

## FLORIST RELICTS FROM HĂRMAN MARSH

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**ABSTRACT.** Hărman Marsh Nature Reserve is part of the natural botanical sites of Community importance Natura 2000. The importance of the site is given by the presence of numerous relict species which are present in the eutrophic marsh. The conservation of relict species from Hărman marsh until now depended on the hydrographic network and topoclimatic conditions adding the anthropogenic activity. The objective of the paper is to present the glacial relicts found in the field at Hărman marsh, and complete them with data from the literature.

**Key words:** floristic relicts, Hărman Marsh, phytocoenotic integration, habitat.

**REZUMAT. Relicte floristice din Mlaștina Hărman.** Rezervația Naturală Mlaștina Hărman face parte din siturile botanice de importanță comunitară Natura 2000 din România. Importanța sporită a sitului este dată de prezența numeroaselor specii relicte caracteristice mlaștinii eutrofe. Conservarea speciilor relicte până în zilele noastre la mlaștina de la Hărman, a depins în mare măsură de rețeaua hidrografică și de condițiile topoclimatice la care se adaugă și activitatea antropogenă. Prezenta lucrare are drept obiectiv prezentarea relictelor glaciare întâlnite în studiile din teren efectuate la mlaștina Hărman, completate cu date din literatură.

**Cuvinte cheie:** relicte floristice, mlaștina Hărman, integrare fitocenotică, habitat.

### INTRODUCTION

Hărman marsh is the most important marsh in terms of floristic composition, which brings together numerous relicts and rare species of Țara Bârsei (Pop, 1955).

The importance of the eutrophic marshes is given by the large conservation ability of the glacial relicts, being higher than peat bogs (Pop, 1960). Relicts conservation capacity in the eutrophic Hărman marsh depends on topoclimatic and hydrographic network conditions, dominated by low temperatures of shallow streams that permeates the substrate (Morariu, 1966; Brînzan, 2013).

G. Moesz describes for the first time using common names, but floristic data, the Hărman marsh in 1908 (Pop, 1960). In 1911 Römer prepares a general outline of the flora from Hărman marsh (Pop, 1960), continued by an extensive

research conducted by E. Pop (1954, 1955, 1960), other studies to Hărman in 1957 were made by: E. Pop, B. Diaconeasa, N. Boșcaiu, V. Soran, F. Micle (Pop, 1960).

Currently Hărman marsh has an area of 4.5 ha: 2 ha are fenced and 2.5 ha are considered buffer zone (Life for Marsh, 2014).

Some of the relicts found in Hărman marsh are rare or endangered species on the Red List of Romania such as: *Drosera anglica* Huds., *Primula farinosa* L., *Pedicularis sceptrum-carolinum* L. and *Carex davalliana* All. (Sârbu, 2007).

## MATERIAL AND METHODS

Relict species are presented in phylogenetic order, classification, nomenclature and synonyms being adopted after **Flora Europaea** (Tutin et al. 1964-1980, 1993) and **Flora ilustrată a României** (Ciocârlan, 2009). To present the bioforms, geoelements and the ecology of species, were collected bibliographic data from two sources: **Flora cormofitelor spontane și cultivate din România** (Sanda et al., 2003) and **Flora ilustrată a României** (Ciocârlan, 2009). For each species were mentioned the botanists, who confirmed their presence at Hărman marsh: from literature (Lit.) and the species found by us (Exs.). The setting of the appropriate habitat and the plant associations of relict species was made following the sources: **Les associations végétales de Roumanie** (Coldea, 1997), **Manual de interpretare a Habitadelor Natura 2000 din România** (Gafta & Mountford, 2008), **Habitatele din România** (Doniță, 2005) and **Habitat și situri de Interes Comunitar** (Schneider & Drăgulescu, 2005).

