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RARE AND NEWLY RECORDED PLANTS FROM THE SEMENIC AND ANINA MOUNTAINS (ROMANIA)

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Abstract: The present paper reports several plant taxa newly recorded in the Semenic and Anina Mountains, Romania (*Juncus squarrosus*, *Plantago gentianoides, Taraxacum erythrospermum* and *Sisyrinchium montanum*), as well as the reconfirmation of previously reported occurrences (*Drosera rotundifolia*, *Gymnadenia frivaldii, Pulmonaria rubra* f. *albocorollata*). Some of these taxa – specifically *Gymnadenia frivaldii*, *Drosera rotundifolia*, and *Plantago gentianoides* – are considered rare elements of the Romanian flora, according to the Red List of vascular plants in Romania. *Juncus squarrosus* had previously been reported in Romania only from the Apuseni Mountains, while *Pulmonaria rubra* f. *albocorollata* occurs in Romania exclusively in the forests surrounding the town of Anina. These records contribute to a better understanding of the floristic diversity and distribution of plant taxa in the Semenic and Anina Mountains.
Keywords: floristic diversity, plant distribution, conservation status, Semenic Mountains, Anina Mountains, Romania

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Introduction

History of Botanical Research in the Semenic Mountains and the Semenic-Cheile Carașului National Park. Botanical research in the Semenic Mountains has a long-standing tradition, with the earliest floristic observations dating back to the beginning of the nineteenth century. One of the earliest references to the vegetation and wetlands of the massif is provided by Rochel, who explored the Semenic Mountains in 1815 and recorded the presence of marshes in the mountainous area (Rochel 1828). Although he did not provide detailed information on the flora of these habitats, his observations represent some of the earliest documentary evidence of the occurrence of wetlands in the Semenic Mountains.

During the following decades, the flora of the massif was investigated by several botanists, including Wierzbicki and Heuffel. Heuffel regarded the flora of the Semenic Mountains as relatively poor in species, but nevertheless recorded *Carex pauciflora*, a species characteristic of oligotrophic peatlands, among the flora of the massif (Heuffel 1858). Borbás visited the Semenic Mountains in 1889 and, through his observations, contributed to the knowledge of the flora of the mountainous Banat region (Borbás 1891). Pax, Jávorka, and Muste did not undertake systematic botanical investigations in the Semenic Mountains but made occasional observations during their travels through the region (Borza 1946).

A major milestone in the study of the flora and vegetation of the Semenic Mountains was the work of Alexandru Borza. During his period of refuge in Timișoara,

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Borza conducted extensive and systematic investigations of the flora of Banat. On 20 - 25 August 1941 and 20 - 22 June 1942, the latter expedition being undertaken together with I. Todor, he made two field excursions to Mount Semenic and carried out phytosociological observations on its vegetation (Borza 1946). Borza also referred to studies of the Semenic pastures conducted by Safta and Buia.

Wetland and peatland habitats in the Semenic Mountains became an important focus of botanical research during the first half of the twentieth century. Ciobanu (1948) published a study based on pollen analyses of peat from the Semenic Massif, thereby contributing to the reconstruction of the vegetation history of the area. Later, Emil Pop devoted particular attention to the peatlands of Romania. In his work *Mlaştinile de turbă din Republica Populară Romînă* he described the seven principal marshes located along the treeless ridge of Mount Semenic, which were considered to be among the habitats most closely resembling the oligotrophic peat bog type. Pop also recorded an oligotrophic marsh at Poiana Preluca and a small complex of wetlands southwest of Gărâna, one of which included a peat substrate (Pop 1960).

Floristic and phytosociological investigations continued throughout the second half of the twentieth century. Bănărescu, Oarcea, and Schrött (1980) documented the principal characteristics of the flora and vegetation, as well as the fauna, of the region, emphasizing its conservation significance and the need for effective protection. The findings of these studies provided important scientific support for the establishment of the Semenic-Cheile Carașului National Park. Subsequently, Sanda and Popescu (1988) published a synthesis of the vegetation of the Semenic Massif, further advancing knowledge of the structure and distribution of its plant communities.

