

The Study of Antropochore Vegetation from Some Forestry Associations

Doina STANA¹⁾, Ioan POP²⁾, Ileana BOGDAN¹⁾

¹⁾ University of Agricultural Sciences and Veterinary Medicine, Cluj-Napoca;
ileana2105@yahoo.com

²⁾ Babes Bolyai University Cluj-Napoca

Abstract. The antropochore plants (weeds and invasive plants) succeed to be incorporated in some plant formations from the natural environment getting in fight with the species of that formation plant. There are mentioned 130 species (3,7%) as antropochore plants into the Romanian flora. The study of the antropochore vegetation was done during the vegetative year 2010 (May-October) being based on direct observations correlative with date from got from the Romanian flora, this study was to be carried forward in the next years. In the present work it is presented the study of the antropochore vegetation from four forestry associations:

- **Salicetea purpurea Association** (Moor 1958) that contains 18 antropochore species;
- **Fraxino-Ulmetum Associations** (Tx. 1952) Oberd. 1953; **Telekio speciosae-Alnetum incanae** (Coldea, 1990), **Aegopodio-Alnetum** (Karpati et Jurkó, 1961) where were identified 8 antropochore species;
- **Quercu-Fagetea Association** (Vlieger, 1937) that contains 16 antropochore species care and,
- **Quercu petraeae – Carpinetum Association** (Soó et Pocs, 1957) where were identified 10 antropochore species.

Keywords: antropochore species, nemoral, nemoral-riverain associations;

INTRODUCTION

At present, the antropochore plants represent a major mission both to their strong invasive capacity and the risk due to some species allergic features (*Ambrosia artemissifolium*). It is worth to be specified the fact that some of them have medicinal particularities.

It is known the fact that the human is one agent of plants dissemination both involuntary and voluntary becoming mere and more active, starting from prehistoric age to present. Taking in consideration the historical moment of enfranchisement there are known two categories of plants: archaeophyta and neophyta. The archaeophyta plants were identified during the very old historical ages, more frequent during the Grecian- Roman age. The presence of the neophytes was noticed during the Renaissance age, these ones becoming gradually more frequent till the present age.

As an involuntary agent (passive) of the dissemination the human being accidentally brought in the germs of some weeds from different continents and countries together with imported agro-alimentary goods, both sea-going, fluvial, by air and terrestrial. It was not coincidental the fact that the antropochore plants, respectively the weeds, were and are still discovered in the ports, railway beds from the railway stations, near the custom points, they migrate from these locations and integrate into ruderales vegetative communions.

As a voluntary (active) agent the human being subserved to the expansion of the

cultivated plants (ergasiophyta) which he fed as alimentary, fodder, technical, medicinal, tinctorial and ornamental plants. Some of the ergasiophyte succeeded to get away the cultures through a passive dissemination (alochore) under favour of some external factors (wind, animals, water). In a first phase these ones filled the dry lands, next to the cultures, adapting gradually to the new life conditions. In the next phase some of the plants that got away from the cultures succeeded to be incorporated in the plant formations from the natural environment and got in fight with the plant formation species; other ones disappeared in time without vital descendants.

Both the plants that are passively spread by the human being and those actively spread, underlie the analysis of the antropochore plants of this study.

MATERIALS AND METHODS

The study of the antropochore vegetation was done during the vegetative year 2010 (May-October) being based on direct observations correlative with date from got from the Romanian flora, this study was to be carried forward in the next years.

Antropochore species have been identified in several areas of the Apuseni Mountains by direct observation.

Woody vegetation is represented by several associations of which floristic composition reports no differences compared to data published in a number of other phytocenological works about the Apuseni Mountains.

Scientific names of species are those mentioned in the list of cormophyta species from Romanian flora, with some changes after Sanda *et al.* (1983), and for some Central European species after Neuhauslova (1972) and Oberdorfer (1994).

RESULTS AND DISCUSSION

The most antropochore plants are dispersed on plains and hills, their number decreases gradually to the mountain area of broadleaf and coniferous forests. In the alpine level the antropochore plants miss.