**Abbreviations:** Al-Albania, Au-Austria, Be-Belgium, Br-Great Britan, Bu-Bulgaria, Cz-Czech Republic, Da-Denmark, Fe-Finland, Ga-France, Ge-Germany, Hb-Ireland, He-Switzerland, Ho-Holland, Hs-Spain, Hu-Hungary, Is-Iceland, It-Italy, Lu-Portugal, No-Norway, Po-Poland, Rm-Romania, Rs-Russia, Su-Sweden; H-hemicriphophytes, HH-helohidatophytes, G-geophytes, Mph-megaphanerophytes; Alp-Alpic, Balc-Balkan, Carp-Carpathian, Circ (Bor)-Circumboreal, Cont-Continental, Eur-European, Eua-Eurasian, Bor-Boreal, Circ-Circumpolar, Euc-Central-European, Eua (Bor)-Eurasianic boreal; U-Humidity, T-Temperature, R-Soil reaction.

## REZULTS AND DISSCUTION

The eutrophic marsh from Hărman holds numerous relict species, found in field trips, completed with those mentioned in literature: *Adenophora liliifolia* (L.) Ledeb. ex A.DC., *Allium ericetorum* Thore, *Angelica palustris* (Besser) Hoffm, *Armeria maritima* (Mill.) Willd. ssp. *barcensis* (Simonk.) P.Silva, *Calamagrostis stricta* (Timm) Koeler, *Calla palustris* L., *Carex buxbaumii* Wahlenb., *Carex davalliana* Sm., *Carex acuta* L., *Carex hostiana* DC., *Carex lepidocarpa* Tausch, *Carex panicea* L., *Carex pseudocyperus* L., *Carex riparia* Curtis, *Carex rostrata* Stokes, *Carex vesicaria* L., *Carex nigra* (L.) Reichard, *Cladium mariscus* (L.) Pohl, *Drosera anglica* Huds., *Euphrasia officinalis* ssp. *kernerii* (Wettst.) Eb.



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Fisch., *Euphrasia hirtella* Jord. ex Reut., *Eriophorum angustifolium* Honck., *Eriophorum latifolium* Hoppe, *Equisetum palustre* L., *Frangula alnus* Mill., *Galium boreale* L., *Ligularia sibirica* (L.) Cass., *Liparis loeselii* (L.) Rich., *Molinia caerulea* (L.) Moench, *Pedicularis sceptrum-carolinum* L., *Polygala amarella* Crantz, *Populus tremula* L., *Primula farinosa* L., *Ribes nigrum* L., *Salix cinerea* L., *Salix repens* L., *Sanguisorba officinalis* L., *Sesleria caerulea* (L.) Ard., *Swertia perennis* L., *Thalictrum lucidum* L., *Triglochin maritime* L., *Viburnum opulus* L. along with many other species.

Further on, some of the relict species of community importance will be presented in phylogenetic order, also the endemic species and the species that reach the southern limit of the European area at Härman marsh. For each relict were mentioned: synonyms, common name (in Romanian), area, habitat type, bioform, geoelement, ecology, the botanist who had mentioned the species at Härman and their phytocoenotic integration.

### ***Armeria maritima* (Mill.) Willd. ssp. *barcensis* (Simonk.) P.Silva.**

- Synonyms: *Armeria alpina* Willd. ssp. *barcensis* (Simonk.) Jáv.; *Armeria barcensis* Simonk.
- Common name: jimlă.
- Area: Rm.
- Natura 2000 Habitat: 7230 Alkaline fens.
- Bioform: H.
- Geoelement: Eur.
- Ecology: U3T3R2.
- Lit.: Drăgulescu, 1999; Ularu & Heltman, 1994; Morariu, 1964; Pop, 1960.
- Phytocoenotic integration: *Orchido - Schoenetum nigricantis* Oberd., 1957 (Syn.: *Schoenetum nigricantis* Pop et al., 1962; *Schoeneto-Armerietum barcensis* Morariu, 1967).

### ***Ribes nigrum* (L.).**

- Synonyms: *Ribes nigrum* var. *europaeum* Jancz.
- Common name: coacăz negru.
- Area: Au, Be, Br, Bu, Cz, Da, Fe, Ga, Ge, Ho, Hu, It, Ju, No, Po, Rm, Rs, Su.
- Natura 2000 Habitat: 7210\* Calcareous fens with *Cladium mariscus* and *Caricion davallianae*.
- Bioform: M/Ph.
- Geoelement: Eua.
- Ecology: U0T0R3.
- Lit.: Drăgulescu, 1999; Exs.; Matei, 2014.
- Phytocoenotic integration: *Cladietum marisci* Allorge, 1922 ex Zobrist, 1935.

