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Guide to the Excursion of the "Fédération Internationale de Phytosociologie" to the Natural Parks of Conero, Gran Sasso and Monti della Laga, and Circeo

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Excursion to the "Selva di Gallignano"

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The woods of Gallignano

The morphology of the subcoastal territory of Marche is characterised by a large stretch of hills that slope gently towards the sea. The morphogenesis has been conditioned, not only by the lithological nature, but also by many other factors: active tectonics and earthquakes, past and present climate, gravitational processes, superficial channeled and spread water, and man's activities. Anyway, in recent times the anthropical factor can be considered as the most effective morphogenic agent.

Use of the territory in this area has produced a strong thinning of the natural wood vegetation from which the very few sections of woods still present, together with the "scattered elements of the agricultural landscape" (hedges, rows and isolated or small groups of trees) have acquired a particular biogeographical meaning and perform a strategic role in the creation of ecological corridors and networks, able to sustain the environmental maintenance of a territory more and more exploited by the intensive agricultural practices.

The plant landscape can be directly correlated with the lithological characteristics of the areas (Fig. 1). On the top of the hills, where the sandstone rocks, more or less cemented, surface and a good drainage is possible, with the consequent edaphic dryness, which allows the development of the edapho-xerophilous series of *Roso sempervirentis-Querceto pubescentis* sygmetum. On the aspects of the hills with a prevalence of clay, the damper substratum allows the development of the climatic series of the *Asparago acutifolii-Ostryeto carpinifoliae* sygmetum, while on the aspects with arenaceous-pelitic outcrops and on the gravely-sandy flood deposits, the

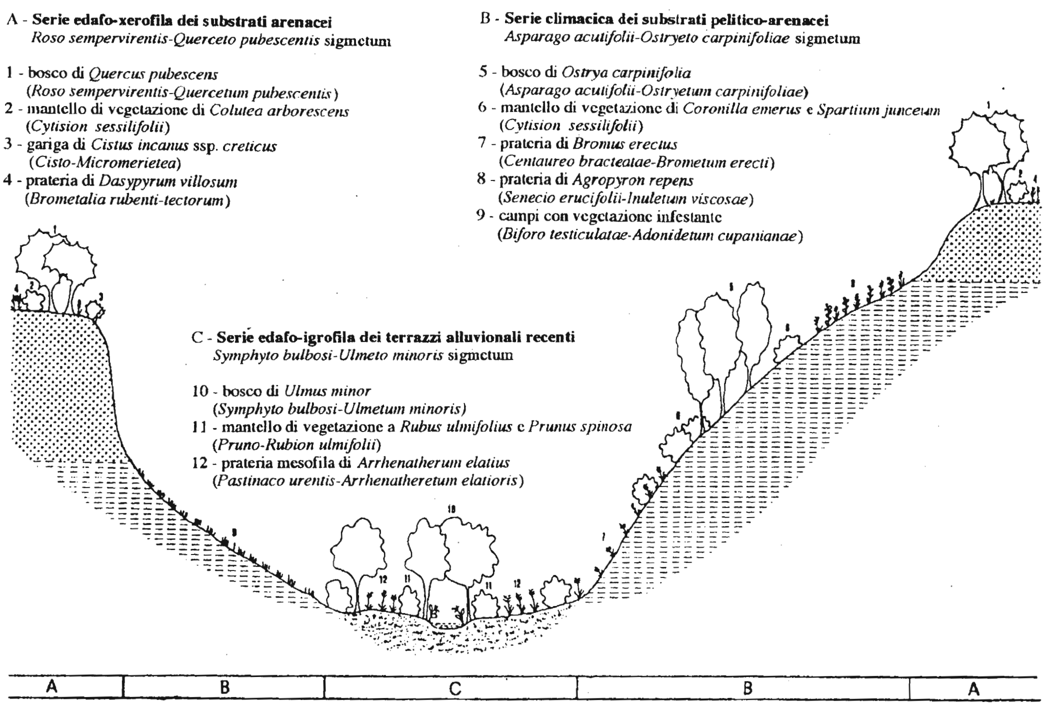

Fig. 1 – Geosygmetum of the hills in the Ancona area. In the upper sectors, with arenaceous substrata colonised by the xerophilous vegetation series; in the marl slopes, the climatophilous series; and in the lowest part of the alluvial system, the edapho-hygrophilous series (from Biondi & Allegrezza, 1996)

Lonicero xylostei-Querceto cerridis sygmetum can be found. Finally, in the fall lines and along the ditches on a constantly damp substratum the edapho-hygrophilous serie of *Symphyto bulbosi-Ulmeto minoris* sygmetum is present (Biondi & Allegrezza, 1996).