History of Botanical Research in the Anina Mountains and the Cheile Nerei-Beușnița National Park. The Anina Mountains and the surrounding areas likewise have a long tradition of botanical exploration, with the earliest floristic investigations dating back to the first half of the nineteenth century. Wierzbicki investigated the flora of Banat and, in particular, the areas surrounding Oravița and Sasca Montană during several expeditions conducted in 1839, 1840, 1842, and 1845 (Wierzbicki 1839a,b, 1840a,b, 1842, 1845). His investigations were subsequently followed by those of Heuffel, whose contributions were of considerable importance to the development of botanical knowledge of the Banat region (Heuffel 1858).

During the twentieth century, research on the flora and vegetation of the Anina Mountains intensified considerably. Pall (1935a,b) and Borza (1946) made significant contributions to the knowledge of the flora of this region through floristic and phytogeographical observations. Particularly the investigations of Schrött were important, who conducted detailed studies of the flora and vegetation of the Cheile Nerei-Beușnița area. In 1972, he completed an unpublished doctoral dissertation devoted to the flora and vegetation of the region. This work was preceded by several scientific communications and studies (Schrött 1968, 1969, Schrött & Faur 1969, 1971) and was subsequently followed by numerous contributions published either independently or in collaboration with other researchers (Schrött & Oprea 1972, Schrött 1973, 1978, 1979, Schrött & Purdela 1984, 1993, 1997).

Interest in the floristic diversity and conservation significance of the Anina Mountains continued during the final decades of the twentieth century. In 1993, the University of Bucharest prepared a scientific substantiation study for the proposed Anina

Mountains National Park, with the aim of establishing the Anina Mountains Biosphere Reserve (Studiu de fundamentare pentru Parcul Național Munții Aninei, 1993. Universitatea din București). The documentation included information on the flora and vegetation of the area and emphasized the outstanding importance of the region for biodiversity conservation.

Overall, nearly two centuries of botanical research have contributed to an increasingly comprehensive understanding of the floristic diversity of the Semenic and Anina Mountains. Nevertheless, the distinctive geomorphological, climatic, and ecological characteristics of these mountain massifs, together with the presence of habitats of high conservation value, warrant continued floristic investigation and periodic reassessment of the distribution of rare and poorly documented species. The observations presented in the present study contribute to this ongoing body of research by providing new data on the occurrence of rare taxa in the Semenic and Anina Mountains.

Material and methods

Study area and field surveys. Field surveys were conducted in the Semenic and Anina Mountains (Fig. 1), within the area of the Semenic – Cheile Carașului National Park (ROSCI0226 Semenic – Cheile Carașului) and in beech forests southeast of Steierdorf, within the Cheile Nerei – Beușnița National Park (ROSCI 0031 Cheile Nerei – Beușnița).

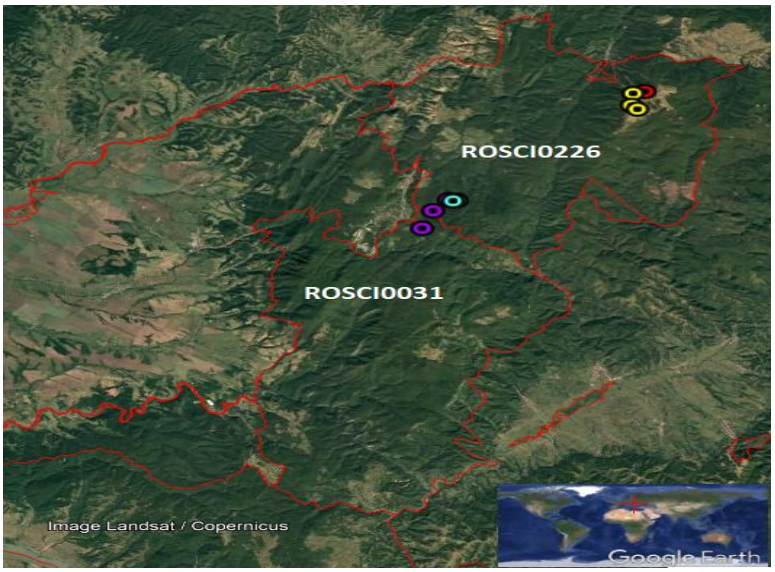


Fig. 1. Distribution of species in the study area: ● – *Gymnadenia frivaldii*, *Drosera rotundifolia*; ● – *Juncus squarrosus* (Semenic Plateau); ● – *Plantago gentianoides*, *Sisyrinchium montanum*, *Taraxacum erythrospermum*; ● – *Pulmonaria rubra* f. *albocorollata*

The investigated sites were selected to include a variety of habitats, particularly wetlands, springs, mountain grasslands and forest ecosystems.