*Sanguisorba officinalis* L. (Photo 1).



Photo 1 - *Sanguisorba officinalis* L. (Matei, 2014).

- Synonyms: *Poterium officinale* A.Gray, *Sanguisorba polygama* F.Nyl.
- Common name: sorbestrea.
- Area: Al, Au, Be, Br, Bu, Cz, Da, Ga, Ge, Gr, Hb, He, Ho, Hs, Hu, Is, It, Ju, No, Po, Rm, Rs, Su
- Natura 2000 Habitat: 7230 Alkaline fens; 7210\* Calcareous fens with *Cladium mariscus* and *Caricion davalliana*; 7140 Transition mires and quaking bogs.
- Bioform: H.
- Geoelement: Eua (Bor).
- Ecology: U3.5T3R0.
- Lit.: Drăgulescu, 1999; Morariu, 1964; Exs.: Matei, 2014.
- Phytocoenotic integration: *Cladietum marisci* Allorge, 1922 ex Zobrist, 1935; *Caricetum rostratae* Rubel, 1912; *Eriophoretum angustifoliae* Morariu, 1964.

*Frangula alnus* Mill.

- Synonyms: *Rhamnus frangula* L., *Frangula nigra* Samp.
- Common name: crușin.
- Area: Al, Au, Be, Br, Bu, Cz, Da, Fe, Ga, Ge, Gr, Hb, He, Ho, Hs, Hu, It, Ju, Lu, No, Po, Rm, Rs, Su, Tu.
- Natura 2000 Habitat: 7210\* Calcareous fens with *Cladium mariscus* and *Caricion davalliana*.
- Bioform: M/Ph.
- Geoelement: Eua.
- Ecology: U4T3R3.

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- Lit.: Drăgulescu, 1999; Exs.: Matei, 2014.
- Phytocoenotic integration: *Cladietum marisci* Allorge, 1922 ex Zobrist, 1935.

### *Drosera anglica* Huds.

- Synonyms: *Drosera longifolia* L.
- Common name: roua cerului.
- Area: Au, Be, Br, Cz, Da, Fe, Ga, Ge, Gr, Hb, He, Ho, Hs, Hu, It, Ju, No, Po, Rm, Rs, Su.
- Natura 2000 Habitat: 7230 Alkaline fens.
- Bioform: H.
- Geoelement: Circ.
- Ecology: U5T2.5R2.
- Lit.: Drăgulescu, 1999; Pop, 1960; Exs.: Matei, 2014.
- Phytocoenotic integration: *Orchido - Schoenetum nigricantis* Oberd., 1957 (Syn.: *Schoenetum nigricantis* Pop et al., 1962; *Schoeneto-Armerietum barcensis* Morariu, 1967).

### *Salix cinerea* L.

- Synonyms: *Salix aurita* L. var. *cinerea* (L.) Fiori.
- Common name: zălog.
- Area: Al, Au, Be, Br, Bu, Cz, Da, Fe, Ga, Ge, Gr, Hb, Ho, Hs, Hu, It, Ju, No, Po, Rm, Rs, Su, Tu.
- Natura 2000 Habitat: 7210\* Calcareous fens with *Cladium mariscus* and *Caricion davallianae*.
- Bioform: M.
- Geoelement: Eua.
- Ecology: U5T3R3.
- Lit.: Drăgulescu, 1999; Exs.: Matei, 2014.
- Phytocoenotic integration: *Cladietum marisci* Allorge, 1922 ex Zobrist, 1935.

### *Primula farinosa* L.

- Synonyms: -.
- Common name: ochii-broaștei.
- Area: Au, Br, Bu, Cz, Da, Fe, Ga, Ge, He, Hs, Hu, It, Ju, Po, Rm, Rs, Su.
- Natura 2000 Habitat: 7210\* Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*; 7230 Alkaline fens.
- Bioform: H.
- Geoelement: Alp-Carp-Balc.
- Ecology: U3T1.5R3.
- Lit.: Drăgulescu, 1999; Morariu, 1964; Pop, 1960.

