

ASSOCIATIONS OF THE CLASS QUERCO-FAGETEA BR.-BL. ET VLIEGER IN VLIEGER 1937 FROM VASLUI RIVER BASIN

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Abstract: The present paper analyses two forest associations (*Fraxino angustifoliae-Quercetum pedunculiflorae*, *Galio schultesii-Fagetum*) described both phytocenologically, as well as by the help of bioforms, floristic elements and ecological indexes. Phytocoenosis' vertical structure has also been made and there has been calculated the supraterranean amount of phytomass produced by the herbaceous and by the tree layer.

Introduction

The Vaslui river basin lies along the territories of two districts (Iași and Vaslui), it has an area of 646 km² and it is surrounded by the following hydrographical basins: at the north side by the hydrographical basin of Jijia, at the east side by the hydrographical basins of Crasna and Bârlad, at South by Bârlad hydrographical basin and at West by the hydrographical basins of Rebricea and Telejna. The associations taken into study belong to the Querco – Fagetea class, as follows: *Fraxino angustifoliae-Quercetum pedunculiflorae* Chifu, Sârbu et Ștefan (1998) 2002 in the sub-alliance *Ulmenion* Oberd. 1953, alliance *Alnion incanae* Pawlowski in Pawlovski et Wallisch 1928, order *Alno-Fraxinetalia* (Oberd. 1953) Passarge et Hofmann 1968; *Galio schultesii-Fagetum* (Burduja et al. 1973) Chifu et Ștefan 1994 in the sub-alliance *Galio schultesii-Carpinenion* Täuber 1992, alliance *Lathyro hallersteinii-Carpinion* Boșcaiu 1979, order *Fagetalia sylvaticae* Pawlowski in Pawlovski et al. 1928.

Material and Method

The study of the vegetation has been carried out according with the Braun-Blanquet phytosociological method, and the calculation of the supraterranean phytomass of the herbaceous layer (both for the vernal and aestival seasons) has been carried out by weighting the fresh vegetal samples and afterwards drying them at 105°C inside the drying closet, until they reach constant weight. As far as the supraterranean phytomass resulted by tree layer is concerned, it has been calculated starting with the data taken from the site, establishing thus the average densities and diameters per developing stages and per species.

Results

1. *Fraxino angustifoliae-Quercetum pedunculiflorae* Chifu, Sârbu et Ștefan (1998) 2002 (Table 1)

These phytocoenosis occupy relatively limited areas within Vaslui river basin and they can be found within only two resorts: Dobrovăț and Poieni, at an average altitude of 300m, on soils with slight slope (2 - 6°), with southern and eastern exposition.

The flower composition has a large amount of species, given by the presence of the species characteristic to the *Alnion incanae* alliance, as well as *Querco – Fagetea* class.

In the layer dominated by *Quercus pedunculiflora*, there sometimes penetrate *Fraxinus angustifolia*, *Tilia tomentosa*, *Carpinus betulus*, *Cerasus avium* etc. After analyzing the vertical structure of these phytocoenosis we can observe that mature trees (with an average height between 20 and 26m) predominate, which give the forest a rather pluriaenous structure. Thus we

can observe a tri-stratified structure: a high area (24 – 26m), a medium one (22 – 24m) and an inferior area (20 – 22m) (Fig. 1).

The shrub layer is weakly developed, variously finding few individuals of the species *Crataegus monogyna*, *Cornus mas*, *Evonymus verrucosus*.

The herbaceous layer is well represented by species of the *Fagetalia sylvaticae* order and of the *Quercus – Fagetea* class, with a covering which varies between 10 and 55%, in which *Stellaria holostea*, *Campanula trachelium*, *Galium odoratum*, *Euphorbia amygdaloides*, *Geum urbanum*, *Mycelis muralis* etc are abundant.

After the analysis of the relevé made, the following can be observed: the analysis of the bioforms shows the clear predominance of the hemicryptophytes, thus illustrating a moderate climate, followed by phanerophytes and geophytes; the analysis of the floristic elements indicates the predominance of the Eurasian and European elements in relatively equal proportions, followed by the cosmopolite and circumpolar elements, which indicates the affiliation to the Eurasian domain of the area taken into study. The presence of the Pontic elements in a proportion of 13% shows the forest-steppe physiognomy of the researched region; the analysis of the ecological indices shows that the species undertake a moderate shadowing, they are mesothermic, with the distribution area in central Europe, they are mesophyllous, developing on slightly acid, neutrophile soils, with relatively high content of mineral nitrogen.

The association is cited for the first time in the territory taken into study.