The woods of Gallignano are a very good example of remnant forest vegetation, representative of the complex vegetational situation that characterises the subcoastal hilly area of the Ancona Province. Therefore, it has been recognised as a "protected floristic area" according to the Regional Law 52/74 and a "botanical-vegetational growth of exceptional interest" by the Regional Environment and Landscape Planning. Moreover, from 1998 it has been a "faunal oasis" and from 1999 it has been a Centre for Environmental Education of the Marche region.

At present, the green areas of the Woods of Gallignano constitute one of the centres of the University of Ancona Botanical Gardens run by the Interdepartmental Centre of the Botanical Garden. In the land around the woods, according to an already approved project (Fig. 2), the flowerbeds that will host the collection of plants with anfi-Adriatic distribution are being prepared, especially those plants in danger of extinction or particularly rare. Moreover, a project of restoration of a farmhouse has been outlined that will contain research laboratories for the study of the vegetational biodiversity, a seed bank, and other structures for ecological education.

The substratum that characterises the aspect of the wood consists of alternating sand, lime and clay that gives origin to the arenaceous-pelitic and pelitic-arenaceous substratum.

Visit to the woods

The visit to the wood will be arranged to follow the educational itinerary already prepared that allows observation of the diverse forestal associations that are found there.

Immediately after the eastern entrance of the lower part one enters the wood of the association:

ROSO SEMPERVIRENTIS-CORYLETUM AVELLANAE ass. nova (type n. 2 of Tab.1)

The association that is found on the rising plain morphology and on silt-sand colluvium deposits is made up of a copse wood of *Corylus avellana* with *Laurus nobilis, Rosa sempervirens* and *Rubia peregrina* (Tab. 1) which are indicated as characteristic and differential species of the new association. This replaces, under meso-Mediterranean and sub-Mediterranean conditions,

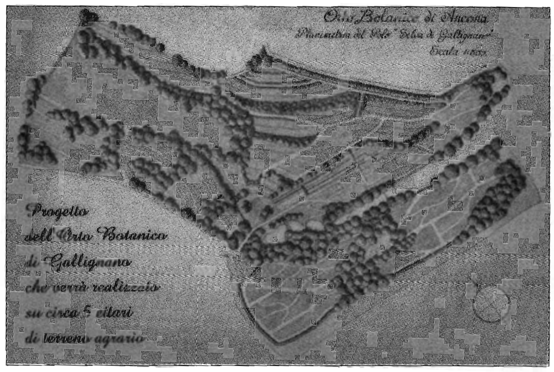

Fig. 2 – The Botanical Garden project of the University of Ancona that will be built in the same valley as the Selva di Gallignano

the similar formations present on the Apennines a attributable to the *Carpino betuli-Coryletum avellanae* association. The *Roso sempervirentis-Coryletum avellanae* association represents the pre-forestal vegetation of the *Carpinus betulus* woods attribuited to the *Rubio-Carpinetum betuli* association present under similar ecological conditions in the bordering hill areas such as the Selva di Castelfidardo (Woods of Castelfidardo) (Pedrotti & Cortini, 1975).

ASPARAGO ACUTIFOLII-OSTRYETUM CARPINIFOLIAE Biondi 1982
fraxinetosum oxycarpae subass. nova (type n. 8 of Tab. 2)

On the steep aspects, on the pelitic-arenaceous substratum covered by water-wash deposits with a prevalence of the silt component, the woods with a dominance of hop hornbeam that represent the most mature stage of the climatophilous series of the *Asparago-Ostryeto carpinifoliae* sygmetum are found. This constitutes a mixed forestal mesophilous coenosis, with a dominance of *Ostrya carpinifolia* and with *Fraxinus ornus* ssp. *ornus, Acer campestre* ssp. *campestre, A. obtusatum* ssp. *obtusatum, Q. pubescens* and *Laurus nobilis.*