- Phytocoenotic integration: *Eriophoretum angustifoliae* Morariu, 1964; *Cladietum marisci* Allorge, 1922 ex Zobrist, 1935; *Caricetum davallianae* Dutoit, 1924.

***Swertia perennis* L.**

- Synonyms: -.
- Common name: -.
- Area: Au, Bu, Cz, Ga, Ge, He, Hs, It, Ju, Po, Rm, Rs.
- Natura 2000 Habitat: 7230 Alkaline fens.
- Bioform: H.
- Geoelement: Circ (Bor).
- Ecology: U5T2.5R0.
- Lit.: Drăgulescu 1999; Pop, 1960.
- Phytocoenotic integration: *Orchido - Schoenetum nigricantis* Oberd., 1957 (Syn.: *Schoenetum nigricantis* Pop et al., 1962; *Schoeneto-Armerietum barcensis* Morariu, 1967).

***Galium boreale* L.**

- Synonyms: *Galium hyssopifolium* Hoffm., *Galium septentrionale* Roem. & Schult.
- Common name: -.
- Area: Al, Au, Be, Br, Bu, Cz, Da, Fe, Ga, Ge, Hb, He, Ho, Hs, Hu, Is, It, Ju, Lu, No, Po, Rm, Rs, Su.
- Natura 2000 Habitat: 6410 *Molinia* meadows on calcareous, peaty or clayey-siltladen soils (*Molinion caeruleae*).
- Bioform: H.
- Geoelement: Eua.
- Ecology: U4T2R4.
- Lit.: Drăgulescu, 1999; Pop, 1960; Exs.: Matei, 2014.
- Phytocoenotic integration: *Junco-Molinietum* Preising, 1951.

***Viburnum opulus* L.**

- Synonyms: *Opulus glandulosa* Mönch.
- Common name: călin.
- Area: Al, Au, Be, Br, Bu, Cz, Da, Fe, Ga, Ge, Hb, He, Ho, Hs, Hu, It, Ju, No, Po, Rm, Rs, Su.
- Natura 2000 Habitat: 6410 *Molinia* meadows on calcareous, peaty or clayey-siltladen soils (*Molinion caeruleae*).
- Bioform: M.
- Geoelement: Circ.
- Ecology: U4T3R4.
- Lit.: Drăgulescu, 1999; Exs.: Matei, 2014.
- Phytocoenotic integration: *Junco-Molinietum* Preising, 1951,

*Pedicularis sceptrum-carolinum* L.

- Synonyms: -.
- Common name: darie.
- Area: Cz, Da, Fe, Ge, No, Po, Rm, Rs, Su.
- Natura 2000 Habitat: 7210\* Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*.
- Bioform: H.
- Geoelement: Eua (Bor).
- Ecology: U4.5T2.5R4.5.
- Lit.: Drăgulescu, 1999; Ularu & Heltman, 1994; Morariu, 1964; Pop, 1960.
- Phytocoenotic integration: *Cladietum marisci* Allorge, 1922 ex Zobrist, 1935.

*Ligularia sibirica* (L.) Cass. (Photo 2).



Photo 2 - *Ligularia sibirica* (L.) Cass. (Matei, 2014).

- Synonyms: *Senecio cacaliifolius* Sch. Bip; *Cineraria sibirica* L.; *Ligularia bucovinensis* Nakai.
- Common name: curechiul de munte, gălbinele.
- Area: Au, Bu, Cz, Ga, Hu, Po, Rm, Rs.
- Natura 2000 Habitat: 7140 Transition mires and quaking bogs; 7230 Alkaline fens; 7210\* Calcareous fens with *Cladium mariscus* and *Caricion davallianae*.
- Bioform: H.
- Geoelement: Eua (Bor).
- Ecology: U4T2R3.5.

