. To maintain the viability of the newly identified population, it is necessary to include it in the reserve's long-term monitoring programs, prevent habitat fragmentation, and ensure a regime of strict protection.

The "Vîșcăuți" Forest Nature Reserve, already recognized as an *Emerald* site, harbors important habitats with high floristic diversity and strong potential for integration into the *Natura 2000* network, thus constituting a fundamental pillar for biodiversity conservation at the national and European levels.



Figure 4. Comparative morphology of the fruiting stage*:* A, C – *Fritillaria montana (*A – early fruiting stage*;* C – mature capsule at dehiscence*); B, D – F. ruthenica (*B – early fruiting stage; *D* – mature capsule ready for seed dissemination)

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