

## FLORA AND VEGETATION ASPECTS IN THE FOREST FROM “PIELEȘTI INN” (OLTENIA-ROMANIA)

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**Abstract.** In the paper there are presented the results of the researches made during 8 years. There have been analysed both the floristic composition of the forest and the sequence of vegetation and compared with other forest floristic composition, framed in this association. Also, some comments were made referring to the coenotaxonomic framing of these plant formations from the south-west part of Romania.

**Keywords:** flora, vegetation, Pielești, Oltenia, Romania.

**Rezumat. Aspecte floristice și de vegetație din pădurea de la „Hanul Pielești” (Oltenia-Romania).** Lucrarea prezintă rezultatele cercetărilor efectuate pe o perioadă de circa 8 ani. A fost urmărită atât alcătuirea floristică a acestei păduri cât și succesiunea vegetației și comparată cu compoziția floristică a altor păduri încadrate în această asociație. De asemenea, au fost făcute câteva comentarii referitoare la încadrarea cenotaxonomică a acestor formațiuni vegetale din partea de SV a României.

**Cuvinte cheie:** floră, vegetație, Pielești, Oltenia, România.

### INTRODUCTION

The research area is located in the northern extremity of the Romanian Plain and southern part of the Getic Piedmont (PĂUN & CĂRȚU, 1980). The relief is characteristic to the piedmont plain with altitudes around 150-171 m, made of large fields, separated from deep valleys (PĂTRĂCHIOIU & PĂTRĂCHIOIU, 2010).

The forest is placed next to the European Road E574, with an area of 85 ha. The settlement was inhabited since ancient times, the people's presence in this village dating back in the Neolithic (approx. 5000 BC). The name of Pielești comes from a citizen called Stan Piele, skinner and merchant of skins, who gave his name to the village as he had many children (boys).

The study surface is placed in an area with temperate continental climate of lowland, with some sub-Mediterranean influences (POPESCU, 1996). The soils are brown and brown compact clay.

Some data about few taxa from Pielești are found in certain papers (PĂUN, 1966b). These include *Quercus frainetto* TEN. var. *minor* TEN. f. *minor*, *Equisetum palustre* L. f. *multicaule* BAENITZ and var. *simplicissimum* A. BR., *Nasturtium officinale* R. BR., *Trifolium fragiferum* L. subsp. *bonannii* (C. PRESL) SOJÁK, *Berula erecta* (HUDS.) COVILLE, *Matricaria perforata* MÉRAT.

As phytocoenology, the forest form Pielești Inn is not mentioned in specialty literature.

### MATERIAL AND METHODS

The work method is the usual one for such a study. This involves many field trips, in different times of the year to analyse the entire vegetation. During the eight years of study, the floristic composition was noted in the book to follow the sequence of vegetation on this period. The determination was made using the specialty literature (BELDIE, 1977, 1979; CIOCĂRLAN, 2009). The classification of the phytocoenoses was made according to SANDA et al. (2001).

The obtained data have been compared with the existing ones for the same plant formation to observe any similarities or differences with the phytocoenosis from other stations with the same conditions.

The authors' abbreviations are according to BRUMMITT & POWELL (1992).

### RESULTS

#### Flora

Following the 8 year studies there has been identified a number of 201 species framed in the following taxonomical system:

Phyl. Spermatophyta, Cl. Magnoliophytina, Fam. Aristolochiaceae: *Aristolochia clematitis* L. - G., *Medit.*; Fam. Ranunculaceae: *Anemone nemorosa* L. - G., *Circ.*, *A. ranunculoides* L. - G., *Eur.*, *Caltha palustris* L. - H., *Circ.*, *Clematis vitalba* L. - Ph., *Eur. Centr.*, *Helleborus odoratus* WALDST. & KIT. - H., *Balc.*, *Isopyrum thalictroides* L. - H., *Eur. Centr.*, *Ranunculus acris* L. subsp. *acris* - H., *Euras.*, *R. constantinopolitanus* (DC.) D'URV. - H., *Balc.*, *R. ficaria* L. subsp. *bulbilifer* LAMBINON - H., *Euras.*; *R. repens* L. - H., *Euras.*, *R. sceleratus* L. - T., *Circ.*, *Thalictrum aquilegifolium* L. - H., *Eur.*, *T. minus* L. - H., *Euras. Cont.*; *T. simplex* L. - H., *Euras. Cont.*; Fam. Papaveraceae: *Chelidonium majus* L. - H., *Euras.*; Fam. Fumariaceae: *Corydalis cava* (L.) SCHWEIGG. & KÖRTE subsp. *marschalliana* (PALL.) HAYEK - G., *Eur.*, *C. solida* (L.) CLAIRV. - G., *Eur.*; Fam. Ulmaceae: *Ulmus glabra* HUDS. em. MOSS - Ph., *Euras.*, *U. minor* MILL. em. RICHENS

