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REDISCOVERY OF *CYPRIPEDIUM CALCEOLUS* L. IN THE VICINITY OF CLUJ-NAPOCA (ROMANIA) AFTER 80 YEARS

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Abstract: *Cypripedium calceolus* L. is one of the most spectacular species of orchid and one that suffered a significant decrease in Eurasia in the second half of the past century. After more than 80 years since the last record, we have found a new population of *Cypripedium calceolus* L. in the environs of Cluj-Napoca city, in Gârbăului Valley. The last record of this species, near Cluj-Napoca area, was reported from a parallel watercourse named Dumbrăvii Valley in 1934 by E. I. Nyárády. However, any attempts to localize again Nyárády's *C. calceolus* population have failed. We have identified this orchid species at two new sites that have not been mentioned before. The two different sites are at the edge of *Galio-Carpinetum* oak-hornbeam forests, *Asperulo-Fagetum* beech forests and Dacian oak-hornbeam forests from the Natura 2000 site - Făgetul Clujului-Valea Morii. The importance of this discovery stands on the rarity of this orchid that, although it is a criterion species for the declaration of Natura 2000 sites, is not listed in the Standard Form of the Făgetul Clujului-Valea Morii site. The data from this paper aim to contribute to the introduction of *Cypripedium calceolus* L. on to the list of protected species from the Natura 2000 site in order to ensure the conservation of this population in Romania.

Keywords: *Cypripedium calceolus*, lady's slipper orchid, new record, Natura 2000 site

Introduction

Cypripedium calceolus L. (synonyms: *Calceolus marianus* Rouy, *Calceolus alternifolius* St.-Lag., *Cypripedium atsmori* C. Morren, *Cypripedium boreale* Salisb, *Cypripedium cruciatum* Dulac, *Cypripedium ferrugineum* Gray, *Cypripedium microsaccos* Kraenzl; common names: Lady's slipper orchid, Sabot de Vénus, Zapatito de Dama) is one of the best known and most widely illustrated of all flowering plants. The earliest record of this impressive orchid is Conrad Gessner's fine watercolour illustration of 1541, which was sadly not published until the 18th century by Camerarius [5]. It is one of the most spectacular orchids of the Eurasian flora, and one which has suffered in recent decades a decline in the number of localities, and therefore of the distribution area.

The typical habitats of *Cypripedium calceolus* include open woodland, forest edges, grasslands, forests with oak, hornbeam, beech, spruce and pine and ravine forests, thermophilous woodland fringes, and *Picea* taiga woodland [9]. Furthermore, it grows in narrow-leaved dry grassland or broad-leaved dry grassland. It is found in fens, including eutrophic tall-herb fens and calcareous flushes and swales, as well as broad-leaved swamp woodland not on acid peat. The seeds can be transported by wind over several hundred kilometres [16]. *Cypripedium*

calceolus prefers partial shade on lime-rich soils over limestone and in rocky places. This orchid species flowers from April to August [10,18,4].

Cypripedium calceolus is widespread across Eurasia except the extreme north and south, the Mediterranean region and Anatolia, the West and East of Siberia, the Far East of Russia, and the South of Sakhalin Island [16]. Within Eurasia, it spreads from the North of England through northern and central parts of Europe to Eastern Europe, through Russia, Siberia, North of Sakhalin, Korea, NE China (Heilongjiang, Kirin and Inner Mongolia) up to Japan (Rebun Island) [16]. The orchid is mainly found in Boreal and Alpine regions and in cooler and more humid parts of the Continental region. The estimated area of occupancy in about 2600 km^2 and the upper elevation limit is 2100 meters a.s.l. [16]. Although formerly prevalent within Europe, in the last eight decades the species has become rarer [4,14,3,7] and even extinct in some areas such as Luxembourg [27]. In the UK there is only one surviving original clump [7] and in Netherlands only two populations are left [14].

