

# THE FOREST VEGETATION OF THE TOLFA-CERITI MOUNTAINS (NORTHERN LATIUM – CENTRAL ITALY)

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## Abstract

The forests of the Tolfa-Ceriti mountains (Lazio, central Italy) were investigated through a phytosociological approach. 249 relevés were performed and treated with multivariate analysis. 13 woodland communities were identified, of which 7 belong to *Quercetalia pubescenti-petraeae*, 1 to *Fagetalia sylvaticae*, 1 to *Populetalia* and 4 to *Quercetalia ilicis*. The thermophilous Turkey oak-forests occurring on the trachytic hills of the Ceriti Mountains and on the flysch substrates of the Tolfa Mountains were included in *Rubio peregrinae-Quercetum cerridis* ass. nova. *Quercus cerris* and *Fraxinus angustifolia* subsp. *oxycarpa* woodland communities of the foot-slopes have been ascribed to *Fraxino oxycarpae-Quercetum cerridis*, while the widespread mesophilous Turkey oak forests have been ascribed to *Melico-Quercetum cerridis*. *Cephalanthero longifoliae-Quercetum cerridis* has been restricted to acid and oligotrophic soils. *Quercus petraea* woodlands, occurring on trachytic substrates have been described as a new association named *Carici olbiensis-Quercetum petraeae* ass. nova. All these mixed oak woods have been included in the alliance *Crataego laevigatae-Quercion cerridis* Arrigoni 1997. The nomenclatural problems concerning the prior name *Teucro siculi-Quercion cerridis* Ubaldi 1988 are also discussed. The beech forests of the higher altitudes have been included in *Fraxino orni-Fagetum sylvaticae*, while the *Alnus glutinosa* ravine woodlands have been described as belonging to the new association *Polysticho setiferi-Alnetum glutinosae*. Secondary communities of *Acer monspessulanum* and *Acer campestre* developed on flysch substrates, and of *Erica arborea* and *Arbutus unedo* (*Erico-Arbutetum unedonis*) developed on trachytic substrates, have also been identified. Finally two types of *Quercus ilex* wood have been identified: *Cyclamino repandi-Quercetum ilicis*, on sandstones, and the new association *Arbuto unedonis-Quercetum ilicis* ass. nova on volcanic soils. This latter community can be considered as a coenological and geographical vicariant in central Italy of the sicilian *Erico-Quercetum ilicis*.

**Key words:** forest vegetation, ICPN, peninsular Italy, phytosociology, syntaxonomy.

## Izvešček

Fitocenološko so bili raziskani gozdovih na pogorju Tolfa-Ceriti (Lacij, osrednja Italija). Izdelano je bilo 249 fitocenoloških popisov, ki so bili obdelani z multivariantnimi metodami. Ugotovljenih je bilo 13 gozdnih združb, od katerih jih 7 uvrščamo v red *Quercetalia pubescenti-petraeae*, 1 v red *Fagetalia sylvaticae*, 1 v red *Populetalia* in 4 v red *Quercetalia ilicis*. Termofilni cerovi gozdovi, ki jih najdemo v gričevnatem svetu pogorja Ceriti in se razvijajo na flišu v pogorju Tolfa, so vključeni v asociacijo *Rubio peregrinae-Quercetum cerridis* ass. nova. Gozdovi cera (*Quercus cerris*) in ozkolistnega jesena (*Fraxinus angustifolia* subsp. *oxycarpa*) na vznožjih so uvrščeni v združbo *Fraxino oxycarpae-Quercetum cerridis*, medtem ko so široko razširjeni mezofilni cerovi gozdovi uvrščeni v združbo *Melico-Quercetum cerridis*. Združba *Cephalanthero longifoliae-Quercetum cerridis* je razširjena le na grušču na kisljih in oligotrofnih tleh. Gradnovi gozdovi, ki se pojavljajo na trahičnem substratu, so uvrščeni v novo asociacijo *Carici olbiensis-Quercetum petraeae*. Vsi obravnavani mešani hrastovi gozdovi so vključeni v zvezo *Crataego laevigatae-Quercion cerridis* Arrigoni 1997; poleg tega pa obravnavamo tudi starejše ime *Teucro siculi-Quercion cerridis* Ubaldi 1988. Bukove gozdove, ki se pojavljajo na večjih nadmorskih višinah, uvrščamo v združbo *Fraxino orni-Fagetum sylvaticae*, medtem ko jelševe gozdove, ki jih najdemo po grapah, uvrščamo v novo asociacijo *Polysticho setiferi-Alnetum glutinosae*. Ugotovili smo tudi

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sekundarni združbi, in sicer na flišu združbo trokrpega javorja (*Acer monspessulanum*) in maklena (*Acer campestre*) ter na trahičnem substratu združbo drevesaste rese (*Erica arborea*) in jagodičnice (*Arbutus unedo*) – *Erico-Arbutetum unedonis*. Ugotovili smo tudi dva tipa gozdov črničevja (*Quercus ilex*): *Cyclamino repandi-Quercetum ilicis* na peščenjakih in novo asociacijo *Arbuto unedonis-Quercetum ilicis* ass. nova na vulkanskih tleh, ki jo lahko obravnavamo kot cenološko in geografsko vikariantno združbo združbe *Erico-Quercetum ilicis*, ki jo najdemo na Siciliji.

**Ključne besede:** gozdna vegetacija, ICPN, Apeninski polotok, fitocenologija, sintaksonomija.

## 1. INTRODUCTION

The hilly-mountainous range known as “Comprensorio Tolfetano-Cerite” is the southernmost limit of an ecological and biogeographical area which finds its centre in south-western Umbria and southern-Tuscany. Being an isolated sub-coastal low-mountainous massif this area exhibits some particular litho-stratigraphical and bioclimatical features that give rise to a quite unique potential vegetation pattern. Although the highest peaks of the Tolfa-Ceriti mountains do not exceed 600 m, the entire altitudinal woodland zonation occurring in the central Apennines (from thermophilous holm-oakwoodlands to beech woodlands) can be found as one moves inland from the Thyrrenian coastline. Since ancient times, however, man has significantly influenced the woodland potential vegetational landscape as a result of a variety of activities, from forestry-grazing to mineral mining. The previous vegetational studies concerning the Tolfa-Ceriti mountains (Anzalone 1961a, 1961b; Montelucci 1962; Spada 1975; Scoppola & al. 1990; Scoppola & Caporali 1996, 1998; Pignatti 1998), were restricted to very specific issues and suffered from the lack of a phytosociological overview and of a relevés database regarding the woodland pattern. In the present paper a complete coenological and syntaxonomical analysis of both the evergreen and deciduous woodland communities was carried out and updated to take account of the main recently-published syntaxonomical European revisions on forest vegetation.

## 2. STUDY AREA

The Tolfa-Ceriti Mountains are a volcanic group in the Latium Anti-Apennines, central Italy (Fig. 1). They are bounded by the Tyrrhenian Sea coast on the West, by the Monti Sabatini on the East, and the Monti Cimini and the Mignone river on

the North (Fig. 1). The Tolfa-Ceriti mountains are formed mostly of trachyte stones from the Eocene and the early Pleistocene, which markedly characterise the landscape of the study area in the form of a complex of acid domes. These volcanic edifices give rise to the rugged morphology which characterises the higher altitude zones of the study area (the highest peak of Tolfa mountains is the Monte della Grazie, 616 m) and which makes them easily distinguishable from the surrounding hilly zones which are formed by older sedimentary deposits of flyschoid origin (Devoto & Lombardi 1977; Contoli & al. 1980; Angelelli



Figure 1: Study area.

Slika 1: Preučevano območje.

& Faramondi 1995; Lombardi 2000). Particularly important are the reservoirs of alunite, a mineral discovered here in the 15th century, and which has been extensively mined since then. According to Blasi (1994), the study area is included in two bioclimatic units: a narrow territorial fringe which runs parallel to the coastal line which belongs to the Mediterranean Region, and a higher altitude zone which belongs to the Transition Mediterranean Region (upper meso-Mediterranean thermotype, upper subhumid- lower humid umbrotype).

2000 program, Podani 2001). The following scale was adopted to transform the Braun-Blanquet values of the matrix into numerical values (van der Maarel 1979): r = 1; + = 2; 1 = 3; 2 = 5; 3 = 7; 4 = 8; 5 = 9. Species nomenclature is according to Conti & al. (2005). The new syntaxa were named according to the International Code of Phytosociological Nomenclature (ICPN, Weber et al. 2000). Species which occur only once were excluded from the phytosociological table and were reported in Appendix 1. Place and date of relevés were listed in Appendix 2.

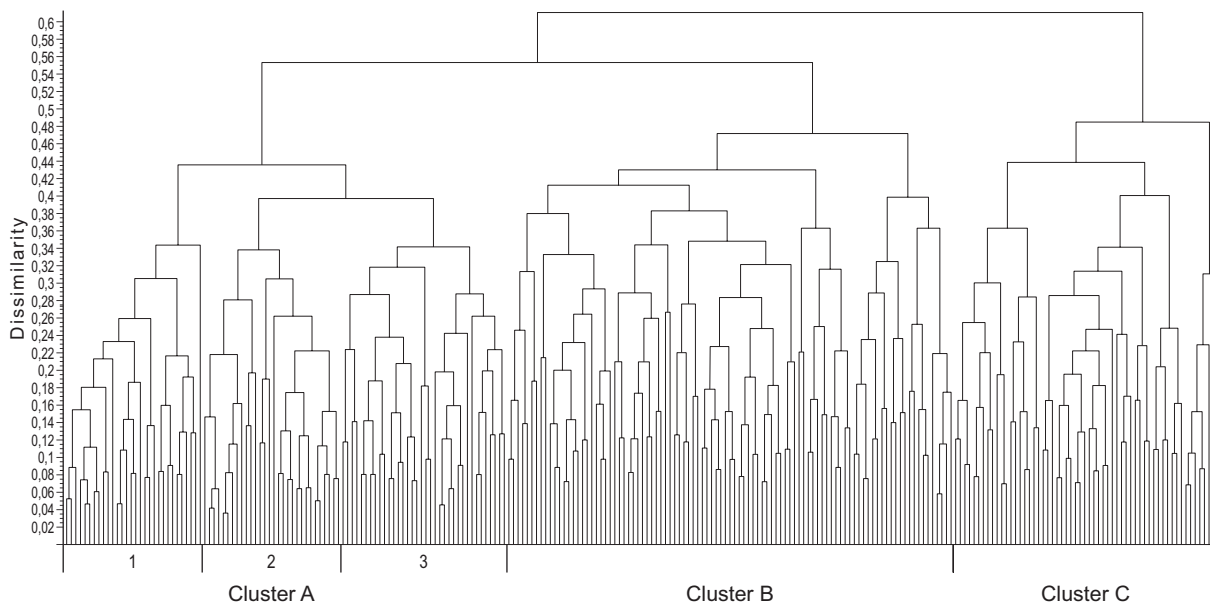
### 3. DATA AND METHODS

Field research was carried out in the period from 2004 to 2005. Altogether 249 phytosociological relevés were made following the standard methods of the Zurich-Montpellier approach (Braun-Blanquet 1964). The row matrix (249 rel. x 330 species) was subjected to multivariate analysis procedures (cluster analysis), using the chord distance algorithm to produce the dissimilarity matrix and the minimum variance in new clusters as agglomeration criterion (package Syntax

### 4. RESULTS AND DISCUSSION

#### 4.1 MULTIVARIATE ANALYSIS

The cluster analysis dendrogram based on quantitative data, transformed through the van der Maarel conversion scale, is shown in Fig. 2. Three main clusters were identified; cluster A, which included the thermophilous communities only, was composed of three sub-clusters: secondary *Erica arborea* and *Arbutus unedo* high shrublands (1), mixed woods of *Quercus ilex* and thermophilous



**Figure 2:** Cluster analysis dendrogram based on quantitative data, transformed through the van der Maarel conversion scale, and computed using the chord distance algorithm to produce the dissimilarity matrix and the minimum variance in new clusters as an agglomeration criterion.

**Slika 2:** Dendrogram klastrske analize: kvantitativni podatki, pretvorjeni z van der Maarlovo skalo in izračunani z uporabo algoritma tetivne razdalje za izdelavo matrike različnosti in kopičenja na osnovi minimalne variance.

deciduous tree species developed on the flysch substrates of Tolfa mountains (2), and those developed on the volcanic trachytic substrates of the Ceriti hills (3). In the latter sub-cluster the evergreen *Quercus suber* woodlands and the thermophilous *Quercus cerris* woodlands were also classified. Cluster B included all the mesophilous *Quercus cerris* woodlands developed both on volcanic and flysch substrates, as well as the *Acer monspessulanum* secondary woodlands. Cluster C includes the ravine *Alnus glutinosa* woodlands and the woodlands communities developed at higher altitudes; *Quercus cerris* acidic oligotrophic woods, *Quercus petraea* woods, *Castanea sativa* woods and *Fagus sylvatica* woods. In most of the cases all these woodlands types are relic and are restricted to small areas.

## 4.2 VEGETATION

*Rubio peregrinae-Quercetum cerridis* ass. nova hoc loco (Table 1, 2)

(Holotypus rel. 3 in Table 1 hoc loco)

**Distribution and structure:** Thermophilous *Quercus cerris* woodlands are developed on the marly-calcareous hills, especially on south-western slopes, and are interposed between the sclerophyllic vegetation of the coastal side and the mesophilous *Quercus cerris* woodlands of the inner areas. These woodlands are usually coppiced and are mostly dominated by *Quercus cerris* and in some cases co-dominated by *Quercus pubescens* s.l. In the lower tree-layer the constant presence of *Acer monspessulanum* and *Fraxinus ornus* is found, while the undergrowth is very rich in Mediterranean species (*Osyris alba*, *Pistacia lentiscus*, *Rhamnus alaternus*, *Rosa sempervirens*, *Viburnum tinus*, *Smilax aspera*, *Asparagus acutifolius*, *Rubia peregrina*, *Lonicera implexa* and *Clematis flammula*), which enable these turkey oak woodlands to be distinguished from those occurring in the inner areas and/or at higher altitudes.

**Syntaxonomy:** These thermophilous *Quercus cerris* woodlands sampled in the Tolfa-Ceriti mountains exhibit strong similarities to those included in the subassociation *Roso-Quercetum pubescentis quercetosum cerridis* proposed by Arrigoni & al. (1997) for some thermophilous oak-woods of central and southern Tuscany (Table 17). However, it is evident that both communities are *Quercus cer-*

*ris* communities and not *Quercus pubescens* communities mixed with *Quercus cerris*. Moreover, *Roso-Quercetum pubescentis quercetosum cerridis* Arrigoni & al. 1997 is different (physiognomically and coenologically) from the original diagnosis of *Roso-Quercetum pubescentis* provided by Biondi in 1986 and subsequently in Biondi & al. (2002) and Allegrezza & al. (2002). As a consequence the inclusion of our relevés within *Roso-Quercetum pubescentis* was not considered in the present study. Allegrezza & al. (2002) came to the same conclusion and included the subassociation *Roso-Quercetum pubescentis quercetosum cerridis* (sensu Arrigoni & al. 1997) in a *Quercus cerris* forest association, *Lonicero xylostei-Quercetum cerridis* as a new subassociation (*Lonicero-Quercetum cerridis loniceretosum etruscae*). In our opinion the use of the name *Lonicero xylostei-Quercetum cerridis* raises some coenological and nomenclatural problems. From a coenological point of view the association *Lonicero xylostei-Quercetum cerridis* (formerly *Lonicero xylostei-Carpinetum orientalis* Taffetani & Biondi 1995) exhibits a highly unusual floristic combination which is very different from those of the other types of thermophilous *Quercus cerris* woodlands of central Italy. In addition to the abundance of *Carpinus orientalis* there is the simultaneous presence of a species, *Lonicera xylosteum*, which is typical of mesophilous oak-hornbeam woodlands (*Erythronio-Carpinion*) or thermophilous beech woodlands (Ubaldi 1988; Oberdorfer 1994; Di Pietro & Tondi 2005), along with several *Quercetea ilicis* species, such as: *Smilax aspera*, *Rosa sempervirens*, *Viburnum tinus*, *Quercus ilex*. Therefore *Lonicero xylostei-Quercetum cerridis* cannot be considered a widely-distributed community, and must necessarily be restricted to the few zones of the hilly (Adriatic) sector of Marches region where these unusual coenological features were identified (Taffetani & Biondi 1995). Certainly it is not appropriate to include a community such as *Roso-Quercetum quercetosum cerris*, which was described for the Tyrrhenian side of central Italy and in a geographical context which is external to the distributional range of *Carpinus orientalis*, and what is more in a coenological context in which the character species *Lonicera xylosteum* is absent. From a nomenclatural viewpoint the name *Lonicero xylostei-Quercetum cerridis* is to be considered invalid (Art. 39 ICPN, Weber & al. 2000), in spite of the arguments provided in Biondi & al. (2002). In addition, the new combination of the subass. *Roso-Quercetum pubescentis quercetosum cerridis* Ar-

rigoni 1997 (Arrigoni & al. 1997) in the form of the new subass. *Lonicero xylostei-Quercetum cerridis loniceretosum etruscae* is to be considered *nom. illeg.* (Art. 26 ICPN).