- Ph., Eur.; Fam. Urticaceae: *Urtica dioica* L. - H., Cosm., *Parietaria officinalis* L., H., Medit.-Submedit.; Fam. Fagaceae: *Quercus cerris* L., Ph., Submedit., *Q. frainetto* TEN. - Ph., Balc., *Q. pubescens* WILLD. - Ph., Submedit.; Fam. Betulaceae: *Alnus glutinosa* (L.) GAERTN. - Ph., Euras.; Fam. Caryophyllaceae: *Lychnis coronaria* (L.) DESR., - H., Medit., *L. viscaria* L. - CH.(H.), Euras., *Myosoton aquaticum* (L.) MOENCH - H., Euras., *Silene latifolia* POIR. subsp. *alba* (MILL.) GREUTER & BURDET - T., H., Euras., *S. vulgaris* (MOENCH) GARCKE - H., Euras., *Stellaria media* (L.) VILL. - T-HT., Cosm.; Fam. Polygonaceae: *Fallopia dumetorum* L. - T., Circ., *Polygonum lapathifolium* L. - T., Cosm., *Rumex sanguineus* L. - H., Eur.; Fam. Crassulaceae: *Sedum cepaea* L. - T., Medit., *S. maximum* (L.) HOFFM. - H., Eur.; Fam. Rosaceae: *Agrimonia eupatoria* L. - H., Submedit., *Agrimonia agrimonoides* (L.) DC. - H., Centr. Eur.-Medit., *Cerasus avium* (L.) MOENCH - PH., Submedit., *Crataegus monogyna* JACQ. - Ph., Euras., *Filipendula vulgaris* MOENCH - H., Euras., *Fragaria vesca* L. - H., Euras., *Geum urbanum* L. - H., Circ., *Malus sylvestris* Mill. - Ph., Eur., *Potentilla argentea* L. subsp. *argentea* - H., Euras., *P. micrantha* RAMOND ex DC. - H., Submedit., *Prunus spinosa* L. - Ph., Eur., *Pyrus pyraeaster* (L.) BURGS. - Ph., Eur., *Rosa canina* L. - Ph., Eur., *Rubus caesius* L. - Ph., Eur., *R. candicans* WEIHE EX RCHB. subsp. *thyrsanthus* (FOCKE) GAYER - Ph., Eur. Centr. și SV., *Sanguisorba minor* SCOP. - H., Euras.; Fam. Fabaceae: *Astragalus cicer* L. - H., Euras. Cont., *A. glycyphyllos* L. - H., Euras.-Submedit., *Chamaecytisus albus* (HACQ.) ROTHM. var. *pallidus* SCHRAD. - Ph., Pont.-Pan-Balc., *Ch. heuffelii* (WIERZB.) ROTHM. - Ph., Pont.-Pan.-Balc.; *Coronilla varia* L. - H., Centr. Eur.-Submedit., *Dorycnium herbaceum* VILL. - Ch., Centr. and SE. Eur., *Galega officinalis* L. - H., Pont.-Medit., *Genista tinctoria* L. subsp. *elatior* (J. KOCH) NYMAN - Ch., Euras., *Lathyrus niger* (L.) BERNH., G., Eur. Centr., *L. venetus* (MILL.) WOHLF. - G., Pont.-Medit., *L. vernus* (L.) BERNH. - G., Euras., *Lotus corniculatus* L. - H., Euras., *Medicago lupulina* L. - T.-H., Euras., *Melilotus albus* MEDIK. - HT., Euras., *M. officinalis* Lam. - HT., Euras., *Robinia pseudoacacia* L. - Ph., Am. de N., *Trifolium campestre* SCHREB. - T., Eur., *T. medium* L. subsp. *medium* - H., Euras., *Vicia cracca* L. - H., Euras., *V. grandiflora* Scop., T., Pont.-Balc.-Cauc.; *V. dumetorum* L. - H., Eur. Centr.; Fam. Cornaceae: *Cornus mas* - Ph., Pont. Medit., *C. sanguinea* - Ph., Eur. Centr., Fam. Celastraceae: *Evonymus europaeus* L. - Ph., Eur.; Fam. Euphorbiaceae: *Euphorbia amygdaloides* L. - Ch., Centr. Eur. Subatl. Submedit., *E. cyparissias* L. - H., Euras., *E. epithymoides* L. - H., Pan.-Balc., *E. virgata* WALDST. & KIT. - H., Euras.; Fam. Aceraceae: *Acer campestre* L. - Ph., Eur., *A. negundo* L. - Ph., North America, *A. tataricum* L. - Ph., Euras. Cont.; Fam. Oxalidaceae: *Oxalis corniculata* L. - T.-H., Adv. (Medit.); Fam. Geraniaceae: *Erodium cicutarium* (L.) L' HER. - T., Cosm., *Geranium pusillum* L. - T., Eur.; Fam. Araliaceae: *Hedera helix* L. - Ph., Atl.-Medit.; Fam. Apiaceae: *Anthriscus cerefolium* (L.) HOFFM. subsp. *trichosperma* (SCHULT.) ARCANG. - T., Pont.-Medit., *Daucus carota* L. subsp. *carota* - HT., Euras., *Ferulago sylvatica* (BESSER) RCHB. - H., Pont.-Medit., *Heracleum sphondylium* L. - HT.-H., Euras., *Peucedanum alsaticum* L. - H., Eur. Centr., *P. cervaria* (L.) LAPEYR. - H., Eur. Cont., *Torilis arvensis* (HUDS.) LINK - T., Eur. Centr.; Fam. Hypericaceae: *Hypericum perforatum* L. - H., Euras.; Fam. Tiliaceae: *Tilia tomentosa* MOENCH - Ph., Balc.