With respect to the similar phytocoenosis particularly common on the pelitic-arenaceous aspects of the hills of the Ancona Province, the hop hornbeam wood present in the territory under study is different because it is more mesophilous due to the contact with the forestal and edapho-hygrophilous vegetation of the *Lauro-Fraxinetum oxycarpae* association. The chain link is as indicated in Tab. 2 from the new subassociation *fraxinetosum oxycarpae* differentiated by *Fraxinus angustifolia* ssp. *oxycarpa* and *Lonicera caprifolium.*

Tab. 1 - ***ROSO SEMPERVIRENTIS-QUERCETUM PUBESCENTIS*** ass. nova

Rel. N.	1	2*	P
Altitude (m)	115	110	r
Exposure	N	-	e
Slope (°)	5	-	s.
Coverage (%)	100	100	
Area (m^2)	80	80	
Charact. and diff. species of the ass., the *Lauro-Quercenion pubescentis* suball. and the *Ostryo-Carpinion orientalis* all.			
Corylus avellana L.	5.5	4.5	2
Laurus nobilis L.	1.2	+.2	2
Rosa sempervirens L.	2.2	1.2	2
Rubia peregrina L.	1.2	2.2	2
Ruscus aculeatus L.	+	+.2	2
Cyclamen repandum S. et S.	.	+.2	1
Charact. species of the *Quercetalia pubescentis* order and the *Querco-Fagetea* class			
Hedera helix L. ssp. helix	4.4	2.2	2
Lonicera xylosteum L.	+	+.2	2
Castanea sativa Miller	.	+.2	1
Symphytum tuberosum L.	.	+.2	1
Quercus pubescens Willd.	.	+.2	1
Fraxinus ornus L. ssp. ornus	.	+.2	1
Other species			
Cornus sanguinea L.	1.2	+.2	2
Euonymus europaeus L.	+	+.2	2
Crataegus monogyna Jacq. ssp. monogyna	+	+.2	2
Rubus ulmifolius Schott	1.2	1.1	2
Tamus communis L.	+	1.1	2
Clematis vitalba L.	1.2	.	1
Juglans regia L. pl.	+	.	1
Lonicera caprifolium L.	.	1.1	1

LONICERO XYLOSTEI-QUERCETUM CERRIDIS (Taffetani & Biondi 1995) Biondi & Allegrezza 1996 *ericetosum arboreae* subass. nova (type n. 7 of Tab. 3)

This constitutes a mixed wood with dominance of *Quercus cerris*, with *Q. pubescens, Fraxinus ornus* ssp. *ornus, Sorbus torminalis, S. domestica, Ostrya carpinifolia, Acer campestre* ssp. *campestre*, etc. In the shrub and vine-like layers there can be found: *Lonicera xylosteum, L. caprifolium, Rosa sempervirens, Smilax aspera*, in the grass layer: *Cyclamen repandum, C. hederifolium, Ruscus aculeatus, Rubia peregrina, Festuca heterophylla*, etc. Corresponding to the subacidic lenticular formation of the soil, the *Lonicero xylostei-Quercetum cerridis* association is present in the new *ericetosum arboreae* subassociation differentiated by *Erica arborea* ssp. *arborea, Juniperus communis* ssp. *communis, Osyris alba* and *Malus florentina.*

LAURO NOBILIS-FRAXINETUM OXYCARPAE Pedrotti & Gafta 1992

The mesohygrophilous woods of *Fraxinus angustifolia* ssp. *oxycarpa* (Tab. 4), are found on the silt-sand rain-wash deposits present in the narrow fall line that separates the woods into two parts, and on steep aspects.

This constitutes a small wood almost monospecific of *Fraxinus angustifolia* ssp. *oxycarpa* with the rare presence in the higher shrub layer of *Sambucus nigra, Fraxinus ornus* ssp. *ornus, Crataegus monogyna* ssp. *monogyna* and *Ulmus minor.*

The lower shrub layer is more rich with *Cornus sanguinea, Euonymus europaeus, Smilax aspera, Rubus ulmifolius, Laurus nobilis, Tamus communis, Lonicera caprifolium.* The grass layer is made up of *Arum italicum, Symphytum bulbosum, Brachypodium sylvaticum, Bromus ramosum, Carex pendula, Ruscus aculeatus, Cyclamen hederifolium, Rubia peregrina,* etc.