Cypripedium calceolus is legally protected in all European countries and collection of the species is forbidden. This orchid is included under Appendix II of CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) [20]. It is also listed on Annex II of the Habitats Directive 92/43/EEC and under Appendix I of the Berne Convention on the Conservation of European Wildlife and Natural Habitats [21]. This orchid is included in several national Red Lists as threatened: regionally Extinct (Luxembourg), Critically Endangered (Bulgaria, Serbia and the United Kingdom), Endangered (Croatia, Czech Republic, Hungary, Russia, and Spain), Vulnerable (Austria, Belarus, Denmark, France, Germany, Lithuania, Romania, Slovakia, and Switzerland), Near Threatened (Finland and Norway) and Least Concern in Sweden.

Cypripedium calceolus is considered a rare species in Romania, with a lack of reports in the Cluj region. The last record of this species in the vicinity of Cluj-Napoca city was reported in Plecica Valley (also known as Sfântul Ion area) in 1908 and in Dumbrăvii Valley in 1934 (both locations having herbarium sheets in the Herbarium of "Alexandru Borza" Botanical Garden, in Cluj-Napoca). Marcu [11] revisited in 1982 the sites near Cluj-Napoca city (Floreşti, Moldoveneşti and Turda) but the orchid species was not found any more [11]. In Romania, according to Annex II of the Directive 92/43/EEC (Habitats Directive) of the European Council, the conservation measures for *Cypripedium calceolus* require the designation of Special Areas for Conservation [22].

The current report aims to aid the conservation of this rare and endangered orchid species and to contribute to knowledge regarding its distribution in Romania. Also, considering the status of this new population and regarding the studies about ecology and conservation on this species in the Eurasia region, our paper should represent an argument that *Cypripedium calceolus* must be listed in the Standard Form of the Făgetul Clujului-Valea Morii protected area.

Material and Methods

A map showing the study site in Romania, Cluj County with Cluj-Napoca and Floreşti administrative boundaries, and the position of the Natura 2000 site – Făgetul Clujului-Valea Morii – is provided (Fig. 1). After the first individuals were identified, we used the method of transects for the inventory of the surface and population size of *Cypripedium calceolus*. Also, vegetation samples according to the Braun-Blanquet [2] approach for vegetation classification

were performed along the transects and were used to describe the habitats in which the orchid species occurs. For an overview of the species chorology in Romania, lists have been made by consulting the literature and the voucher sheets deposited at "*Alexandru Borza*" Botanical Garden Herbarium in Cluj-Napoca.

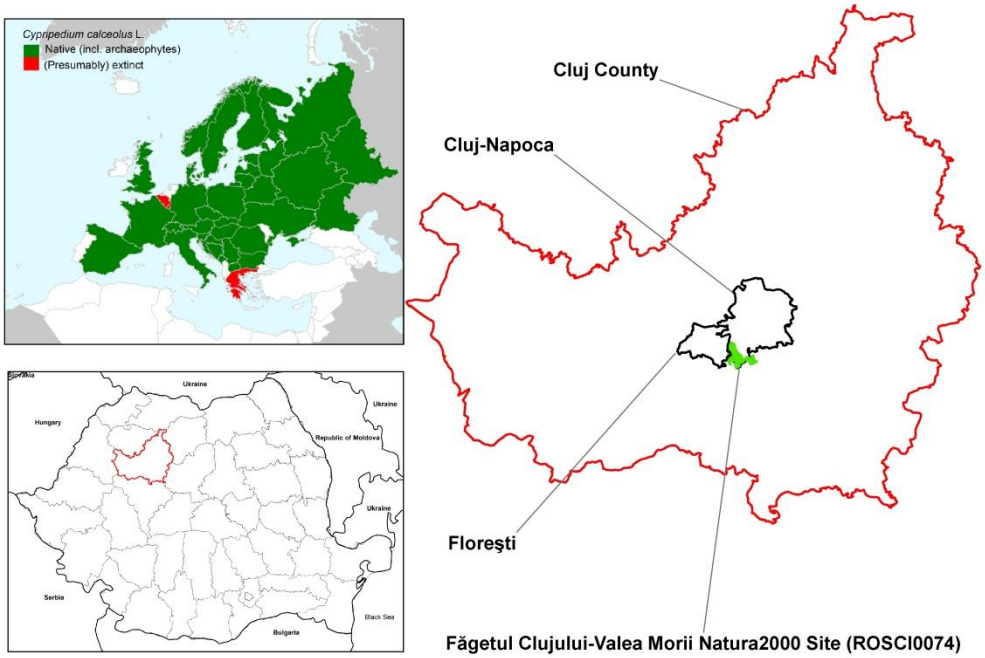


Fig. 1: The geographical distribution of *Cypripedium calceolus* [28] and area of study site in Cluj county.