In the Semenic Mountains, field investigations were carried out at the following locations:

1. the peat bog known as Tinovul de sub Gozna, fed by the upper reaches of the Gozna stream (Izvoarele Goznuței);
2. the headwaters of the Crivaia stream, a tributary of the Bârzava River;
3. the area surrounding Lake Baia Vulturilor, including the springs and small watercourses that converge to form the Vulturilor Spring, which subsequently receives the waters of the Băile Mari Spring and continues downstream, at the forest level, as the Băile Mari stream before flowing into the Bârzava River;
4. the headwaters of the Nera River.

In the Anina Mountains, the investigated sites included:

1. the area surrounding Lake Buhui, within the Buhui-Mărghitaș Nature Reserve;
2. forest habitats in the Steierdorf – Anina area.

Field work has been conducted on 19 April 2019, 15 - 16 June 2024, 21 April 2026, 5 June 2026.

Taxonomic identification and nomenclature. Taxa were identified to species level, but also at the infraspecific level, using the relevant Romanian and European floristic literature, including *Flora României* (Săvulescu 1952–1976, Gușuleac 1960, Paucă & Ștefureac 1972), *Flora Europaea* (Tutin et al. 1964–1980, Webb 1964, Richards & Sell 1976, Chater & Cartier 1976, Moore 1980, Snogerup 1980), and the floristic treatments of Ciocârlan (2000, 2009) and Sârbu et al. (2013).

The nomenclature of vascular plants follows the Euro+Med PlantBase.

GPS coordinates in DMS format were recorded for each species.

For the species included in the Red List of Higher Plants of Romania, the sozological category is indicated based on the relevant scientific literature (Oltean et al. 1994, Dihoru & Negrean 2009).

The voucher specimens of *Juncus squarrosus* and *Gymnadenia frivaldii*, collected during field surveys, are deposited in the Herbarium of the University of Craiova (CRAI), as follows: *Juncus squarrosus*, under accession numbers 3721–3723, collectors: Ioana Simion and Violeta Boruz; *Gymnadenia frivaldii*, under accession number 3645, collectors: Violeta Boruz and Ioana Simion. The herbarium acronym follows Thiers (2016).

For some taxa, the Natura 2000 habitat type(s) and the phytocoenoses in which they were identified were also specified, according to Gafta & Mountford (coord.) (2008).

Results and discussion

***Juncus squarrosus* L. -** this species was not reported from Romania in *Flora Europaea*. Its presence in Romania was documented by Pál et al. (2017), who reported the species from several localities in the Apuseni Mountains, namely Molhașul de la Rîșca (Molhașul de la Dealul Negru), Dîmbul Negru – La Pod, and Dîmbul Negru. At the time of publication, the latter locality was considered the southeastern limit of the species European distribution (Pál et al. 2017).

During field surveys conducted on 15–16 June 2024, the authors identified the species *J. squarrosus* in several areas of the Semenic Plateau.

One of the populations was recorded on 15 June 2024 at the headwaters of the Crivaia stream (45°10′54.29″ N, 22°02′54.22″ E), along the margin of a small stream (Figs 2, 3, 4), in a wet habitat together with: *Cardamine amara* subsp. *amara*, *Chaerophyllum aureum*, *Caltha palustris*, *Carex canescens*, *C. echinata*, *C. nigra*, *C. rostrata*, *Epilobium palustre*, *Galium palustre* subsp. *palustre*, *Juncus compressus*, *Myosotis scorpioides* subsp. *scorpioides*, *Polytrichum commune*, *Ranunculus repens*, and *Sphagnum* sp.



Fig. 2. The headwaters of the Crivaia stream, in a wet habitat



Fig. 3. Juncus squarrosus – habitus, along the margin of a small stream



Fig. 4. Juncus squarrosus – inflorescence detail

In the surrounding vegetation, at a greater distance from the stream, the following taxa were also recorded: *Anthoxanthum odoratum*, *Athyrium filix-femina*, *Avenella flexuosa*, *Bistorta officinalis*, *Carex brizoides*, *C. pallescens*, *Eriophorum vaginatum*, *Festuca rubra* subsp. *rubra*, *Luzula luzuloides* subsp. *rubella*, *Gentiana acaulis*, *Gymnadenia conopsea*, *Nardus stricta*, *Pseudorchis albida*, *Vaccinium myrtillus*, and *Veratrum album*.