Syntassonomical list

QUERCO-FAGETEA Br.-Bl. & Vlieger in Vlieger 1937
+*Quercetalia pubescentis* Klika 1933
**Ostryo-Carpinion orientalis* Horvat (1954) 1959
***Lauro-Quercenion pubescentis* (Ubaldi 1988) Ubaldi 1995
Asparago acutifolii-Ostryetum carpinifoliae Biondi 1982
fraxinetosum oxycarpae subass. nova
Lonicero xylostei-Quercetum cerridis (Taffetani & Biondi 1995) Biondi & Allegrezza 1996
ericetosum arboreae subass. nova
Roso sempervirentis-Coryletum avellanae ass. nova
+*Populetalia albae* Br.-Bl. ex Tchou 1948
**Populion albae* Br.-Bl. ex Tchou 1948
Lauro nobilis-Fraxinetum oxycarpae Pedrotti & Gafta 1992

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Soils of the "Selva di Gallignano" (by S. Cocco & G. Corti)

Geology of the Selva di Gallignano consists of two major substrates of lower Pleistocene origin: alternation of bluish or ochreceous sandy-silty clays with scarcely cemented arenaceous lenses (LP1), and alternation of sands and sandstone with laminated and sometime convoluted clays (LP2).

If one images to subdivide the area of the Selva in three vertical sectors, these marine-swampy deposits represent the two sectors at the borders, while the central one is occupied by a continental deposit (of Present to Middle Pleistocene age) produced by geomorphologic phenomena and consisting of colluvia dotted by silty-clayey-sandy landslide deposits (MP). MP also covers the base of the hill (from 85 to 100 m above sea level), where the slope tends to decrease.

From an altitudinal point of view, the MP spans from the base to the top of the area, LP1 covers the lower part of the forest (between 100 and 160 m above sea level) and LP2 rests on the upper part (from 160 to 200 m above sea level).

The soils of the Selva are developed from these three lithologies.

In the lower portion of the forest (*Roso sempervirentis–Coryletum avellanae*), soils developed on MP (mostly consisting of colluvia) have a *solum* (horizons A and B) more than 1.2 m deep, characterized by a good structure and organic carbon content.

Immediately upper, *Asparago acutifolii–Ostryetum carpinifoliae* association growths on soils derived from LP1 rock that in place contains a stratum of limestone of organo-thermal origin (travertine). Surface shows creeping phenomena that have produced cracks reaching the depth of about 60 cm, so interesting all the horizons till the Bw2. Cracks are mostly filled of material coming from the upper horizons and colonized by roots. The A horizons are poorly developed (about 10 cm of thickness) since the disturbance due to erosion and creeping that interfere with horizon organisation. The *solum* has a texture dominated by silt and clay fractions and has a depth of around 70 cm. Plants of *Ostrya carpinifolia* have a "saber profile" because of the stemflow-water discharge. In fact, canopy morphology, insertion of the branches and smoothness of the bark produce a discharge of the stemflow that is able to induce erosion in the lower portion of the base of the stem itself. With time, the plants of *Ostrya carpinifolia* loose stability, tilt, assume a "saber profile" and, finally, fall down. On the contrary, plants of *Quercus pubescens* produce a smaller stemflow that, because of the roughness of the bark, is discharged slowly with no erosion effects on the soil underneath.

The adjacent sector is that of the MP, characterized by colluvia with diffused landslides. In this area, vegetation is represented by a wood of *Ostrya carpinifolia* with diffused *Ruscus aculeatus*, while soils are of three types: 1) at the early stage of pedogenesis, 2) buried, and 3) stabilized. All these soils have a fine texture with a slightly higher content of sand than the soils of before. The soils 1) are developing on the more recent landslide bodies, do not show horizon organisation and do not host plants of *Ruscus aculeatus*. The soils 2) are those that have been covered by the landslide masses and that, sometime, still show the ancient horizon organisation. The soils 3) show a horizon organization with consequent formation of structure; they derive from areas avoided by landslides or from old landslides themselves and are colonised by *Ruscus aculeatus*. Also in this sector, plants of *Ostrya carpinifolia* with a "saber profile" are frequent, but here they are mostly due to the weight of the landslide bodies that occasionally leaned at the base of the stem.