Over the last thirty years many other *Quercus cerris* woodland associations have been proposed for the Tyrrhenian district of central Italy (*Asparago-Quercetum cerridis* Scoppola & Filesi 1995, *Carpino orientalis-Quercetum cerris* Blasi ex Taffetani & Biondi 1995; *Rubio peregrinae-Quercetum cerris* (Pignatti & Pignatti 1968) Bas Pedroli in Pignatti 1998) and some of them show similarities with *Quercus cerris* thermophilous woodlands of the Tolfa-Ceriti mountains (Table 17). Unfortunately we cannot classify these communities into any of the existing described syntaxa. *Asparago tenuifolii-Quercetum cerridis* (Scoppola & Filesi 1995) is not suitable owing to the complete absence of *Asparagus tenuifolius* (guide species of the association) and the scarcity of *Echinops ritro* subsp. *siculus*, *Bromus ramosus* and *Malus florentina* (character species in the original diagnosis). *Carpino orientalis-Quercetum cerris* is to be excluded owing to the absence of *Quercus frainetto* (co-dominant with *Quercus cerris* in the lectotypus of the association provided in Taffetani & Biondi 1995) and the negligible presence of *Carpinus orientalis* in the entire Tolfa-Ceriti mountains area<sup>1</sup>.

The association *Rubio-Quercetum cerris* deserves a separate treatment. The name *Rubio peregrinae-Quercetum cerris* was proposed (invalidly, Art. 2, Art. 5) in Pignatti & Pignatti (1968) for describing sub-acidophilous woodlands in southern Tuscany. This association was further recognized by other authors (Stortelder & al. 1986; Bas Pedroli & al. 1988) for some types of *Quercus cerris* woodlands of southern Tuscany, despite the lack of a phytosociological table in the original publication from which to extrapolate a type-relevé. The name *Rubio peregrinae-Quercetum cerridis* was proposed again in Pignatti (1998) together with an appropriate synecological and synchorological diagnosis, a list of the character species and a synoptic table listing the high-frequency species only. On the basis of Pignatti's new coenological

description of *Rubio-Quercetum* together with the wide distribution of the characteristic species it can be deduced that this association has a very extensive distribution area. According to Pignatti (1998) *Rubio-Quercetum* includes the majority of the thermophilous *Quercus cerris* woodlands currently described for the Tyrrhenian district of central Italy (e.g. the associations *Asparago tenuifolii-Quercetum cerris*, *Coronillo emeri-Quercetum cerris*, *Carpino orientalis-Quercetum cerris*, *Erico-Quercetum cerridis* were considered in the form of syntaxonomical synonyms).

Nevertheless, this new version of the association is also to be considered invalid (Art. 5), since in Pignatti (1998) it was reported as *Rubio-Quercetum cerris* Bas Pedroli 1989, although in the publication of Bas Pedroli & al. (1988) there was neither an indication of the nomenclatural-type of the association nor a phytosociological table from which to extrapolate a type-relevé. These nomenclatural gaps, however, do not nullify the statement that Pignatti's *Rubio-Quercetum cerridis* covers a coenological space for which no other existing validly described syntaxa currently correspond. For this reason, and in order to avoid the proliferation of new names, we think it appropriate to keep the reference to the name *Rubio peregrinae-Quercetum cerridis*, however in the form of a new association (*Rubio peregrinae-Quercetum cerridis* ass. nova hoc loco). The proposal of this new association is necessary not only for purely nomenclatural reasons, but also because, even if it corresponds almost entirely to the ecological diagnosis provided by Pignatti (1998), it is in disagreement with most of the syntaxonomical synonymies he proposed. As a consequence, the type-relevé of the new association is defined ex-novo and hoc loco (rel. 3 Table 1 of the present paper) and is no way related to any of the associations published to date which are considered by other authors as syntaxonomical synonyms of *Rubio-Quercetum cerridis*. In this new form *Rubio-Quercetum cerridis* becomes a sort of "base-association" ("Torso-gesellschaft" sensu Poldini 1988) which includes all those *Quercus cerris* thermophilous woodlands of central and western Italy which are developed on sub-acid and/or flyschoid substrates, and which are markedly influenced by the Mediterranean bioclimate. The following species are included in the characteristic component of this new association: *Rubia peregrina*, *Smilax aspera*, *Asparagus acutifolius*, *Stachys officinalis*, *Melittis melissophyllum* and *Hedera helix*.

<sup>1</sup> The name *Carpinus orientalis-Quercetum cerris* was described invalidly in Blasi (1984) (Art. 3). The further validation of the name made in Taffetani & Biondi (1995) as *Carpino orientalis-Quercetum cerris* Blasi ex Taffetani & Biondi 1995 is a *nom. illeg.*, owing to the presence of a prior validly described nomenclatural synonym in the Balkan phytosociological literature (*Carpino orientalis-Quercetum cerris* Oberd. 1934) (Horvat & al. 1974).

In addition to the typical aspect of the *Rubio-Quercetum cerridis*, a thermophilous subassociation named *Rubio-Quercetum cerridis ericetosum arboreae* subass. nova hoc loco (holotypus Table 2 rel. 4), has been identified in the study area. It consists of relatively open woods which occur mostly on the SW facing slopes of the Ceriti hills where trachitic substrates are to be found, and also less frequently on the driest areas of the Tolfa mountains flysch substrates. The upper tree layer is dominated by *Quercus cerris* with *Quercus ilex* and *Quercus suber* also very frequent. The shrub layer is characterised by the presence of many evergreen sclerophyllic species, mainly *Phillyrea latifolia* and *Quercus ilex* and less frequently *Erica arborea*, *Arbutus unedo*, *Myrtus communis* *Clematis flammula*, *Asparagus acutifolius*, *Rubia peregrina*, *Smilax aspera*. The thermophilous deciduous tree component is composed of *Fraxinus ornus*, *Quercus pubescens* s.l., *Acer monspessulanum*, and *Sorbus domestica*, while *Ostrya carpinifolia* is more sporadic, being restricted to the bottom of small gorges where moister conditions occur. *Luzula forsteri*, *Melica uniflora*, *Ruscus aculeatus*, *Brachypodium sylvaticum* and *Carex distachya* are the most common species in the herb-layer. The presence of this thermophilous subassociation *Rubio-Quercetum* can be explained by the drying out of soils, in its turn the result of coppicing and extensive grazing, which led to increased competitiveness of the evergreen steno-Mediterranean species. The differential species of *Rubio-Quercetum cerridis ericetosum arboreae* are *Erica arborea*, *Myrtus communis*, *Arbutus unedo*, *Quercus suber* and *Quercus ilex*.

*Melico uniflorae-Quercetum cerridis* Arrigoni, in Arrigoni, Mazzanti & Ricceri 1990 (Tables 3, 4, 5)

**Distribution and structure:** The mesophilous *Quercus cerris* woodlands are the most widespread woodland type in the study area, where it occurs on both Flysch and volcanic substrates. These woodlands usually exhibit long-turn coppicing and have a diverse vertical structure. The upper tree-layer is dominated by *Quercus cerris*, and *Acer monspessulanum* and *Fraxinus ornus* are also present. *Acer campestre*, *Sorbus torminalis*, *S. domestica* and *Malus sylvestris* occur in secondary tree layer. The most common shrub species are *Cornus mas*, *Crataegus monogyna*, *C. laevigata*, *Euonymus europaeus*, *Hedera helix*, *Lonicera etrusca* and *Ruscus*

*aculeatus*. In the herb layer the presence of mesophilous species such as *Melica uniflora*, *Euphorbia amygdaloides*, *Oenanthe pimpinelloides*, *Brachypodium sylvaticum* and *Lathyrus venetus* differentiates these forests from thermophilous forests of *Rubio-Quercetum cerridis*.

**Syntaxonomy:** In the phytosociological literature of central Italy there are several studies concerning turkey oak woods developed in the ecological conditions described in the previous paragraph (Ubaldi e Speranza 1982; Blasi 1984; Blasi & al. 1993; Arrigoni & al. 1990; Arrigoni 1998; Foggi & al. 2000; Scoppola 1998, Scoppola & Filesi, 1998). Here, the mesophilous *Quercus cerris* woodlands of the Tolfa-Ceriti mountains have been included in the association *Melico uniflorae-Quercetum cerridis* which was first described for southern Tuscany by Arrigoni & al. (1990) and was also recognised in other areas such as the Mount Rufeno Reserve (Scoppola & Filesi 1998) and the Cecina River Basin (Foggi & al. 2000). In addition to the typical aspect of the *Melico-Quercetum* two further types were identified in the study area. On the moister soils of the N-facing footslopes *Melico-Quercetum* woods are characterised by the co-dominance of *Carpinus betulus* in the dominated tree layer and by the abundance of *Fagetalia* species in the undergrowth (*Melico-Quercetum carpinetosum betuli*) (Table 5). On steeper slopes with stony substrates *Ostrya carpinifolia* becomes co-dominant with *Quercus cerris* (*Melico-Quercetum ostryetosum carpinifoliae*) (Table 4).

*Fraxino oxycarpae-Quercetum cerridis* (Scoppola & Filesi 1995) Foggi, Selvi & Viciani in Foggi, Selvi, Viciani, Bettini & Gabellini 2000 (Table 6)

**Distribution and structure:** This woodland type is developed on the marly-calcareous substrates of the plain whose ground water table occurs very close to the surface. These woodlands are in spatial contact with *Melico-Quercetum cerridis* and serial contacts with the secondary thick woods of *Acer monspessulanum* and *Acer campestre*. The dominant layer is composed of *Quercus cerris* and *Fraxinus angustifolia* subsp. *oxycarpa*, whereas the dominated tree-layer mainly of *Fraxinus ornus* and *Acer monspessulanum* together with *Acer campestre*, *Ulmus minor* and *Malus sylvestris*. The herb layer is not substantially different from that of *Melico-Quercetum cerridis*.

**Syntaxonomy:** In the Tolfa-Ceriti mountains area *Fraxinus angustifolia* subsp. *oxycarpa* does not occur in riparian environments, as instead is the case for the rest of the Latium region and indeed most of the peninsular Italy (Pedrotti & Gafta 1996; Blasi & al. 2002). Scoppola & Filesi (1995) described the subassociation *Asparago tenuifolii-Quercetum cerridis fraxinetosum oxycarpae* for the Mount Rufeno Natural Reserve. This subassociation was subsequently identified in south-western Tuscany (Foggi & al. 2000) and raised to the rank of association with the name *Fraxino oxycarpae-Quercetum cerridis*. The rank of association has been adopted in the present paper too.

*Acer monspessulanum* and *Acer campestre* community (Table 7)

**Distribution and structure:** These are secondary woods which mainly occur on flysch substrates on gentle slopes. *Acer monspessulanum*, and to lesser extent *Acer campestre*, are the dominant species of tree layer and are accompanied by *Fraxinus angustifolia* subsp. *oxycarpa*, *F. ornus*, *Quercus cerris*, *Q. pubescens* s.l. and *Malus sylvestris*. These woodlands are subjected to extensive wild grazing and this is testified by the high cover of edge species such as *Stellaria media* and *Geranium purpureum*. These *Acer*-dominant woods are developed in ecological conditions which are similar to those of *Fraxino oxycarpae-Quercetum cerridis*, so it can be assumed that these woodlands are the successional stage which precedes *Fraxino-Quercetum* in the dynamical series. According to Portoghesi & al. (2008) the prevalence of *Acer monspessulanum* in these areas must be viewed as the consequence of two factors: on the one hand, frequent coppicing and wild grazing, causing intensive soil erosion and accentuating the effects of summer drought; on the other hand a high content of calcium carbonate in the soil, derived from the sedimentary lithotypes (Tolfa flysch) occurring in the southern part of the Tolfa Mountains. So it seems plausible that the progressive drying out of the soil has disadvantaged *Quercus cerris* and especially *Fraxinus angustifolia* subsp. *oxycarpa* which is more sensitive to ground water level fluctuations.

This study is probably the first carried out in peninsular Italy in which *Acer monspessulanum* is not only a forest species involved in reforestation processes of *Quercus cerris* potential forests, but is also the dominant species in various secondary

forest types. The dynamical role of *Acer monspessulanum* on the flyschoid substrates of the Tolfa mountain (coastal northern Latium) is very similar to that of *Carpinus orientalis* on the limestone substrates of the Ausoni-Aurunci mountains (coastal southern Latium) where this species is dynamically linked to *Quercus pubescens* thermophilous woodlands (Blasi & Di Pietro 1998; Blasi & al. 2001).

**Syntaxonomy:** As *Acer monspessulanum* has a wide ecological niche, it is hard to classify its wood stands within known syntaxa. The nearest example occurring in the national phytosociological literature is probably that of *Cercidi-Aceretum monspessulani* described in Pignatti (1998). This reference, however, is not proposable for Tolfa communities since it is a sort of tall-shrub community which is characterised by the co-dominance of *Carpinus orientalis* in the upper tree layer and by the abundance of *Cercis siliquastrum*. Therefore, for the moment, we would provisionally classify the *Acer*-dominant communities from the study area as “*Acer monspessulanum* and *Acer campestre* community”, stressing however that further phytosociological research is needed.

*Cephalanthero longifoliae-Quercetum cerridis* Scoppola & Filesi 1998 (Table 8)

**Distribution and structure:** This woodland type occurs exclusively on trachytic substrates on the western slopes of M. Urbano and M. Madonna, at altitudes around 600 m. These are typical impoverished acidic woodlands developed on relatively shallow soils which are dominated by *Quercus cerris*, with minor occurrence of *Fagus sylvatica*, *Quercus petraea*, *Castanea sativa* and *Fraxinus ornus*. In the lower tree-layer *Ilex aquifolium* and *Sorbus torminalis* were found, while in the herb-layer *Cephalanthera longifolia*, *Hieracium racemosum*, *Solidago virgaurea* and *Cruciata glabra* were the most common species.

**Syntaxonomy:** Three relevés are certainly too few to provide a definite syntaxonomical classification. Nevertheless, classification into the association *Cephalanthero longifoliae-Quercetum cerris* (Scoppola & Filesi 1998), which was described for the acidic sandstones of Mount Rufeno, appears the most suitable.

*Carici olbiensis-Quercetum petraeae* ass. nova hoc loco (Table 9)  
(Holotypus releve 7 in Table 9 hoc loco)

**Distribution and structure:** A discontinuous belt of *Quercus petraea* woodlands was recognizable within the north-western sector of the Tolfa mountains at altitudes between 450 and 600 m. The Sessile oak woodlands were normally developed on relatively deep soils on gentle slopes (10–15°), where they came into spatial contact with beech woodlands at higher altitudes and mesophilous turkey oak woodlands at lower altitudes. *Quercus petraea* woodlands are normally characterised by a very dense canopy which prevents development of the shrub-layer, while the herb-layer is always well developed. In addition to *Quercus petraea* (dominant) the upper tree-layer was composed of *Fagus sylvatica*, *Carpinus betulus* and *Ostrya carpinifolia*. The lower tree-layer was mainly characterised by *Ilex aquifolium*, *Mespilus germanica* and *Acer opalus* subsp. *obtusatum*. *Hedera helix* and *Ruscus aculeatus* were the most frequent species of the herb layer where *Carex olbiensis*, *Daphne laureola*, *Cruciata glabra*, *Solidago virgaurea*, *Festuca heterophylla* and *Melica uniflora* also occur.