The record from the Semenic Plateau extends the known distribution of *J. squarrosus* in Romania and represents an important addition to the floristic knowledge of the Semenic Mountains. Its occurrence in a wet, stream-margin habitat, together with several hygrophilous and acidophilous taxa, is consistent with the ecological requirements of the species.

A second population was recorded in the area of Lake Baia Vulturilor (45°10′11.3″ N, 22°02′46.6″ E) on 16 June 2024 and revisited on 5 June 2026 (Figs 5, 6). The vegetation in this area includes habitats corresponding to Natura 2000 habitat type 7110* – Active raised bogs, represented by the *Eriophoro vaginati – Sphagnetum recurvi* Hueck 1925 association (syn. *Eriophoro – Sphagnetum* auct. rom.), as well as habitat type 7120 – Degraded raised bogs still capable of natural regeneration.

Outside the peatland habitats, the surrounding vegetation is represented mainly by *Nardo – Festucetum rubrae fallax* Pușcaru et al. 1959.

J. squarrosus was found around the springs and along the margins of all the small watercourses that converge to form the Vulturilor Spring. It was identified alongside the following cohabiting species: *Avenella flexuosa*, *Carex echinata*, *Eriophorum vaginatum*, *Festuca rubra*, *Homogyne alpina*, *Nardus stricta*, *Polytrichum juniperinum*, *Sphagnum* sp., *Vaccinium myrtillus*, *V. vitis-idaea*, and *Veratrum album*.



Fig. 5. The area of Lake Baia Vulturilor



Fig. 6. Juncus squarrosus – inflorescence detail

A third population was identified at the Nera headwaters (45°09′54.69″ N, 22°03′00.57″ E). The species *J. squarrosus* was recorded on 16 June 2024 in habitat type 7140 – Transition mires and quaking bogs (Figs 7, 8). This habitat has previously been reported from the Semenic Plateau, including the headwaters of the Nergăniţa River, where it is represented by phytocoenoses of the *Sphagno–Caricetum rostratae* Steffen 1931 association (Sanda & Popescu 1988).



Fig. 7. Juncus squarrosus – at the Nera headwaters, in habitat 7140 – Transition mires and quaking bogs



Fig. 8. Juncus squarrosus – inflorescence detail

The occurrence of *J. squarrosus* in these three localities demonstrates that the species is associated with a range of wetland habitats on the Semenic Plateau, including active and degraded peatlands, transition mires, and wet areas along springs and small mountain streams. The repeated observation of the species at Lake Baia Vulturilor in 2024 and 2026 also confirms its persistence at this area.

***Gymnadenia frivaldii* Hampe ex Griseb.** is a rare orchid species (Oltean et al. 1994) with a scattered distribution in the South-Eastern Carpathians. Dihoru & Negrean (2009) assign this taxon to the Critically Endangered (CR) sozological category. In Romania, the species has been reported from the Retezat Mountains, Țarcu Mountains - its presence in the Țarcu Mountains was confirmed by Milanovici (2016) on Muntele Mic, and Harghita Mountains (Mădăraș). Its occurrence in the Semenic Mountains was mentioned by Soó (1958) and subsequently cited by Dihoru & Negrean (2009). However, no herbarium specimen was available to substantiate the record, and its presence in the Semenic Mountains was therefore considered uncertain by Bartók et al. (2016).

According to Dihoru & Negrean (2009), Soó had examined a specimen of *G. frivaldii* belonging to the collection of Gábor Szabó, a photographer and amateur botanist from Făgăraș, which had reportedly been collected in the Semenic Mountains. Although this specimen provided historical evidence for the species in the area, the absence of a documented herbarium voucher prevented the locality from being regarded as confirmed.

Bartók et al. (2016) considered only a limited number of populations of *G. frivaldii* in the South-Eastern Carpathians to be confirmed, particularly those from the Țarcu Mountains (Groapa Bistrei), Retezat Mountains (Peleaga Mountain, Judele Valley, Bucura Valley, Zănoaga Lake and Zănoguța Lake), and Harghita Mountains (Szökő-láp). The authors also noted that the populations were only partly included within the Romanian protected-area network.