Results and Discussion

After more than eight decades since the last record of *Cypripedium calceolus* in the Cluj-Napoca area and after many failed attempts to relocate it, on 8th May 2015, during a botanical excursion, a new population of this orchid species was discovered by the Z. R. Balázs and H. E. Balázs in the Natura 2000 site - Făgetul Clujului-Valea Morii. The population is localized in two sites that we have named: Site A (fig. 2) found on 8th May 2015 and Site B, identified a few days later, based on information offered by D. Căpraş. The individuals were found during flowering and at the beginning of the fruiting season.



Fig. 2: Photo of *Cypripedium calceolus* found in Natura 2000 site - Făgetul Clujului-Valea Morii.

A specimen was deposited by Z. R. Balázs, H. E. Balázs and P. D. Turtureanu in the Cluj-Napoca "Alexandru Borza" Botanical Garden herbarium (CL, no. 665648).

In order to have an overview of the distribution of *Cypripedium calceolus* in Romania, we consulted the Romanian flora [24] and the herbarium vouchers deposited at the "Alexandru Borza" Botanical Garden Herbarium in Cluj-Napoca (Table 1). According to the Romanian Flora [24], the orchid species was present (at least until 1972) in the following locations: Maramureș (Sighet, Lunca la Tisa, Cărpiniş), Bistriţa (Bistriţa, Dumbrăveni), Cluj (Stana, Cluj-Napoca (Fâneţe, Făget, Pleica Valley), Floreşti, Someşeni, Baciu at Dealul Melcilor, Corpadea, Dej, Gherla, Fizeşul Gherlei, Silviaş, Răchiţele, Turda, Moldoveneşti, Cheia), Mureș (Sighişoara, Boiu, Mureni, Sovata, Reghin, Gurghiu, Cocoşi), Harghita (Dârjiu, Bodogoaia, Filiaş, Odorheiul Secuiesc, Praid, Strâmbă, Valley Tulgheş, The Bicazului Gorges at Ciuha), Covasna (Bodoş, Sf. Gheorghe at Băile Şuşag, Racoşul de Sus), Brașov (Rupea, Hoghiz, Rocoşul de Jos, Braşov at Tâmpa, Valley Răcădăului, Dârste, Predeal, Postăvarul Mountains), Sibiu (Făgăraş Mountains, Guşteriţa, Cisnădioara, Şura Mare, Vurpăr, Hosman, Biertan, Agârbiciu, Târnăvioara, Mediaş), Alba (Alba-Iulia, Trascăului Mountains at Piatra Cetii, Vidra at Piatra Struţu, Bihorului Mountains at Scărişoara at Ordâncşua Valley, Aiud, Lopadea, Sebeş la Râpa Roşie), Mehedinți (Godeanu Mountain at Albele), Bihor (Oradea at Băile Episcopiei), Caraș Severin (Băile Herculane, Cernei Valley, Baia de Aramă), Gorj (Novaci), Buzău (Penteleu Mountain, Tisău, Câmpulungeanca), Neamț (Petricani, Ceahlău Mountain, Schitul Durău), Iași (Bârnova at Cazacului Hill, Dobrovăţ, Scânteia, Repedea Hill, Poieni, Ciurea, Voineşti, Lugani, Slobozia, Horleşti, Tătăruşi, Drăgoiasa, Broşteni, Barnarului Valley), Suceava (Slătioara Forest, Câmpulung-Moldovenesc, Pojorâta, Zovorişţea and Arinii).