-Pan.; Fam. Malvaceae: *Malva sylvestris* L. - HT.-H., Euras. Fam. Violaceae: *Viola arvensis* MURRAY - T., Cosm., *V. canina* L. subsp. *ruppilii* (ALL.) SCHÜBL. & MARTENS - H., Euras., *V. elatior* Fr. - H., Euras., *V. odorata* L. - H., Atl.-Medit.; Fam. Brassicaceae: *Alliaria petiolata* (M. BIEB.) CAVARA & GRANDE - H., Euras., *Barbarea vulgaris* R. BR. - HT.-H., Euras., *Berteroa incana* (L.) DC. - HT., Euras., *Cardaria draba* (L.) DESV. - H., Euras.-Medit., *Dentaria bulbifera* L. - G., Centr. Eur., *Erophila verna* (L.) CHEVALL. - T., Eur., *Rorippa austriaca* (CR.) BESS. - H., Pont., *R. sylvestris* (L.) BESS. - H., Euras., *Turritis glabra* L. - HT., Circ.; Fam. Primulaceae: *Primula acaulis* (L.) L. - H., Submedit.; Fam. Asclepiadaceae: *Vincetoxicum hirundinaria* MEDIK. - H., Euras. Cont.; Fam. Oleaceae: *Fraxinus angustifolia* VAHL. - Ph., Medit., *F. excelsior* L. - Ph., Eur., *Ligustrum vulgare* L. - Ph., Eur. (Submedit.); Fam. Solanaceae: *Solanum dulcamara* L. - Ch., Euras., *S. nigrum* L. - T., Cosm.; Fam. Convolvulaceae: *Calystegia sepium* (L.) R. BR. - G.(H.), Euras.; Fam. Boraginaceae: *Cerinthe minor* L. - T.-HT., Centr. Eur.-Medit., *Cynoglossum hungaricum* SIMONK. - HT., Pont. (Fig. 1), *Lithospermum arvense* L. - T., Euras., *L. purpureo-caeruleum* L. - H.-G., Eur. Centr.-Submedit., *Symphytum tuberosum* L. - H., Eur. Centr. și V.; Fam. Lamiaceae: *Ajuga genevensis* L. - H., Euras., *A. laxmannii* (L.) BENTHAM - H., Pont. Pan. Balc., *Ballota nigra* L. - H., Eur. Centr. și NE., *Clinopodium vulgare* L. - H., Circ., *Glechoma hirsuta* WALDST. & KIT. - H.(Ch.), Pont.-Medit.-Centr. Eur., *Lamium maculatum* L. subsp. *maculatum* - H.(Ch.), Euras., *Lycopus europaeus* L. - H.(HH.), Euras., *Prunella vulgaris* L. - H., Cosm., *Salvia pratensis* L. - H., Eur. (Submedit.), *Stachys germanica* L. - H., Pont. Medit., *Teucrium chamaedrys* L. - Ch., Eur. Centr. (Submedit.); Fam. Scrophulariaceae: *Digitalis lanata* EHRH. - HT.-H., Balc.-Pan., *Scrophularia nodosa* L. - H., Euras., *Verbascum blattaria* L. - HT., Euras. (Submedit.), *V. densiflorum* Bertol. - HT., Eur., *V. phlomoides* L. - HT., Eur. Centr. și SE., *Veronica chamaedrys* L. subsp. *chamaedrys* - H.-Ch., Euras., *V. hederifolia* L. - T., Euras., *V. officinalis* L. - Ch., Euras., *V. serpyllifolia* L. - H., Cosm.; Fam. Campanulaceae: *Campanula persicifolia* L. - H., Euras., *C. rapunculoides* L. - H., Euras., *C. rapunculus* L. - HT., Eur.; Fam. Rubiaceae: *Cruciata laevipes* OPIZ - H., Euras., *Galium aparine* L. - T., Circ., *G. mollugo* L. - H., Euras.; Fam. Caprifoliaceae: *Sambucus ebulus* L. - H., Euras. (Submedit.), *S. nigra* L. - Ph., Eur., *Viburnum lantana* L. - Ph., Eur. Centr. Submedit.); Fam. Asteraceae: *Anthemis tinctoria* L. - H., Euras. Cont., *Carthamus lanatus* L. - T., Pont. Medit., *Conyza canadensis* (L.) CRONQUIST - T., Adv. (Am. de N.), *Doronicum hungaricum* (SADL.) RCHB. fil. - G., Pont. Pan. Balc. (Fig. 2), *Erigeron annuus* (L.) PERS. subsp. *strigosus* (H. L. MÜHL. ex WILLD.) WAGENITZ - T., HT., H., Adv. (Am. de N.), *Inula britannica* L. - HT., Euras., *Tanacetum corymbosum* (L.) SCH. BIP. - H., Euras., *Tussilago farfara* L. - G., Euras., *Xeranthemum annuum* L. - T., Pont.-Medit., *Crepis biennis* L. - HT., Eur., *Hieracium bauhini* SCHULT. in BESS. subsp. *bauhini* - H., E. și Centr. Eur., *Hypochaeris maculata* L. - H., Euras., *Lapsana communis* L. subsp. *communis* - T.-H., Euras., *Mycelis muralis* (L.) DUMORT. - H., Eur., *Tragopogon dubius* SCOP. - T.-HT., Centr. Eur.-Medit.; Cl. Liliopsida, Fam. Dioscoreaceae: *Tamus communis* L. - G., Submedit.; Fam. Liliaceae: *Asparagus tenuifolius* Lam. - G., Pont.-Medit., *Colchicum autumnale* L. - G., Centr. Eur., *Gagea lutea* (L.) KER.-GAWL. - G., Euras.,

