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LIST OF RARE, ENDEMIC AND THREATENED PLANTS IN ROMANIA (I.)

MOLDOVAN I., PÁZMÁNY D., SZABÓ A., CHIRCA E., LEON Ch.\*

Abstract:

MOLDOVAN I., PÁZMÁNY D., SZABÓ A., CHIRCA E., LEON Ch., 1984, List of rare, endemic and threatened plants in Romania (I.). Not. bot. hort. agrobot., Cluj., XIV, 5-16. The IUCN list of rare, endemic and threatened plant species of Romania are presented with the indication of corresponding IUCN Red Data Book Categories, habitate codes and threat codes. In this first report 47 endemic and 101 other threatened plant species were included.

Key words: threatened plants, conservation, plant genetic resources

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This paper is published in accordance with the principles accepted in conservation of plant genetic resources - one of the main goal of our agrobotanical garden - and the international plant conservation programme for the years 1984-1985 (SYNGE 1984). The IUCN List of Rare, Threatened and Endemic Plants in Romania was used as first reference. The list was put to our disposal by Christine LEON, Senior Research Officer for Europe, Royal Botanic Garden, Kew. This list contains 47 endemic and 101 other rare species considered threatened.

Recently about 630 rare, relict and endemic species are indicated as worth of attention in conservation by different Romanian authors (E.POP 1976, STEFUREAG 1976, MORARIU et BELDIE 1976, PETERFI et al.1977).

In this first report just the IUNC list was considered. The order of informations from the list is as follows: family, species, infra-specific taxa, author; IUCN Red Data Book Category (cf. tab. 1.); Threat

Code (cf. tab. 2.); Habitat Code (cf. tab. 3).

Tab. 1.

The IUCN Red Data Book Categories

Ex = extinct	R = rare	O = out of danger
E = endangered	K = insufficiently known	
V = vulnerable	nt = not threatened	

Tab. 2.

The IUCN Threat Codes

<u>Code</u>	<u>Meaning</u>	<u>Code</u>	<u>Meaning</u>
A1	= deforestation	G1	= hybridisation
A2	= afforestation	G2	= competition
A3	= pollution	G3	= predation
A4	= dam construction	G4	= disease
A5	= changes in water table level	D1	= low population
A6	= siltation	D2	= restricted range
A7	= canalisation	D3	= fire (≠ A16!)
A8	= reclamation	D4	= others
A9	= urbanisation	E1	= ineffective conservation management
A10	= road/railway building	E2	= human pressure
A11	= mining	E3	= persecution (removal, chemical control)
A12	= other human activities	E4	= wars
A13	= tourism	E5	= lack of pollinators
A14	= browsing	E6	= lack of seed dispersal agents
A15	= other agricultural/forestry practices	F1-20	= others
A16	= fire		
B1	= exploitation for food		
B2	= sport		
B3	= specimen		
B4	= subsistence		
B5	= science		
B6	= trade		

Tab. 3.

Habitat Codes of Plant Communities for Conservation  
Purposes (E.DAHL, 1982)