During our field surveys, *G. frivaldii* (Figs 9, 10) was recorded on 16 June 2024 in the peat bog known as Tinovul de sub Gozna, fed by the upper reaches of the Gozna stream (Izvoarele Goznuței). This area provides recent field evidence confirming the occurrence of the species in the Semenic Mountains.



Fig. 9. Gymnadenia frivaldii – habitus, in the peat bog of Tinovul de sub Gozna



Fig. 10. Gymnadenia frivaldii – inflorescence detail

Tinovul de sub Gozna was described by Pop (1960) as an important peatland, covering approximately 4 ha at an altitude of about 1382 m. The peat layer reaches approximately 2.40 m in thickness in some places. According to Pop (1960), the peat deposit consists predominantly of *Cyperaceae* remains, with traces of ferns and

Sphagnum spp., whereas the uppermost metre is composed almost exclusively of *Sphagnum*. Based on pollen analyses, Ciobanu (1948) considered that peat accumulation in these wetlands began during the postglacial warm period.

The population of *G. frivaldii* was recorded within Natura 2000 habitat type 7110* – Active raised bogs, represented by the *Eriophoro vaginati–Sphagnetum recurvi* Hueck 1925 association (syn. *Eriophoro–Sphagnetum* auct. rom.), at the following coordinates: 45°11′01.58″ N, 22°03′31.32″ E.

The following taxa were recorded in the vegetation surrounding the *G. frivaldii* population: *Anthoxanthum odoratum*, *Athyrium filix-femina*, *Avenella flexuosa*, *Caltha palustris*, *Carex echinata*, *C. flava*, *C. limosa*, *C. nigra*, *C. pauciflora*, *C. rostrata*, *Chaerophyllum aureum*, *Cirsium palustre*, *Crepis paludosa*, *Dactylorhiza maculata* subsp. *elodes*, *Deschampsia cespitosa*, *Doronicum austriacum*, *Drosera rotundifolia*, *Eriophorum vaginatum*, *Homogyne alpina*, *Luzula luzuloides* subsp. *rubella*, *Lychnis flos-cuculi*, *Molinia caerulea*, *Myosotis sylvatica*, *Nardus stricta*, *Polygala vulgaris*, *Bistorta officinalis*, *Polytrichum juniperinum*, *Potentilla erecta*, *Pseudorchis albida*, *Sphagnum magellanicum*, *S. recurvum*, *Vaccinium myrtillus*, *V. vitis-idaea*, and *Veratrum album*.

The discovery of the species *G. frivaldii* in Tinovul de sub Gozna provides recent field evidence for the species in the Semenic Mountains, supporting the historical indication reported by Soó (1958) and cited by subsequent authors. The record is particularly relevant in view of the species rarity and its close association with peatland habitats. The occurrence of *G. frivaldii* together with other characteristic peatland taxa, including *Carex pauciflora*, *C. limosa*, *Drosera rotundifolia*, *Eriophorum vaginatum*, and several *Sphagnum* species, further emphasizes the floristic importance of Tinovul de sub Gozna.

***Drosera rotundifolia* L.** is a rare species (Oltean et al. 1994) and characteristic of peat bog habitats, wich is not reported in the Semenic Mountains in the classical Romanian floristic literature. In particular, Pop (1960) did not mention the species from the peat bogs of the Semenic Plateau.

During our field survey on 16 June 2024, *D. rotundifolia* was recorded in Tinovul de sub Gozna, in the same peatland habitat where *Gymnadenia frivaldii* was identified. Although the species was not included in the earlier floristic inventory of this area, subsequent field observations have documented its presence in the region.

In 2019, *D. rotundifolia* was recorded by biologist Irenca Vasiluț at the following coordinates: 45°11′14.96″ N, 22°04′00.71″ E; 45°11′00.13″ N, 22°03′34.47″ E; 45°11′00.22″ N, 22°03′34.42″ E; and 45°11′00.22″ N, 22°03′34.43″ E. In 2021, the species was subsequently recorded by biologist Irinel Bucur at 45°10′59.58″ N, 22°03′33.05″ E and 45°10′40.71″ N, 22°03′23.19″ E. Further observations were made in 2023 by Liviu Drăghici, a biology student and volunteer, at 45°11′00.21″ N, 22°03′37.97″ E; 45°10′59″ N, 22°03′38″ E; and 45°10′59.20″ N, 22°03′38.77″ E (comm. pers. Ifca Nicolae, director of the Semenic – Cheile Carașului National Park).