Table 1: Ass. *Fraxino angustifoliae – Quercetum pedunculiflorae* Chifu, Sârbu et Ștefan (1998) 2002

| Relevé number | 1 | 2 | 3 | 4 | 5 | |
|---|------|------|------|------|------|-----|
| Altitude (m) | 310 | 310 | 310 | 296 | 296 | |
| Exposition | S | S | SE | NE | E | |
| Slope (°) | 5 | 2 | 5 | 6 | 3 | |
| Coverage of the arborescent layer (%) | 95 | 90 | 85 | 80 | 75 | |
| Coverage of the shrub and juvenile layer (%) | 3 | 2 | 2 | 8 | 10 | |
| Coverage of the herbaceous layer (%) | 55 | 45 | 30 | 20 | 10 | |
| Relevé surface (m ²) | 1000 | 1000 | 1000 | 1000 | 1000 | |
| Nr. of species | 44 | 30 | 26 | 27 | 25 | K |
| <i>Characteristics species</i> | | | | | | |
| <i>Fraxinus angustifolia</i> | - | + | + | + | + | IV |
| <i>Ulmenion et Alnion incanae</i> | | | | | | |
| <i>Acer campestre</i> | - | + | 1 | 2 | 1 | IV |
| <i>Acer campestre</i> juv. | - | + | + | + | + | IV |
| <i>Aegopodium podagraria</i> | 2 | 1 | + | - | - | III |
| <i>Geranium phaeum</i> | + | + | - | - | + | III |
| <i>Viburnum opulus</i> | + | - | - | - | + | II |
| <i>Stachys sylvatica</i> | + | - | - | - | + | II |
| <i>Urtica dioica</i> | + | - | - | - | - | I |
| <i>Rumex sanguineus</i> | + | - | - | - | - | I |
| <i>Alno-Fraxinetalia</i> | | | | | | |
| <i>Quercus pedunculiflora</i> | 4 | 4 | 4 | 3 | 4 | V |
| <i>Quercus pedunculiflora</i> juv. | + | - | + | - | + | III |
| <i>Fraxinus excelsior</i> | - | - | - | 1 | + | II |
| <i>Fraxinus excelsior</i> juv. | - | - | - | + | - | I |
| <i>Glechoma hederacea</i> | - | - | - | - | + | I |
| <i>Lathyro hallersteinii-Carpinion</i> | | | | | | |
| <i>Campanula trachelium</i> | + | + | + | + | + | V |
| <i>Stellaria holostea</i> | + | 3 | 2 | + | - | IV |
| <i>Carpinus betulus</i> | 2 | 2 | 1 | - | - | III |
| <i>Carpinus betulus</i> juv. | - | + | + | + | - | III |
| <i>Dactylis polygama</i> | 1 | + | + | - | - | III |
| <i>Galium schultesii</i> | + | + | - | - | - | II |

