

ASTRAGALUS DEPRESSUS L. IN ROMANIA. CHOROLOGY WITH NEW LOCALITIES

Attila BARTÓK^{1*}, Gabriel LAZĂR², Victor Adrian INDREICA³

Abstract: The paper points one new locality in Transylvania (Romania) of *Astragalus depressus* L. and one new locality in Oltenia, tracking at the same time the species distribution in Romania, using herbarium materials and existing bibliographic sources.

Keywords: *Astragalus depressus* L., threatened species, Red Book, chorology, Carpathians, Romania.

Introduction

Astragalus depressus L. (*Cent. Pl.* 2: 39. 1756).

Species is perennial, caespitose, acaulescent to shortly caulescent with branched stock, or stems up to 10 cm, procumbent; hairs medifixed with one arm very short or almost simple. Leaves 3–22 cm long; leaflets in 5–15 pairs, 3–10 × 2–6 mm, triangular-obovate, rounded to emarginate at the wide tip; petiole shorter or nearly as long as the blade, stipules 3–10 mm, not connate. Peduncles 0,3–8 cm long, never exceeding leaves; racemes oblong with 6–14 flowers. Calyx tubular-campanulate, 4–7.5 mm long, whitish, loosely covered with ascending white and black, but mostly with predominantly black hairs. Petals whitish, at the tip often bluish suffused, keel mostly bluish. Standard (7–)10–12 mm long; blade elliptic to obovate. Wings (6–)7.5–10 mm; keel (5–)7–9 mm long. Legumes sessile, mostly nodding, linear, slightly curved or straight, acuminate at both ends, 6–18 mm long, 2.5–3 mm high and wide; valves covered with short, often curved, appressed or rarely nearly spreading hairs, often glabrescent with age. Flowering time: April–July. (Podlech, 2008; Chater, 1968).

It is a heliophytic species growing in mountain area on all kind of soils, but mainly on limestone (Podlech, 2008). *Astragalus depressus* L. is a mediterranean orophyte, the geographical distribution of this species includes the next countries: Albania, Algeria, Bulgaria, Former Yugoslavia, France, Greece, Morocco, Switzerland, Spain, Italy, Romania, Turkey (Podlech, 2008).

In Romanian flora, *Astragalus depressus* is a rare species (Oprea, 2005; Ciocârlan, 2009; Sârbu et al., 2013), found in the Red list of vascular plants of Romania as rare (R) (Oltean et al., 1994), placed in the rare zoological category (R) (Boșcaiu et al., 1994; Dihoru and Dihoru, 1994; Negrean, 2001). Species was also included in the Red book of vascular plants of Romania (Dihoru and Negrean, 2009), in the Critically endangered category (CR).

On the territory of Romania, *Astragalus depressus* L. has been signaled only in Southern Carpathians in Cernei, Bucegi and Mehedinți Mountains, in Banat, Muntenia and

¹ Actavis, 11 Ion Mihalache Blvd., 011171, București, Romania; bartok.attila@gmail.com (corresponding author*)

² ICAS Brașov, 13 Cloșca Str., 500040, Brașov, Romania

³ Transilvania University of Brașov, 1 Șirul Beethoven Str., 500123, Brașov, Romania

Oltenia, in Caraș-Severin, Dâmbovița and Gorj counties (Oprea, 2005; Ciocârlan, 2009; Dihoru and Negrean, 2009; Sârbu et al., 2013).

From the phytocoenological point of view, it is a mountain species, included in *Thymo jankae* – *Festucetum dalmaticae* Boșcaiu 1970 vegetal association (Boșcaiu, 1971).

Materials and methods

The identification of the taxa has been done using the following "floras" and papers: *Romanian Flora*, vol. V; *Flora Europaea*, vol. 2; *Flora ilustrată a României–Pteridophyta et Spermatophyta* (Ciocârlan, 2009); *Plante vasculare din România: determinant ilustrat de teren* (Sârbu et al., 2013).

The distribution of *A. depressus* species in Romania, has been made based on data from the herbarium collections (BP, CL, BVS, SIB) and also different bibliographical sources. Herbarium abbreviation follow Index Herbariorum (<http://sweetgum.nybg.org/ih/>).

The collected material was registered and stored in Transilvania University of Brașov - Faculty of Silviculture Herbarium [BVS], from Brașov and in Personal Herbarium „A. Bartók” [HAB].

Results and discussions

L. Thaisz was the first botanist who discovered *Astragalus depressus* L. and published for the first time in Carpathian Flora (in Banat, Caraș-Severin county, Mehedinți Mountains, Șușcu Peak) on 14 June 1901 (Thaisz, 1902) (Fig. 2).

E.I. Nyárády identified *Astragalus depressus* L. in a second locality of Southern Carpathians (Cernei Mountains, Arjana Peak) on 23 June 1930.