Our observations in 2024 and 2026 confirm the continued presence of *D. rotundifolia* in Tinovul de sub Gozna (Figs 11, 12), at the following coordinates: 45°11′00.93″ N, 22°03′29.83″ E; 45°11′01.70″ N, 22°03′34.39″ E; 45°11′00.33″ N, 22°03′33.72″ E, and provides additional evidence for its distribution within the Semenic

Mountains. The repeated records between 2019 and 2026 indicate that the species is established in this peatland complex rather than representing an isolated or accidental occurrence.



Fig. 11. Drosera rotundifolia – habitus, in the peat bog of Tinovul de sub Gozna, in habitat 7110* – Active raised bogs, with as. *Eriophoro vaginati–Sphagnetum recurvi* Hueck 1925



Fig. 12. Drosera rotundifolia - detail

The floristic context of the population is the same as that described for *Gymnadenia frivaldii*, as both species were recorded within the same peatland complex. The population occurs in Natura 2000 habitat type 7110* – Active raised bogs, represented by the *Eriophoro vaginati–Sphagnetum recurvi* Hueck 1925 association (syn. *Eriophoro – Sphagnetum* auct. rom.).

The occurrence of *D. rotundifolia* in Tinovul de sub Gozna is consistent with the ecological requirements of the species and further highlights the floristic and conservation value of the peatland habitats of the Semenic Plateau. Together with other peatland specialists recorded at the site, its presence supports the importance of maintaining the hydrological and ecological conditions necessary for the persistence of these habitats.

Taraxacum erythrospermum **Besser** is a taxon sporadically distributed in Romania from the steppe zone up to the beech forest belt, occurring in meadows, pastures, forest openings, shrublands, grassy rocky areas, and ruderal sites (Sârbu et al. 2013). It is not included in the Red List of Higher Plants in Romania (Oltean et al. 1994) nor in the Red Book of Vascular Plants in Romania (Dihoru & Negrean 2009).

The species was recorded on 19 April 2019 in the Buhui–Mărghitaș Nature Reserve, within the Semenic-Cheile Carașului National Park, at 45°04′32.27″ N, 21°53′30.26″ E (Figs 13, 14).

For the Anina Mountains this is the first report of the species.



Fig. 13. Taraxacum erythrospermum – habitus, in the Buhui–Mărghitaș Nature Reserve, within the Semenic-Cheile Carașului National Park



Fig. 14. Taraxacum erythrospermum - inflorescence detail

***Plantago gentianoides* Sibth. & Sm.** is a rare species in the Romanian flora (Oltean et al. 1994), with a predominantly subalpine - alpine distribution. According to Sârbu et al. (2013), the species has been reported from the Rodna, Călimani, Bucegi, Iezer-Păpușa, Făgăraș, Sibiului, Parâng, Țarcu – Petreanu and Godeanu Mountains, as well as from the counties of Gorj, Argeș and Suceava.

During field investigations carried out on 19 April 2019, *P. gentianoides* was identified in the Buhui – Mărghitaș Nature Reserve, within the Semenic – Cheile Carașului National Park, at 45°04′33.31″ N, 21°53′28.90″ E (Fig. 15).



Fig. 15. Plantago gentianoides – habitus, in the Buhui–Mărghitaș Nature Reserve, within the Semenic-Cheile Carașului National Park

The record from the Buhui–Mărghitaș Reserve adds the Anina Mountains to the known distribution of *P. gentianoides* and contributes to a more complete understanding of the species distribution in Romania. Given its rarity and predominantly montane distribution, the occurrence of *P. gentianoides* in the Semenic-Cheile Carașului protected area further emphasizes the floristic importance of the Anina Mountains.

***Pulmonaria rubra* Schott f. *albocorollata* (Dostál) Soó** has previously been reported from the Anina area, historically referred to as the Oravița region, by Gușuleac (1960). The taxon was recorded during our field investigations on 19 April 2019 in the Buhui – Mărghitaș Nature Reserve, within the Semenic-Cheile Carașului National Park, at 45°04′33.31″ N, 21°53′28.90″ E (Fig. 16).