At higher altitudes (around 155-160 m), close to LP2, LP1 is richer in sand layers. This fact increases the stability of the lithology, so as creeping phenomena occur at a lesser extent. In this area, the development of the *solum* is similar to that seen at the *Asparago acutifolii–Ostryetum carpinifoliae* association, but here it rests on a bench consisting of an alternation of sandy and silty layers. The higher content of sand and the presence of sand layers at about 80 cm of depth induce soil conditions of slightly higher dryness that account for the presence of the *Lonicero xylostei-Quercetum cerridis* association.

The soils developed on the LP2 lithology are at the highest altitudes of the forest host the *Lonicero xylostei-Quercetum cerridis* association, sub-association *ericetosum arboreae*. These soils are considerably different from all the others already discussed. Here, creeping phenomena are scarce but able to produce little cracks that reach the depth of 15 cm. The surface appears slightly eroded so as A horizon is small and discontinuous: it is present only in the concave areas where material transported by superficial run off tends to accumulate. Under the A or, more frequently, at the surface, there is a thin E horizon, which has been produced by bleaching processes, here favoured by the higher content of sand and the presence of acidifying species such as *Erica arborea*. Also a transitional EB horizon formed underneath. In these soils, creeping cracks assume particular relevance as they behave as a sink for the products transported by the run off, which consist of O, A and E materials. Thus, in these microenvironments, the high moisture and the presence of organic matter and fluffy soil material favour the development of a diffuse mycelium; in these conditions, also a neo-formation of E material occurs. These soils offer such growth conditions for fungi that they develop till the depth of about 70 cm.

The forest is crossed by a gulch that set at the contact between Pleistocene rocks and MP. Section of the gulch is consequently asymmetric, with the wall on Pleistocene rocks in a steeper slope asset respect to that on MP. Soils are conditioned by the different parent materials: those on Pleistocene rocks have a coarser texture and lower moisture than those on MP. In these soils, the combination of fine textures and their position into a gulch accounts for the presence of the *Lauro nobilis–Fraxinetum oxycarpae* association.

Tab. 2 - ***ASPARAGO ACUTIFOLII-OSTRYETUM CARPINIFOLIAE*** Biondi 1982
fraxinetosum oxycarpae subass.nova