Although the presence of *Cypripedium calceolus* was reported in many sites in Romania, there were situations where populations were represented by only a few individuals: i.e. only 3 stems were identified in 1941 in the Buzăului Mountains [12], and 15 stems in the Slătioara Forest [8]. Moreover, some of the locations cited in the Romanian flora [24] were repeatedly revisited since, but the orchid was not found again. More recent studies, performed in 2006 at Sovata (Mureş county) indicated the presence of 112 plant stems, of which only 27 were flowering stems [17,15].

Within the currently reported locations of *Cypripedium calceolus* a series of measurements was made in order to describe the actual status and the natural environment of the newly found population.

Site A was found at the ecotone between the forest and a dry grassland habitat, near a forest road. It comprises four groups, totalling 183 stems, assembled into 50 clumps spread over 100 m along a trail in the *Asperulo-Fagetum* beech forest.

Site B was divided into two groups of clumps, numbering a total of 13 clumps with 32 stems. The groups were situated at the edge of a small forest opening, near the dirt road between *Galio-Carpinetum* oak-hornbeam and *Dacian oak-hornbeam* forests. The number of stems and the proportion of capsules reported to the total number of stems are shown in Table 2. We considered a clump to consist of many stems situated very close together and originating from the same rhizome, respectively a group being formed of several distinct clumps, probably belonging to multiple individuals, located in proximity to each other (no more than 10 m apart).

Table 1: Distribution of *Cypripedium calceolus* L. in Romania, according to herbarium voucher specimen deposited at the "Alexandru Borza" Botanical Garden in Cluj-Napoca, Romania.

County	Locality	Location	Herbarium	Name of deponent
Alba	The Râmețului Gorges	Piatra Cetei limestone rocks, 1300 m.a.s.l	Cl 80652, Cl 80658/ 27.05.1918	A. Borza
Alba	The Râmețului Gorges	*Pinus* sp. Forest.	Cl 664165/ 29.05.2013	P. D. Turtureanu
Alba	Aiud	-	Cl 06407/	-
Cluj	Dej	Florii Hill 854 m.a.s.l	Cl 06411/ 06.1864	G. Czetz
-	Canciu	-	Cl 06412, Cl 06409	G. Czetz
Cluj	Fizeșul Gherlii	-	Cl 4222,Cl 4225?/ Cl 4236/ 16.05.1901	A. Richter
Cluj	Cluj-Napoca	PlecicaValley	Cl 92385, Cl 4221, Cl 4223/ 15.05.1908	A. Richter
Cluj	Cluj-Napoca	Dumbrăvii Hill, vs. PlecicaValley, 450 m.a.s.l	Cl 433865/ 08.05.1934	E. I. Nyárády
Cluj	Dumbrava Ierii	-	Cl 642811, Cl 642824/ 22.05.1981	A. Marcu
Cluj	Gârbăului Valley	Beech and hornbeam forest, right slope on a tributary waterbody Calcareous grasslands at the base of the slope, with rocks showing at the surface, 355 m.a.s.l	Cl 665648/ 09.05.2015	H. E. Balazs, Z. R. Balazs, P. D. Turtureanu
Mureș	Sovata	In vicinity of Ursu Lake	Cl 591999 /28.05.1942	R. Soó
Mureș	Sovata	Zoltan Peak, N, 550 m.a.s.l	Cl 271482/29.07.1943	E. G. Nyárády
Mureș	Sovata	Mixed deciduous forest, East side of Aluniș Lake, in the vicinity of Frumoasei Valley	Cl 659859/ 27.07.2008	J. P. Frinc
Harghita	Misentea Ilăceni	Young forest	Cl 630165/ 08.06.1973	M.V. Vilmos
Hunedoara	Petroșani	Albele Mountain 1900 - 1950 m.a.s.l	Cl 560208/ 26.07.1956	S. Csürös
Hunedoara	Geoagiu	Forest	Cl 612965/ 07.06.1957	F. Rațiu
Transylvania	-	-	Cl 06419/ 15.05.1976	-
Transylvania	undecipherable	-	Cl 06420/ 1858	E. Haynald
Botoşani	Dorohoi	Plaiul Zvoriștea, SW slope, 300 m.a.s.l	Cl 209891/ 02.06.1946	E. Țopa
Suceava	Câmpulung Moldovenesc	Young forest in vicinity of Slătioara, 1000 m.a.s.l	Cl 623079/ 28.08.1946	E. Țopa
Iași	Dobrovăț	Beech forest on the left side of the road Vaslui-Iași, near the junction with the road to Dobrovăț	Cl 663620/ 15.08.2012	M. Pușcaș, B. I. Hurdu
Bacău	Vultureni	-	Cl 611085/ 15.05.1976	M. Botezatu