**Syntaxonomy:** According to Pignatti (1998) *Quercus petraea* woodlands of the Tolfa mountains are included in two associations: *Hieracium racemosi-Quercetum petraeae* Pedrotti & al. 1982 and *Ilici-Quercetum petraeae* Brullo 1983 which were both classified into the alliance *Quercion robori-petraeae* and in the order *Quercetalia robori-petraeae*. This syntaxonomical interpretation, however, gives rise to several doubts. In fact, it is highly unlikely that two different *Quercus petraea* associations could find adequate ecological space in a relatively small area, where the climate is mainly meso-Mediterranean and the typically scattered potential areas for *Quercus petraea* are restricted to a narrow belt between *Quercus cerris* and *Fagus sylvatica* forests. Furthermore, it was found (Table 19) that the majority of the characteristic species of both *Hieracio racemosi-Quercetum petraeae* and its higher syntaxonomical ranks are absent in the Tolfa-Ceriti mountains. This absence is due to lithological and ecological dissimilarities which become strikingly evident when the alluvial Umbrian plain of Gubbio (locus classicus of *Hieracio-Quercetum petraeae*) is compared to the Tolfa mountain slopes.

In contrast, the ecological and biogeographical context which characterises *Ilici-Quercetum petraeae* is completely different. This association was described for the montane belt of the Madonie mountains in Sicily and consequently the majority of its diagnostic species (*Geranium versicolor*, *Doronicum orientale* etc.) are restricted to southern Italy (Table 19). In a recent syntaxonomical revision (Ubaldi 2003) *Ilici-Quercetum petraeae* was lowered to the rank of a subassociation of *Anemono-Fagetum* of which it was considered as a previous secondary syndynamical stage. In our opinion this hypothesis is not correct for the Tolfa-Ceriti mountains area where the sessile-oak woodlands are a potential vegetation type and are physiognomically and coenologically distinguishable from the surrounding woodlands. As a consequence they can not be defined using the rank of “variant” or “subassociation”. Instead they have to be considered as a sort of residual potential woodland which at present are “trapped” (due to both natural and anthropic causes) between *Quercus cerris* and *Fagus sylvatica* potential areas. Nevertheless *Quercus petraea* woodlands maintain a typical core area which is floristically and coenologically autonomous and, as a consequence, perfectly distinguishable in terms of association. As far as syntaxonomy is concerned, the high number of Mediterranean species occurring alongside several *Fagetalia* species is unusual for the woodland syntaxonomical context of central Italy. Hence a new association named *Carici olbiensis-Quercetum petraeae* ass. nova is here proposed. The character species of this association are *Carex olbiensis*, *Ilex aquifolium*, *Hedera helix*, *Mespilus germanica* and *Rubia peregrina*. This new syntaxonomical reference could be further extended to the adjacent *Quercus petraea* woodlands of the Cimini volcanic mountains (Blasi & al. 1990) and to the hilly area of south-western Umbria. In central and southern Tuscany this association is vicaried by *Frangulo alni-Quercetum petraeae*, which shows similar structural and physiognomical features. This association, however, has a floristic component which includes diagnostic species that find their southernmost limit in southern Tuscany (*Physospermum cornubiense*, *Teucrium scorodonia*, *Cytisus nigricans*), or which simply do not occur in Tolfa-Ceriti sessile-oak forests (*Frangula alnus*, *Anemone nemorosa*, *Molinia caerulea* subsp. *arundinacea*, *Erica scoparia*, *Genista pilosa*, *G. germanica* etc.).



*Castanea sativa* woodlands (Table 10)

**Distribution and Structure:** The Tolfa mountains chestnut forests are floristically poor as is typical of such plantations. The upper tree-layer is often monospecific while the shrub and herb layers show very low cover values. The co-existence of companion species such as *Fagus sylvatica*, *Quercus petraea*, *Fraxinus ornus*, *Ilex aquifolium*, *Quercus ilex*, *Arbutus unedo*, however, reflects the peculiar coenological features of Tolfa-Ceriti mountains.

**Syntaxonomy:** The chestnut woods of central Italy can be considered the result of human exploitation and substitution of mixed mesophilous and acidophilous *Quercus cerris* and *Quercus petraea* woodlands, in which it is likely that *Castanea sativa* originally played the role of companion species. Arrigoni & Viciani (2001) identify five *Castanea sativa* forest types occurring in Tuscany including mixed deciduous woodlands, coppiced and monodominant chestnut woods exploited for timber and/or for fruit. In our opinion it is not methodologically correct to assign a syntaxonomical rank to a silvicultural plantation. However, given the wide diffusion of chestnuts woods on the Tolfa mountains and adjacent areas it seems interesting to speculate what the natural forest types which were replaced by chestnut groves were most likely to have been. In fact some authors (Spada 1975; Contoli & al. 1980) hypothesised a previous *Fagus sylvatica* stage. The abundance of *Fagus sylvatica* in the shrub-layer of the chestnut woods would suggest a possible natural dominant role of this species. The presence of *Castanea sativa* in the relevés of *Quercus cerris* and *Quercus petraeae* woods (Table 3, 4, 9), however, suggests that these forest types, too, provided portions of their potential area for chestnut plantations.

**Remarks on *Crataego laevigatae-Quercion cerridis* Arrigoni 1997**

According to the most recent revision of *Quercetalia pubescenti-petraeae* (Blasi & al. 2004) all the associations described in this paper are included in the alliance *Teucrio-Quercion cerridis* Ubaldi 1988 and in the suballiance *Teucrio-Quercenion cerridis* Blasi, Di Pietro & Filesi 2004. According to the ICPN, this name is no longer valid.

The name *Teucrio siculi-Quercion cerridis* was proposed invalidly by Ubaldi (1988) as a new

alliance of the order *Lathyro nigri-Quercetalia cerridis*. Some years later (1995) the same author did not recognize this alliance and included *Teucrio-Quercion* in the alliance *Lonicero etruscae-Quercion pubescentis* Arrigoni & Foggi in Arrigoni, Mazzanti & Ricceri 1990, as a syntaxonomical synonym. However, according to Blasi & al. (2004), the name *Lonicero-Quercion pubescentis* is to be considered invalid (Art. 5) because this alliance overlaps with *Carpinion orientalis* Horvat 1958. In 2003, Ubaldi proposed the alliance *Teucrio siculi-Quercion cerridis* once again in the form “*Teucrio siculi-Quercion cerridis* Ubaldi 1998 em. Scoppola & Filesi 1995” all. nov. From a strictly nomenclatural viewpoint the new name *Teucrio-Quercion* had several problems. First, the reference to the year of the publication of *Teucrio-Quercion* (1998 vs. 1988) was wrong. Second, the new alliance *Teucrio-Quercion* Ubaldi included the alliance *Lathyro montani-Quercion cerridis* Scoppola & Filesi 1995. Although the latter was described invalidly in 1995, it was validated later in Scoppola & Filesi (1998). As a consequence the name *Teucrio siculi-Quercion cerridis* Ubaldi 2003 is to be considered a superfluous name (art. 29c). In addition, the alliance did not coincide syntaxonomically with the *Teucrio-Quercion* Ubaldi 1988 nom. inval. because a significant part of the coenological and geographical range of the *Teucrio-Quercion* Ubaldi 1988 is included in other alliances, namely *Quercion frainetto* Horvat 1954 and *Mespilo-Carpinion betuli* Ubaldi 2003.

Thanks to the appropriate choice of the nomenclatural binomial and to the shared floristic, coenological and synchronological diagnosis of the first version of the alliance *Teucrio siculi-Quercion cerridis* Ubaldi 1988, the name has been widely used by the majority of Italian phytosociologists over the last twenty years. As a consequence Blasi & al. (2004) proposed this name to be maintained as nomen conservandum. This proposal was not allowed by ICPN as *Teucrio siculi-Quercion cerridis* Ubaldi 1988 is an invalid name.

Given the nomenclatural vicissitudes mentioned above, it is understandable that a certain degree of confusion has arisen around the name *Teucrio-Quercion cerridis* in coenological, chorological and nomenclatural terms. As a consequence a new proposal of a nomenclaturally valid version of *Teucrio-Quercion* as “nomen conservandum” does not seem to make sense at present.

For this reason in the place of *Teucrio-Quercion* it is necessary to apply the prior published valid

name. This name is *Crataego laevigatae-Quercion cerridis* Arrigoni 1997. According to its original diagnosis, however, this alliance only partially coincides with *Teucrio-Quercion cerridis* as it is presently used. In fact *Crataego laevigatae-Quercion cerridis* includes only the mesophilous mixed *Quercus cerris* woodlands. The nomenclatural type (*Melico-Quercetum cerridis* Arrigoni in Arrigoni, Mazzanti & Ricceri 1990) and the year of effective publication (1997) confirm that *Crataego laevigatae-Quercion cerridis* has all the necessary nomenclatural qualifications to be considered the valid prior name to be used in place of *Teucrio-Quercion*. Nevertheless both its synchorological range and its character specific component proposed in the original publication of *Crataego laevigatae-Quercion cerridis* are significantly reduced when compared to those of *Teucrio-Quercion cerridis* (e.g. the oak woodlands of southern Italy are completely excluded). For this reason, we have decided to maintain the name *Crataego laevigatae-Quercion cerridis* as the name of the alliance, and to re-propose the division into two “geographical” suballiances as originally made in Blasi & al. (2004): a “northern” *Teucrio-Quercion cerridis* Blasi, Di Pietro & Filesi 2004 and a “southern” *Ptilostemo-Quercion cerridis* Bonin & Gamisans 1977. Since the name *Teucrio siculi-Quercion cerridis* Blasi, Di Pietro & Filesi 2004, is to be considered invalid due to the invalidity status of the alliance *Teucrio siculi-Quercion cerridis*, it is substituted here with the new suballiance *Crataego laevigatae-Quercion cerridis* Blasi, Di Pietro & Filesi suball. nov. hoc loco. The nomenclatural type of this new suballiance is the same as that of the alliance (*Melico uniflorae-Quercetum cerridis* Arrigoni in Arrigoni, Mazzanti & Ricceri 1990), while its specific character, transgressive and differential species are those already proposed in Blasi, Di Pietro & Filesi (2004) for the invalid version of the suballiance *Teucrio siculi-Quercion cerridis*. The diagnosis, coenological and synchorological features, as well as character species of the suballiance *Ptilostemo stricti-Quercion cerridis* remain those which were proposed in Blasi & al. (2004).

*Fraxino orni-Fagetum sylvaticae* Ubaldi 1995 (Table 11)

**Distribution and Structure:** The beech woods of the Tolfa mountains are restricted to the N-facing slopes of the upper part of the massif at alti-

tudes ranging between 500 and 600 m. These are old coppices which started to be converted into high-forest stands 50 years ago. *Fagus sylvatica* is the dominant species of a high-cover woodland type having an upper tree-layer co-dominated by *Quercus petraea*, *Carpinus betulus*, *Castanea sativa* and more sporadically by *Ostrya carpinifolia* and *Quercus cerris*. The lower tree-layer is almost completely absent while the shrub-layer is composed of saplings of *Fagus sylvatica*, *Ilex aquifolium*, and scattered individuals of *Mespilus germanica*, *Fraxinus ornus*, *Quercus ilex* and *Acer pseudoplatanus*. The herb layer exhibits a relatively high specific diversity and cover degree (generally exceeding 60 %). Species with high cover values are *Hedera helix* and *Ruscus aculeatus* while *Melica uniflora*, *Festuca heterophylla*, *Pteridium aquilinum*, *Daphne laureola*, *Tamus communis* are very frequent. The occurrence of *Galium rotundifolium* subsp. *rotundifolium* is very interesting because in the central and southern Apennines it is usually restricted to the microthermic beech woodlands of the upper montane belt.

**Syntaxonomy:** According to several authors (Felioli & Lagonegro 1982; Blasi 1992; Pignatti 1994; Scoppola & Caporali 1996; Fascetti & al. 1996; Scoppola & al. 1993; Scoppola & Caporali 1998) the Tolfa beechwoods are to be included in the association *Anemono-Fagetum* (Gentile 1969) Brullo 1983 which corresponds to the well-known *Aquifolio-Fagetum* sensu Gentile 1969 (*nom. illeg.*). This syntaxonomical diagnosis was mainly due to the frequency of *Ilex aquifolium* in the shrub layer and to the presence of many thermophilous species in the undergrowth. Ubaldi (1995) disagreed with this interpretation and defined a new association, *Fraxino orni-Fagetum sylvaticae*, on the basis of a phytosociological table published by Anzalone (1961a) and composed exclusively of relevés performed in Tolfa beechwoods. *Anemono-Fagetum* is strictly linked to the southern Apennine area due to the presence of species which do not occur in central Italy such as *Geranium versicolor*, *Doronicum orientale*, *Luzula sicula*, *Festuca exaltata* etc. (Gentile 1970; Di Pietro & al. 2004). As a consequence in the present paper too, the Tolfa beech woodlands were included in *Fraxino orni-Fagetum sylvaticae*<sup>2</sup>. As far as the higher syntaxonomical

<sup>2</sup> In Ubaldi 2003 the association *Fraxino orni-Fagetum* Ubaldi 2005 was considered a syntaxonomical synonym of *Aristolochio-Fagetum* Ubaldi 1987. The name *Aristolochio-*

ranks are concerned this association was (provisionally) included in the *Geranio versicoloris-Fagion* even if this alliance has a southern Apennines centre of distribution which makes its presence in central Italy doubtful. The occurrence in the Tolfa beechwoods of *Anemone apennina*, *Lathyrus venetus*, *Allium pendulinum* and *Cyclamen hederifolium* (which were considered as character species in the original proposal of *Geranio-Fagion*) partially justifies this choice (some authors, e.g. Biondi & al. 2002, however, have recently made reference to it regarding the beechwoods of other central Apennine zones). However there are no doubts about the ranks of order and class which are *Fagetalia* and *Quercus-Fagetea*, respectively.

*Polysticho setiferi-Alnetum glutinosae* ass. nova hoc loco  
(Holotypus relevé 1 in Table 12 hoc loco)

**Distribution and Structure:** These are typical ravine woodlands which are developed on the slopes and at the bottom of the small gorges which characterise the inner zones of the study area. The upper tree-layer is dominated by *Alnus glutinosa* while in the lower tree-layer *Ilex aquifolium*, *Fagus sylvatica* and *Quercus cerris* occur. The herb layer is composed of two components which are easily distinguishable on a physiological-spatial scale: a dense carpet of ferns (*Osmunda regalis*, *Athyrium filix-foemina* and *Blechnum spicant*) which occur along the banks of the stream at the bottom of the gorge, and a *Hedera helix*-*Ruscus aculeatus* carpet which provides more or less con-

tinuous cover of the gorge's steep slopes (30°–45° in the header data of Table 12).