| | | | | | | |
|---------------------------------------|---|---|---|---|---|-----|
| <i>Tilia cordata</i> | + | - | + | - | - | II |
| <i>Tilia cordata</i> juv. | + | - | + | - | - | II |
| <i>Carex pilosa</i> | - | 1 | + | - | - | II |
| <i>Cerasus avium</i> | - | - | - | + | + | II |
| <i>Glechoma hirsuta</i> | - | - | - | + | + | II |
| <i>Fagetalia sylvaticae</i> | | | | | | |
| <i>Galium odoratum</i> | + | + | + | - | - | III |
| <i>Euphorbia amygdaloides</i> | + | + | + | - | - | III |
| <i>Hedera helix</i> | + | + | + | - | - | III |
| <i>Asarum europaeum</i> | 1 | + | + | - | - | III |
| <i>Carex sylvatica</i> | + | + | + | - | - | III |
| <i>Tilia platyphyllos</i> | - | + | - | + | + | III |
| <i>Tilia platyphyllos</i> juv. | - | + | - | - | - | I |
| <i>Epipactis helleborine</i> | + | - | + | - | - | II |
| <i>Mercurialis perennis</i> | + | + | - | - | - | II |
| <i>Lapsana communis</i> | + | - | - | - | + | II |
| <i>Geranium robertianum</i> | - | - | - | + | + | II |
| <i>Lathyrus venetus</i> | + | - | - | - | - | I |
| <i>Campanula rapunculoides</i> | - | + | - | - | - | I |
| <i>Neottia nidus-avis</i> | - | - | + | - | - | I |
| <i>Quercus-Fagetea</i> | | | | | | |
| <i>Geum urbanum</i> | + | + | - | + | + | IV |
| <i>Viola reichenbachiana</i> | - | + | 1 | + | + | IV |
| <i>Mycelis muralis</i> | + | - | + | + | + | IV |
| <i>Crataegus monogyna</i> | - | + | - | + | + | III |
| <i>Melica uniflora</i> | + | + | + | - | - | III |
| <i>Polygonatum latifolium</i> | - | + | + | - | - | II |
| <i>Acer platanoides</i> juv. | + | - | - | - | - | I |
| <i>Brachypodium sylvaticum</i> | + | - | - | - | - | I |
| <i>Corylus avellana</i> | + | - | - | - | - | I |
| <i>Scrophularia nodosa</i> | + | - | - | - | - | I |
| <i>Convallaria majalis</i> | - | + | - | - | - | I |
| <i>Quercetea pubescentis</i> | | | | | | |
| <i>Tilia tomentosa</i> | + | - | + | + | + | IV |
| <i>Tilia tomentosa</i> juv. | + | - | - | + | - | I |
| <i>Acer tataricum</i> | + | - | + | - | + | III |
| <i>Acer tataricum</i> juv. | - | - | - | + | - | I |
| <i>Polygonatum odoratum</i> | + | + | - | 1 | - | III |
| <i>Evonymus verrucosus</i> | - | + | - | + | - | II |
| <i>Scutellaria altissima</i> | - | - | - | 1 | + | II |
| <i>Cornus mas</i> | - | - | - | 1 | 1 | II |
| <i>Asparagus tenuifolius</i> | - | - | - | + | 1 | II |
| <i>Campanula rapuncululus</i> | + | - | - | - | - | I |
| <i>Asparagus officinalis</i> | - | - | - | + | - | I |
| <i>Molinio-Arrhenatheretea</i> | | | | | | |
| <i>Lysimachia nummularia</i> | 2 | - | - | - | - | I |
| <i>Trifolium repens</i> | + | - | - | - | - | I |
| <i>Trifolium pratense</i> | + | - | - | - | - | I |
| <i>Plantago major</i> | + | - | - | - | - | I |
| <i>Prunella vulgaris</i> | + | - | - | - | - | I |
| <i>Variae syntaxa</i> | | | | | | |
| <i>Polygonum lapathifolium</i> | + | - | - | - | - | I |
| <i>Polygonum convolvulus</i> | + | - | - | - | - | I |
| <i>Cirsium arvense</i> | + | - | - | - | - | I |

Data and place of the relevées:

1-3. the forest Mustață, 27.07.2003; 4,5. the forest Cobuza, 24.08.2003

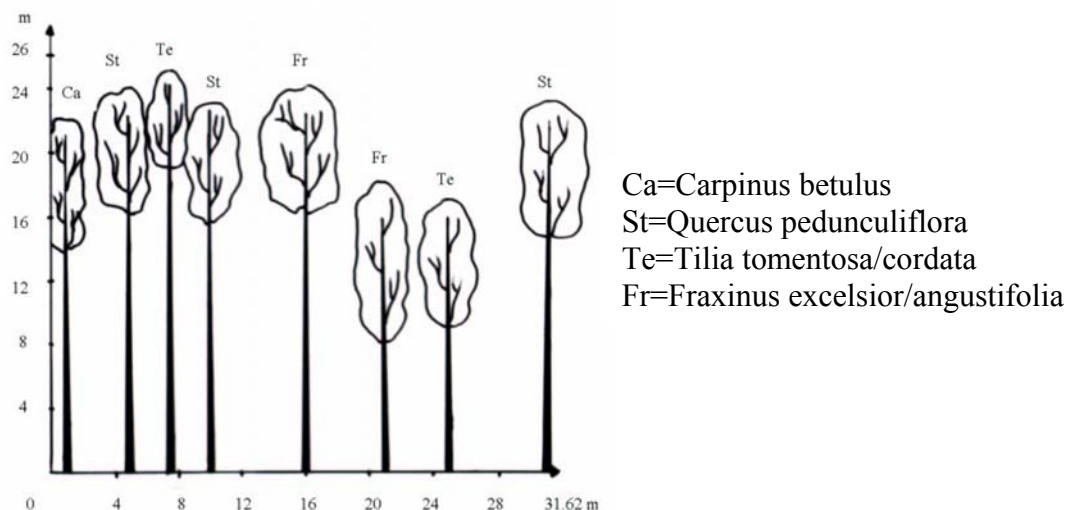


Fig. 1: The vertical structure of the *Fraxino angustifoliae* – *Quercetum pedunculiflorae* association

2. *Galio schultesii* – *Fagetum* (Burduja et al. 1973) Chifu et Ștefan 1994 (Table 2)

The associations of the phytocoenosis vegetate on the northern slopes, with slight inclination (2-5°), at altitudes between 290 and 400m. Besides the characteristic species *Galium schultesii*, these phytocoenosis are given by *Fagus sylvatica* and *Carpinus betulus*, which cover 80 – 90%, as well as by *Tilia cordata*, *Acer pseudoplatanus*, *Ulmus minor*, *Fraxinus excelsior*, *Fagus taurica* etc.