The currently known localities of the species are summarized by Dihoru and Negrean (Dihoru and Negrean, 2009). In current paper two new locations are being added to the formerly known ones (Țarcu and Vâlcan Mountains).

The species was identified for the first time in Transylvania, in the „Calcarele de la Fața Fetii” Natural Reserve (Râu de Mori locality, Hunedoara county, Țarcu Mountains), in the vicinity of the Fața Fetii Peak (1,630 m altitude), on the E-SE slope, the population spreading on a small area (2 points). The species was first noticed in 18 June 2006 (G. Lazăr) (Fig. 1) and then reconfirmed in 10 June 2013 (A. Bartók). The area was previously studied, from floristically point of view (Boșcaiu, 1971), but *A. depressus* was not recorded.

The „Calcarele de la Fața Fetii” Natural Reserve was declared a Site of Community Importance in Natura 2000 Network (**ROSCI0217**). The rocks of this limestone mountain harbor many interesting vegetal species (e.g. *Lilium jankae* A. Kern., *Hepatica transilvanica* Fuss, *Centaurea phrygia* L. subsp. *ratezatensis* (Prodan) Dostal, *Hepatica* × *media* Simonk.), the area having a high conservation value.

The second new locality where the species was found (A. Indreica, G. Lazăr, B. Candrea – 9 July 2010) is in Oltenia (near Transylvania) in the „Defileul Jiului” National Park (Bumbești-Jiu locality, Gorj county, Vâlcan Mountains) on the Cuptorului Ridge (between valleys Dumitra and Cerbănașul Mic) (Fig. 3). The population is spreading on a small area, on limestone, at 1,010-1,050 m altitude, on rocky, steep slopes with southern aspect. Herbaceous vegetation is dominated in patches by *Sesleria rigida* – *Festuca rupicola* or by *Sedum hispanicum* – *Teucrium montanum*; companions of these taxa are

Seseli rigidum, *Jovibarba heuffelii*, *Asplenium trichomanes*, *A. ruta-muraria*, *Ranunculus oreophilus*, *Seseli libanotis*, *Ceterach officinarum*, *Stachys recta*, *Cardaminopsis arenosa*, *Saxifraga marginata*, *Edraianthus graminifolius*, *Thymus comosus*, *Galium purpureum*, *Dianthus spiculifolius*, *Euphorbia cyparissias*, *Ajuga genevensis*, *Acinos alpinus*, *Erysimum diffusum*. Admixed or bordering are shrubs of *Syringa vulgaris* and *Fraxinus ornus*. The area has not been previously systematically studied. The „Defileul Jiului” National Park had been declared a Site of Community Importance in Natura 2000 Network (ROSCI0063).



Figure 1. *Astragalus depressus* L. in „Calcarele de la Fața Fetei” Natural Reserve (18 June 2006), Photo G. Lazăr

We hereby list all the known specimens, including those traced by us in [BP; CL; BVS; SIB; BUCF], arranged in the chronological order of gathering. It is worth mentioning that no voucher specimen was found in [I; BUAG; CRA].

- 1901 [BP; CL]: *Thaisz*, Șușcu Peak, Mehedinți Mts.
- 1905 [BP]: *Mágócsy-Dietz & Lengyel*, Șușcu Peak, Mehedinți Mts.
- 1905 [BP]: *Wagner*, Șușcu Peak, Mehedinți Mts.
- 1905 [BP]: *Filarszky & Kümmerle*, Șușcu Peak, Mehedinți Mts.
- 1930 [CL; SIB]: *Nyárády*, Arjana Peak, Cernei Mts.
- ? [BUCF]: *Beldie*, Zănoaga Peak, Bucegi Mts.
- 1983 [HGN]: *Negrean*, Piatra Cloșanilor Peak, Mehedinți Mts.
- 1984 [HGN]: *Negrean*, Arjana Peak, Cernei Mts.
- 2006 [BVS]: *Lazăr*, Fața Fetei Peak, Țarcu Mts.

2010 [BVS]: *Indreica, Lazăr & Candrea-Bogza*, Cuptorului Ridge, Vâlcan Mts.

2013 [HAB]: *Bartók*, Fața Fetii Peak, Țarcu Mts.



Figure 2. Original herbarium sheet by L. Thaisz with first collection of *Astragalus depressus* L. from Mehedinți Mountains (Șușcu Peak), [CL 15594].

The species distribution in Romania is shown in Table 1. The chorological map of *A. depressus* in Romania is shown in Figure 4.