<u>Code</u>	<u>Meaning</u>	<u>Code</u>	<u>Meaning</u>
1.	Salt and brackish water communities	6.	Communities on shallow soils or sands draying up in summer
1.1.	Zoosteretea	6.1.	Thero-Brachypodietea
1.2.	Ruppiaetea	6.2.	Sedo-Scleranthetea
2.	Freshwater communities	7.	Violetea calaminariae
2.1.	Lemnetea	8.	Asplenietea rupestris
2.2.	Potametea	9.	Steppe communities
2.3.	Littorelletalia	9.1.	Festuco-Brometea
2.4.	Isoeto-Nanojuncetea	9.1.1.	Festucetalia valesiacae
2.5.	Phragmitetea	9.1.2.	Brometalia erecti
2.6.1.	Paspalo-Heleochoetalia	9.1.2.1.	Xerobromion
2.6.2.	Bidentetea tripartiti	9.1.2.2.	Mesobromion
3.	Sea shore communities	9.2.	Brachypodio-Brometea
3.1.	Cakiletea maritima	10.	Desert and steppe communities in Anatolia
3.2.	Ammophiletea	11.	Thlaspietea rotundifoliae
3.3.	Gorynephoretalia	12.	Arctic-alpine communities
3.4.	Agropyro-Rumicion crispi	12.1.	High-arctic fellfields
3.5.1.	Crithmo-Limonietea	12.2.	Juncetea trifidi
3.5.2.	Crithmo-Staticetea	12.2.1.	Loiseleurio-Vaccinion s.l.
3.6.	Salicornietea	12.2.2.	Caricetalia curvulae
3.7.	Asteretea tripolii incl. Juncetea maritimi	12.3.	Elyno-Seslerietalia
3.8.	Bolboschoenetea incl. Spartinetea	12.4.1.	Nardeto-Caricion bigelowii
4.	Spring communities	12.4.2.	Nardion
4.1.	Gratoneurion commutati	12.4.3.	Caricion ferrugineae incl. Primulion intricatae
4.2.	Gardamineo-Montion	12.5.	Salicetea herbaceae
5.	Mire communities	12.5.1.	Salicetalia herbaceae
5.1.	Oxycocco-Sphagnetea	12.5.2.	Arabidetalia caeruleae
5.2.	Scheuchzerietalia palustris	12.5.3.	Luzulion arcticae
5.3.1.	Caricetalia fuscae	12.6.	Alchemillo-Campanuletalia tridentatae
5.3.2.	Tofieldetalia		

- Thymus bihoriensis* Jalas - R; D1; 9.1.  
*Thymus comosus* Heuffel ex Griseb. - nt; nt; 8.1., 9.1., 12.3.

## LEGUMINOSAE

- Astragalus peterfii* Jávorka - E; D1, D2; 9.1.1.  
*Astragalus pseudopurpureus* Gugul. - V; D1, D2; 12.3.  
*Astragalus roemerii* Simonkai - V; D2; 12.3.

## LINACEAE

- Linum uninerve* (Rochel) Jávorka - V; A14; 12.3.

## PAPAVERACEAE

- Pumaria jankae* Hausskn. - K; A15; 12.3.  
*Papaver corona-sancti-stephani* Zapal. - R; A13; 11.1.

## PRIMULACEAE

- Primula elatior* (L.) Hill ssp. *leucophylla* (Pax) H-H. ex Smith & F  
 Fletch. - nt; A14; 12.2.  
*Primula wulfeniana* Schott ssp. *baumgarteniana* (Degen & Moesz) Ludi  
 - Ex; D1, D2; 12.3.

## RANUNCULACEAE

- Delphinium simonkaianum* Pawl. - R; D1; 20.3.  
*Hepatica transsilvanica* Fuss - nt; nt; 20.1.3., 20.4.2.1.

## RUBIACEAE

- Galium bailloni* Brandza - R; D1; 20.4.2.2.

## SANTALACEAE

- Thesium karnerianum* Simonkai - R; A14, D2; 12.2., 12.3.

## SAXIFRAGACEAE

- Saxifraga nutata* L. ssp. *demissa* (Schott & Kotschy) D.A. Webb - R;  
 D2; 8.2.

## SCROPHULARIACEAE

- Pedicularis baumgartenii* Simonkai - R; D2; 12.4.2.

## UMBELLIFERAE

- Athamanta turbith* (L.) Brot. ssp. *hungarica* (Borbás) Tutin - R; D1,  
 D2; 12.3.

## VIOLACEAE

- Viola joóii* Janka - R; A2; 9.1.

DOUBTFULLY ENDEMIC TAXA

## GRAMINEAE

- Trisetum macrotrichum* Hackel - K; A14; 12.4.2.

NON-ENDEMIC TAXAPTERIDOPHYTA

## ASPIDIACEAE

- Cystopteris sudetica* A. Braun & Mildt - nt; nt; 8.1.

## ASPLENIACEAE

- Asplenium adulterinum* Mildt - R; D1; 8.1.

## MARSILEACEAE

- Marsilea quadrifolia* L. - V; A7; 2.2.