The vertical structure of the association indicates an pluriaenous structure, almost bi-stratified, with predominantly mature trees (Fig. 2).

The arborescent layer has an average density of 616 trees/ha, in which *Fagus sylvatica* is predominant, with 484 trees/ha, and *Carpinus betulus* has a relatively high density of 104 trees/ha. The highest tree density is made by the relatively young stages 464 trees/ha, with a diameter between 24 and 36cm (Table 3).

The trees of this association have an average diameter of 31,55cm, which integrates them into the “young woods” development stage. The largest diameters are made by *Fagus sylvatica*, *Fraxinus excelsior* and *Acer pseudoplatanus* (Table 4).

After the calculation of the phytomass accomplished by the arborescent layer we have obtained the following results: the species of this association make a total aerial phytomass of 690853,82 kg/ha, of which the most important contribution is given by trunks – 522236,26 kg/ha (75,59%), followed by branches – 159211,92 kg/ha (23,0%) and leaves – 9405,64 kg/ha (1,36%). Among branches, the ones of the third and second order give the largest amount of phytomass; considering the development stages, there can be observed that the largest amount of phytomass is given by species of the “young woods” stage (68,37%), due to the fact that, in this development stage, the trees’ density is highest, followed by the ones in the “woods” stage (28,81%)(Table 6); considering the species, the largest amount of phytomass is made by *Fagus sylvatica* (626578,55 kg/ha), followed by *Carpinus betulus* with 4133,27 kg/ha. The other species participate in a smaller extent to the production of phytomass (Table 7).

In the shrub layer there are isolated individuals of *Crataegus monogyna*, *Rosa canina*, resulting in a weekly-developed shrub layer.

The herbaceous layer has a relatively good average covering of 25%, and among the edifying species we can mention *Galium schultesii*, *Galium odoratum*, *Lamium galeobdolon*, *Melica uniflora*, *Salvia glutinosa* etc. The aerial phytomass of the herbaceous layer has relatively low amounts – 96,96 kg desiccated substance/ha, from which during the vernal season the amount of phytomass is 50,66 kg desiccated substance/ha, and during the aestival season it is

46,30 kg desiccated substance/ha. These relatively low values are also due to unfavourable meteorological conditions, with very high temperatures and prolonged drought periods (Table 5).

After the analysis of the relevées, the following can be observed: the analysis of the bioforms shows the distinct predomination of the hemicryptophytes, followed by phanerophytes and geophytes; from the analysis of the floristic elements we observe the predominance of the European and Eurasian elements, followed by the circumpolar and Pontic ones; by analysing the ecological indices we observe that the species composing the phytocoenosis are species which bear a moderate shading, they are mesotherms, with the distribution area in central Europe, they are mesohydrophyll and they develop on weakly acid-neutrophyll soils, with a moderate content of mineral nitrogen.

The association has been signalled within the area taken into study, without presenting a table with floristic relevées.

Table 2: Ass. *Galio schultesii* – Fagetum (Burduja et al. 1973) Chifu et Ștefan 1994