The main area of origin for the antropochore plants is the American continent being followed by Mediterranean sub region, Asia and Eurasia.

Tab.1

The origin of the antropochore plants

Number	Origin	Number of species	%
1	Europe	2	1.5
2	Mediterranean sub region	31	23.80
3	Eurasia (inclusively the south part – 9 sp.)	13	10
4	Asia	20	15.40
5	Africa	1	0.80
6	North America	46	35.40
7	Central America	8	6.20
8	South America	9	6.90

From the total number of plants contained by the Romanian flora, 130 species (3.7%) represents antropochore plants integrated into the autochthon vegetation. These are distributed into 38 families (Table 2) the most multiple ones belong to *Asteraceae* (29 species, 22.3%); *Brassicaceae* (12 species, 9.2%); *Poaceae* (10 species, 7.7%); *Amaranthaceae* (8 species,

6.2%); *Chenopodiaceae* (6 species, 4.6%); *Solanaceae* (5 species, 3.8%) și *Scrophulariaceae* (5 species, 3.8%). The other families, a number of 30 families, contain in their floristic inventory about 4-1 species of antropochore plants.

Related to the bio form categories, the most antropochore plants belong to the terophytes (Th, TH: 87 species, 66.9%), next are the hemicriptophytes (H: 21 species, 16.1%), geophytes (G: 6 species, 4.6%), pfanerophytes (Mph, nPh: 8 species, 6.2%) and helohidatophytes (Hh: 8 species, 6.2%).

The undertaken study refers only to the antropochore plants that are met in some forestry associations. These are presented, after the Romanian flora with their scientific name, their affiliation to the botanical family, habitat, bio form and their affiliation (Tab. 2).

Tab. 2

The antropochore species from forestry associations

No	Species	Family	Habitat	Bio forma	Affiliation
1	<i>Morus alba</i> L.	Moraceae	nemoral-riverain	Mph	Asia (China)
2	<i>Mespilus germanica</i> L.	Rosaceae	nemoral	nPh	Mediterranean sub region
3	<i>Amorpha Fruticosa</i> L.	Fabaceae	nemoral-riverain	nPh	North America
4	<i>Cytisus scoparius</i> (L.) Link	Fabaceae	nemoral	nPh	Europe
5	<i>Robinia pseudacacia</i>	Fabaceae	nemoral-riverain	Mph	North America
6	<i>Impatiens glandulifera</i> Royle	Balsaminaceae	nemoral-riverain	Th	Asia (India)
7	<i>Ailanthus altissima</i> (Mill) Swingle	Simaroubaceae	nemoral-ruderales	Mph	Asia (China)
9	<i>Elscholtzia ciliata</i> (Thunbg.) Hylander	Lamiaceae	nemoral-riverane	Th	Asia (China)
10	<i>Erechtites hieracifolia</i> (L.) Raf.	Asteraceae	nemoral-ruderales	Th	Central America
11	<i>Inula helenium</i> L.	Asteraceae	nemoral-ruderales	H	Asia
12	<i>Rudbeckia laciniata</i> L.	Asteraceae	nemoral-ruderales	H	North America
13	<i>Solidago canadensis</i> L.	Asteraceae	nemoral-ruderales	H	North America
14	<i>S. gigantea</i> Aiton	Asteraceae	nemoral-ruderales	H	North America

In the studied forestry associations it was found out the fact that 19 antropochore species found in more vegetal associations live besides the autochthon plants.