## OPHIOGLOSSACEAE

- Botrychium matricariifolium* A. Braun ex Koch - V; D2; 20.1.3.  
*Botrychium multifidum* (S.G. Gmelin) Rupr. - R; A2; 15.1.  
*Botrychium virginianum* (L.) Swartz - V; D1; 20.1.3., 20.4.2.1.

## SALVINIACEAE

- Salvinia natans* (L.) All. - nt; nt; 2.2.

ANGIOSPERMAE

## ALISMATACEAE

- Caldesia parnassifolia* (L.) Parl. - V; A7; 2.5.  
*Luronium natans* (L.) Raf. - Ex; ?; ?

## AMARYLLIDACEAE

- Galanthus plicatus* M. Bieb. - R; D2; 20.4.2.2.

## BERBERIDACEAE

- Gymnospermium altaicum* (Pallas) Spach - K; ?; ?

## BETULACEAE

- Betula humilis* Schrank - V; A5, D1, D2; 5.1., 5.2.

## BORAGINACEAE

- Buglossoides glandulosa* (Velen.) R. Fernandes - I; A15, D1, D2; 6.2.  
*Myosotis stenophylla* Knaf - I; D1; 12.2.  
*Pulmonaria filarszkyana* Jávorka - R; ?; 20.1.

## CAMPANULACEAE

- Campanula transsilvanica* Schur ex Andrae - E; A13, D1, D2; 12.2.  
*Symphandra wanneri* (Rochel) Heuffel - R; D2; 8.1.

## CARYOPHYLLACEAE

- Arenaria rigida* M. Bieb. - K; D1, D2; 6.1., 6.2.  
*Dianthus dobrogensis* Prodan - E; D2; 9.1.  
*Dianthus nardiformis* Janka - V; A15, D2; 9.1.  
*Moesringia grisebachii* Janka - V; D2; 9.1.1.  
*Moesringia jankae* Griseb. ex Janka - V; D2; 9.1.1.  
*Silene zawadzki* Herbich - R; D2; 12.3.

## CELASTRACEAE

*Eucryphia nana* M.Bieb. - V; A1c, D2; 20.4.

## CHENOPODIACEAE

*Bassia hirsuta* (L.) Aschers. - V; D2; 3.1.  
*Corispermum caesecens* Kit. - E; ?; ?  
*Corispermum marschallii* Steven - V; A13, D3; 3.1.  
*Corispermum nitidum* Kit. - R; A13, D2; 3.1., 6.

## COMPOSITAE

*Achillea impatiens* L. - E; D1; 5.2.2.  
*Achillea ochroleuca* Ekh. - V; A14; 9.1.  
*Centaurea marschalliana* Sprengel - V; D1; 9.1.  
*Centaurea pinnatifida* Schur - R; A14, D1; 12.3.  
*Centaurea ruthenica* Lam. - E; A15, D1, D2; 9.1.  
*Centaurea varnensis* Velen. - E; D1, D2; 9.1.  
*Cirsium brachycephalum* Juratzka - V; A7; 2.5.  
*Cirsium furiens* Briseb. & Schenk - nt; nt; 13., 14.  
*Erigeron nanus* Schur - V; D1, D2; 11.1.  
*Ligularia glauca* (L.) O.Hoffman - R; D1, D2; 11.1., 12.  
*Ligularia sibirica* (L.) Cass. - R; A5, D1, D2; 20.4.4.  
*Saussurea porcii* Degen - E; D1; 5., 4.2.  
*Senecio congestus* (R.Br.) DC. ?; ?; ?  
*Serratula bulgarica* Acht. & Stoy. - R; ?; ?  
*Serratula lycopifolia* (Vill.) A.Kerner - V; A15; 14.2.  
*Tragopogon floccosus* Waldst. & Kit. - V; A15, D2; 6.2.