| | | | | | | |
|--|------|------|------|------|------|-----|
| Relevé number | 1 | 2 | 3 | 4 | 5 | |
| Altitude (m) | 399 | 300 | 300 | 300 | 290 | |
| Exposition | NE | NE | NE | E | N | |
| Slope (°) | 2 | 5 | 3 | 2 | 2 | |
| Coverage of the arborescent layer (%) | 90 | 80 | 80 | 85 | 80 | |
| Coverage of the shrub and juvenile layer (%) | 3 | 10 | 3 | 4 | 10 | |
| Coverage of the herbaceous layer (%) | 20 | 40 | 30 | 35 | 5 | |
| Relevé surface (m ²) | 1000 | 1000 | 1000 | 1000 | 1000 | |
| Nr. of species | 28 | 30 | 19 | 29 | 20 | K |
| <i>Characteristics species</i> | | | | | | |
| <i>Galium schultesii</i> | + | - | + | + | - | III |
| <i>Galio schultesii-Carpinenion</i> | | | | | | |
| <i>Carpinus betulus</i> | 1 | 1 | + | + | + | V |
| <i>Carpinus betulus</i> juv. | + | 1 | + | + | - | IV |
| <i>Glechoma hirsuta</i> | - | + | + | + | - | III |
| <i>Carex pilosa</i> | - | 2 | + | + | - | III |
| <i>Cerasus avium</i> | - | + | - | - | + | II |
| <i>Stellaria holostea</i> | - | - | + | + | - | II |
| <i>Campanula trachelium</i> | + | - | - | - | - | I |
| <i>Dactylis polygama</i> | - | - | + | - | - | I |
| <i>Tilia cordata</i> | - | 3 | - | - | - | I |
| <i>Tilia cordata</i> juv. | - | + | - | + | - | II |
| <i>Aro orientalis-Carpinenion</i> | | | | | | |
| <i>Arum orientale</i> | - | - | - | + | - | I |
| <i>Fagus taurica</i> | + | - | - | - | - | I |
| <i>Tilia tomentosa</i> juv. | - | + | - | - | - | I |
| <i>Symphyto cordati-Fagion</i> | | | | | | |
| <i>Acer pseudoplatanus</i> | + | - | - | - | - | I |
| <i>Acer pseudoplatanus</i> juv. | + | - | - | - | - | I |
| <i>Epipactis helleborine</i> | - | - | - | - | + | I |
| <i>Fagetalia</i> | | | | | | |
| <i>Fagus sylvatica</i> | 5 | 3 | 5 | 5 | 5 | V |
| <i>Fagus sylvatica</i> juv. | + | - | + | + | + | IV |
| <i>Salvia glutinosa</i> | + | + | - | + | + | IV |
| <i>Sanicula europaea</i> | - | + | + | + | + | IV |
| <i>Asarum europaeum</i> | - | 1 | 1 | + | - | III |
| <i>Euphorbia amygdaloides</i> | - | + | - | + | + | III |
| <i>Galium odoratum</i> | - | + | + | + | - | III |
| <i>Anemone nemorosa</i> | + | - | + | - | - | II |
| <i>Carex sylvatica</i> | - | - | - | + | + | II |
| <i>Geranium robertianum</i> | - | + | - | + | - | II |
| <i>Ulmus minor</i> | + | - | - | - | + | II |

| | | | | | | |
|---|---|---|---|---|---|-----|
| Dentaria bulbifera | 2 | - | - | - | - | I |
| Mercurialis perennis | - | - | 2 | - | - | I |
| Acer platanoides | - | - | - | - | + | I |
| Acer platanoides juv. | + | + | + | + | + | V |
| <i>Alnion incanae et Alno-Fraxinetalia</i> | | | | | | |
| Fraxinus excelsior | + | + | + | + | + | V |
| Fraxinus excelsior juv. | - | - | + | - | - | I |
| Urtica dioica | - | + | + | + | + | IV |
| Aegopodium podagraria | + | 1 | - | 2 | - | III |
| Circaea lutetiana | - | + | - | + | - | II |
| Stachys sylvatica | + | + | - | - | - | II |
| Galium aparine | + | - | - | - | - | I |
| Stellaria nemorum | + | - | - | - | - | I |
| Acer campestre juv. | - | + | - | - | - | I |
| Glechoma hederacea | - | + | - | - | - | I |
| Geranium phaeum | - | - | - | 1 | - | I |
| Anthriscus sylvestris | - | - | - | + | - | I |
| <i>Quercu-Fagetea</i> | | | | | | |
| Viola reichenbachiana | + | 1 | + | 1 | + | V |
| Hedera helix | + | + | + | + | - | IV |
| Geum urbanum | - | + | - | - | + | II |
| Pulmonaria obscura | - | + | - | + | - | II |
| Lathyrus niger | - | + | - | + | - | II |
| Melica uniflora | - | - | - | + | + | II |
| Mycelis muralis | - | - | - | + | + | II |
| Rosa canina | - | - | - | + | + | II |
| Anemone ranunculoides | + | - | - | - | - | I |
| Quercus dalechampii | + | - | - | - | - | I |
| Crataegus monogyna | + | - | - | - | - | I |
| Quercus robur | + | - | - | - | - | I |
| Ligustrum vulgare juv. | + | - | - | - | - | I |
| Moehringia trinervia | + | - | - | - | - | I |
| Viola odorata | - | + | - | - | - | I |
| Tilia platyphyllos | - | - | - | + | - | I |
| Brachypodium sylvaticum | - | - | - | - | + | I |
| <i>Variae syntaxa</i> | | | | | | |
| Polygonum convolvulus | + | - | - | - | - | I |
| Achillea millefolium | - | + | - | - | - | I |
| Polygonatum odoratum | - | - | + | - | - | I |