*Muscari comosum* (L.) MILL. – G., Eur. (exception N.), *Ornithogalum orthophyllum* TEN. subsp. *kochii* (PARL.) ZAHAR. – G., Centr. Eur. Submedit., *O. pyrenaicum* L. – G., Atl. Medit., *O. umbellatum* L. – G. Submedit., *Polygonatum latifolium* (JACQ.) DESF. – G., Pont.-Pan.-Balc., *Scilla bifolia* L. subsp. *drunensis* SPETA – G., Eur. Centr. și Sudică, *Allium scorodoprasum* L. – G., Centr. Eur.; Fam. Iridaceae: *Iris pseudacorus* L. – G., Eur.; Fam. Juncaceae: *Luzula campestris* (L.) DC. – H., Circ.; Fam. Cyperaceae: *Carex brizoides* L. – C. *divulsa* STOKES – H., Circ., *C. praecox* SCHERB. – G., Euras. Cont., *C. vulpina* L. – H., Euras., *Scirpus sylvaticus* L. – G., Circ.; Fam. Poaceae: *Aegilops cylindrica* HOST – T., Cont. Euras., *Agrostis stolonifera* L. – H., Circ., *Brachypodium sylvaticum* (HUDS.) P. BEAUV. – H., Euras. (Submedit.), *Calamagrostis epigejos* (L.) ROTH – G., Euras., *Dactylis glomerata* L. – H., Euras., *Elymus repens* (L.) GOULD – G., Cric., *Festuca heterophylla* Lam. – H., Centr. Eur.-Submedit., *F. rupicola* HEUFF. – H., Cont. Euras.; *Holcus lanatus* L. – H., Cosm., *Hordeum murinum* L. – T., Euras., *Melica ciliata* L. – H., Centr. Eur.-Medit., *M. uniflora* RETZ. – H.(G.), Centr. Eur.-Submedit., *Milium effusum* L. – H., Circ., *Poa pratensis* L. – H., Circ. (today Cosm.); Fam. Araceae: *Arum orientale* M. BIEB. – G., Centr. Eur.-Medit.