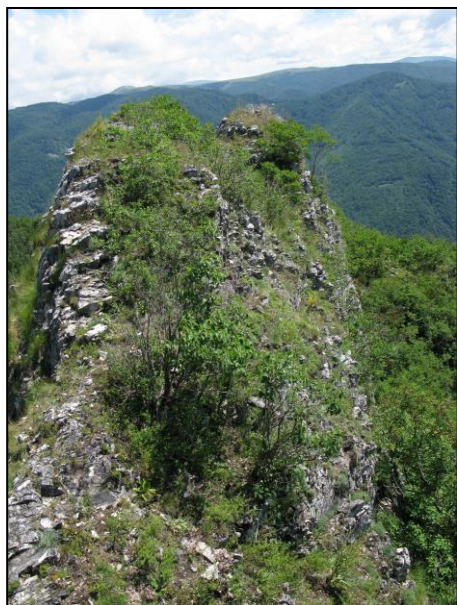


Figure 3. Habitat of *Astragalus depressus* L. in Vâlcan Mts., Defileul Jiului National Park (9 July 2010), Photo A. Indreica

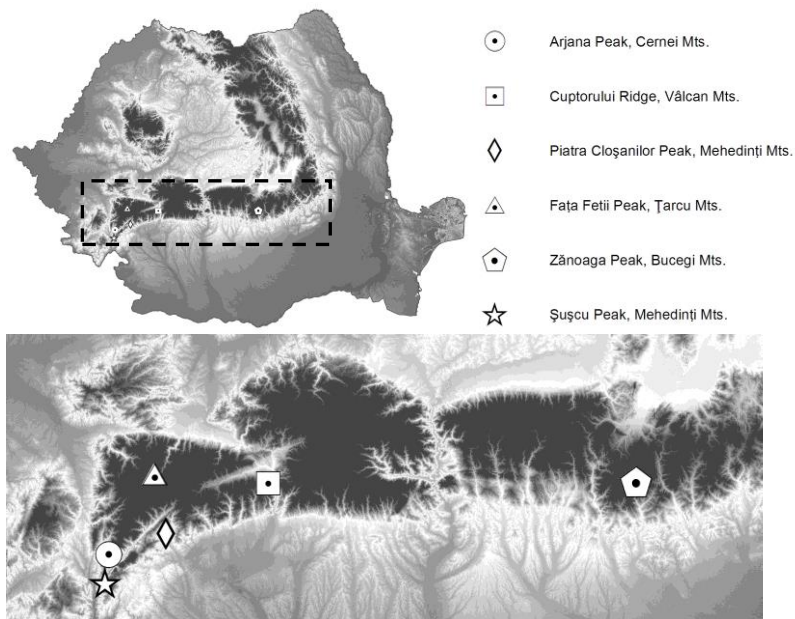


Figure 4. The chorological map of *Astragalus depressus* L. in Romania

Table 1. Distribution of *Astragalus depressus* L. in Romania

Geographical region	County	Locality	Date	Collected by	Source
Banat	Caraş-Severin	„In cacumine montis Suskuluj, ad Thermas Herculis.”	14 June 1901	L. Thaisz	[BP 101042] [CL 155594]
Banat	Caraş-Severin	„In apice montis V. Suskului, prope Herkulesfürdő.”	22 May 1905	S. Mágócsy-Dietz and G. Lengyel	[BP 575615]
Banat	Caraş-Severin	„Herkulesfürdő, Suskului, Domogledhegy.”	25 June 1905	N. Filarszky and J.B. Kümmerle	[BP 101041]
Banat	Caraş-Severin	„Prope Herkulesfürdő, V. Suskuluj teteje.”	June 1905	J. Wagner	[BP 696227]
Banat	Caraş-Severin	Munții Mehedinți, Poiana Domogled spre Vârful Șerban, Poiana Șușcu.	-	-	(Bujorean and Popescu, 1966)
Banat	Caraş-Severin	„In rupibus montis Arjana supra pagum Globureu. Alt. cca. 1300-1500 m. Solo calc.”	23 June 1930	E. I. Nyárády	[CL 134412] [CL 447978] [CL 447979] [SIB 136317]
Banat	Caraş-Severin	Munții Cernei, FQ1:101, 116.	-	-	(Boșcaiu, 1971)
Banat	Caraş-Severin	„Muntele Arjana, ad cacumine, in herbosis, alt. cca. 1465 m.”	28 July 1984	G. Negrean	[Gavril Negrean personal herbarium]
Muntenia	Dâmbovița	„Munții Bucegi, Zănoaga, 1480 m.”	?	A. Beldie	[BUCF ?] (Dihoru and Negrean, 2009)
Muntenia	Dâmbovița	Muntelui Zănoaga, 1480 m.	-	-	(Beldie, 1952)
Muntenia	Dâmbovița	Munții Bucegi Rezervația Zănoaga.	-	-	(Beldie, 1956)
Muntenia	Dâmbovița	Brânele de sub pereții de sud ai Muntelui Zănoaga, la 1480 m altitudine pe calcare jurasice.	-	-	(Beldie, 1967)
Oltenia	Gorj	„Muntele Pietra Cloșanilor, ad cacumine, in herbosis, alt. cca. 1393 m.”	30 May 1983	G. Negrean	[Gavril Negrean personal herbarium]