Data and place of the relevés:

1. Slobozia, 11.06.2003; 2-4. Poieni, 27.07.2003; 5. Dobrovăț, 17.07.2002

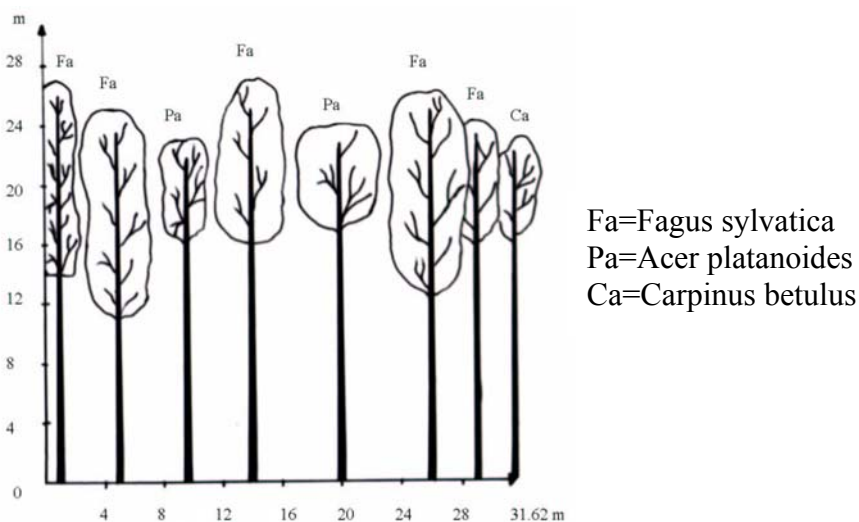


Fig. 2: The vertical structure of the *Galio schultesii* – *Fagetum* association

Table 3: Average density (trees/ha) of the arborescent layer

| Development stage (cm) | <i>Fagus sylvatica</i> | <i>Carpinus betulus</i> | <i>Fraxinus excelsior</i> | <i>Acer pseudoplatanus</i> | <i>Quercus robur</i> | Total phytocoenosis |
|----------------------------|------------------------|-------------------------|---------------------------|----------------------------|----------------------|---------------------|
| 11-20 | 16 | - | 4 | - | - | |
| | 20 | 16 | 40 | - | - | |
| Total | 16 | 44 | - | - | - | 60 |
| 21-36 | 24 | 76 | 32 | - | 8 | |
| | 28 | 148 | 24 | - | 4 | |
| | 32 | 92 | 4 | - | - | |
| | 36 | 76 | - | - | - | |
| Total | 392 | 60 | - | 8 | 4 | 464 |
| >36 | 40 | 48 | - | 8 | 4 | |
| | 44 | 28 | - | - | 4 | |
| Total | 76 | - | 8 | 8 | - | 92 |
| Total phytocoenosis | 484 | 104 | 8 | 16 | 4 | 616 |

Table 4: Average diameter (cm) of the arborescent layer

| Development stage (cm) | <i>Fagus sylvatica</i> | <i>Carpinus betulus</i> | <i>Fraxinus excelsior</i> | <i>Acer pseudoplatanus</i> | <i>Quercus robur</i> | Average phytocoenosis |
|------------------------------|------------------------|-------------------------|---------------------------|----------------------------|----------------------|-----------------------|
| 11-20 | 20,00 | 19,67 | - | - | - | 19,75 |
| 21-36 | 29,99 | 26,25 | - | 24,00 | 28,00 | 29,42 |
| >36 | 41,53 | - | 40,00 | 42,06 | - | 41,45 |
| Average phytocoenosis | 31,82 | 23,69 | 40,00 | 34,24 | 28,00 | 31,55 |