Figure 1. *Cynoglossum hungaricum* at the edge of forest (original).



Figure 2. *Doronicum hungaricum* inside the forest (original).

Analysing the floristic composition of this forest, it is visible that the southern elements have a high percentage (Fig. 3), on the general fund of the Eurasian elements.

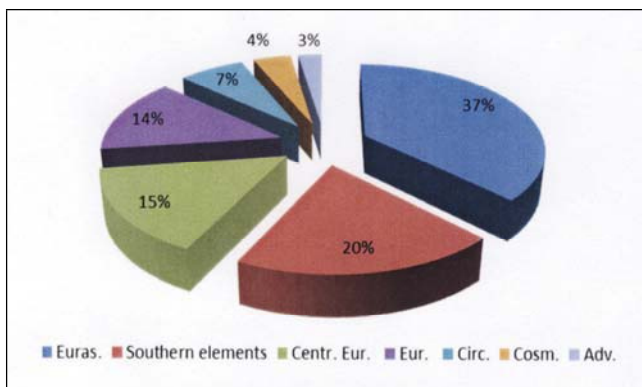


Figure 3. Spectrum of geoelements.

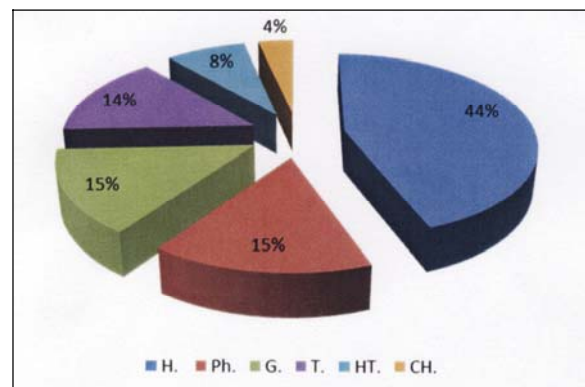


Figure 4. Spectrum of bioforms.

Analysing the bioform spectrum (Fig. 4), it can be said that the hemicryptophytes have an overwhelming dominance, which can be explained if we consider that these are present both inside of the forest clearings and in the bushes or to the edge of these plant formation.

### Vegetation

The identified phytocoenosis belong to two associations whose outline and description are further rendered.

Cl. Querceteta pubescenti – petraeae (OBERD. 1948) JAKUCS 1960

Ord. Quercetalia cerris BORHIDI 1996

Al. Quercion frainetto HORVAT 1954

1. *Quercetum frainetto – cerris* GEORGESCU 1945, RUDSKI 1949

Ord. Prunetalia TX. 1952

Al. *Prunio spinosae* SOÓ (1930) 1940

2. *Pruno spinosae – Crataegetum monogynae* (SOÓ 1927) HUECK 1931

1. *Quercetum frainetto – cerris* GEORGESCU 1945, RUDSKI 1949

In Oltenia, the phytocoenosis edified by the two species, are mentioned by PAUN (1966a) on the plateau from Bals District, by CĂRȚU (1970), within the Amaradia Basin, CĂRȚU (1972) between the Jiu-Desnățui-Craiova, POPESCU GH. (1974) within the Bistrita Basin (Valcea County), POPESCU (1988, 1996), POPESCU et al., (2001), COSTACHE (2005) within the basin of the lower Motru, RĂDUȚOIU (2008), within the Cerna de Olteț Basin. It grows on soils with humidity seasonal fluctuation (very wet in the spring and very dry during the summer).