## CRUCIFERAE

*Alyssum borzaceanum* Nyár. - E; A12, D1; 3.3., 3.1.  
*Crambe tatarica* Sebeok - V; A15; 9.1., 14.2.  
*Erysimum hungaricum* Zapal. - ?; ?;  
*Hymenoclobus procumbens* (L.) Nutt. ex Torrey & A.Gray - V; A15; 3., 6., 9., 13.  
*Schivereckia podolica* (Besser) Andr. - E; D1, D2; 9.1.  
*Syrenia montana* (Pallas) Klokov - R; ?; ?

## CYPERACEAE

*Eleocharis carniolica* Koch - I; A5, D2; 2.4.  
*Eriophorum gracile* Koch ex Roth - R; A5b; 5.2.

## DROSERACEAE

*Aldrovanda vesiculosa* L. - V; A7; 2.2.

## ELATINACEAE

*Elatine elsinastrum* L. - R; A5; 2.  
*Elatine hungarica* Mocsz - V; A5, D1, D2; 2.

## GEMTIANACEAE

*Lomatogonium carinthiacum* (Wulfen) Reichenb. - R; D1, D2; 12.4.

## GRAMINEAE

*Festuca arenicola* (Prod.) Soó - R; ?; ?  
*Poa rehmanni* (Asch. & Graeb.) Woloszczak - R; ?; ?  
*Stipa borysthena* Klokov ex Prokudin - R; ?; ?  
*Stipa dasyphylla* (Lindem.) Trautv. - R; D1, D2; 9.1.  
*Stipa ucrainica* P. Smirnow - R; D1, D2; 9.1., 20.4.2.2.  
*Zingeria pisidica* (Boiss.) Tutin - I; ?; ?

## IRIDACEAE

*Grocus banaticus* J. Gay. - nt; A13; 20.4.  
*Iris humilis* Georgi - I; A14, A15; 9.1.  
*Iris sintonensis* Janka ssp. *brandzae* (Prodan) Webb - I; D1, D2; 14.2.

## LABIATAE

*Dracocephalum austriacum* L. - R; D1, D2; 12.3.

## LEGUMINOSAE

*Astragalus cornutus* Pallas - K; D1, D2; 9.1.  
*Astragalus dasyanthus* Pallas - R; A15; 9.1., 18.1.  
*Astragalus sulcatus* L. - V; D1, A15; 14.1., 14.2.  
*Lathyrus transsilvanicus* (Sprengel) Fritsch - R; A1, D1; 18.1., 20.4.  
*Sophora jaubertii* Spach - V; D1, D2; 18.1., 9.1.1.  
*Trifolium lupinaster* L. - E; D1, D2; 12.2.  
*Vicia sparsiflora* Ten. - E; D1, D2; 20.4.2.

## LILIACEAE

*Allium obliquum* L. - R; D1, D2, B1, B3; 8.1., 12.3.  
*Bellevalia sarmatica* (Pallas) Woronow - E; D1; 9.  
*Colchicum arsenatum* Waldst. & Kit. - E; D2; 9.1.  
*Colchicum fominii* Bords. - V; A15, D1, D2; 9.1., 6.  
*Gagea bulbifera* (Pallas) J.A. & J.H. Schultes - R; D1, D2; 9.1.1.  
*Gagea taurica* Steven - R; D1, D2; 9.1.  
*Ornithogalum amphibolum* Zahar. - V; D1, D2; 9.1.  
*Ornithogalum orthophyllum* Ten. ssp. *psammophilum* (Zahar.) Zahar. - V; D1, D2; 6.1., 9.1.

## NYMPHAEACEAE

*Nymphaea lotus* L. - R; D1, D2; 2.2.

## OLEACEAE

*Syringa josikaea* Jacq.f. - nt; D1, D2; 20.4.2.

## ORCHIDACEAE

*Cypripedium calceolus* L. - V; B3, B5, E1; 20.4.2.  
*Hammarbya paludosa* (L.) Kuntze. - E; D1, D2; 5.1.  
*Liparis loeselii* (L.) Rich. - R; D1, A5b; 5.1.

## OROBANCHACEAE

Orobancha caesia Reichenb. - R; D1; 9.

## PLANTAGINACEAE

Plantago schwarsbergiana Schur - I; A12, A7; 3.7.