In the **nemoral-riverain** community from Romania there were met the next antropochore species from the associations:

- **Salicetea purpurea** (Moor, 1958) are: *Amaranthus retroflexus*, *Amorpha fruticosa*, *Echinocystis lobata*, *Erigeron annuus*, *E. canadensis*, *Galinsoga parviflora*, *Helianthus glandulifera*, *Juncus tenuis*, *Morus alba*, *Oenothera biennis*, *Phytolacca americana*, *Robinia pseudacacia*, *Rudbeckia laciniata*, *Solidago canadensis*, *S. gigantea*, *Xanthium italicum*, *X. riparium*, *X. spinosum*;
- **Fraxino-Ulmetum** (Tx. 1952) Oberd. 1953; **Telekio speciosae-Alnetum incanae** (Coldea, 1990), **Aegopodio-Alnetum** (Karpati et Jurkó, 1961) are: *Amorpha fruticosa*, *Echinocystis lobata*, *Elscholtzia ciliata*, *Erigeron annuus*, *E. canadensis*, *Robinia pseudacacia*, *Rudbeckia laciniata*, *Solidago gigantea*;

In the **nemoral** community from our country, in the studied associations, there were identified the following antropochore species:

- **Quercu-Fagetea** (Vlieger, 1937) are: *Ailanthus altissima*, *Amorpha fruticosa*, *Cytisus scoparius*, *Echinocystis lobata*, *Elscholtzia ciliate*, *Erechtites hieracifolia*,

Erigeron annuus, *E. canadensis*, *Impatiens parviflora*, *Inula helenium*, *Mespilus germanica*, *Oxalis europaea*, *Robinia pseudacacia*, *Rudbeckia laciniata*, *Scilla sibirica*, *Solidago gigantea*;

- **Quercus petraeae – Carpinetum** (Soó et Pocs, 1957) are: *Ailanthus altissima*, *Cytisus scoparius*, *Erechtites hieracifolia*, *Erigeron annuus*, *E. canadensis*, *Impatiens parviflora*, *Inula helenium*, *Mespilus germanica*, *Oxalis europaea*, *Scilla sibirica*.

From the undertaken remarks, correlative with the bibliographical data, result that the antropochore plants are mostly spread on plains and hills, their number decreases to the mountain area.

In the mountain area there survive: one species in the Fagaras Mountains, 2 species in the Rodnei Mountains, 3 species in the Retezat Mountains, 9 species in the Bucegi Mountains, 17 species in the Apuseni Mountains (Vlădeasa, Garda de Sus, and in the north-east of the Parang Mountains – Sadului Valley)

To the highest altitudes there were identified the following 11 antropochore species *Matricaria matricarioides* – 1650 m (Bătrâna Mountain –Sadului Valley), *Impatiens parviflora* – 1234 m (Făgăraș Mountains, Bâlea Waterfall), *Juncus tenuis* – 1200 m (Măgura Mountains, Tâlmăciu, Sadului Valley); 1120 m (Apuseni Mountains –Stâna de Vale); 867 m (Retezat Mountains), *Lolium temulentum* – 1250 m (Apuseni Mountains - Vlădeasa), *Ammannia rusticana* – 930 m (Apuseni Mountains - Vlădeasa), *Galinsoga parviflora* – 860-883 m (Bucegi Mountains), *Erigeron annuus* – 860 m (Bucegi Mountains – Poiana Țapului); 800 m (Rodnei Mountains); 800-830 m (Măgura Mountain –Sadului Valley), *Medicago sativa* – 798 m (Bucegi Mountains), *Minulus moschatus* – 790 m (Apuseni Mountains), *Iva xanthifolia* – 700 m (Retezat Mountains), *Xanthium spinosum* – 730 m (Retezat Mountains).

The antropochore species met in the forestry associations that were studied with the biggest extensions in the chemotaxonomic units are the following:

- *Erigeron canadensis* present in 74 associations (praticol, arenicol, segetal, ruderal, nemoral-riverain and nemoral) subordinated to 14 vegetation categories;
- *Amaranthus retroflexus* identified in 53 associations (praticol, arenicol, segetal, ruderal and nemoral-riverain) subordinated to 8 vegetation categories;
- *Erigeron annuus* noted in 47 associations (praticol, arenicol, segetal, ruderal, nemoral-riverain and nemoral) included in 11 vegetation categories;
- *Xanthium spinosum* presented in 38 associations (praticol, arenicol, segetal, ruderal and nemoral-ruderal) subordinated to 10 vegetation categories;
- *Galinsoga parviflora* identified in 34 associations (arenicol, segetal, ruderal și nemoral-riverain) din 7 vegetation categories;
- *Xanthium italicum* inhabit the plant formation of 29 associations (praticol, arenicol, segetal, ruderal, nemoral-riverain) included in 11 vegetation categories;
- *Oenothera biennis* found in 8 associations (arenicol, segetal, ruderal and nemoral-riverain) from 6 vegetation categories;
- *Amorpha fruticosa* remarked in 13 associations (palustre, praticol, arenicol, ruderal and nemoral-riverain) from 6 vegetation categories;
- *Rudbeckia laciniata* present in 7 associations (palustre, praticol, ruderal and nemoral-riverain) from 5 vegetation categories.

CONCLUSIONS

The phytocenologic studies done in Romania up to present relieve the fact that in the nemoral and nemoral-riverain communities the antropochore plants are in one reduced number of species;

The most frequent antropochore species identified into the studied associations from the communities that were mentioned above are: *Erigeron annuus*, *E. canadensis*, *Amorpha fruticosa*, *Echinocystis lobata*, *Rudbeckia laciniata*, *Robinia pseudacacia*, *Solidago gigantea*.

To high altitudes (700-1650 m) there were identified 11 antropochore species

REFERENCES

1. Beldie, A.L. (1967). The flora and vegetation from the Bucegi Mountain, Academy Publishing House. RSR, Bucharest.
2. Boşcaiu, N. (1971). The flora and vegetation from Tarcău, Godeanu și Cernei Mountains, Academy Publishing House. RSR, Bucharest.
3. Braun – Blanquet (1928). Pflanzen Soziologie, 930 Berlin.
4. Bujoreanu, G. and I. Coste (1970). Beitrage zum Studium der anthropogenen Association aus der Beregsau-Aue (Temesch-Ebene), Rev. Roum. De Biol. Bot., 15 (6): 385-397.
5. Burduja, C., I. Sârbu and C. Horeanu (1971). Contribution a l'étude de la vegetation anthropophile de la Moldova et Dobrogea (Roumanie), Analele Șt. Univ. Al. I. Cuza Iași (ser. nouă), 2a Biologie, 17 (2): 405-411.
6. Fink, G.H. (1974). Pflanzengesellschaften des Schulergebirges (Sudostkarpaten). Stafia. 2:1-370.
7. Ivan, D. *et.al.* (1993). Vegetation potentielle de la Roumanie. Braun-Blanquetia. 9:1-79.
8. Morariu, I. and L. Spiridon (1975). The vegetation of the mountain weeds from the Carpathians, Studies and Comentaries. (Natural Sciences Museum. Bacău) :33-42.
9. Neuhauslova, R. (1972). Subkontinentale Hoch More und ihre Vegetation, Studie ZCSAV, 13, Praha :121.
10. Oberdorfer, E. (1994). Pflanzen Soziologische Excursionflora, 7. Aufl; 1015 S., Ulmer Verlag. Stuttgart.
11. Sanda, V., A. Popescu, M.I. Doltu and N. Doniță. (1983). The ecological and phytocenologic description of the spontaneous species from the Romanian flora, Studies and Comentaries, 25 supl., Șt Nat. (Muz. Bruckenthal, Sibiu):1-126.
12. Soran, V. (1962). Researches upon weeds and associations in the Apuseni Mountains, Problems of Biology, Romanian Academy:299-345.
13. Tudor, I. (1955). Contributions to the flora recognition from Somesul Mic superior bank (Someșu Cald and Somesu Rece- Apuseni Mountains), Work study. Scientifical Presentation to N. Bălcescu Agronomic Institute, Bucharest. 1:1-40.
- 14.*** The Flora of Romanian Popular Republic and Romanian Socialist Republic, 1952-1976, Academy Publishing House, Bucharest, vol. I-XIII.