Rel. N.	1	2	3	4	5	6	7	8*	Pres.
Altitude (m)	120	130	130	130	150	150	140	150	
Exposure	N	SW	N	N	NO	NO	S	NO	
Slope (°)	15	15	30	30	30	10	45	30	
Coverage (%)	100	100	100	100	100	100	100	100	
Area (m^2)	200	40	100	80	80	100	90	100	
Charact. and diff. species of the ass.									
Ostrya carpinifolia Scop.	5.5	4.5	4.5	4.4	4.4	4.4	4.4	3.3	8
Asparagus acutifolius L.	+	+	+.2	1.1	1.1	1.1	1.2	+.2	8
Rubia peregrina L.	2.2	1.1	2.3	1.1	1.2	1.1	1.2	2.3	8
Smilax aspera L.	.	1.2	1.2	3.4	+.2	1.2	1.2	+.2	7
Diff. species of the *fraxinetosum oxycarpae* subass.									
Fraxinus angustifolia Vahl ssp. oxycarpa (Willd.) Franco & Rocha Afonso	.	.	+.2	1.2	+.2	1.2	1.2	2.3	6
Lonicera caprifolium L.	.	.	.	.	1.1	1.1	1.2	1.1	4
Charact. and diff. species of the *Lauro-Quercenion pubescentis* suball. and the *Ostryo-Carpinion orientalis* all.									
Ruscus aculeatus L.	2.2	.	1.2	4.4	+.2	3.4	3.3	1.2	7
Hippocrepis emerus (L.) Lassen ssp. emeroides (Boiss. et Spruner) Hayek	2.2	+.2	+.2	+.2	.	+.2	+.2	.	6
Laurus nobilis L.	+	.	+.2	2.3	+.2	.	1.2	+.2	6
Rosa sempervirens L.	+	1.2	.	.	+.2	+.2	1.2	.	5
Cyclamen repandum S. et S.	.	.	.	.	1.2	+	.	+.2	3
Cyclamen hederifolium Aiton	.	.	.	.	.	1.2	.	.	1
Viburnum tinus L.	.	.	.	.	+.2	.	.	.	1
Charact. species of the *Quercetalia pubescentis* order and the *Querco-Fagetea* class									
Fraxinus ornus L. ssp. ornus	3.3	2.3	1.2	2.3	1.1	1.2	2.2	1.2	8
Quercus pubescens Willd.	.	1.2	1.2	1.2	1.2	1.2	1.2	1.2	7
Tamus communis L.	+	+.2	1.2	.	2.2	1.2	+.2	3.3	7
Viola alba Besser ssp. dehnhardtii (Ten.) W. Becker	1.2	1.2	+.2	.	+.2	1.2	1.2	1.1	7
Hedera helix L. ssp. helix	4.4	.	2.2	2.3	1.2	2.3	1.2	1.2	7
Quercus cerris L.	.	+.2	.	1.2	+.2	3.4	1.2	(+.2)	6
Acer campestre L. ssp. campestre	+	.	+.2	.	1.2	1.2	1.2	.	5
Lonicera xylosteum L.	+	+.2	+.2	.	.	.	+	.	4
Buglossoides purpurocaerulea (L.) Johnston	1.2	.	.	.	+.2	.	1.2	+.2	4
Acer obtusatum W. et K. ssp. obtusatum	.	2.3	.	.	+.2	.	+.2	+.2	4
Arum italicum Miller	.	.	+	.	1.2	+.2	.	+.2	4
Symphytum tuberosum L.	.	+	.	.	+.2	1.2	+	.	4
Brachypodium sylvaticum (Hudson) Beauv.	1.2	.	.	.	.	+	.	1.2	3
Sorbus domestica L.	.	.	.	1.2	.	+	1.2	.	3
Viola reichenbachiana Jordan ex Boreau	+.2	.	+.2	.	.	+.2	.	.	3
Corylus avellana L.	+.2	.	1.2	.	.	.	.	.	2
Neottia nidus-avis (L.) L. C. Rich.	+.2	.	.	.	.	.	.	.	1
Primula vulgaris Hudson	1.2	.	.	.	.	.	.	.	1
Campanula trachelium L.	+	.	.	.	.	.	.	.	1
Solidago virgaurea L.	1.2	.	.	.	.	.	.	.	1
Cephalanthera longifolia (Hudson) Fritsch	.	+	.	.	.	.	.	.	1
Carpinus betulus L.	.	.	.	1.2	.	.	.	.	1
Hieracium gr. murorum L.	.	.	.	.	+	.	.	.	1
Cephalanthera damasonium (Miller) Druce	.	.	.	.	+	.	.	.	1
Lathyrus venetus (Miller) Wohlf.	.	.	.	.	.	+	.	.	1
Ulmus minor Miller	.	.	.	.	.	.	.	1.2	1
Symphytum bulbosum Schimper	.	.	.	.	.	.	.	+.2	1
Charact. species of the *Rhamno-Prunetea* class									
Crataegus monogyna Jacq. ssp. monogyna	1.1	+.2	1.2	+.2	+.2	1.2	+.2	1.2	8
Cornus sanguinea L.	1.1	.	1.2	.	1.2	1.2	+.2	1.2	6
Rubus ulmifolius Schott	1.1	+	+.2	+.2	.	.	.	+.2	5
Euonymus europaeus L.	.	.	+	.	.	1.2	1.2	+.2	4
Prunus spinosa L.	+	.	+.2	.	.	.	+	.	3
Clematis vitalba L.	1.2	+	.	.	+.2	.	.	.	3
Osyris alba L.	.	+.2	.	.	.	.	.	.	1
Other species									
Carex flacca Schreber	.	1.2	.	.	+.2	.	+.2	.	3
Stachys officinalis (L.) Trevisan	+	.	.	.	+.2	.	.	.	2
Robinia pseudoacacia L.	.	.	.	.	+	.	.	+.2	2
Geum urbanum L.	.	.	.	.	.	.	.	+	1
Brachypodium rupestre (Host) R. et S.	.	+.2	.	.	.	.	.	.	1

Tab. 3- ***LONICERO XYLOSTEI-QUERCETUM CERRIDIS*** (Taffetani & Biondi 1995) Biondi & Allegrezza 1996
ericetosum arboreae subass. nova