Table 2: Number of stems and capsules, counted separately for each group of the Site A (A1, A2, A3 and A4) and Site B (B1, and B2).

Group	A1	A2	A3	A4	B1	B2	Total
No. stems	29	38	112	4	21	11	215
No. capsules	6	0	35	3	3	1	48

The floristic composition of the plant communities and habitats where the individuals of *C. calceolus* were found in the Natura 2000 site Făgetul Clujului-Valea Morii are given in Table 3. In this protected area the orchid grows in the following habitats: 9170 *Galio-Carpinetum* oak-hornbeam forests, 9130 *Asperulo-Fagetum* beech forests and 91Y0 Dacian oak-hornbeam forests. In other countries of the European Union this plant grows in the following Habitats Directive-listed habitats: 9020 Fennoscandian hemiboreal natural old broad-leaved deciduous forests (*Quercus, Tilia, Acer, Fraxinus* or *Ulmus*) rich in epiphytes, 9050 Fennoscandian herb-rich forests with *Picea abies*, 9150 Medio-European limestone beech forests of the *Cephalanthero-Fagion*; 9160 Sub-Atlantic and medio-European oak or oak-hornbeam forests of the *Carpinion betuli,* 9180 *Tilio-Acerion* forests of slopes, screes and ravines [16].

Table 3: The floristic composition of the habitats from Făgetul Clujului-Valea Morii, Gârbăului Valley. CF – *Carpino-Fagetum* Paucă 1941; LC – *Lathyro hallersteinii-Carpinetum* Coldea 1975; CQ – *Carici montanae-Quercetum petraeae* Gergely 1962.

Releve number	1	2	3	4	5	6
Area (m^2)	400	400	400	400	400	400
Altitude (m)	486	514	515	555	534	500
Aspect	W	W	SWW	SW	NW	W
Slope (degrees)	15	15	25	5	7	15
Soil pH	8	7,6	7,5	7,8	7.6	8
Canopy cover (%)	80	80	75	80	75	90
Tree age	55	55	60	60	60	55
Number of species	26	23	20	19	22	43
Natura 2000 Habitat	9130	9130	91Y0	91Y0	91Y0	9170
Plant community type	CF	CF	LC	LC	LC	CQ
Characteristic species						
Carpinus betulus	1	1	2	2	3	1
Fagus sylvatica	4	4	1	1	+	2
Quercus petraea	1	+	2	2	2	3
Asperula odorata	1	1	.	.	.	.
Viola reichenbachiana	+	+	.	.	.	.
Aposeris foetida	.	.	+	+	+	.
Lathyrus hallersteinii	.	.	+	+	.	.
Scilla bifolia	.	.	.	+	+	.
Carex montana	.	+	+	.	+	2
Pulmonaria mollis	.	.	.	.	.	+
Lathyro hallersteinii-Carpinion						
Carex pilosa	+	+	1	+	+	.