Table 5: Phytomass (kg/ha) of the herbaceous forest layer

| Species | Desiccated substance (%) | Aerial phytomass (kg/ha) | |
|-------------------------------|--------------------------|--------------------------|--------------|
| | | Green | Anhydrous |
| a. Vernal phytomass | | | |
| <i>Isopyrum thalictroides</i> | 18,13 | 32,00 | 5,86 |
| <i>Lamium maculatum</i> | 15,03 | 13,30 | 2,00 |
| <i>Dentaria bulbifera</i> | 11,47 | 90,60 | 10,40 |
| <i>Aegopodium podagraria</i> | 17,82 | 80,00 | 14,26 |
| <i>Anemone ranunculoides</i> | 12,25 | 41,30 | 5,06 |
| <i>Mercurialis perennis</i> | 13,08 | 56,00 | 7,33 |
| <i>Ranunculus auricomus</i> | 13,98 | 13,30 | 1,86 |
| <i>Euphorbia amygdaloides</i> | 12,65 | 20,00 | 2,53 |
| Other species | 6,04 | 22,50 | 1,36 |
| Total a. | - | 369,00 | 50,66 |
| b. Aestival phytomass | | | |
| <i>Galium schultesii</i> | 34,32 | 37,00 | 9,00 |
| <i>Viola reichenbachiana</i> | 5,00 | 2,00 | 0,10 |
| <i>Salvia glutinosa</i> | 26,95 | 46,00 | 12,40 |
| <i>Asarum europaeum</i> | 25,15 | 66,00 | 16,60 |
| <i>Sanicula europaea</i> | 14,00 | 30,00 | 4,20 |
| <i>Stellaria holostea</i> | 12,30 | 26,00 | 3,20 |
| Other species | 4,00 | 20,00 | 0,80 |
| Total b. | - | 227,00 | 46,30 |
| Total a. + b. | - | 596,00 | 96,96 |

Table 6: Phytomass (Kg/ha) of the arborescent layer, according to development stages of *Galio schultesii-Fagetum* association

| SPECIES | Density (trees/ha) | Average diameter (cm) | Phytomass (kg/ha) | | | | | | | | |
|----------------------------|--------------------|-----------------------|-------------------|------------------|---------------|-----------------|-----------------|-----------------|-----------------|----------------|------------------|
| | | | Trunks | Branches | | | | | Leaves | Total | |
| | | | | Total | 5 | 4 | 3 | 2 | | | 1 |
| <i>Carpinus betulus</i> | 44 | 19,67 | 8037,10 | 3638,21 | - | - | 1779,23 | 1675,43 | 183,55 | 133,85 | 11845,16 |
| <i>Fagus sylvatica</i> | 16 | 20,00 | 5819,2 | - | - | - | 675,2 | 756,8 | 163,2 | 161,6 | 7576,00 |
| Total 11-20cm | 60 | 19,75 | 13892,30 | 5233,41 | - | - | 2454,43 | 2432,23 | 346,75 | 295,45 | 19421,16 |
| <i>Fagus sylvatica</i> | 392 | 29,99 | 329859,18 | 101869,81 | - | 7917,81 | 42347,66 | 44901,73 | 6702,61 | 6013,77 | 437742,76 |
| <i>Carpinus betulus</i> | 60 | 26,25 | 21281,81 | 8473,68 | - | 837,00 | 3858,00 | 3357,00 | 421,68 | 332,62 | 30088,11 |
| <i>Acer pseudoplatanus</i> | 8 | 24,00 | 1928,00 | 548,00 | - | - | 272,00 | 245,60 | 30,40 | 28,00 | 2504,00 |
| <i>Quercus robur</i> | 4 | 28,00 | 1546,00 | 437,60 | - | 28,40 | 211,80 | 173,80 | 23,60 | 22,40 | 2006,00 |
| Total 21-36cm | 464 | 29,42 | 354614,99 | 111329,09 | - | 8783,21 | 46689,46 | 48678,13 | 7178,29 | 6396,79 | 472340,87 |
| <i>Fagus sylvatica</i> | 76 | 41,53 | 140792,97 | 37917,42 | - | 8167,58 | 13346,18 | 13652,39 | 2751,27 | 2549,40 | 181259,79 |
| <i>Fraxinus excelsior</i> | 8 | 40,00 | 8585,6 | 3318,4 | 183,20 | 1259,20 | 980,00 | 831,20 | 64,80 | 64,00 | 11968,00 |
| <i>Acer pseudoplatanus</i> | 8 | 42,06 | 4350,40 | 1413,60 | - | 306,40 | 560,80 | 441,60 | 104,80 | 100,00 | 5864,00 |
| Total >36cm | 92 | 41,45 | 153728,97 | 42649,42 | 183,20 | 9733,18 | 14886,98 | 14925,19 | 2920,87 | 2713,40 | 199091,79 |
| Total association | 616 | 31,55 | 522236,26 | 159211,92 | 183,2 | 18516,39 | 64030,87 | 66035,55 | 10445,83 | 9409,64 | 690853,82 |
| % | - | - | 75,59 | 23,05 | 0,04 | 2,68 | 9,26 | 9,55 | 1,51 | 1,36 | 100 |