- Lit.: Drăgulescu, 1999; Ularu & Heltman, 1994; Morariu, 1964; Pop, 1960; Pop E. & Diaconeasa B. & Boşcaiu H. & Soran V. & Micle F. 1957, Römer, 1911; Exs.: Matei, 2014.
- Phytocoenotic integration: *Cladietum marisci* Allorge, 1922 ex Zobrist, 1935 sp. accompanying; *Orchido - Schoenetum nigricantis* Oberd., 1957 (Syn.: *Schoenetum nigricantis* Pop et al., 1962; *Schoeneto - Armerietum barcensis* Morariu, 1967); *Caricetum rostratae* Rubel, 1912; *Eriophoretum angustifoliae* Morariu, 1964.

***Allium ericetorum* Thore.**

- Synonyms: *Allium ochroleucum* Waldst. & Kit., *Allium xanthicum* Griseb. & Schur.
- Common name: ai sălbatic, usturoi sălbatic.
- Area: Au, Cz, Ga, Hs, It, Ju, Lu, Rm, Rs.
- Natura 2000 Habitat: 7210\* Calcareous fens with *Cladium mariscus* and *Caricion davallianae*.
- Bioform: G.
- Geoelement: Alp-Carp-Balc.
- Ecology: U0T2R0.
- Lit.: Morariu, 1964; Exs.: Matei, 2014.
- Phytocoenotic integration: *Cladietum marisci* Allorge, 1922 ex Zobrist, 1935.

***Liparis loeselii* (L.) Rich.**

- Synonyms: *Malaxis loeselii* (L.) Sw.; *Sturmia loeselii* (L.) Rchb.; *Pseudorchis loeselii* (L.) Gray.
- Common name: moșișoare.
- Area: Au, Be, Br, Cz, Da, Fe, Ga, Ge, Gr, Hb, He, Ho, Hs, Hu, It, Ju, No, Po, Rm, Rs, Su.
- Natura 2000 Habitat: 7230 Alkaline fens.
- Bioform: G.
- Geoelement: Circ.
- Ecology: U5T3.5R4.5.
- Lit.: Drăgulescu, 1999; Exs.: Matei, 2014.
- Phytocoenotic integration: *Orchido - Schoenetum nigricantis* Oberd., 1957 (Syn.: *Schoenetum nigricantis* Pop et al., 1962; *Schoeneto - Armerietum barcensis* Morariu, 1967); *Caricetum davallianae* Dutoit, 1924.

***Carex davalliana* Sm.**

- Synonyms: *Carex davalliana* Sm. ssp. *cyrnea* (Briq.) Cif. & Giacom.
- Common name: -.
- Area: Au, Co, Cz, Ga, Ge, Gr, He, Hs, Hu, It, Ju, Po, Rm, Rs.
- Natura 2000 Habitat: 7230 Alkaline fens.
- Bioform: H.

- Geoelement: Euc (mont).
- Ecology: U3.5T2.5R3.
- Lit.: Drăgulescu, 1999; Morariu, 1964; Pop, 1960; Exs.: Matei, 2014.
- Phytocoenotic integration: *Caricetum davallianae* Dutoit, 1924; *Orchido - Schoenetum nigricantis* Oberd., 1957 (Syn.: *Schoenetum nigricantis* Pop et al., 1962; *Schoeneto-Armerietum barcensis* Morariu, 1967); *Cladietum marisci* Allorge, 1922 ex Zobrist, 1935; *Eriophoretum angustifoliae* Morariu, 1964.

***Carex acuta* L.**

- Synonyms: *Carex sareptana* V. I. Krecz.; *Carex mauritanica* Boiss. & Reut.; *Carex gracilis* Curtis ssp. *intermedia* (Ěelak.) Soó; *Carex panormitana* Guss.; *Carex gracilis* Curtis; *Carex gracilis* Curtis ssp. *gracilis*; *Carex cespitosa* L. var. *panormitana* (Guss.) Fiori; *Carex tricostata* Fr.; *Carex fuscovaginata* sensu V. I. Krecz., non Kük.; *Carex acuta* L. ssp. *intermedia* (Ěelak.); *Carex cespitosa* L. var. *gracilis* (Curtis) Fiori; *Carex graciliformis* V. I. Krecz.; *Carex acuta* L. ssp. *erecta* Kük.
- Common name: rogoz.
- Area: Al, Au, Az, Be, Bl, Br, Bu, Cz, Da, Fe, Ga, Ge, Gr, Hb, He, Ho, Hs, Hu, It, Ju, Lu, No, Po, Rm, Rs, Sa, Si, Su.
- Natura 2000 Habitat: 7210\* Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*.
- Bioform: G (HH).
- Geoelement: Circ.
- Ecology: U5T3R0.
- Lit.: Morariu, 1964; Exs.: Matei, 2014.
- Phytocoenotic integration: *Cladietum marisci* Allorge, 1922 ex Zobrist 1935 (accompanying sp.).