Rel. N.	1	2	3	4	5	6	7*	Pres.
Altitude (m)	145	145	165	140	140	140	170	
Exposure	SE	NO	NNO	N	N	N	N	
Slope (°)	25	30	35	40	40	40	15	
Coverage (%)	100	100	100	100	100	100	100	
Area (m^2)	80	40	100	100	80	70	100	
Charact. and diff. species of the ass.								
Quercus cerris L.	4.5	5.5	3.4	4.5	3.4	4.5	4.5	7
Lonicera caprifolium L.	1.2	1.2	1.2	+.2	1.1	1.2	2.3	7
Lonicera xylosteum L.	1.2	2.3	1.2	1.2	1.1	1.1	1.2	7
Sorbus domestica L.	.	+	1.2	+.2	+.2	1.2	+.2	6
Sorbus torminalis (L.) Crantz	+	.	.	1.2	2.2	+.2	2.2	5
Cyclamen hederifolium Aiton	.	.	1.2	1.2	.	1.2	2.2	4
Diff. species of the. *ericetosum arboreae* subass.								
Juniperus communis L.	.	.	+.2	+.2	+.2	+.2	+.2	5
Osyris alba L.	.	.	.	+.2	+	+.2	+.2	4
Erica arborea L. ssp. arborea	.	.	.	.	1.2	4.4	3.4	3
Malus florentina (Zuccagni) C. K. Schneider	.	.	.	.	.	.	1.2	1
Charact. and diff. species of the *Lauro-Quercenion pubescentis* suball. and the *Ostryo-Carpinion orientalis* all.								
Hippocrepis emerus (L.) Lassen ssp. emeroides (Boiss. et Spruner) Hayek	+	1.1	+.2	+	+	+.2	+.2	7
Rubia peregrina L.	2.3	1.1	1.1	+.2	1.1	+.2	+	7
Smilax aspera L.	+.2	+.2	3.4	2.3	1.2	+.2	+.2	7
Ruscus aculeatus L.	4.5	4.5	3.4	2.3	1.2	1.2	+.2	7
Ostrya carpinifolia Scop.	1.2	+	1.2	1.2	2.3	1.2	+.2	7
Rosa sempervirens L.	1.2	+	1.2	+.2	+.2	+.2	+.2	7
Asparagus acutifolius L.	1.1	1.1	1.1	+.2	+.2	.	+	6
Laurus nobilis L.	+.2	1.2	1.2	.	1.2	.	.	4
Cyclamen repandum S. et S.	+	.	.	+.2	1.1	+.2	.	4
Charact. species of the *Quercetalia pubescentis* order and the *Querco-Fagetea* class								
Fraxinus ornus L. ssp. ornus	3.3	4.4	3.3	3.4	2.3	2.3	2.3	7
Quercus pubescens Willd.	1.2	1.2	2.3	1.2	2.2	2.3	1.2	7
Hedera helix L. ssp. helix	2.3	1.2	2.3	1.2	+.2	.	.	5
Acer campestre L. ssp. campestre	1.2	2.3	1.2	1.2	1.2	.	.	5
Tamus communis L.	+	1.1	+.2	.	1.1	+	.	5
Festuca heterophylla Lam.	.	1.2	.	.	1.2	+.2	1.1	4
Viola alba Besser ssp. dehnhardtii (Ten.) W. Becker	+	.	+.2	+.2	+.2	.	.	4
Symphytum tuberosum L.	+.2	.	+	+	+	.	.	4
Lathyrus venetus (Miller) Wohlf.	.	+	+	+	.	.	.	3
Arum italicum Miller	+	.	+	+	.	.	.	3
Luzula forsteri (Sm.) DC.	.	+.2	.	.	.	.	+.2	2
Carpinus betulus L.	.	.	.	+.2	1.2	.	.	2
Acer obtusatum W. et K. Ssp. obtusatum	1.2	.	.	.	.	.	.	1
Corylus avellana L.	.	+	.	.	.	.	.	1
Quercus petraea (Mattuschka) Liebl.	.	.	+.2	.	.	.	.	1
Brachypodium sylvaticum (Hudson) Beauv.	.	.	.	.	1.2	.	.	1
Buglossoides purpurocaerulea (L.) Johnston	.	.	.	.	+.2	.	.	1
Hieracium gr. murorum L.	.	.	.	.	+	.	.	1
Hepatica nobilis Miller	.	.	.	.	+.2	.	.	1
Prunus avium L.	.	.	.	.	+	.	.	1
Sanicula europaea L.	.	.	.	.	+	.	.	1
Melittis melissophyllum L. ssp. melissophyllum	.	.	.	.	.	+	.	1
Charact. species of the *Rhamno-Prunetea* class								
Crataegus monogyna Jacq. ssp. monogyna	+.2	1.1	1.2	1.2	1.2	+.2	.	6
Euonymus europaeus L.	+.2	+	.	.	.	.	.	2
Cornus sanguinea L.	1.2	+	.	.	.	.	.	2
Prunus spinosa L.	+	.	.	.	+	.	.	2
Rubus ulmifolius Schott	+	+	.	.	.	.	.	2
Clematis vitalba L.	.	1.2	.	.	.	.	.	1
Crataegus laevigata (Poiret) DC.	.	.	.	.	+.2	.	.	1
Other species								
Stachys officinalis (L.) Trevisan	.	+.2	+.2	.	+.2	.	1.1	4
Ajuga reptans L.	.	.	.	.	+	.	.	1
Carex flacca Schreber	.	.	.	.	+.2	.	.	1
Brachypodium rupestre (Host) R. et S.	.	.	.	.	+	.	.	1
Bellevalia romana (L.) Sweet	.	.	.	.	+	.	.	1
Polypodium vulgare L.	.	.	.	.	.	.	+	1