**Syntaxonomy:** The *Alnus glutinosa* ravine communities of the Tolfa mountains exhibit a slight similarity with the association *Circaeo lutetianae-Alnetum glutinosae* which was described for an adjacent area in Blasi & Frondoni (1996). This association, however, mainly described flooded riparian woodlands developed on the plain, where the substrates were normally not volcanic. Furthermore the name *Circaeo lutetianae-Alnetum glutinosae* is illegitimate (art 31 ICPN) since it had already been used in Fukarek (1979) for the riparian vegetation of Bosnia and Herzegovina. For this reason we propose the new association *Polysticho setiferi-Alnetum glutinosae* ass. nova hoc loco for the ravine woodlands of the Tolfa mountains. This association is typically developed on volcanic substrates. The following characteristic species were selected: *Polystichum setiferum*, *Blechnum spicant*, *Hypericum androsaemum* and *Ilex aquifolium*. Table 12 also includes two relevés (7 and 8) in which the undergrowth is comparable to that of a typical *Alnus glutinosa* ravine woodland but from which *Alnus glutinosa* is completely missing. *Polysticho-Alnetum glutinosae* could be considered the southern and thermophilous vicariant of the association *Carici pallescenti-Alnetum glutinosae* described by Landi & Angiolini (2008) for various areas of Tuscany. However no sharp geographical or ecological boundaries occur between these two associations. In fact it is not uncommon to find intermediate coenological situations, as we found performing relevés in the thermophilous *Alnus glutinosa* communities of the torrential riverbeds surrounding the area of S. Lorenzo a Merse in central Tuscany (Table 12, relevés 9–10–11). As far as the higher taxonomical ranks are concerned the situation is rather complex. It is known that *Alnus glutinosa* ravine woodlands with *Athyrium filix-foemina*, *Blechnum spicant*, *Polystichum setiferum*, *Carex remota* (etc.) occur both in Croatia and Bosnia and Herzegovina (Fukarek 1979; Barudanović 2003; Barudanović & Redžić 2006). At the same time typical thermophilous Mediterranean *Alnus glutinosa*-*Osmunda regalis* communities are also very frequent in Spain (Rivas-Martínez & al. 2002) and Algeria (Meddour & Laribi 1999).

In our opinion, on the basis of its floristic and bioclimatic features, the new association *Polysticho-Alnetum glutinosae* should be included in the

*Fagetum* was proposed invalidly in Ubaldi et al. (1990) (art. 3, 5) and subsequently validated in Ubaldi (1995) choosing a type-relevé in the table of beech woodlands relevés published in Anzalone (1961). Amongst the species belonging to the genus *Aristolochia* only the species *Aristolochia longa* var. *pallida* was reported in Table 1 published in Anzalone, 1961. According to Fiori (1923) and Nardi (1984) this variety is to be ascribed to the binomy *Aristolochia pallida*. As a consequence, on the basis of the association in Ubaldi, 1995 should be: *Aristolochio pallidae-Fagetum sylvaticae* Ubaldi et al., 1990 ex Ubaldi 1995. According to Conti & al. (2005) the taxon *Aristolochia pallida* is absent from Latium region where it is vicaried by *Aristolochia lutea*. For this reason the name *Aristolochio pallidae-Fagetum sylvaticae* has to be considered as not validly published at the moment, at least until it is proposed in its correct form, *Aristolochio luteae-Fagetum sylvaticae* (art. 43).

suballiance *Hyperico hircini-Alnenion glutinosae*, and in the submediterranean-atlantic alliance *Osmundo-Alnion*. The inclusion in *Osmundo-Alnion*, however, is to be considered as provisional, since at present this alliance is characterised almost entirely by species having a western-Iberian distribution and, as a consequence, only marginally eligible as a reference for the submediterranean communities of peninsular Italy (Rivas-Martínez & al., 2002; Bardat & al. 2004.). For this reason a new syntaxonomical and synchorological revision of *Osmundo-Alnion* that also includes Peninsular Italy and western Balkans communities is needed.

*Cyclamino repandi-Quercetum ilicis* Riv.-Mart., Cantò, Fernández-González, Sánchez-Mata 1995 (Table 13)

*Cyclamino repandi-Quercetum ilicis quercetosum cerridis* subass. nova hoc loco  
(Holotypus relevé 14 in Table 13 hoc loco)

**Distribution and Structure:** This woodland type is found in the coastal area extending from Civitavecchia to Santa Severa and it is restricted to the flyschoid or marly-calcareous substrates occurring on gentle slopes. It is characterised by a single tree-layer where *Quercus ilex* is a dominant tree species and several deciduous species such as *Quercus pubescens* s.l., *Quercus cerris*, *Fraxinus ornus* and *Acer monspessulanum* may also occur. *Phillyrea latifolia*, *Pistacia lentiscus* *Smilax aspera*, *Rubia peregrina*, *Asparagus acutifolius* and *Osyris alba* are the most frequent species in the shrub layer, while the poor-in-species herb layer is composed of *Tamus communis*, *Cyclamen repandum*, *C. hederifolium*, *Carex hallerana* and *Arisarum vulgare*.

**Syntaxonomy:** Because of the presence of a strong deciduous woody component the syntaxonomical diagnosis of the holm oak woods on flyschoid substrates of the Tolfa area is rather complex. On the basis of Biondi & al. (2003), the abundance of species such as *Quercus pubescens* s.l., *Fraxinus ornus*, *Acer monspessulanum* and an undergrowth characterised by many ingressive elements from *Rhamno-Prunetea* and *Quercu-Fagetea* would suggest the inclusion of the relevés in the association *Cyclamino hederifolii-Quercetum ilicis* (of which more or less the entire characteristic component was found). The scarce presence of Illyrian-Balkan species, however, makes this

reference unsuitable (especially because in its original diagnosis *Cyclamino hederifolii-Quercetum ilicis* was considered a geographical vicariant of *Fraxino orni-Quercetum ilicis*). On the other hand, the wide occurrence of *Cyclamen repandum* and the location in the north-western coastal sector of the Latium region made us lean towards *Cyclamino repandi-Quercetum ilicis*. According to Rivas-Martínez & al. (1995) and Biondi & al. (2003) this association would take the place of *Viburno-Quercetum ilicis pistacetosum* which was proposed by De Dominicis & al. (1988) for the compact limestone substrates of the Punta Ala promontory in southern Tuscany. For this association the new subassociation *Cyclamino repandi-Quercetum ilicis quercetosum cerridis* was recognised for some *Quercus ilex* stands characterised by the constant presence of *Quercus cerris* in the upper tree-layer, and of slightly mesophilous species such as *Brachypodium sylvaticum*, *Viola alba* subsp. *dehnhardtii*, and *Anemone apennina* in the herb layer.

*Arbuto unedonis-Quercetum ilicis* ass. nova hoc loco  
(Holotypus relevé 7 in Table 14 hoc loco)

**Distribution and Structure:** These holm-oak woodlands occur exclusively on the trachytic volcanic substrate of the Ceriti mountains where they occupy both steep and gentle slopes. The upper tree-layer is dominated by *Quercus ilex*, and *Quercus cerris* is also well represented, whereas the lower tree-layer is composed completely of *Quercus ilex*. The shrub-layer is mainly composed of *Arbutus unedo*, *Erica arborea* and other species of the evergreen sclerophyllic shrublands.

**Syntaxonomy:** The abundance of *Erica arborea* and *Arbutus unedo* in the shrub-layer, together with the presence of the *Erico-Arbutetum* as the main woodland regressive successional stage, suggests a possible classification within the association *Erico-Quercetum ilicis* which was described for the island of Pantelleria to the south of Sicily. In fact many other holm oak woodlands of Sicily and southern Italy have already been classified in this association (Brullo & Marcenò 1984; Brullo & al. 2001; Biondi & al. 2003) on the basis of the simultaneous presence of *Erica* and *Arbutus* in their undergrowth. Simply by observing the *locus classicus* of *Erico-Quercetum ilicis* and its original phytosociological table, it is imme-

diately evident that this community is a sort of thermo-Mediterranean tall-maquis, dominated by *Quercus ilex* and by other *Pistacio-Rhamnetalia* species to which extremely xerothermic species (*Chamerops humilis*, *Euphorbia dendroides* etc.) are commonly associated (Table 18). In our opinion these peculiar coenological features restrict the distribution of *Erico-Quercetum ilicis* to Sicily and immediately surrounding areas. Certainly these thermo-xeric bioclimatic conditions are not to be found along most of the Tyrrhenian side of the Italian Peninsula where thermo-Mediterranean thermotypes are completely absent or restricted to coastal cliffs (Blasi & Michetti 2003). Still in Sicily, on acid substrates at higher altitudes *Erico-Quercetum ilicis* becomes substituted by *Teucrio siculi-Quercetum ilicis*, which is a sub-montane and lower-montane evergreen wood rich in *Quercus-Fagetea* species. Despite its mesophilous characteristics *Teucrio siculi-Quercetum ilicis* is to be considered as restricted to Sicily and southern Italy due to the presence of species, *Quercus congesta*, *Silene sicula*, *Doronicum orientale* (etc), whose distributional ranges do not extend beyond this area.

After close examination of the wide phytosociological literature on the syntaxonomy of holm oak forests it is our opinion that there is still no acidophilous *Quercus ilex* association which appropriately describes those woods which behave as bioclimatic and/or biogeographic vicariants of the Sicilian *Erico-Quercetum ilicis* and *Teucrio-Quercetum ilicis*. For this reason we here propose a new association, named *Arbuto unedonis-Quercetum ilicis*, which can be used to classify all those acidophilous holm-oak woodlands of the Tyrrhenian sector of peninsular Italy which thrive in sub-mediterranean bioclimatic conditions and which are characterised by a significant deciduous component. This new association is characterised by an abundance of *Erica arborea* and *Arbutus unedo*, while its differential floristic component is made up of *Quercus cerris*, *Acer monspesulanum*, *Fraxinus ornus*.

We here propose classifying both *Cyclamino repandi-Quercetum ilicis* and *Arbuto unedonis-Quercetum ilicis* into the alliance *Quercion ilicis*. In fact, other options would have been to include both associations in the recently described alliance *Fraxino orni-Quercion ilicis* (sensu Biondi & al. 2003) or to include in this latter alliance only the association *Cyclamino repandi-Quercetum*, leaving the association *Arbuto-Quercetum ilicis* in *Erico-*

*Quercion ilicis* (sensu Brullo & al. 1977). However, in our opinion neither of the alliances *Fraxino orni-Quercion ilicis* and *Erico-Quercion ilicis* displays a sufficient floristic autonomy to be substantially distinguished from the older alliance *Quercion ilicis*. According to Biondi & al. (2003) the distribution area of *Quercion ilicis* (sensu Braun-Blanquet) was restricted to the Iberian Peninsula whereas the *Quercus ilex* forests of the entire Italian peninsula (Sicily and Sardinia included) and of the Dinarids have to be ascribed to the amphiadriatic alliance *Fraxino orni-Quercion ilicis*. Obviously this paper is not the suitable place for a revision of the syntaxonomy of *Quercus ilex* woodlands in southern Europe. Nevertheless there are various factors that suggest to us that Tolfa-Ceriti *Quercus ilex* woodlands should be included in *Quercion ilicis* rather than in *Fraxino orni-Quercion ilicis*. First, the locus classicus of *Quercion ilicis* is in the Catalanian-Provincial district, and here *Quercus ilex* woodlands exhibit a clear "eastern" biogeographical character making them very different from those of the rest of the Iberian peninsula, where *Quercus ilex* is almost completely substituted by *Quercus rotundifolia* (Rivas-Martínez 1975; Rivas-Martínez & al. 2002). Second, Provincial *Quercus ilex* woodlands (which are often in spatial contact with *Ostrya carpinifolia* and *Fraxinus ornus* woodlands) share several floristic, coenological and biogeographical similarities with the holm-oak woods of the Tyrrhenian district of the Italian Peninsula, especially with those of Liguria, Tuscany and northern Latium. Third, due to the fact that they mostly occur on volcanic or flyschoid substrates, Tolfa-Ceriti *Quercus ilex* woodlands are extremely impoverished in those SE-European species which should play the role of "differential" species in the *Fraxino orni-Quercion ilicis* alliance and which are usually linked to limestone substrates.

*Quercus suber* community (Table 15)

Distribution and Structure: Very limited stands of *Quercus suber* forests were identified between 450 and 500 m on volcanic substrates on gentle south-facing slopes. These are mixed evergreen/deciduous communities where *Quercus suber* (slightly dominant) is accompanied by *Quercus cerris*, *Quercus ilex* and *Castanea sativa*. The herb-layer in which thermophilous species such as *Smilax aspera*, *Asparagus acutifolius*, *Arbutus unedo*, *Erica*

*arborea*, *Lonicera implexa* are mixed together with mesophilous ones such as *Melica uniflora*, *Viola reichenbachiana*, *Brachypodium sylvaticum* (etc.) is highly unusual.

There is no general agreement on whether *Quercus suber* woodlands are native to the Tolfa-Ceriti mountains. Some authors consider these woods to be ancient plantations whereas others think that they are merely the remains of widely distributed *Quercus suber* forests which underwent a regression due to climatic and anthropogenic pressure.

**Syntaxonomy:** The few available relevés do not allow a classification into the rank of the association, although a slight similarity with the association *Cytiso-Quercetum suberis* sensu Testi & Lucatini (1994) was recognised.

*Erico arborea*-*Arbutetum unedonis* Allier & Lacoste ex Foggi in Foggi & Grigioni 1999. (Table 16)

**Distribution and Structure:** *Erica-Arbutus* stands are secondary successional stages which are developed exclusively on the acid volcanic soils of the Tolfa-Ceriti mountains. *Erica arborea* and *Arbutus unedo*, form a very intricate structure together with other shrub species such as *Quercus ilex*, *Phillyrea latifolia* and *Crataegus monogyna*. The herb-layer is poor-in-species and mainly composed of *Rubia peregrina* and *Cyclamen repandum*. *Erica-Arbutus* stands are dynamically related to various types of pre-existing woodlands which were over-exploited for timber or which were subjected to frequent fire. Here and there isolated old individuals of *Quercus cerris*, *Q. petraea* and *Q. ilex* break through the compact *Erica-Arbutus* canopy, indicating the potential vegetation type which would be capable of replacing the tall-maquis phase. In spite of their typically Mediterranean character, the majority of *Erica-Arbutus* stands are dynamically linked to mesophilous deciduous forests, in particular *Carici-Quercetum petraeae* or *Melico-Quercetum cerridis*.

**Syntaxonomy:** These pre-forestal communities are included in the association *Erico arborea*-*Arbutetum unedonis*, which is widely known as a secondary maquis type developed on siliceous substrates (Molinier 1937, Allier & La Coste 1980, Foggi & Grigioni 1999). Although many *Erico-Arbutetum* subassociations have been described in

the phytosociological literature, we have decided to express the floristic-coenological pattern occurring in the *Erico-Arbutetum* stands of the study area at the level of “dynamical variants”. In particular two different variants were identified: a termo-xerophilous *Quercus ilex* variant, restricted to the Ceriti mountains and which is dynamically linked to *Arbuto-Quercetum ilicis* or to *Rubio-Quercetum ericetosum arborea*, and a mesophilous *Quercus petraea* variant, which is restricted to the Tolfa mountains and is dynamically linked to the *Quercus cerris* and/or *Quercus petraea* mesophilous woodlands (and sporadically even to *Fagus* or *Alnus* woodlands). At alliance level *Erico-Arbutetum* is included in the *Ericion arborea* alliance and in the *Pistacio lentisci-Rhamnalia alaterni* order.

## 5. CONCLUSIONS

In this paper several syntaxa of particular interest for forest vegetation of the Italian peninsula have been discussed. In particular the proposition here of the new association *Rubio peregrinae-Quercetum cerridis* represents an important contribution to fill in the gaps in the coenological pattern of *Quercus cerris* thermophilous woodlands in central Italy. The new evergreen sclerophillic association *Arbuto-Quercetum ilicis* is described as geosynvicariant of the association *Erico-Quercetum ilicis* of southern Italy, while *Carici olbiensis-Quercetum petraeae* is the southernmost *Quercus petraea* association so far described for continental Italy. Besides providing further confirmation of the high forest heterogeneity of the studied area, the presence of the new ravine woodland association *Polysticho-Alnetum glutinosae* also represents an additional contribution towards achieving a wider biogeographical and coenological definition of the alliance *Osmundo-Alnion*. Finally, the syntaxonomical-nomenclatural question of the alliance of thermophilous oak woodlands of peninsular Italy was resolved by substituting the invalid name *Teucro siculi-Quercion cerridis* Ubaldi 1988 with *Crataego laevigatae-Quercion cerridis* Arrigoni 1997.