***Carex lepidocarpa* Tausch**

- Synonyms: *Carex flava* L. ssp. *lepidocarpa* (Tausch) Nyman; *Carex flavella* auct., non V. I. Krecz. pro parte; *Carex flava* L. ssp. *flava* var. *lepidocarpa* (Tausch) Godr.
- Common name: rogoz.
- Area: Al, Au, Be, Br, Bu, Co, Cz, Da, Fe, Ga, Ge, Gr, Hb, He, Ho, Hs, Hu, It, Ju, No, Po, Rm, Rs, Rs.
- Natura 2000 Habitat: 7230 Alkaline fens.
- Bioform: H.
- Geoelement: Eur.
- Ecology: U4.5T2.5R4.5.
- Lit.: Drăgulescu, 1999; Exs.: Matei, 2014.
- Phytocoenotic integration: *Orchido - Schoenetum nigricantis* Oberd., 1957 (Syn.: *Schoenetum nigricantis* Pop et al., 1962; *Schoeneto-Armerietum barcensis* Morariu, 1967).

***Carex panicea* L.**

- Synonyms: *Carex panicea* L. ssp. *dalmatica* Degen & Lengyel.
- Common name: rogoz.
- Area: Al, Au, Az, Be, Br, Bu, Co, Cz, Da, Fa, Fe, Ga, Ge, Gr, Hb, He, Ho, Hs, Hu, Is, It, Ju, Lu, No, Po, Rm, Rs, Su.
- Natura 2000 Habitat: 7230 Alkaline fens, 7210\*; Calcareous fens with *Cladium mariscus* and *Caricion davallianae*.
- Bioform: G.
- Geoelement: Circ.
- Ecology: U3.5T3R0.
- Lit.: Drăgulescu, 1999; Morariu, 1964; Exs.: Matei, 2014.
- Phytocoenotic integration: *Caricetum davallianae* Dutoit, 1924; *Orchido - Schoenetum nigricantis* Oberd., 1957 (Syn.: *Schoenetum nigricantis* Pop et al., 1962; *Schoeneto - Armerietum barcensis* Morariu, 1967; *Cladietum marisci* Allorge, 1922 ex Zobrist, 1935, accompanying sp.); *Eriophoretum angustifoliae* Morariu, 1964.

***Cladium mariscus* (L.) Pohl. (Photo 3).**



Photo 3 - *Cladium mariscus* (L.) Pohl. (Matei, 2014).

- Synonyms: *Carex panicea* L. ssp. *dalmatica* Degen & Lengyel.
- Common name: rogoz mare (rogoz dinți de fierăstrău).
- Area: Al, Au, Az, Be, Bl, Br, Bu, Co, Cr, Cz, Da, Fe, Ga, Ge, Gr, Hb, He, Ho, Hs, Hu, It, Ju, Lu, No, Po, Rm, Rs, Sa, Si, Su.
- Natura 2000 Habitat: 7210\* Calcareous fens with *Cladium mariscus* and *Caricion davallianae*; 7230 Alkaline fens.
- Bioform: G (HH).



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- Geoelement: Eur.
- Ecology: U6T0R5.
- Lit.: Drăgulescu, 1999; Ularu & Heltman 1994; Morariu, 1964; Exs.: Matei, 2014.
- Phytocoenotic integration: *Cladietum marisci* Allorge 1922 ex Zobrist 1935, *Orchido* – *Schoenetum nigricantis* Oberd. 1957 (Syn.: *Schoenetum nigricantis* Pop et al. 1962; *Schoeneto-Armerietum barcensis* Morariu 1967).