The taxon was also observed on 21 April 2026 in beech forests southeast of Steierdorf, within the Cheile Nerei-Beușnița National Park, in Natura 2000 habitat type 91V0 Dacian Beech forests (*Symphyto-Fagion*) (according to Management Plan of the Nera Gorges – Beușnița National Park and of the Natura 2000 sites ROSCI0031 Nera Gorges - Beușnița and ROSPA0020 Nera Gorges - Beușnița).



Fig. 16. Pulmonaria rubra f. *albocorollata* – habitus, in the Buhui–Mărghitaș Nature Reserve, within the Semenic-Cheile Carașului National Park

The recent observation confirms the continued occurrence of this taxon in the Anina Mountains and complements the historical record reported by Gușuleac (1960).

The presence of *P. rubra* f. *albocorollata* in both localities, associated with beech forest habitats, highlights the floristic continuity between the Buhui – Mărghitaș area and

the surrounding forests of the Anina Mountains. These records also contribute to the current documentation of the distribution of this rarely reported form in south-western Romania.

***Sisyrinchium montanum* Greene** is a non-native species with a predominantly northern and central distribution in Romania. According to the available floristic literature, the species has been reported from the counties of Maramureș, Satu Mare, Cluj, Mureș, Bistrița-Năsăud, Brașov, Prahova, Vrancea, Bacău, Neamț, Iași, Suceava, and Hunedoara (Popescu & Boruz 2008). Some authors consider this species to be rare in the Romanian flora (Ciocârlan 2009).

During field investigations carried out on 19 April 2019, *S. montanum* was identified in the Buhui – Mărghitaș Nature Reserve, within the Semenic – Cheile Carașului National Park, at 45°04′30.94″ N, 21°53′39.21″ E (Figs 17, 18).

The species was recorded in Natura 2000 habitat type 9150 – Medio-European limestone beech forests of the *Cephalanthero-Fagion*.

The record from the Buhui – Mărghitaș Nature Reserve adds a new locality in south-western Romania to the known distribution of *S. montanum*. Its occurrence in the Anina Mountains extends the documented distribution of the species towards the south-western part of the country and contributes to a more complete picture of its distribution in Romania.



Fig. 17. Sisyrinchium montanum, in the Buhui – Mărghitaș Nature Reserve, within the Semenic – Cheile Carașului National Park



Fig. 18. Sisyrinchium montanum – inflorescence detail

According to the Global Register of Introduced and Invasive Species (GBIF 2026), *Sisyrinchium montanum* is recorded as an introduced species in 22 countries. In Romania, it is classified as an introduced and invasive species.

The presence of the species should continue to be monitored in order to assess its degree of invasiveness.

We believe that reporting this species in the study area contributes to a better understanding of its regional distribution.

Conclusions

The present study contributes new data to the knowledge of the vascular flora of the Semenic and Anina Mountains and highlights the importance of these mountain areas for the conservation of rare and locally distributed plant taxa.

Field investigations conducted between 2019 and 2026 documented the presence of seven taxa, some of which are listed as Rare species (*Drosera rotundifolia* and *Plantago gentianoides*) and Critically Endangered (*Gymnadenia frivaldii*).

Several of these records provide important additions to the currently available distribution data for south-western Romania. Moreover, the record of *Gymnadenia frivaldii* provides recent field evidence supporting the historical reports of this species from the Semenic Mountains. The occurrence of *Gymnadenia frivaldii* at Tinovul de sub Gozna is particularly significant in the context of the previously uncertain status of the species in the Semenic Mountains.

The records of *Juncus squarrosus* from several localities on the Semenic Plateau provide new information on the distribution and habitat preferences of this species in Romania.

Repeated observations of *Drosera rotundifolia* between 2019 and 2026 further confirm its presence and persistence within the peatland complex of the Semenic Plateau.

The records from the Buhui – Mărghitaș area and the forests surrounding Steierdorf contribute to the floristic knowledge of the Anina Mountains and complement historical data from the region.

The recorded taxa are mainly associated with peatland, wetland, and calcareous beech-forest habitats, emphasizing the floristic and conservation importance of these ecosystems.

Overall, the results demonstrate that continued floristic investigations in the Semenic and Anina Mountains remain essential for documenting plant distribution, reassessing historical records, clarifying the status of poorly documented taxa, and identifying populations of conservation interest. Regular monitoring of peatland habitats and calcareous beech forests is recommended to assess the long-term persistence of the recorded taxa and the ecological conditions of their habitats.

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