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## 7. SYNTAXONOMICAL SCHEME

QUERCETEA ILICIS Br.-Bl. ex A. & O. Bolos 1950

QUERCETALIA ILICIS Br.-Bl. ex Molinier 1934

**Quercion ilicis Br.-Bl. ex Molinier 1934**

[Incl. Fraxino orni-Quercion ilicis Biondi, Casavecchia & Gigante 2003]

- *Cyclamino repandi-Quercetum ilicis* Riv.-Mart., Cantó, Fernández-González & Sánchez-Mata 1995

*Cyclamino repandi-Quercetum ilicis quercetosum cerridis* subass. nova hoc loco

- *Arbuto unedonis-Quercetum ilicis* ass. nova hoc loco
- *Quercus suber* comm.

PISTACIO-RHAMNETALIA ALATERNI Rivas-Martínez 1975

***Erico arboreae* (Rivas-Martínez ex Rivas-Martínez, Costa & Izco 1986) Rivas-Martínez 1987**

*Ericenion arboreae* Rivas-Martínez, Costa & Izco 1986

- *Erico arboreae-Arbutetum unedonis* Allier & Lacoste ex Foggi & Grigioni 1999

QUERCO-FAGETEA Br.-Bl. et Vlieger in Vlieger 1937

FAGETALIA SYLVATICAE Pawlowski. in Pawlowski, Sokolowski et Wallisch 1928

***Geranio verisicoloris-Fagion sylvaticae* Gentile 1970**

- *Fraxino orni-Fagetum sylvaticae* Ubaldi 1995

QUERCETALIA PUBESCENTI-PETRAEAE Klika 1933  
COIT.

***Crataego laevigatae-Quercion cerridis* Arrigoni 1997**

[=*Teucrio siculi-Quercion cerridis* nom. Conserv. Propos in Blasi, Di Pietro & Filesi 2004. Incl.: *Teucrio siculi-Quercion cerridis* Ubaldi 1988 nom. inval. Art. 3; *Teucrio siculi-Quercion cerridis* Ubaldi 2003 synt. syn.; *Lonicero etruscae-Quercion pubescentis* p.p.; *Lathyro montani-Quercion cerridis* Scoppola & Filesi 1998 synt. syn.; *Mespilo-Quercion cerridis* Ubaldi 2003 synt. syn.]

*Crataego laevigatae-Quercion cerridis* Blasi, Di Pietro & Filesi suball. nova

[=*Teucrio siculi-Quercion cerridis* Blasi, Di Pietro & Filesi 2004. nom. inval.]

- *Rubio peregrinae-Quercetum cerridis* ass. nova hoc loco

[Incl.: *Roso sempervirentis-Quercetum pubescentis quercetosum cerridis* Arrigoni in Arrigoni et al., 1997; *Lonicero xylostei-Quercetum cerridis loniceretosum etruscae* Allegrezza, Baldoni, Biondi, Taffetani & Zuccarello 2002 p.p.; *Carpino orientalis-Quercetum cerridis* Blasi ex Taffetani & Biondi 1995 p.p.]

- *Rubio peregrinae-Quercetum cerridis ericetosum arboreae* subass. nova hoc loco

- *Melico uniflorae-Quercetum cerridis* Arrigoni 1990

*Melico uniflorae-Quercetum cerridis carpinetosum betuli* Arrigoni 1990

*Melico uniflorae-Quercetum cerridis ostrytetosum carpinifoliae* Arrigoni, Foggi & Selvi 1998

- *Fraxino oxycarpae-Quercetum cerridis* (Scoppola & Filesi 1995) Foggi, Selvi & Viciani in Foggi, Selvi, Viciani, Bettini & Gabellini 2000

- *Cephalanthero longifoliae-Quercetum cerridis* Scoppola et Filesi 1998

- *Carici olbiensis-Quercetum petraeae* ass. nova hoc loco

- *Acer monspessulanum & Acer campestre* comm.

- *Castanea sativa* comm.

SALICI PURPUREAE-POPULETEA NIGRAE (Rivas-Martínez & Cantó) ex Rivas-Martínez, Bascónes, T.E. Díaz, Fernández-González & Loidi 1991

POPULETALIA ALBAE Br.-Bl. & Tchou 1948

***Osmundo-Alnion* (Br.-Bl., P. Silva & Rozeira 1956) Dierschke & Rivas-Martínez in Rivas-Martínez 1975**

*Hyperico hircini-Alnenion glutinosae* Dierschke 1975

- *Polysticho setiferi-Alnetum glutinosae* ass. nova hoc loco

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## APPENDIX 1:

## List of the sporadic species

Table 1

*Alliaria petiolata* (rel. 2; +); *Achnatherum bromoides* (rel. 11; +); *Anacamptis pyramidalis* (rel. 13; +); *Arbutus unedo* (rel. 20; 1); *Arisarum vulgare* (rel. 3; +); *Avena sterilis* s.l. (rel. 22; +); *Biarum tenuifolium* (rel. 22; +); *Blackstonia perfoliata* s.l. (rel. 23; +); *Brachypodium rupestre* (rel. 17; +); *Clematis vitalba* (rel. 22; +); *Clinopodium vulgare* s.l. (rel. 5; +); *Dactylorhiza maculata* (rel. 6; +); *Dorycnium hirsutum* (rel. 19; +); *Eryngium campestre* (rel. 19; +); *Geum urbanum* (rel. 2; +); *Hedypnois rhagadioloides* (rel. 5; +); *Hypericum perforatum* (rel. 22; +); *Lamium purpureum* (rel. 2; +); *Lathyrus annuus* (rel. 2; +); *Lathyrus clymenum* (rel. 23; +); *Lathyrus hirsutus* (rel. 16; +); *Lathyrus sylvestris* (rel. 19; +); *Leontodon tuberosus* (rel. 18; +); *Lotus corniculatus* s.l. (rel. 19; +); *Malus florentina* (rel. 14; +); *Medicago arabica* (rel. 2; +); *Orchis coriophora* (rel. 5; +); *Piptatherum miliaceum* s.l. (rel. 7; +); *Phleum pratense* (rel. 16; +); *Plantago lanceolata* (rel. 18; +); *Poa pratensis* (rel. 2; +); *Rubus hirtus* (rel. 14; +); *Salvia pratensis* s.l. (rel. 19; +); *Scorzonera humilis* (rel. 18; +); *Serratula tinctoria* subsp. *tinctoria* (rel. 5; +); *Sonchus oleraceus* (rel. 11; +); *Trifolium angustifolium* (rel. 4; +); *Trifolium ochroleucum* (rel. 2; +); *Vicia disperma* (rel. 2; +); *Vicia grandiflora* (rel. 2; 3); *Vicia pubescens* (rel. 2; +).

Table 2

*Aremonia agrimonoides* (rel. 11; +); *Achnatherum bromoides* (rel. 13; +); *Asperula laevigata* (rel. 6; +); *Celtis australis* (rel. 6; +); *Clematis vitalba* (rel. 7; +); *Cynosurus echinatus* (rel. 6; +); *Euphorbia amygdaloides* (rel. 9; +); *Lathyrus clymenum* (rel. 11; +); *Melica arrecta* (rel. 4; +); *Poa sylvicola* (rel. 1; +); *Prunella vulgaris* (rel. 11; +); *Ranunculus lanuginosus* (rel. 1; +); *Ranunculus velutinus* (rel. 11; +); *Rumex sanguineus* (rel. 6; +); *Sedum cepaea* (rel. 1; +); *Stellaria media* subsp. *media* (rel. 16; +); *Urospermum dalechampii* (rel. 6; +).

Table 3

*Acer pseudoplatanus* (rel. 3; +); *Achnatherum bromoides* (rel. 22; +); *Agrimonia eupatoria* s.l. (rel. 23; +); *Anacamptis pyramidalis* (rel. 25; +); *Arabis turrata* (rel. 21; +); *Bromus erectus* s.l. (rel. 23; +); *Chaerophyllum temulum* (rel. 16; +); *Chelidonium majus* (rel. 8; +); *Clematis flammula* (rel. 23; +); *Coleostephus myconis* (rel. 21; +); *Cytisophyllum ses-*

*silifolium* (rel. 16; +); *Cytisus scoparius* (rel. 7; +); *Fagus sylvatica* (rel. 7; +); *Fragaria vesca* (rel. 5; +); *Holcus lanatus* (rel. 2; +); *Hypericum perfoliatum* (rel. 16; +); *Inula conyzae* (rel. 17; +); *Lamium bifidum* (rel. 10; +); *Lamium purpureum* (rel. 24; +); *Lathyrus aphaca* (rel. 18; +); *Lathyrus clymenum* (rel. 17; +); *Lathyrus sphaericus* (rel. 57; +); *Lathyrus sylvestris* (rel. 10; +); *Legousia falcata* (rel. 14; +); *Leontodon hispidus* (rel. 10; +); *Lolium rigidum* s.l. (rel. 16; +); *Lunaria annua* (rel. 3; +); *Medicago lupulina* (rel. 15; +); *Moehringia trinervia* (rel. 10; 2); *Myosotis sylvatica* s.l. (rel. 10; +); *Muscari comosum* (rel. 15; +); *Picris hieracioides* (rel. 17; +); *Pyrus communis* (rel. 22; +); *Rhagadiolus stellatus* (rel. 16; +); *Sambucus nigra* (rel. 8; +); *Silene flos-cuculi* (rel. 8; +); *Sisymbrium officinale* (rel. 18; +); *Solidago virgaurea* subsp. *virgaurea* (rel. 3; +); *Sonchus oleraceus* (rel. 16; +); *Torilis arvensis* (rel. 8; +); *Trifolium ochroleucum* (rel. 10; +); *Umbilicum rupestre* (rel. 10; +); *Urtica dioica* (rel. 8; +); *Veronica hederifolia* s.l. (rel. 8; +); *Vicia bithynica* (rel. 17; +); *Vicia disperma* (rel. 24; +); *Vicia narbonensis* (rel. 10; 1); *Vicia villosa* (rel. 10; +).

Table 4

*Anacamptis pyramidalis* (rel. 9; +); *Arabis turrata* (rel. 7; +); *Anthoxanthum odoratum* (rel. 18; +); *Calamintha nepeta* subsp. *sylvatica* (rel. 13; +); *Cardamine hirsuta* (rel. 3; +); *Carex divulsa* (rel. 6; +); *Carex halleriana* (rel. 11; +); *Carex depauperata* (rel. 20; +); *Corylus avellana* (rel. 8; 1); *Crepis vesicaria* s.l. (rel. 10; +); *Cynosurus echinatus* (rel. 6; +); *Emerus majus* subsp. *emeroides* (rel. 10; 1); *Euphorbia characias* (rel. 9; +); *Fallopia convolvulus* (rel. 13; +); *Fallopia dumetorum* (rel. 14; +); *Ficus carica* (rel. 7; +); *Fumaria flabellata* (rel. 18; +); *Fumaria officinalis* s.l. (rel. 7; +); *Hyoseris radiata* (rel. 6; +); *Lactuca muralis* (rel. 20; +); *Lamium purpureum* (rel. 14; +); *Lathyrus aphaca* (rel. 14; +); *Lathyrus clymenum* (rel. 7; +); *Lathyrus niger* (rel. 18; +); *Laurus nobilis* (rel. 3; 1); *Legousia falcata* (rel. 9; +); *Limonium abortivum* (rel. 20; +); *Loncomelos pyrenaeus* (rel. 10; +); *Lonicera implexa* (rel. 10; +); *Myrtus communis* s.l. (rel. 11; +); *Picris hieracioides* (rel. 5; +); *Piptatherum miliaceum* s.l. (rel. 13; +); *Muscari neglectum* (rel. 9; +); *Parietaria officinalis* (rel. 6; +); *Pulicaria odora* (rel. 10; +); *Pyrus communis* (rel. 18; +); *Ranunculus bulbosus* (rel. 10; +); *Rosa balsamica* (rel. 21; +); *Rubus hirtus* (rel. 2; +); *Sanicula europaea* (rel. 20; +); *Scrophularia peregrina* (rel. 3; +); *Silene italica* subsp. *italica* (rel. 13; +); *Spartium junceum* (rel. 10; +); *Sonchus arvensis* s.l. (rel. 3; +); *Symphytum tuberosum* subsp. *angustifo-*

*lium* (rel. 17; +); *Teucrium chamaedrys* (rel. 9; +); *Trifolium pratense* (rel. 6; +).

Table 5

*Anthriscus nemorosa* (rel. 19; +); *Arabis turrata* (rel. 1; +); *Arisarum vulgare* (rel. 12; +); *Asperula laevigata* (rel. 11; +); *Cardamine impatiens* (rel. 17; +); *Carduus pycnocephalus* (rel. 11; +); *Carpinus orientalis* (rel. 16; 1); *Calamintha nepeta* subsp. *syloatica* (rel. 13; +); *Castanea sativa* (rel. 17; 1); *Catapodium rigidum* (rel. 11; +); *Cephalanthera damasonium* (rel. 18; +); *Cynosurus cristatus* (rel. 11; +); *Cynosurus echinatus* (rel. 11; +); *Cytisus scoparius* (rel. 5; +); *Erigeron sumatrensis* (rel. 1; +); *Fallopia dumetorum* (rel. 3; +); *Galium mollugo* subsp. *erectum* (rel. 4; +); *Galium rotundifolium* (rel. 17; +); *Geranium columbinum* (rel. 11; +); *Hieracium racemosum* (rel. 11; +); *Hypericum perforatum* (rel. 8; +); *Juniperus communis* (rel. 4; +); *Klasea flavescens* subsp. *cichoracea* (rel. 13; +); *Lamium bifidum* (rel. 5; +); *Lamium purpureum* (rel. 6; +); *Lathyrus clymenum* (rel. 7; +); *Myosotis arvensis* (rel. 11; +); *Myosotis ramosissima* (rel. 5; +); *Orchis purpurea* (rel. 14; +); *Platanthera bifolia* (rel. 9; +); *Ranunculus ficaria* (rel. 7; +); *Ranunculus velutinus* (rel. 12; +); *Rhamnus alaternus* (rel. 14; +); *Rosa arvensis* (rel. 8; +); *Sambucus nigra* (rel. 3; +); *Selaginella denticulata* (rel. 5; +); *Silene latifolia* subsp. *alba* (rel. 11; +); *Torilis arvensis* (rel. 11; +); *Trifolium repens* s.l. (rel. 11; +); *Trifolium medium* (rel. 11; +); *Trifolium pratense* (rel. 11; +); *Viburnum tinus* (rel. 1; 2); *Vicia bithynica* (rel. 7; +); *Vicia villosa* (rel. 11; +).

Table 6

*Allium subhirsutum* (rel. 9; +); *Anthriscus sylvestris* (rel. 2; +); *Arctium minus* (rel. 4; +); *Asphodelus ramosus* (rel. 7; +); *Blackstonia perfoliata* s.l. (rel. 7; +); *Campanula rapunculus* (rel. 8; +); *Carex flacca* s.l. (rel. 7; +); *Cercis siliquastrum* (rel. 4; 2); *Chaerophyllum temulum* (rel. 3; 1); *Clematis flammula* (rel. 7; 1); *Cruciata glabra* s.l. (rel. 1; +); *Dactylis glomerata* s.l. (rel. 1; +); *Dactylorhiza maculata* s.l. (rel. 2; +); *Emerus majus* subsp. *emeroides* (rel. 4; +); *Hyoseris radiata* (rel. 2; +); *Hypochaeris achyrophorus* (rel. 6; +); *Inula conyzae* (rel. 4; +); *Lamium maculatum* (rel. 4; +); *Lamium purpureum* (rel. 8; +); *Lathyrus aphaca* (rel. 8; 1); *Lathyrus niger* (rel. 1; +); *Laurus nobilis* (rel. 7; 2); *Leontodon tuberosus* (rel. 6; +); *Lonicera caprifolium* (rel. 1; +); *Luzula forsteri* (rel. 8; +); *Lythrum junceum* (rel. 6; +); *Osyris alba* (rel. 7; +); *Paliurus spina-christi* (rel. 4; 1); *Ranunculus ficaria* s.l. (rel. 1; 1); *Ranunculus sardous* s.l. (rel.