Oltenia	Gorj	„Defileul Jiului, pe Culmea Cuptorului (între văile Dumitra și Cerbanașul Mic), pe stâncării calcaroase.”	9 July 2010	A. Indreica, G. Lazăr and S. B. Candrea-Bogza	[BVS 064668]
Transylvania	Hunedoara	„Muntele Țarcu în locul numit Calcarele de la Fața Fetei.”	18 June 2006	G. Lazăr	[BVS 064326]
Transylvania	Hunedoara	„In declivibus petrosis montis Fața Fetei, supra Gura Apei in Montibus Țarcu. Solo calcareo.”	10 June 2013	A. Bartók	[HAB]

Conclusions

This is the first record of *Astragalus depressus* in Transylvania (Romania), in „Calcarele de la Fața Fetei” Natural Reserve. Also, the authors of this papers have discovered the species in a second locality in Oltenia (Defileul Jiului National Park, Vâlcan Mountains, Cuptorului Ridge).

In the two newly discovered localities, the species is very rare but is not threatened due to very difficult access in the above-mentioned places.

Acknowledgements

We wish to thank to Dr. Gavril Negrean, Dr. Mihai Pușcaș (curator of CL Herbarium) and Dr. Ghizela Vonica (curator of SIB Herbarium).

REFERENCES

- Beldie, A., 1952. O insulă de vegetație termofilă în Bucegi. Comunic. Acad. Române. **2**, 9-10: 565-574.
- Beldie, A., 1956. Rezervația naturală „Bucegi”. Ocrot. Nat. **2**: 31-63.
- Beldie, A., 1967. *Flora și vegetația Munților Bucegi*. Edit. Academiei Române, București: p.177.
- Boșcaiu, N., 1971. *Flora și vegetația Munților Țarcu, Godeanu și Cernei*. Edit. Academiei R.S. Române. București: p. 112.
- Boșcaiu, N., Coldea, G., Horeanu C., 1994. Lista Roșie a plantelor vasculare dispărute, periclitare, vulnerabile și rare din flora României. Ocrot. Nat. **38**, 1: 45-56.
- Chater, A.O., 1968. *Astragalus* L., in: Tutin, T.G. (Ed.). *Flora Europaea*, **2**. Cambridge University Press: 108-124.
- Ciocârlan, V., 2009. *Flora ilustrată a României. Pteridophyta et Spermatophyta*. Edit. Ceres, București.
- Dihoru G., Dihoru A., 1994. Plante rare, periclitare și endemice în Flora României - Lista roșie. *Acta Bot. Horti Bucurest. 1993-1994*: 173-197.
- Dihoru, G., Negrean, G., 2009. *Cartea roșie a plantelor vasculare din România*. Edit. Acad. Rom., București: p. 83.
- Gușuleac M., 1957. *Astragalus* L., in: Săvulescu, T. (Ed.). *Flora R.P.R.*, **V**. Edit. Acad. R.P.R., București: 261-262.
- Negrean, G., 2001. Lista roșie a plantelor din România existente în pajiști (inclusiv endemite și subendemite), in: Coldea, G., Negrean, G., Sârbu, I., Sârbu, A. 2001. *Ghid pentru identificarea și inventarierea pajiștilor seminaturale din România*. Edit. Alo, București: 30-58.

- Oltean, M., Negrean, G., Popescu, A., Roman, N., Dihoru, G., Sanda, V., Mihăilescu, S., 1994. *Lista roșie a plantelor superioare din România*. In: Oltean, M. (coord.), Studii, sinteze, documentații de ecologie. **1**. Academia Română, Institutul de Biologie, București: 1-52.
- Oprea, A., 2005. *Lista critică a plantelor vasculare din România*. Edit. Univ. „Al. I. Cuza”, Iași: p. 182.
- Podlech, D., 2008. The genus *Astragalus* L. (Fabaceae) in Europe with exclusion of the former Soviet Union. *Feddes Repertorium*. **119**, 5-6: 310-387.
- Sârbu, I., Ștefan, N., Oprea, A., 2013. *Plante vasculare din România: determinant ilustrat de teren*, Edit. victorBvictor, București: p. 324.
- Thaisz L., 1902. A hazai flóránk új polgára. *Astragalus depressus* L. *Magyar Bot. Lapok* **1**, 1: 24-25.
- Thiers, B. [continuously updated]. Index Herbariorum: A global directory of public herbaria and associated staff. New York Botanical Garden's Virtual Herbarium. <http://sweetgum.nybg.org/ih/>.