Galium schultesii	1	+	.	+	.	.
Dactylis polygama	.	.	.	+	.	+
Festuca drymeia	.	.	.	+	.	.
Helleborus purpurascens	.	+	.	.	.	.
Melampyrum bihariense	+	.	.	.	.	+
Prunus avium	.	.	1	+	1	.
Tilia cordata	1	+	+	+	+	.
Stellaria holostea	.	.	.	+	.	.
Fagetalia sylvaticae						
Ajuga reptans	+	+	.	.	.	+
Asarum europaeum	+	+	.	+	+	+
Cardamine bulbifera	.	.	+	.	+	.
Carex sylvatica	.	+	.	.	.	.
Cephalanthera longifolia	.	+	.	.	.	.
Epipactis helleborine	+	.	.	.	+	+
Hepatica nobilis	.	+	+	.	+	.
Lathyrus vernus	.	.	.	+	.	.
Mercurialis perennis	.	+	.	.	+	.
Mycelis muralis	+	+	.	.	.	+
Neottia nidus-avis	+	.	.	.	.	.
Polygonatum multiflorum	.	.	.	.	.	+
Rubus hirtus	.	.	.	.	.	+
Salvia glutinosa	+	.	.	.	.	.
Sanicula europaea	+	.	.	.	.	.
Carpino-Fagetea						
Acer campestre	+	.	+	.	+	1
Acer pseudoplatanus	.	+	.	.	+	+
Brachypodium sylvaticum	.	+	.	.	.	.
Convallaria majalis	.	1	+	+	+	.
Corylus avellana	.	.	.	.	.	1
Geranium robertianum	.	.	+	.	.	.
Euphorbia amygdaloides	+	+	.	.	+	+
Lamiastrum galeobdolon	+	.	.	.	+	.
Quercion petraeae						
Genista tinctoria	.	.	.	.	.	+
Lembotropis nigricans	+	.	.	.	.	+
Stachys officinalis	.	.	.	.	.	+
Quercetalia pubescenti-petraea						
Lathyrus niger	.	.	+	.	.	+
Campanula persicifolia	.	.	.	.	.	+
Melittis melissophyllum	.	.	+	.	.	.
Staphylea pinnata	.	.	.	.	.	+
Vincetoxicum hirundinaria	+	.	.	.	.	+
Quercetea pubescentis						
Chamaecytisus albus	.	.	.	.	.	+
Primula veris	.	.	.	.	.	+

Pyrus pyraster	.	.	.	.	.	+
Vinca herbacea	.	.	.	.	.	+
Variae syntaxa						
Anthericum ramosum	.	.	.	.	.	+
Asperula cynanchica	.	.	.	.	.	+
Betula pendula	.	.	+	.	1	.
Carex humilis	.	.	.	.	.	+
Centaurea phrygia	.	.	.	.	.	+
Clematis vitalba	+	.	.	+	.	.
Clinopodium vulgare	.	.	.	.	.	+
Cornus sanguinea	+	.	.	+	.	+
Crataegus monogyna	+	.	.	.	.	.
Cruciata glabra	.	.	.	.	.	+
Cypripedium calceolus	**.**	**+**	**.**	**.**	**+**	**+**
Dorycnium herbaceum	.	.	.	.	.	+
Evonymus europaea	.	.	+	.	.	.
Evonymus verrucosa	.	+	.	.	.	.
Fragaria vesca	.	.	.	.	.	+
Galeopsis speciosa	.	.	.	.	.	+
Geum urbanum	+	.	.	.	.	.
Glechoma hederacea	.	.	.	+	.	.
Gymnadenia conopsea	.	+	.	.	+	.
Hedera helix	.	.	+	.	.	.
Hypericum perforatum	+	.	.	.	.	.
Ligustrum vulgare	.	.	.	.	.	+
Moehringia trinervia	.	.	+	.	.	.
Populus tremula	.	.	.	.	+	.
Prunus spinosa	.	.	.	.	.	+
Sanguisorba minor	.	.	.	.	.	+
Spiraea chamaedryfolia	+	.	.	.	.	.
Veronica chamaedrys	.	.	.	.	.	+

Cypripedium calceolus reproduces sexually by outcrossing and pollination by mining bees (*Andrena* sp.) [1] but, due to pollen limitation, low fruit set (0–57%) [9] has been observed in different countries [13]. Reproduction also occurs asexually through a strong growth of the horizontal rhizome. The generation length is thought to be ≥10 years [2]. Seed germinates if symbiosis with the fungal genus *Rhizoctonia* develops [9], and it is more than three years after seed germinates before for the first leaves to appear above ground [6].