2; +); *Ranunculus velutinus* (rel. 2; 1); *Rhagadiolus stellatus* (rel. 8; +); *Rhamnus alaternus* (rel. 7; 1); *Rubus hirtus* (rel. 8; 1); *Salvia pratensis* s.l. (rel. 7; +); *Saponaria officinalis* (rel. 6; +); *Senecio aquaticus* (rel. 6; +); *Serratula tinctoria* subsp. *tinctoria* (rel. 1; +); *Sonchus bulbosus* (rel. 6; +); *Sonchus oleraceus* (rel. 4; +); *Sorbus domestica* (rel. 3; 1); *Stachys sylvatica* (rel. 5; +); *Teucrium siculum* s.l. (rel. 2; +); *Theligonum cynocrambe* (rel. 4; +); *Torilis arvensis* s.l. (rel. 4; +); *Torilis nodosa* (rel. 2; +); *Trifolium medium* (rel. 8; +); *Trifolium pallidum* (rel. 4; +); *Veronica arvensis* (rel. 6; +); *Vicia cracca* (rel. 8; +); *Vicia hirsuta* (rel. 2; +); *Vicia grandiflora* (rel. 8; +); *Vitis vinifera* s.l. (rel. 7; +).

Table 7

*Allium pendulinum* (rel. 5; +); *Alopecurus myosuroides* (rel. 6; +); *Asplenium trichomanes* s.l. (rel. 1; +); *Asphodelus macrocarpus* (rel.5; +); *Bromus sterilis* (rel. 6; +); *Carex depauperata* (rel. 3; +); *Carex flacca* s.l. (rel. 4; +); *Carex sylvatica* (rel. 8; +); *Teucrium chamaedrys* s.l. (rel. 4; +); *Chaerophyllum temulum* (rel. 3; 1); *Cruciata glabra* s.l. (rel. 4; +); *Echinops ritro* subsp. *siculum* (rel. 5; +); *Euphorbia amygdaloides* s.l. (rel. 4; +); *Festuca heterophylla* (rel. 1; +); *Fumaria capreolata* (rel. 1; 2); *Hyoseris radiata* (rel. 6; +); *Klasea flavescens* subsp. *cichoracea* (rel. 5; +); *Laurus nobilis* (rel.8; +); *Nigella damascena* (rel.4; +); *Ostrya carpinifolia* (ril 2; 1); *Osyris alba* (rel.8; +); *Rubus hirtus* (rel. 1; 2); *Selaginella denticulata* (rel. 1; +); *Serratula tinctoria* subsp. *tinctoria* (ril 4; +); *Silene latifolia* subsp. *alba* (rel. 6; +); *Sonchus asper* s.l. (rel.3; +); *Torilis arvensis* s.l. (rel. 1; +); *Trifolium pratense* s.l. (rel. 4; +); *Umbilicus rupestris* (rel.1; +); *Urospermum dalechampii* (rel. 7; +); *Vicia bithynica* (rel. 6; +); *Vicia tenuifolia* s.l. (rel. 1; +).

Table 9

*Acer monspessulanum* (rel. 7; +); *Allium pendulinum* (rel. 6; +); *Allium triquetrum* (rel. 3; +); *Anthoxanthum odoratum* (rel. 7; +); *Calamintha nepeta* (rel. 6; +); *Campanula rapunculus* (rel. 8; +); *Campanula trachelium* (rel. 9; +); *Cyclamen repandum* (rel. 10; +); *Cytisophyllum sessilifolium* (rel. 7; +); *Cytisus scoparius* (rel. 3; +); *Euphorbia amygdaloides* (rel. 9; +); *Lapsana communis* (rel. 5; +); *Lathyrus niger* (rel. 4; +); *Laurus nobilis* (rel. 4; +); *Melittis melissophyllum* (rel. 5; +); *Osyris alba* (rel. 10; +); *Prunus spinosa* (rel. 4; +); *Quercus pubescens* (rel. 5; 1); *Rubus gr. silvatici* (rel. 4; +); *Silene italica* (rel. 5; +); *Viola riviniana* (rel. 3; +).

Table 10

*Acer opalus* (rel. 4; +); *Asplenium onopteris* (rel. 7; +); *Brachypodium sylvaticum* (rel. 7; +); *Carex distachya* (rel. 7; +); *Carex flacca* (rel. 7;+); *Carex sylvatica* (rel. 4; +); *Clinopodium vulgare* (rel. 7; +); *Crataegus monogyna* (rel. 7; +); *Cyclamen repandum* (rel. 4; +); *Dactylis glomerata* (rel. 7; +); *Daphne laureola* (rel. 6; +); *Digitalis ferruginea* (rel. 7;+); *Hieracium sabaudum* (rel. 3; +); *Holcus lanatus* (rel. 5; +); *Juniperus communis* (rel. 1; +); *Lactuca muralis* (rel. 6; +); *Lathyrus venetus* (rel. 4; +); *Limodorum abortivum* (rel. 6; +); *Lonicera caprifolium* (rel. 4; +); *Lonicera etrusca* (rel. 1; +); *Mespilus germanica* (rel. 2; +); *Quercus cerris* (rel. 1; +); *Smilax aspera* (rel. 6; +).

Table 11

*Acer campestre* (rel. 1; +); *Ajuga reptans* (rel. 5; +); *Alliaria petiolata* (rel. 7; 1); *Allium triquetrum* (rel. 1; +); *Arbutus unedo* (rel. 11; +); *Asperula laevigata* (rel. 9; +); *Calamintha nepeta* (rel. 5; +); *Carex distachya* (rel. 1; +); *Cyclamen hederifolium* (rel. 9; 1); *Cyclamen repandum* (rel. 9; +); *Cytisus villosus* (rel. 1; +); *Dactylorhiza romana* (rel. 8; 1); *Deschampsia flexuosa* (rel. 6; +); *Euphorbia amygdaloides* (rel. 8; +); *Galium aparine* (rel. 1; +); *Lathyrus venetus* (rel. 1; +); *Malus sylvestris* (rel. 2; +); *Polypodium cambricum* (rel. 9; +); *Populus tremula* (rel. 11; 3); *Rubus gr. Silvatici* (rel. 1; +); *Stachys officinalis* (rel. 8; +); *Stellaria media* (rel. 7; +); *Vinca minor* (rel. 10; 2).

Table 12

*Alliaria petiolata* (rel. 10; +); *Allium pendulinum* (rel. 3; +); *Allium triquetrum* (rel. 11; 2); *Cephalanthera rubra* (rel. 8; +); *Crataegus laevigata* (rel. 5; +); *Dactylis glomerata* (rel. 3; +); *Daphne laureola* (rel. 11; +); *Dryopteris affinis* (rel. 9; 1); *Emerus majus* subsp. *emeroides* (rel. 9; +); *Equisetum palustre* (rel. 5; +); *Erica arborea* (rel. 3; +); *Eupatorium cannabinum* (rel. 6; +); *Euphorbia dulcis* (rel. 6; +); *Ficus carica* (rel. 8; 1); *Galium aparine* (rel. 6; +); *Geranium purpureum* (rel.6; +); *Hieracium murorum* (rel. 4; +); *Ligustrum vulgare* (rel. 9; +); *Luzula pilosa* (rel. 9; +); *Melica arrecta* (rel. 4; +); *Mespilus germanica* (rel.4; +); *Oenanthe pimpinelloides* (rel. 3; +); *Poa sylvicola* (rel. 5; +); *Populus tremula* (rel. 2; 2); *Ranunculus ficaria* (rel. 9; 2); *Ranunculus velutinus* (rel.6; 1); *Robinia pseudacacia* (rel. 10; +); *Smilax aspera* (rel.2; +); *Stachys sylvatica* (rel. 6; 1); *Stellaria media* (rel. 11; 1); *Symphytum tuberosum* (rel. 6; 1); *Ulmus minor* (rel. 8; +); *Verbena officinalis* (rel. 1; +); *Veronica montana* (rel. 1; 1); *Viola riviniana* (rel.4; +); *Vitis vinifera* (rel.6; +).

Table 13

*Arum italicum* (rel. 1; +); *Asphodelus ramosus* (rel. 12; +); *Asplenium onopteris* (rel. 12; +); *Brachypodium rupestre* (rel. 10; +); *Bromus sterilis* (rel. 10; +); *Buglossoides purpureo-caerulea* (rel. 10; +); *Carlina corymbosa* (rel. 10; +); *Carpinus orientalis* (rel. 10; +); *Centaureum erythraea* s.l. (rel. 3; +); *Clinopodium vulgare* s.l. (rel. 15; +); *Cytisophyllum sessilifolium* (rel. 10; +); *Cytisus villosus* (rel.1; +); *Dactylis glomerata* s.l. (rel. 15; +); *Dorycnium hirsutum* (rel. 10; +); *Euonymus europaeus* (rel. 8; +); *Euphorbia characias* (rel. 10; +); *Ficus carica* (rel. 10; +); *Galium aparine* (rel. 14; +); *Geranium purpureum* (rel. 6; +); *Lathyrus clymenum* (rel.16; +); *Melica uniflora* (rel. 12; +); *Ostrya carpiniifolia* (rel. 10; +); *Paliurus spina-christi* (rel. 7; 1); *Poa compressa* (rel. 2; +); *Ranunculus lanuginosus* (rel. 15; +); *Reichardia picroides* (rel. 10; +); *Sorbus torminalis* (rel. 10; +); *Spartium junceum* (rel. 6; +); *Ulmus minor* s.l. (rel. 13; +).

Table 14

*Alliaria petiolata* (rel. 7; +); *Arisarum vulgare* (rel. 3; +); *Brachypodium sylvaticum* (rel. 11; +); *Carex depauperata* (rel. 1; +); *Carex divulsa* (rel. 10; +); *Clematis flammula* (rel. 2; +); *Clematis vitalba* (rel. 10; +); *Cornus mas* (rel. 3; 1); *Crataegus monogyna* (rel. 5; +); *Cruciata glabra* (rel. 7; +); *Cynosurus echinatus* (rel. 7; +); *Emerus majus* subsp. *emeroides* (rel. 9; +); *Erigeron sumatrensis* (rel. 10; +); *Euonymus europaeus* (rel. 11; +); *Euphorbia amygdaloides* (rel. 15; +); *Fallopia convolvulus* (rel. 12; +); *Inula conyzae* (rel. 14; +); *Juniperus communis* (rel. 1; +); *Lactuca muralis* (rel. 11; +); *Lamium bifidum* (rel. 9; +); *Lamium maculatum* (rel. 11; +); *Lamium purpureum* (rel. 7; +); *Lathyrus aphaca* (rel. 11; +); *Lonicera caprifolium* (rel. 1; +); *Melica arrecta* (rel. 8; +); *Pistacia lentiscus* (rel. 2; 1); *Pulicaria odora* (rel. 1; +); *Ranunculus bulbosus* (rel. 10; +); *Ranunculus lanuginosus* (rel. 11; +); *Rumex sanguineus* (rel. 11; +); *Stachys sylvatica* (rel. 12;+); *Ulmus minor* (rel. 3; +); *Urtica dioica* (rel. 11; +).

Table 15

*Acer campestre* (rel. 4; +); *Acer monspessulanum* (rel. 3; +); *Anemone apennina* (rel. 3; +); *Carex flacca* (rel. 3;+); *Clematis vitalba* (rel. 4; +); *Cornus mas* (rel. 3; +); *Crataegus monogyna* (rel. 4; +); *Echinops sicularis* (rel. 3; +); *Euonymus europaeus* (rel. 4; +); *Geranium purpureum* (rel. 3; +); *Geum urbanum* (rel. 4; +); *Lonicera etrusca* (rel. 4; +); *Luzula forsteri* (rel. 4; +); *Melica arrecta* (rel. 3; +); *Ranunculus lanuginosus* (rel. 3;+); *Stachys officinalis* (rel. 3;+); *Ulmus minor* (rel. 1; +).

Table 16

*Acer campestre* (rel. 13; 2); *Carex flacca* (rel. 24; +); *Clematis flammula* (rel. 24; +); *Clinopodium vulgare* (rel. 24;+); *Crataegus laevigata* (rel. 20; 1); *Cyclamen hederifolium* (rel.9; +); *Cynosurus echinatus* (rel. 23; +); *Cytisophyllum sessilifolium* (rel.18; +); *Festuca heterophylla* (rel. 7; +); *Galactites elegans* (rel. 23; +); *Juniperus communis* (rel. 7;+); *Lonicera implexa* (rel. 24;+); *Mespilus germanica* (rel. 7; +); *Osyris alba* (rel. 24;+); *Poa sylvicola* (rel. 23;+); *Polypodium vulgare* (rel. 24;+); *Pteridium aquilinum* (rel. 7;+); *Pyrus communis* (rel.7; +); *Rosa sempervirens* (rel. 5; +); *Sherardia arvensis* (rel. 23; +); *Stachys officinalis* (rel. 7; +).

APPENDIX 2

Locations and dates of the relevés

Table 1: rel. 1: Monte Pozzo Ferro, 26. 05. 2005; rel. 2: Buche della Madonnina, 02. 06. 2004; rel. 3, 4: Monte Pozzo Ferro, 17.06.2004; rel. 5, 14: Monte il Cavone, 03. 06. 2005; rel. 6: Monte Pozzo Ferro, 31. 05. 2005; rel. 7: Monte Pozzo Ferro, 22. 06.2005; rel. 8, 9: Macchia del Quartaccio, 17. 06. 2005; rel. 10, 11: Monte Pozzo Ferro, 26. 05. 2005; rel. 12: Monte Pozzo Ferro, 16. 06. 2004; rel. 13, 17, 23: Monte Ianni, 03. 06.2005; rel. 15, 18, 19: Monte Ianni, 06. 06. 2005; rel. 16: Monte Ianni 07. 06. 2005; rel. 20: Monte Pozzo Ferro, 21. 05. 2005; rel. 21: Monte Pozzo Ferro, 26. 05. 2005; rel. 22: Monte Fagiolano, 24. 05. 2005.

Table 2: rel. 1: Monte Santo, 24. 05. 2005; rel. 2, 7, 8, 9, 10: Monte Sughereto, 25. 05. 2005; rel. 3, 4, 5, 6: Monte del Cerqueto, 14. 06. 2005; rel. 11, 12, 13, 14: Macchia del Fagiolano, 18. 05. 2005; rel. 15, 16: Monte Fagiolano, 24. 05. 2005.

Table 3: rel. 1, 2: Monte Sassicari 23. 06. 2005; rel. 3: Monte Urbano, 30. 06. 2005; rel. 4, 5: Monte Sassicari, 01. 07. 2005; rel. 6, 7: Sbroccati, 29. 06. 2005; rel. 8: Monte Ercole, 19. 05. 2005; rel. 9: Monte Marino, 21. 05. 2005; rel. 10: Monte Zanfone, 22. 05. 2004; rel. 11: Monte AcquaTosta, 11. 05. 2005; rel. 12, 15: Monte Ianni, 08. 06. 2005; rel. 13, 14, 23, 25: Monte Ianni, 07. 06. 2005; rel. 16: Monte AcquaTosta, 09. 06. 2005; rel. 17: Poggio Malinverno, 11. 05. 2005; rel. 18, 19: Miniera di piombo abbandonata, 20. 06. 2005; rel. 20: Poggio Ombricolo, 20. 06. 2005; rel. 21: Pozzi, 13. 06.

2005; rel. 22: Macchia del Quartaccio, 17. 06. 2005; rel. 24: Monte S. Ansino, 31. 05. 2004.

Table 4: rel. 1: Monte S. Ansino, 31. 05. 2004; rel. 2: Monte Ianni, 03. 06. 2005; rel. 3: Monte Pozzo Ferro, 17. 06. 2004; rel. 4, 9: Monte Ianni, 07. 06. 2005; rel. 5: Miniera di piombo abbandonata, 20. 06. 2005; rel. 6, 7, 8: Pozzi, 13. 06. 2005; rel. 10: Monte Pozzo Ferro, 26. 05. 2005; rel. 11: Macchia del Fagiolano, 18. 05. 2005; rel. 12: Monte Papparano, 12. 05. 2004; rel. 13: Monte del Cerqueto, 16. 06. 2005; rel. 14, 15: Monte Lungo, 18. 06. 2004; rel. 16, 17: Monte Lungo, 19. 05. 2005; rel. 18, 19: Monte Sassicari, 19. 05. 2004; rel. 20, 21: Monte Sassicari, 30. 06. 2005.