## POTAMOGETONACEAE

Groenlandia densa (L.) Fourr. - V; A5b, D2; 2.2.

Potamogeton rutilus Wulfg. - R; D2; 2.2.

## RANUNCULACEAE

Pulsatilla patens (L.) Miller - R; A15; 9.1.1.

Ranunculus polyphyllus Waldst. & Kit. ex Willd. - V; A5b; 2.6., 14.1.

## ROSACEAE

Spiraea crenata L. - R; B4; 18.2.

## RUBIACEAE

Asperula setulosa Boiss. - V; D1, D2; 6.1., 3.1.

Galium moldavicum (Dobrescu) Franco - V; ?; ?

## SALICACEAE

Salix bicolor Willd. - R; D1, D2; 20.4.

## SANTALACEAE

Thesium ebracteatum Hayne - E; D1; 9.1.

## SCROPHULARIACEAE

Lindernia procumbens (Krockar) Philcox - I; A5b, A15; 2.4.

Pedicularis exaltata Besser - R; A15; 20., 18.3.

Pedicularis limnogens A.Kerner - R; A11, D1, D2; 5.

Verbascum purpureum (Janka) Huber-Mor. - E; ?; ?

## TRAPACEAE

Trapa natans L. - nt; A5, B1; 2.1., 2.2.

## TYPHACEAE

Typha minima Funk - nt; A5b; 2.3.

Typha schuttelworthii Koch & Sonder - R; A5b, B4; 2.5.

## UMBELLIFERAE

Angelica palustris (Besser) Hoffman - V; D1; 18.3.

Ferula sedleriana Ledeb. - V; D1; 18.1.

Heracleum carpaticum Porcius V; A14, D1; 12.

Laserpitium archangelica Wulfen - R; D2; 12.

## Rezumat

MOLDOVAN I., PÁZMÁNY D., SZABÓ A., CHIRCA E., LEON Ch., 1984, Lista speciilor de plante rare, endemice și periclitare din România (I.) (în engleză). Not. bot. hort. agrobot., Cluj., XIV, 5-16. În acest articol este prezentată lista IUCN privind plantele rare, endemice și considerate periclitare în România, împreună cu precizarea categoriilor corespunzătoare din IUCN Red Data Book, codul habitatelor și codul de periclitare. În acest prim articol au fost incluse conform listei 47 de specii endemice și alte 101 specii considerate periclitare.

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COMPARISON OF CZECHOSLOVAK AND ROMANIAN VARIETIES OF  
 RED CLOVER (*TRIFOLIUM PRATENSE* L.)

V. VACEK, J. SMRZ

Abstract:

VACEK V., SMRZ J., 1984, Comparison of Czechoslovak and Romanian varieties of Red Clover (*Trifolium pratense* L.) Not. bot. hort. agrobot., Cluj, XIV. 17-24

Twenty-eight varieties of red clover (*Trifolium pratense* L.) - among them three Romanian varieties - were tested under different conditions at three stations of the Research and Breeding Institute for Fodder Plants (1980-1982). Results of the first harvest year (1981), Czechoslovak varieties and new breedings were compared with Romanian varieties: in total yields of green fodder from three stations the variety Napoca Tetra was best. The variety was characterized by large leaf area, typical for Romanian diploid varieties as well. From the viewpoints of quality, crude protein and fibre content the Romanian varieties were among the best. Rate of infection by viruses was the lowest in the tetraploid varieties (among them in Napoca Tetra); the diploid varieties suffered from virus diseases to a greater extent.

Key words: *Trifolium pratense*, variety trial, Czechoslovakia, Romania.

Adress: Dr. V. Vacek, dr. J. Smrz, Research and Breeding Institute for Fodder Plants, 664 41 Troubsko, Brno, Czechoslovakia.

Systematic and permanent study of foreign varieties of this research project was carried out at Troubsko-based Research and Breeding Institute for Fodder Plants. Two hundred and six varieties of red clover (*Trifolium pratense* L.) have been evaluated since 1961. The aim of the studies was to compare contemporary Czechoslovak traits and find

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