### *Molinia caerulea* (L.) Moench.

- Synonyms: -.
- Common name: iarbă albastră.
- Area: Al, Au, Be, Br, Bu, Co, Cz, Da, Fa, Fe, Ga, Ge, Gr, Hb, He, Ho, Hs, Hu, It, Ju, Lu, No, Po, Rm, Rs, Su, Tu.
- Natura 2000 Habitat: 7230 Alkaline fens; 7120 Degraded raised bogs still capable of natural regeneration; 7210\* Calcareous fens with *Cladium mariscus* and *Caricion davallianae*.
- Bioform: H.
- Geoelement: Eua.
- Ecology: U3.5T3R0.
- Lit.: Drăgulescu, 1999; Ularu & Heltman, 1994; Morariu, 1964; Exs.: Matei, 2014.
- Phytocoenotic integration: *Eriophoretum angustifoliae* Morariu, 1964; *Orchido* - *Schoenetum nigricantis* Oberd., 1957 (Syn.: *Schoenetum nigricantis* Pop et al., 1962; *Schoeneto* - *Armerietum barcensis* Morariu, 1967); *Caricetum davallianae* Dutoit, 1924; *Cladietum marisci* Allorge, 1922 ex Zobrist, 1935.

### *Sesleria caerulea* (L.) Ard.

- Synonyms: *Sesleria uliginosa* Opiz; *Sesleria caerulea* (L.) Ard. ssp. *uliginosa* (Opiz) Hayek.
- Common name: coada iepurelui.
- Area: Au, Bu, Cz, Fe, Ge, He, It, Ju, Po, Rm, Rs, Su.
- Natura 2000 Habitat: 7120 Degraded raised bogs still capable of natural regeneration, 7230 Alkaline fens; 7210\* Calcareous fens with *Cladium mariscus* and *Caricion davallianae*.
- Bioform: H.
- Geoelement: Euc.
- Ecology: U2T2.5R4.
- Lit.: Drăgulescu, 1999; Morariu, 1964; Pop, 1960; Exs.: Matei, 2014.
- Phytocoenotic integration: *Eriophoretum angustifoliae* Morariu, 1964; *Orchido* - *Schoenetum nigricantis* Oberd., 1957 (Syn.: *Schoenetum nigricantis* Pop et al., 1962; *Schoeneto-Armerietum barcensis* Morariu,

1967); *Cladietum marisci* Allorge, 1922 ex Zobrist, 1935; *Caricetum davallianae* Dutoit, 1924.

## CONCLUSIONS

The importance of the eutrophic Hărman marsh is mostly due to the conservation capacity of the existing glacial relicts, many of them belonging to the *Cyperaceae* and *Poaceae* family.

Associations *Orchido - Schoenetum nigricantis* Oberd., 1957 and *Cladietum marisci* Allorge, 1922 ex Zobrist, 1935 include numerous characteristic and accompanying relict species; the species *Eriophorum angustifolium*, *Cladium mariscus*, *Carex rostrata*, *Carex davalliana* and *Armeria maritima* ssp. *barcensis* edify plant associations in the Hărman marsh. Knowing the current conditions of glacial relicts and vegetation found in the Hărman marsh represents an important factor in establishing the necessary conservation measures.

The research performed in July and August 2014 supplemented with data from the literature allowed the setting of a large number of glacial relicts and endemic species which are included in the Red Lists of Romania such as: the Red **List of the extinct, endangered or vulnerable and rare vascular plants from the Romanian Flora**, the Red Book of the **vascular plants from Romania** & and the Red **List of the superior plants from Romania**.

Currently the site is administered by Fundația Carpați (the Carpathian Foundation) and the Forestry Department Brașov. At the moment activities for the protection and rehabilitation of the site are carried out through the project **Life for Marsh LIF II NAT/RO/828**.