Table 5: rel. 1: Monte Lungo, 17. 05. 2005; rel. 2: Monte Lungo, 02. 06. 2004; rel. 3: Fosso della Caldara, 17. 06. 2004; rel. 4, 5, 6: Fosso del Mandrione, 17. 06. 2004; rel. 7, 8, 19, 20: Poggio Malinverno, 11. 05. 2005; rel. 9: Miniera di piombo abbandonata, 19. 05. 2004; rel. 10, 17: Miniera di piombo abbandonata, 20. 06. 2005; rel. 11: Poggio Felcioso, 18. 06. 2004; rel. 12, 14: Monte Pozzo Ferro, 22. 06. 2004; rel. 13, 16: Pozzi, 13. 06. 2005; rel. 15: Monte Pozzo Ferro, 08. 06. 2005; rel. 18: Monte la Roccaccia, 19. 05. 2004.

Table 6: rel. 1: Monte Acquatosta, 09. 05. 2004; rel. 2: Monte Acquatosta, 08. 06. 2004; rel. 3: Monte Acquatosta, 09. 06. 2005; rel. 4, 5: Monte Pozzo Ferro, 26. 05. 2005; rel. 6, 7, 9: Monte Ianni, 06. 06. 2005; rel. 8: Monte Zanfone, 22. 05. 2004.

Table 7: rel. 1: Monte Zanfone, 02. 06. 2004; rel. 2, 4: Monte Acquatosta, 09. 06. 2005; rel. 3: Monte Pozzo Ferro, 08. 06. 2005; rel. 5: Monte Ianni, 03. 06. 2005; rel. 6: Monte Ianni, 06. 06. 2005; rel. 7: La Roccaccia, 13. 06. 2005; rel. 8: Fosso del Marangone, 30. 05. 2005.

Table 8: rel. 1, 2: Monte Urbano, 30. 06. 2005; rel. 3: Madonna delle Grazie, 01. 07. 2005.

Table 9: rel. 1: Sbroccati, 24. 05. 2005; rel. 2, 8, 10: Sbroccati, 22. 06. 2005; rel. 3: La Bianca, 23. 06. 2005; rel. 4: Monte Urbano, 21. 06. 2005; rel. 5: Monte Urbano, 24. 05. 2005; rel. 6: Monte Urbano, 30. 06. 2005; rel. 7, 9: Sbroccati, 28. 06. 2005;

Table 10: rel. 1: Monte Sassicari, 01. 07. 2005; rel. 2, 3, 4: Sbroccati, 21. 06. 2005; rel. 5, 6, 7: Cinque Bottini, 23. 06. 2005.

Table 11: rel. 1: quota 633 (La Bianca), 21. 06. 2005; rel. 2: Faggeto, 29. 06. 2005; rel. 3, 5, 6: Monte Urbano, 30. 06. 2005; rel. 4: Sbroccati, 22. 06. 2005; rel. 7: quota 633 (La Bianca), 01. 07. 2005; rel. 8: Poggio Elceto, 24. 05. 2005; rel. 9: Tolfa, 21. 05. 2004; rel. 10: Tolfa, 29. 06. 2005; rel. 11: Sbroccati, 28. 06. 2005.

Table 12: rel. 1: Monte Sassicari, 23. 06. 2005; rel. 2: Monte Sassicari, 24. 05. 2005; rel. 3, 4, 5: Monte Sassicari, 27. 06. 2005; rel. 6: Fosso di Costa Grande, 29. 06. 2005; rel. 7, 8: Fosso dei Cinque Bottini, 02. 09. 2007; rel. 9, 10, 11: San Lorenzo a Merse (Si), 20. 05. 2008.

Table 13: rel. 1, 3: Macchia del Semaforo, 30. 05. 2005; rel. 2: La Castellina, 27. 05. 2005; rel. 4, 11, 12, 15, 16: Macchia del Fagiolano, 18. 05. 2005; rel. 5, 6, 7: La Fornacetta, 03. 06. 2005; rel. 8, 9: Colle Santa Maria Morgana, 10. 06. 2005; rel. 10: Monte Ianni, 03. 06. 2005; rel. 13, 14: Macchia del Fagiolano, 20. 05. 2005.

Table 14: rel. 1: Monte Papparano, 09. 05. 2004; rel. 2: quota 209, 24. 05. 2005; rel. 3, 13: Monte Lungo, 14. 05. 2004; rel. 4, 6, 7, 16: Monte Ercole, 22. 05. 2004; rel. 5: Monte Marino, 21. 05. 2005; rel. 8, 9: Monte Lungo, 12. 05. 2005; rel. 10: Bucacce, 12. 05. 2005; rel. 11, 12: Monte Lungo, 17. 05. 2005; rel. 14: Monte Lungo 04. 06. 2004; rel. 15: Monte Vittoria, 04. 06. 2004.

Table 15: rel. 1, 2: Monte Sughereto, 24. 05. 2005; rel. 3, 4: La Sughereta, 16. 06. 2008

Table 16: rel. 1, 2, 7: Monte Sassicari, 24. 05. 2005; rel. 3, 6: Monte Sassicari, 27. 06. 2005 rel. 4, 5: Cinque Bottini, 22. 06. 2005; rel. 8: Monte Sassicari, 12. 05. 2005; rel. 9, 14, 21: Monte Stradello, 13. 05. 2004; rel. 10, 12, 19: Monte Marino, 21. 05. 2005; rel. 11: Tenuta del Marchese, 03. 06. 2004; rel. 13: Monte Ercole, 18. 06. 2004; rel. 15: rel. Monte Marino, 03. 06. 2004; rel. 16: Monte Santo, 24. 05. 2005; rel. 17, 18: Monte Lungo, 11. 05. 2005; rel. 20: Monte Lungo, 14. 05. 2004; rel. 22: Monte Vittoria, 03. 06. 2004; rel. 23: Monte Mancini, 03. 06. 2004; rel. 24: Macchia del Cerqueto, 14. 06. 2005.

#### **Legend of Synoptic table 17 (thermophilous *Quercus cerris* woodlands in central Italy).**

Col. 1: from Table 1 in the present paper *Rubio peregrinae-Quercetum cerridis*. Col. 2: from Table 2

in the present paper *Rubio peregrinae-Quercetum cerridis ericetosum arboreae*. Col. 3: from Table 6 in Arrigoni et al. (1997) *Roso sempervirentis-Quercetum pubescentis quercetosum cerris* – Monte Morello (Tuscany). Col. 4: from Table 3 in Scoppola & Filesi (1995) *Asparago tenuifolii-Quercetum cerridis* – Monte Rufeno (Latium). Col. 5: from Table 2 in Arrigoni et al. (1990) *Erico arboreae-Quercetum cerridis* – Maremma grossetana (Tuscany). Col. 6: from Table 2 sub *Lonicero xylostei Carpinetum orientalis* in Taffetani & Biondi (1995) *Lonicero xylostei-Quercetum cerridis* Taffetani & Biondi ex Biondi & Allegranza 1996 – Valloni di Chieuti (Apulia) and Selva dell'Abbadia di Fiastra (Marches). Col. 7: from Table 1 in Blasi (1984) *Carpino orientalis-Quercetum cerridis* – Northwestern Latium.

#### **Legend of Synoptic table 18 (*Quercus ilex* woodlands developed on acid substrates in central and southern Italy).**

Col 1: from Table 5 in Brullo & Marcenò (1984) *Erico-Quercetum ilicis* – Pantelleria (Sicily). Col. 2: from Table 5 in Brullo & Marcenò (1984) *Erico-Quercetum ilicis* – Lipari (Sicily). Col. 3: from Table 3 in Brullo et al. (2001) *Erico-Quercetum ilicis* – Aspromonte (Calabria). Col. 4: from Table 16 in De Dominicis et al. (1988) *Viburno-Quercetum ilicis piatacietosum* – Punta Ala (Tuscany). Col. 5: from Table 16 in De Dominicis et al. (1988) *Viburno-Quercetum ilicis ericetosum* – Punta Ala (Tuscany). Col. 6: from Table 1 in Biondi et al. (2003) *Cyclamino repandi-Quercetum ilicis* – Italy. Col. 7: from Table 14 in the present paper *Arbuto unedonis-Quercetum ilicis*.

#### **Legend of Synoptic table 19 (*Quercus petraea* woodlands on central and southern Italy).**

Col 1: from Table 9 in the present paper *Carici olbiensis-Quercetum petraeae*. Col. 2: from Table 1 in Pedrotti et al. (1982) *Hieracio racemosi-Quercetum petraeae* – Gubbio basin (Umbria). Col. 3: from Table 22 in Brullo (1983) *Illici-Quercetum petraeae*. Col. 4: from Table 4 in Arrigoni (1997) *Frangulo alni-Quercetum petraeae* (sub: *Illici aquifolii-Quercetum petraeae*) – Cerbaie (Tuscany). Col. 5: from Table 14 in Foggi et al. (2000) *Frangulo alni-Quercetum petraeae* – Cecina River Basin (Tuscany). Col. 6: from Table 1 in Viciani & Moggi (1997) – *Quercus petraeae* woods of Sargiano and Lucignano (Tuscany).



**Table 1 (Tabela 1): *Rubio peregrinae-Quercetum cerridis* ass. nova**

Relevé number	1	2	3*	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
Altitude (m a.s.l.)	110	110	260	240	135	290	350	160	170	165	190	160	110	105	155	400	330	360	230	160	220	45	115		
Aspect	NW	.	W	NNW	NE	NNW	WNW	E	E	WSW	SW	WNW	SW	ENE	SSW	SW	S	WSW	SW	W	SW	SSE	SW		
Slope (°)	25	.	10	15	15	40	35	10	20	15	30	25	20	20	15	20	25	30	45	40	25	10	30		
Cover bare rock (%)	10	1	15	30	15	20	25	<5	5	<5	25	5	20	20	10	15	10	5	40	20	10	10	30		
Relevé area (m <sup>2</sup> )	200	200	220	200	200	200	150	200	250	150	200	150	200	200	250	400	220	200	150	100	160	250	200		
<b>Rubio peregrinae-Quercetum cerridis</b>																							Frq.		
<i>Rubia peregrina</i>	+	+	1	1	1	1	1	+	+	+	+	2	1	1	+	.	1	+	+	+	+	+	+	96	
<i>Smilax aspera</i>	2	+	2	2	1	2	.	3	1	1	2	1	+	2	+	+	+	.	1	1	2	1	+	91	
<i>Asparagus acutifolius</i>	+	+	+	+	+	+	+	+	+	+	+	+	.	+	+	.	+	+	+	+	.	+	+	87	
<i>Stachys officinalis</i>	+	+	+	+	+	+	.	+	+	+	.	+	+	1	+	1	+	+	+	+	+	+	.	87	
<i>Melittis melissophyllum</i>	+	.	+	+	1	+	.	.	.	+	+	1	1	1	+	+	1	+	+	+	1	1	+	83	
<i>Hedera helix</i>	1	3	2	2	+	.	1	1	2	+	1	1	+	+	1	1	.	.	.	1	+	1	+	83	
<b>Crataego laevigatae-Quercion cerridis</b>																									
<i>Oenanthe pimpinelloides</i>	+	2	+	+	+	+	.	+	+	.	.	+	+	+	+	+	1	+	.	.	+	+	.	74	
<i>Pulicaria odora</i>	.	.	.	.	+	.	.	+	+	+	.	+	+	.	+	.	.	+	.	.	+	2	+	48	
<i>Poa sylvicola</i>	.	+	.	.	.	+	.	.	.	.	.	.	.	1	+	+	.	.	.	.	.	+	.	26	
<i>Aristolochia rotunda</i>	.	.	.	.	.	+	.	.	.	.	.	.	.	+	.	+	+	+	.	+	.	.	.	26	
<i>Echinops ritro</i> subsp. <i>siculus</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	+	+	.	+	.	.	+	.	22	
<i>Ranunculus lanuginosus</i>	.	+	.	.	+	.	.	.	.	.	.	.	.	.	+	.	.	+	.	+	.	.	.	22	
<i>Teucrium siculum</i>	.	.	+	+	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	+	.	.	22	
<i>Crataegus laevigata</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	2	+	+	+	.	.	.	.	22	
<i>Lathyrus niger</i>	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	+	+	+	.	.	.	.	17	
<i>Iris foetidissima</i>	.	1	+	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	13	
<i>Ligustrum vulgare</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	.	.	9	
<i>Cytisus villosus</i>	.	.	.	.	.	+	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	9	
<i>Malus sylvestris</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	9	
<b>Quercetalia pubescenti-petraeae</b>																									
<i>Acer monspessulanum</i>	2	3	3	3	3	3	3	2	2	2	3	3	2	3	3	2	3	3	3	2	3	2	2	100	
<i>Quercus pubescens</i> s.l.	2	2	1	2	1	3	2	2	1	1	1	3	3	2	1	2	1	1	3	2	1	3	3	100	
<i>Fraxinus ornus</i>	1	1	1	2	2	1	1	1	2	1	1	1	2	2	1	1	1	+	1	1	1	+	2	100	
<i>Viola alba</i> subsp. <i>dehnhardtii</i>	+	+	2	2	1	+	+	1	+	+	+	1	1	1	1	1	1	+	.	+	1	1	.	91	
<i>Buglossoides purpureoacerulea</i>	+	+	+	+	1	+	+	+	+	+	.	+	+	+	+	+	1	+	.	+	+	+	+	91	
<i>Cornus mas</i>	2	.	3	2	1	2	2	1	1	1	1	1	.	2	.	1	+	1	.	2	1	.	.	74	
<i>Carex flacca</i>	.	.	+	.	.	+	.	+	+	+	+	+	+	+	+	.	+	+	+	+	+	1	.	70	
<i>Cyclamen repandum</i>	2	+	+	+	+	+	.	.	.	1	+	+	.	+	+	.	.	.	.	1	+	.	+	61	
<i>Cercis siliquastrum</i>	+	.	1	1	+	.	.	.	1	.	.	.	.	+	1	.	.	+	.	.	2	+	+	48	
<i>Ostrya carpinifolia</i>	.	.	.	3	3	1	2	.	1	.	.	1	.	1	.	1	.	1	.	1	.	.	.	39	
<i>Melica arrecta</i>	.	.	.	+	.	+	.	.	+	.	.	.	.	.	.	+	.	+	+	.	2	.	+	39	
<i>Allium triquetrum</i>	3	.	.	.	+	.	.	+	+	1	2	.	.	.	.	+	.	.	.	.	.	2	.	35	
<i>Sorbus domestica</i>	.	.	+	.	+	1	+	+	.	.	.	.	.	.	.	.	.	.	.	+	1	+	.	35	
<i>Arum italicum</i>	1	+	+	.	.	.	.	.	.	.	+	+	.	.	.	.	.	.	.	.	+	.	.	30	
<i>Scutellaria columnae</i> subsp. <i>columnae</i>	+	.	+	+	+	+	.	.	.	.	.	.	+	.	.	.	+	.	.	.	.	.	.	30	
<i>Carpinus orientalis</i>	.	.	.	.	2	.	.	.	.	.	.	.	3	3	4	.	.	.	.	.	.	.	.	22	
<i>Emerus majus</i> subsp. <i>emeroides</i>	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	13	
<i>Rumex sanguineus</i>	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	9	
<i>Asperula laevigata</i>	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	9	
<i>Silene italica</i> subsp. <i>italica</i>	.	.	.	.	.	.	+	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	9	
<i>Agrimonia eupatoria</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	9
<b>Fagetalia sylvaticae</b>																									
<i>Lathyrus venetus</i>	+	1	+	+	+	+	.	.	.	+	.	+	.	1	1	+	+	.	.	.	.	+	+	61	
<i>Anemone apennina</i>	3	1	1	+	1	1	.	.	.	.	.	.	.	1	2	2	+	1	.	.	+	.	+	57	
<i>Euphorbia amygdaloides</i>	.	+	+	+	+	.	.	.	+	.	.	+	+	+	+	.	.	.	.	.	.	.	.	39	