Table 7: Phytomass (Kg/ha) of the arborescent layer, according to species of the *Galio schultesii-Fagetum* association

| SPECIES | Density (trees/ha) | Average diameter (cm) | Phytomass (kg/ha) | | | | | | | | |
|----------------------------|--------------------|-----------------------|-------------------|------------------|--------------|-----------------|-----------------|-----------------|-----------------|----------------|------------------|
| | | | Trunks | Branches | | | | | Leaves | Total | |
| | | | | Total | 5 | 4 | 3 | 2 | | | 1 |
| <i>Fagus sylvatica</i> | 16 | 20,00 | 5819,2 | - | - | - | 675,2 | 756,8 | 163,2 | 161,6 | 7576,00 |
| | 392 | 29,99 | 329859,18 | 101869,81 | - | 7917,81 | 42347,66 | 44901,73 | 6702,61 | 6013,77 | 437742,76 |
| | 76 | 41,53 | 140792,97 | 37917,42 | - | 8167,58 | 13346,18 | 13652,39 | 2751,27 | 2549,40 | 181259,79 |
| Total | 484 | 31,82 | 476471,35 | 141382,43 | - | 16085,39 | 56369,04 | 59310,92 | 9617,00 | 8724,77 | 626578,55 |
| <i>Carpinus betulus</i> | 44 | 19,67 | 8037,10 | 3638,21 | - | - | 1779,23 | 1675,43 | 183,55 | 133,85 | 11845,16 |
| | 60 | 26,25 | 21281,81 | 8473,68 | - | 837,00 | 3858,00 | 3357,00 | 421,68 | 332,62 | 30088,11 |
| Total | 104 | 23,69 | 29354,91 | 12111,89 | - | 837,00 | 5637,23 | 5032,43 | 605,23 | 466,47 | 41933,27 |
| <i>Fraxinus excelsior</i> | 8 | 40,00 | 8585,6 | 3318,4 | 183,20 | 1259,20 | 980,00 | 831,20 | 64,80 | 64,00 | 11968,00 |
| <i>Acer pseudoplatanus</i> | 8 | 24,00 | 1928,00 | 548,00 | - | - | 272,00 | 245,60 | 30,40 | 28,00 | 2504,00 |
| | 8 | 42,06 | 4350,40 | 1413,60 | - | 306,40 | 560,80 | 441,60 | 104,80 | 100,00 | 5864,00 |
| Total | 16 | 34,24 | 6278,40 | 437,60 | - | 28,40 | 211,80 | 173,80 | 23,60 | 128,00 | 8368,00 |
| <i>Quercus robur</i> | 4 | 28,00 | 1546,00 | 437,60 | - | 28,40 | 211,80 | 173,80 | 23,60 | 22,40 | 2006,00 |
| Total association | 616 | 31,55 | 522236,26 | 159211,92 | 183,2 | 18516,39 | 64030,87 | 66035,55 | 10445,83 | 9409,64 | 690853,82 |

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**ASOCIAȚII ALE CLASEI *QUERCO-FAGETEA* BR.-BL. ET VLIEGER IN VLIEGER 1937
DIN BAZINUL RÂULUI VASLUI**

(Rezumat)

Lucrarea analizează două asociații de pădure ce aparțin clasei *Querco-Fagetea* Br.-Bl. et Vlieger în Vlieger 1937: *Fraxino angustifoliae-Quercetum pedunculiflorae* Chifu, Sârbu et Ștefan (1998)2002 și *Galio schultesii-Fagetum* (Burduja et al. 1973) Chifu et Ștefan 1994, identificate în bazinul râului Vaslui. Pe lângă compoziția floristică, se analizează bioformele, elementele floristice, cât și indicii ecologici. Pentru ambele asociații s-a realizat structura verticală a fitocenozelor, observându-se astfel o structură pluriennă.

Pentru asociația *Galio schultesii-Fagetum* (Burduja et al. 1973) Chifu et Ștefan 1994 s-a calculat și cantitatea de fitomasă supraterană realizată de stratul arborescent și de către stratul erbaceu, în anul 2004. S-a obținut astfel o densitate de 616 arbori/ha, cu un diametru mediu de 31,55 cm, încadrându-se astfel în stadiu de dezvoltare – codrișor. În urma calculării fitomasei realizate de stratul arborescent s-au obținut 690.853,82 kg/ha, din care aportul cel mai important este dat de către trunchiuri (75,59%), urmate de ramuri (23,05%) și frunze (1,36%). Fitomasa supraterană a stratului erbaceu are valori mici, 96,96 kg s.u./ha, din care în sezonul vernal valoarea acesteia este de 50,66 kg s.u./ha, iar în cel estival de 46,30 kg s.u./ha, aceasta datorită condițiilor climatice nefavorabile (temperaturi ridicate și lipsa precipitațiilor).