## REFERENCES

- BOȘCAIU N., COLDEA G., HOREANU C., 1994 - *Lista Roșie a plantelor vasculare dispărute, periclitare, vulnerabile și rare din flora României*. Ocrotirea Naturii. Ed. Academiei Republicii Populare Române, București. **38 (1)**: 45-56.
- BRÎNZAN T., BĂDĂRĂU A. S., MURARIU D., STAICU C., PATRICHE N., CIUBUC C., HULEA D., 2013 - *Catalogul habitatelor, speciilor și siturilor Natura 2000 în România*. Ed. Fundația Centrul Național pentru Dezvoltare Durabilă, București. 37-348.
- CIOCÂRLAN V., 2009 - *Flora ilustrată a României*. Ed. Ceres, București. **2**: 817 p.
- COLDEA GH., 1997 - *Les associations végétales de Roumanie, les associations herbacées naturelles*. Ed. Universitaires de Cluj, Cluj Napoca. **1**: 261 p.
- DIHORU, G., NEGREAN, G., 2009 - *Cartea roșie a plantelor vasculare din România*. Ed. Acad. Rom., București. 630 p.
- DONIȚĂ N., POPESCU A., PAUCĂ-COMĂNESCU M., MIHĂILESCU S., BIRIȘ I. A., 2005 - *Habitatele din România*. Ed. Tehnică Silvică, București. 306-308.
- DRĂGULESCU C., 1999 - *The hydrophilous and hygrophilous flora and vegetation from the upper and middle Olt river valley*. Transylvanian Review of Systematical and Ecological Research. Sibiu. **1**: 13-30.

## FLORIST RELICTS FROM HĂRMAN MARSH

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- GAFTA D., MOUNTFORD O., ALEXIU V., ANASTASIU P., BĂRBOS M., BURESCU P., COLDEA Gh., DRĂGULESCU C., FĂGĂRAȘ M., IRINA G., GROZA Gh., MICU D., MIHĂILESCU S., MOLDOVAN O., NICOLIN A., NICULESCU M., OPREA A., OROIAN S., PĂUCĂ-COMĂNESCU M., SÂRBU I., ȘUTEU A., 2008 - *Manual de interpretare a habitatelor Natura 2000 din România*. Ed. Risoprint, Cluj-Napoca. 48-59.
- MORARIU I. 1964 - *Aspecte din vegetația Rezervației de Mlaștină de la Hărman*. Ocrotirea Naturii. Ed. Academiei Republicii Populare Române, București. **8 (1)**: 9-20.
- MORARIU I., ULARU P., CIOCHINA V., 1966 - *Ce ocrotim din natura regiunii Brașov*. Sfatul popular al regiunii Brașov, Consiliul regional pentru ocrotirea naturii, Brașov. 52-54.
- 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. Ed. Acad. Române, Institutul de Biologie, București. **1**: 1-52.
- POP E., 1955 - *Mlaștinile noastre de turbă și problema ocrotirii lor*. Ocrotirea Naturii. Ed. Academiei Republicii Populare Române, București. **1**: 57-105.
- POP E., 1960 - *Mlaștinile din Republica Populară Română*. Ed. Academiei Republicii Populare Române, București.
- SANDA V., BIȚĂ D. C., BARABAȘ N., 2003 - *Flora cormofitelor spontane și cultivate din România*. Ed. Ion Borcea, Bacău. 316 p.
- SANDA V., BIȚĂ-NICOLAIE C., BARABAȘ N., NEDELICU A. G., 2006 - *Breviar Fitocenologic*. Ed. Rovimed, Bacău. 79-80.
- SÂRBU A., BORTAȘ V., OPREA A., SÂRBU I., TĂNASE C., CRISTEA V., NEGREAN G., 2007 - *Arii speciale pentru protecția și conservarea plantelor în România*. Ed. Victor B Victor, București. 129-130.
- SCHNEIDER E., DRĂGULESCU C., 2005 - *Habitate și situri de Interes Comunitar*. Ed. Lucian Blaga University, Sibiu. 64-65, 104-105.
- TUTIN T. G., HEYWOOD V. H., BURGESS N. A., VALENTINE D. H., WALTERS S. M., WEBB D. A., (eds.), 1964-1980 - *Flora Europaea*. Cambridge University Press. **9**: 587-590.
- \*\*\*Royal Botanic Garden Edinburgh. *Flora Europaea*. Online at: <http://rbgweb2.rbge.org.uk/FE/fe.html> (accessed at 5.09.2014).
- \*\*\*Fundația Carpați. Life for Marsh. On line at: <http://www.fundatiacarpati.ro/formarsh/> (accessed at 5.09.2014).