A statistical simulation of the effects caused by extracting individuals from a population [27], revealed the vulnerability of this species in face of the negative actions of anthropogenic factors. It shows clearly that even the extraction of two plant stems from a population consisting of 50 individuals leads to the extinction of 60% of the population over a five year interval. The results of consecutive effects are more drastic [27].

Many *Cypripedium calceolus* populations were included in Natura 2000 sites and other forms of protected areas. The species enjoys, in addition, habitat protection in natural parks or nature reserves. As a consequence of the conservation actions, according to the assessment at

European level for the IUCN Red List of Threatened Species [16], *Cypripedium calceolus* populations are stabilizing and even increasing in the number of individuals. Nevertheless, some of the subpopulations are still declining as a result of numerous threats, especially collection by enthusiasts. Due to conservation measures implemented by several European countries, the geographical range of the *Cypripedium calceolus* has been relatively maintained and the fall within the threshold for any critical conservation category has been avoided (Sweden, Finland and Norway) [26]. In Romania, *Cypripedium calceolus* is cited as a criterion species for the declaration of Natura 2000 sites. The Government must periodically report its conservation status to the European Environmental Agency (EEA) according to Article 17 of the Council Directive 92/43/EEC. As a consequence, the last report was sent by Romania for the period 2007–2012 and it delivers the presence and the conservation status of the protected orchid in the Natura 2000 Network in a 10 X 10 km grid cells (Fig.3). The conservation status was assessed as Favourable by our country [23].