The association composition highlights the constancy of some species for the recognition of the order *Quercetalia cerris*. These include *Potentilla micrantha*, *Lychnis coronaria*, *Vincetoxicum hirsutinaria*, *Lithospermum purpuro-caeruleum*, etc.

Tree layer, 10-15 m high, is made of two recognition species of the association, but with different proportions, Turkey oak or Hungarian oak being dominant.

The shrub layer, well developed in some phytocoenosis consists in many species: *Acer campestre*, *A. tataricum*, *Crataegus monogyna*, *Rosa canina*, *Ligustrum vulgare*, etc.

Unlike the phytocoenosis described so far in the literature, in this area, there have been found some small changes: some species appeared, species that are not present in any quadrates of other botanists from this part of the country (ex. *Thalictrum simplex*) and some rare species disappeared (*Vicia sparsiflora* TEN., *Dictamnus albus* L. or *Anthericum ramosum* L.) mentioned in similar locations in Oltenia (PĂUN, 1977).

As the dominant species in the forest area are made up of Turkey oak or Hungarian oak, these present a high economic importance.

Turkey oak is a valuable wood, with rapid growth, being excellent as firewood. This importance becomes more obvious if we consider that both Turkey oak and Hungarian oak are less demanding species to the environmental conditions in the plain, being able to grow in conditions not proper to other tree species with a more restricted ecologic amplitude (RĂDUȚOIU, 2008).

2. *Pruno spinosae – Crataegetum monogynae* (SOÓ 1927) HUECK 1931

The shrubs edified by blackthorn and hawthorn are present in the research area to the edge of the forest, near the road or on the grasslands. These have an invasive character, against grasslands and fields. The species with invasive character is *Prunus spinosa*.

The flora of these shrubs is heterogeneous, from different vegetal formations.

Economically, some species included in the phytocoenosis of this association have value as food, medicinal, honey, fodder, industrial or decorative. For example, some extracts from hawthorn are indicated in different cardiovascular disorders, similar with caffeine acting on blood vessels, myocardium and vascular nerve centre. Another example is given by the preparation of 'blackthorn fruits cider'. This is recommended especially to those who suffer from chronic colitis.

## DISCUSSIONS

In some papers PĂUN (1963, 1966c) mentions that the forest dominated by Turkey oak and Hungarian oak, placed to the north part of Craiova, has in their composition species of *Quercus petraea* and *Q. polycarpa*. In the location where the researches have been done, the two species are not found. More, *Quercus petraea*, is not present in any phytocoenosis edified by the two species because its ecology is different from the other two.

Coenotaxonomically, the phytocoenosis from this part of the country, that includes Turkey oak and Hungarian oak, are grouped by different botanists in more associations (ex. PĂUN, 1966a; POPESCU, 1988). We consider that all quadrates that include Turkey oak and Hungarian oak (regardless the abundance-dominance where species that give the association name are present) belong to *Quercetum frainetto – cerris* GEORGESCU 1945, RUDSKI 1949. The rest of the phytocoenoses, which have *Quercus polycarpa* SCHUR next to the Turkey oak and Hungarian oak (ex. *Quercetum polycarpae-cerris* POPESCU 1988, *Quercetum frainetto-polycarpae* POPESCU 1988) or *Quercus robur* L. (ex. *Quercetum robori-cerris* CSAPODY ex SOÓ 1969, *Quercetum robori-frainetto* POPESCU 1988) belong to some transition areas and according to the Phytosociology Nomenclature Code these surfaces have to be avoided. These present only floristic importance because they add species with a higher ecological amplitude, compared to the typical of Turkey oak-Hungarian oak forests.

## CONCLUSIONS

Following the researches from 'Pielesti Inn', it has been made a floristic list of 201 taxa. A high number of the identified species are southern elements.

The observation and studies made in this forest during the eight years led to the conclusion that this is found to the inferior limit of nemoral zone.

The follow taxa have not been found in the floristic composition of these forests and shrubs: *Vicia sparsiflora*, *Dictamnus albus* and *Anthericum ramosum*, rare species, that are mentioned by PĂUN & CĂRȚU (1980) from the phytocoenosis dominated by *Quercus frainetto*.

The crossing of the forest by the European road E574, the placement of a restaurant and a store in the forest perimeter are some elements that contribute to the modification of the floristic composition and to the desolated aspect of the forest in the vicinity of these locations.

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