Tab. 4 - ***LAURO NOBILIS-FRAXINETUM OXYCARPAE*** Pedrotti & Gafca 1992

Rel. N.	1	2	P
Altitude (m)	150	160	r
Exposure	NO	NO	e
Slope (°)	20	20	s.
Coverage (%)	100	100	
Area (m^2)	80	70	
Charact. and diff. species of the ass., the *Populion albae* all. and the *Populetalia albae* ord.			
Fraxinus angustifolia Vahl ssp. oxycarpa (Willd.) Franco & Rocha Afonso	4.5	4,5	2
Arum italicum Miller	2.2	+.2	2
Symphytum bulbosum Schimper	1.2	+.2	2
Rubia peregrina L.	1.2	1,2	2
Smilax aspera L.	+.2	1,2	2
Asparagus acutifolius L.	+	1,1	2
Tamus communis L.	3.3	2,3	2
Ruscus aculeatus L.	1.2	1,2	2
Cyclamen hederifolium Aiton	1.2	+	2
Rosa sempervirens L.	+.2	+	2
Ulmus minor Miller	1.2	.	1
Carex pendula Hudson	1.2	.	1
Laurus nobilis L.	.	+.2	1
Charact. species of the *Querco-Fagetea* class			
Symphytum tuberosum L.	1.2	+.2	2
Fraxinus ornus L. ssp. ornus	1.2	1,2	2
Viola alba Besser ssp. dehnhardtii (Ten.) W. Becker	+.2	+	2
Hedera helix L. ssp. helix	1.2	2,3	2
Brachypodium sylvaticum (Hudson) Beauv.	1.2	1,2	2
Lonicera xylosteum L.	+.2	+.2	2
Polystichum setiferum (Forsskal) Woynar	+.2	.	1
Corylus avellana L.	.	+.2	1
Acer obtusatum W. et K. ssp. obtusatum	.	+.2	1
Bromus ramosus Hudson	.	+.2	1
Charact. species of the *Rhamno-Prunetea* class			
Cornus sanguinea L.	2.3	2,3	2
Lonicera caprifolium L.	1.2	2,3	2
Euonymus europaeus L.	1.2	1,2	2
Crataegus monogyna Jacq. ssp. monogyna	1.2	1,2	2
Rubus ulmifolius Schott	+.2	+.2	2
Sambucus nigra L.	+.2	+.2	2
Hippocrepis emerus (L.) Lassen ssp. emeroides (Boiss. et Spruner) Hayek	+	+	2
Prunus spinosa L.	.	+.2	1
Other species			
Geum urbanum L.	+.2	+.2	2
Carex flacca Schreber	+.2	+.2	2
Ranunculus lanuginosus L.	+.2	.	1
Robinia pseudoacacia L.	.	+.2	1