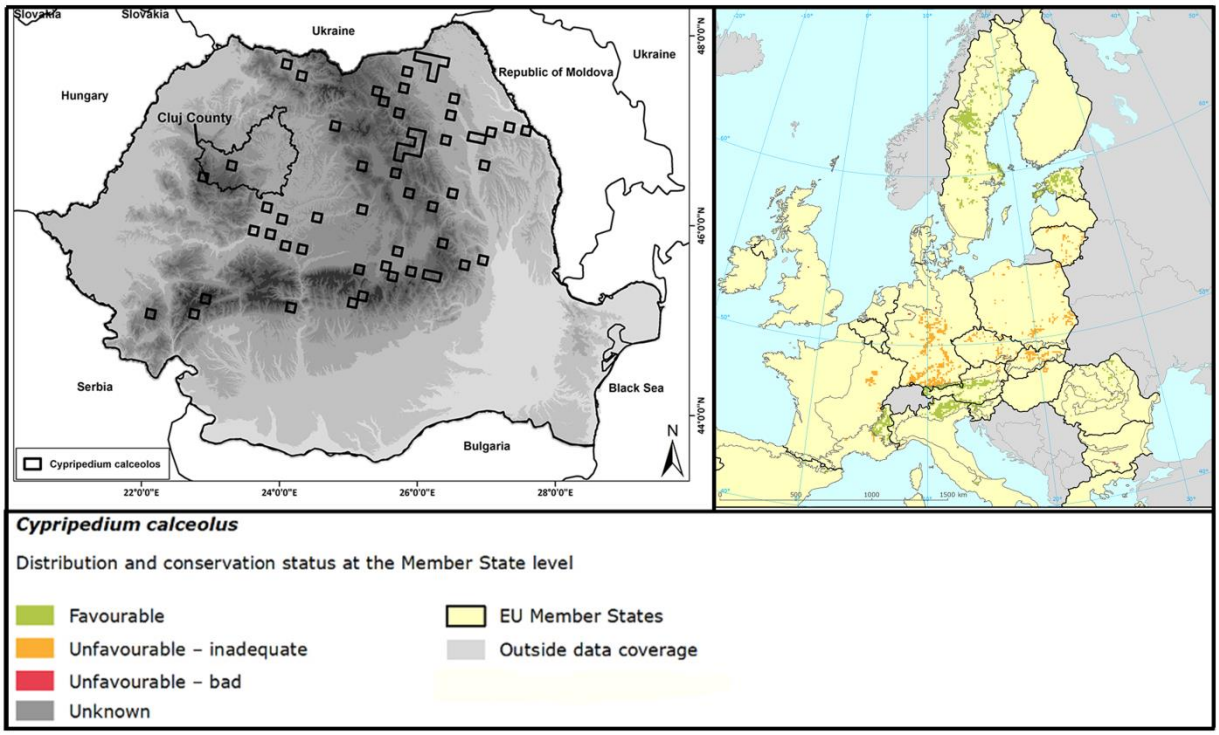


Fig. 3: The map on the left illustrates the presence of *Cypripedium calceolus* in 10 km x 10 km grids in the Natura 2000 sites from Romania (GIS layer source: http://www.mmediu.ro/articol/date-gis/434) [25]. The map on the right represents the conservation status for *Cypripedium calceolus* L. at European Union level (Report under the Article 17 of the Habitats Directive Period 2007-2012).

Conclusions

Based on the above studies, and given the iconic status of *Cypripedium calceolus* in most European countries, our claim is directly related to the necessity of conservation of this orchid species in Romania. It requires better attention and protection against negative anthropogenic factors and therefore we definitely consider that it deserves to be listed in the Standard Form of the Făgetul Clujului-Valea Morii site. Moreover, given the fact that this species has been less studied in our country, we consider that a new population in our region offers a real possibility

for future investigations. Thus, by offering a precise location of this newly found population, our report will contribute to better knowledge of the distribution and ecology of *Cypripedium calceolus* in Romania.

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REDESCOPERIREA DUPA 80 DE ANI A SPECIEI *CYPRIPEDIUM CALCEOLUS* L. ÎN VECINĂTATEA MUNICIPIULUI CLUJ-NAPOCA (ROMÂNIA)

(Rezumat)

Cypripedium calceolus L. reprezintă una din cele mai spectaculoase specii de orhidee din Eurasia, care a avut un declin considerabil în cea de-a doua jumătate a secolului trecut. Necesitatea imediată de conservare a acestei specii emblematice pentru familia orhideelor a condus la conferirea de statut de specie ocrotită în majoritatea ţărilor Europei. În România, *Cypripedium calceolus* este considerată specie rară, are statutul de specie protejată şi este inclusă în lista speciilor protejate, din cadrul unor situri Natura 2000.

În zona Clujului, ultima semnalare a speciei a fost făcută de E. I. Nyárády în 1934, pe Valea Dumbrăvii (Valea Plecica), iar alte încercări de reconfirmare a prezenţei speciei în vecinătatea orașului Cluj-Napoca (Marcu 1982) nu au avut succes.

După mai mult de 80 de ani, o nouă populaţie a fost descoperită de către Z. R. Balázs și H. E. Balázs, pe Valea Gârbăului la sud de Cluj-Napoca pe o vale paralelă cu Valea Dumbrăvii (Plecica).

Populația este împărţită în două situri, pe care le-am denumit A și B, localizate la o distanță de aproximativ 300 m unul de celălalt. Situl A are o dispunere relativ liniară pe o parte și pe alta a unei poteci și cuprinde 4 grupuri de indivizi. Situl B, compus din două grupuri de indivizi, este situat pe marginea unui drum forestier. O serie de măsurători în teren au fost realizate cu scopul de a crea o imagine de ansamblu, clară, a habitatului în care se găsește populația.

Pentru a releva corologia speciei în România și în mod particular în zona Clujului, s-a realizat o listă de semnalări pe baza informaţiilor corologice şi bibliografice din "*Flora Republicii Socialiste România",* volumul XII (1972), precum şi după consultarea specimenelor depuse la Herbarul Grădinii Botanice "*Alexandru Borza*" din Cluj-Napoca.

Având ca suport rezultatele obţinute în urma investigaţiilor din teren și luând în considerare numeroasele studii legate de ecologia şi conservarea speciei pe plan european, considerăm că acest raport de semnalare este important pentru implementarea conservării acestei specii emblematice pentru flora României. În acest sens obiectivele s-au îndreptat spre trei direcţii: introducerea speciei pe lista speciilor protejate în situl Natura 2000 - Făgetul Clujului-Valea Morii, o contribuţie importantă la o mai bună cunoaștere a corologiei speciei în România și, nu în ultimul rând, o bază pentru realizarea de studii filogeografice în vederea conservării speciei la nivel European.

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