Relevé number	1	2	3*	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Frq.	
<i>Cyclamen hederifolium</i>	+	.	+	+	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	+	.	.	22	
<i>Allium pendulinum</i>	.	+	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	9
<b>Quercio-Fagetea</b>																									
<i>Quercus cerris</i>	4	4	3	3	3	3	3	4	4	3	3	3	3	3	3	5	4	4	3	2	3	2	1	100	
<i>Tamus communis</i>	+	+	1	1	1	1	1	+	+	1	+	1	1	1	2	+	+	+	1	2	+	+	1	100	
<i>Ruscus aculeatus</i>	2	1	3	3	1	3	3	2	2	+	2	1	+	2	+	+	+	+	.	+	3	+	.	91	
<i>Melica uniflora</i>	1	2	2	2	+	2	+	+	+	1	.	+	1	2	2	1	.	+	+	+	.	.	+	83	
<i>Brachypodium sylvaticum</i>	+	+	2	2	1	1	+	+	+	1	+	+	1	1	+	+	.	.	+	.	.	+	1	83	
<i>Acer campestre</i>	.	1	2	1	.	.	.	1	+	.	1	+	.	1	1	1	.	.	.	.	.	.	+	52	
<i>Ajuga reptans</i>	+	+	1	.	+	+	.	.	.	.	.	+	.	+	+	+	.	.	+	.	.	2	.	48	
<i>Ulmus minor</i>	+	+	+	.	.	.	.	.	1	.	.	1	.	.	.	1	.	.	.	+	.	1	.	35	
<i>Loncomelos pyrenaicus</i>	.	.	+	.	.	+	+	.	.	.	.	.	+	+	.	1	+	+	.	.	.	.	.	35	
<i>Daphne laureola</i>	.	1	+	+	.	+	.	.	.	.	.	.	.	+	.	.	+	.	.	.	.	.	+	30	
<i>Sorbus torminalis</i>	.	.	1	1	+	.	.	+	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	22	
<i>Cruciata glabra</i>	.	+	.	.	.	.	.	.	.	.	.	.	.	.	+	+	+	+	.	.	.	.	.	22	
<i>Bromus ramosus</i>	.	.	.	.	.	+	+	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	13	
<i>Calamintha nepeta</i> subsp. <i>sylv.</i>	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	9	
<i>Luzula forsteri</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	+	9	
<i>Carex sylvatica</i>	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4	
<b>Quercetea ilicis</b>																									
<i>Clematis flammula</i>	.	1	.	1	+	+	+	+	1	+	+	+	1	+	+	+	2	+	2	1	1	1	1	91	
<i>Rosa sempervirens</i>	+	+	+	+	1	+	1	+	+	+	1	.	+	+	.	2	+	+	+	1	1	1	+	91	
<i>Phillyrea latifolia</i>	1	2	1	2	1	1	.	1	.	3	2	2	1	.	+	.	.	.	+	3	1	+	1	74	
<i>Quercus ilex</i>	+	.	.	2	+	1	.	.	.	1	.	2	.	.	.	.	.	.	.	1	+	.	1	39	
<i>Asplenium onopteris</i>	.	.	+	+	.	+	+	.	+	.	+	.	.	.	+	.	.	.	.	+	.	.	.	35	
<i>Osyris alba</i>	.	.	.	.	+	.	.	.	+	.	.	.	+	.	.	+	+	+	+	.	.	+	+	35	
<i>Carex distachya</i>	.	.	+	.	.	.	+	.	+	.	+	.	.	.	+	.	.	.	.	+	.	1	.	30	
<i>Pistacia lentiscus</i>	.	.	.	+	.	.	.	.	.	.	+	2	2	.	.	.	.	.	.	.	.	.	2	3	26
<i>Viburnum tinus</i>	.	.	.	1	.	1	.	.	.	.	.	3	2	.	.	.	.	.	.	1	.	.	2	26	
<i>Rhamnus alaternus</i>	.	.	.	.	.	+	.	.	+	.	.	.	.	.	+	.	+	.	+	1	.	.	.	26	
<i>Lonicera implexa</i>	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	+	+	+	+	+	26	
<i>Carex halleriana</i>	.	.	.	+	2	.	.	.	.	.	+	.	+	.	.	.	.	.	.	.	.	.	.	17	
<i>Laurus nobilis</i>	1	.	.	+	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	13	
<i>Carex divulsa</i>	.	+	+	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	13	
<i>Carex olbiensis</i>	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4	
<b>Other species</b>																									
<i>Crataegus monogyna</i>	+	2	1	+	1	+	+	+	1	+	+	+	+	1	+	+	2	+	.	+	1	1	+	96	
<i>Lonicera etrusca</i>	+	1	+	+	2	+	+	+	+	+	+	+	1	1	+	+	+	+	+	+	+	+	.	96	
<i>Dactylis glomerata</i>	.	+	+	+	+	+	+	.	.	.	.	+	+	+	.	+	+	+	+	+	+	+	+	78	
<i>Euonymus europaeus</i>	+	+	+	+	+	1	+	+	+	+	.	+	+	+	+	+	.	.	.	+	.	+	.	74	
<i>Asphodelus ramosus</i>	.	.	+	.	.	.	+	+	+	+	2	.	+	.	+	+	+	2	2	.	+	2	+	65	
<i>Sonchus bulbosus</i>	.	2	.	+	1	2	1	.	.	.	.	+	1	.	.	+	2	+	+	+	1	+	.	61	
<i>Prunus spinosa</i>	.	1	.	.	+	+	+	.	+	.	.	.	+	1	+	1	+	+	+	.	.	.	+	57	
<i>Geranium purpureum</i>	.	1	+	+	.	+	1	.	.	.	+	.	+	+	+	+	+	+	.	.	.	.	+	57	
<i>Klasea flavescens</i> subsp. <i>cichoracea</i>	.	.	.	+	.	+	.	.	.	+	.	+	+	+	.	2	+	2	2	.	1	+	+	57	
<i>Ranunculus bulbosus</i>	.	+	.	+	.	.	+	.	.	+	.	.	+	.	+	+	+	+	+	.	+	+	.	52	
<i>Rubus ulmifolius</i>	+	+	+	+	.	.	.	+	+	.	.	+	+	.	.	+	.	+	.	.	.	.	+	48	
<i>Teucrium chamaedrys</i>	.	.	.	.	+	+	.	.	.	.	.	+	+	+	.	+	.	+	+	+	+	.	.	43	
<i>Stellaria media</i> subsp. <i>media</i>	1	1	+	.	.	+	.	.	.	.	.	.	.	.	+	.	.	.	.	+	.	+	.	30	
<i>Theligonum cynocrambe</i>	.	.	.	+	.	+	1	.	.	.	.	.	.	.	+	.	+	+	+	.	.	.	.	30	
<i>Euphorbia characias</i>	.	.	.	.	.	.	.	+	.	.	.	.	+	+	.	.	.	2	+	.	.	+	.	26	
<i>Loncomelos brevistylus</i>	.	.	.	.	.	+	.	.	.	.	.	.	+	.	+	+	+	.	.	.	.	+	.	26	
<i>Cytisophyllum sessilifolium</i>	.	.	.	+	.	.	.	.	.	.	.	+	.	.	.	.	+	.	1	.	.	.	+	22	
<i>Galium aparine</i>	.	1	+	.	.	+	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	+	22	
<i>Gladiolus italicus</i>	.	.	.	.	.	.	.	.	.	.	.	+	.	+	.	.	+	.	.	+	.	+	.	22	

Relevé number	1	2	3*	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Frq.	
<i>Allium subhirsutum</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	1	+	.	.	+	+	.	.	.	.	.	17
<i>Bromus erectus</i>	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	+	.	+	+	.	.	.	.	.	17
<i>Stachys heraclea</i>	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	+	.	+	+	.	.	.	.	.	17
<i>Rubus canescens</i>	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	+	13
<i>Spartium junceum</i>	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	+	13
<i>Lathyrus aphaca</i>	.	2	.	.	.	.	+	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	13
<i>Geranium sanguineum</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1	+	.	.	.	.	.	.	13
<i>Prunella vulgaris</i>	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	+	.	13
<i>Cynoglossum creticum</i>	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	.	13
<i>Crepis vesicaria</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	+	+	.	.	.	.	13
<i>Asplenium trichomanes</i> subsp. <i>quadr.</i>	.	.	.	+	.	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	13
<i>Ranunculus velutinus</i>	+	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	13
<i>Pyrus communis</i>	.	.	.	.	.	.	.	+	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	9
<i>Urospermum dalechampii</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	+	.	9
<i>Catapodium rigidum</i>	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	9
<i>Cynosurus echinatus</i>	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	9
<i>Reichardia picroides</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	9
<i>Anemone hortensis</i>	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	+	.	.	.	.	.	.	9
<i>Sherardia arvensis</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	+	.	9
<i>Campanula rapunculus</i>	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	9
<i>Anthericum liliago</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	+	.	.	.	.	9
<i>Silene latifolia</i> subsp. <i>alba</i>	.	.	.	.	.	.	.	.	.	.	.	.	+	.	+	.	.	.	.	.	.	.	.	.	9
<i>Carduus pycnocephalus</i>	.	.	.	.	+	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	9
<i>Torilis nodosa</i>	.	+	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	9
<i>Inula conyzae</i>	.	.	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	9
<i>Sedum cepaea</i>	.	.	.	.	.	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	9
<i>Vitis vinifera</i>	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	9
<i>Torilis arvensis</i>	.	.	+	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	9

**Table 2 (Tabela 2): *Rubio peregrinae-Quercetum cerridis ericetosum arboreae* subass. nova**

Relevé number	1	2	3	4*	5	6	7	8	9	10	11	12	13	14	15	16	
Altitude (m a.s.l.)	290	320	116	170	275	170	270	280	335	290	50	130	145	140	110	120	
Aspect	SSW	NE	SSW	S	WSW	SSW	WNW	SE	W	WSW	NNW	WSW	NNW	NW	NW	N	
Slope (°)	10	20	5	10	<10	10	30	25	20	15	10	<5	5	10	5	<5	
Cover bare rock (%)	<5	10	<5	10	<5	<10	10	5	<5	<5	5	10	<1	5	<5	<5	
Relevé area (m <sup>2</sup> )	100	80	100	150	250	120	100	100	130	100	180	110	120	140	200	200	
<b>Rubio peregrinae-Quercetum cerridis</b>																	
																	Frq.
<i>Rubia peregrina</i>	1	+	+	+	+	+	+	1	1	+	+	+	+	+	+	+	100
<i>Asparagus acutifolius</i>	+	+	+	+	+	+	+	2	+	+	+	.	+	+	+	+	94
<i>Smilax aspera</i>	+	+	.	1	+	.	+	1	1	2	1	2	2	3	3	1	88
<i>Hedera helix</i>	+	2	.	1	1	1	1	2	2	3	1	.	.	.	+	.	69
<i>Melittis melissophyllum</i>	.	.	.	.	.	.	.	.	.	.	2	.	+	+	+	+	31
<i>Stachys officinalis</i>	.	.	.	+	+	.	.	.	.	.	1	.	.	.	.	+	25
<b>Rubio peregrinae-Quercetum cerridis ericetosum arboreae</b>																	
<i>Quercus ilex</i>	1	3	2	2	2	1	4	3	3	2	3	3	3	3	1	2	100
<i>Erica arborea</i>	.	+	.	+	1	.	1	2	1	1	+	1	2	1	1	+	81
<i>Arbutus unedo</i>	1	.	.	+	1	.	1	2	2	2	.	.	.	.	.	.	44
<i>Myrtus communis</i>	.	.	.	1	.	1	.	.	.	1	.	2	1	.	+	1	44
<i>Quercus suber</i>	.	.	2	1	.	.	2	2	2	2	.	.	.	.	.	.	38
<b>Crataego laevigatae-Quercion cerridis</b>																	
<i>Pulicaria odora</i>	+	.	+	+	.	.	.	+	+	.	+	.	.	.	+	+	50
<i>Cytisus villosus</i>	.	.	.	.	+	.	.	+	+	1	+	.	.	.	+	.	38
<i>Echinops ritro</i> subsp. <i>siculus</i>	.	.	.	+	.	.	.	.	+	.	+	.	.	.	.	.	19
<i>Mespilus germanica</i>	.	.	.	1	1	+	.	.	.	.	.	.	.	.	.	.	19
<i>Malus sylvestris</i>	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	2	13
<i>Oenanthe pimpinelloides</i>	.	.	+	.	.	.	.	.	.	.	+	.	.	.	.	.	13
<i>Ligustrum vulgare</i>	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	6
<i>Ranunculus lanuginosus</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	6
<b>Quercetalia pubescenti-petraeae</b>																	
<i>Fraxinus ornus</i>	+	2	1	1	2	2	2	1	1	2	1	.	1	1	1	1	94
<i>Cyclamen repandum</i>	+	1	.	.	.	.	+	+	+	1	+	1	2	1	1	+	75
<i>Quercus pubescens</i> s.l.	1	.	1	.	1	1	.	.	.	1	3	2	1	2	2	2	63
<i>Allium triquetrum</i>	+	+	.	.	.	.	.	+	+	+	+	.	.	+	1	+	56
<i>Viola alba</i> subsp. <i>dehnhardtii</i>	+	.	+	+	+	+	+	.	.	.	+	1	1	1	2	1	38
<i>Acer monspessulanum</i>	.	.	.	.	.	.	.	.	.	.	1	1	1	2	1	1	38
<i>Sorbus domestica</i>	.	.	.	+	+	+	.	.	+	1	+	.	.	.	.	.	38
<i>Carex flacca</i>	.	.	+	.	+	.	.	+	.	.	.	+	.	.	+	.	31
<i>Cornus mas</i>	.	.	.	.	+	1	.	.	.	1	1	.	.	.	.	.	25
<i>Ostrya carpinifolia</i>	.	2	.	.	2	.	.	.	1	.	.	.	.	.	.	.	19
<i>Buglossoides purpureoerulea</i>	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	6
<i>Cercis siliquastrum</i>	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	6
<b>Fagetalia sylvaticae</b>																	
<i>Cyclamen hederifolium</i>	+	+	.	.	.	.	.	.	+	.	+	+	+	+	+	+	56
<i>Anemone apennina</i>	.	.	.	.	.	.	.	.	.	.	1	.	+	+	+	+	31
<i>Lathyrus venetus</i>	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	6
<b>Quercus-Fagetea</b>																	
<i>Quercus cerris</i>	3	3	3	4	4	4	2	2	3	4	4	2	3	3	4	2	100
<i>Ruscus aculeatus</i>	3	3	1	3	3	2	2	.	3	3	1	+	1	2	3	1	94
<i>Tamus communis</i>	+	1	.	+	+	.	1	2	1	+	+	+	2	2	1	1	88
<i>Brachypodium sylvaticum</i>	+	+	.	+	+	+	.	+	+	.	+	.	.	.	+	+	63
<i>Acer campestre</i>	2	1	.	1	.	1	.	1	1	.	+	.	.	.	.	.	44
<i>Melica uniflora</i>	+	.	.	+	+	.	.	.	.	+	+	.	.	.	.	+	44
<i>Luzula forsteri</i>	+	.	+	+	+	.	.	.	.	.	.	.	.	.	.	+	31

Relevé number	1	2	3	4*	5	6	7	8	9	10	11	12	13	14	15	16	Frq.
<i>Sorbus torminalis</i>	.	.	.	.	.	.	1	+	.	1	1	.	.	.	.	.	25
<i>Ulmus minor</i>	1	.	.	.	.	.	.	.	.	.	+	.	.	1	.	+	25
<i>Alliaria petiolata</i>	1	.	.	.	+	+	.	.	.	.	.	.	.	.	.	.	19
<i>Ajuga reptans</i>	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	+	13
<i>Carex sylvatica</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	6
<b>Quercetea ilicis</b>																	
<i>Phillyrea latifolia</i>	4	.	3	2	1	1	1	1	1	2	2	4	4	4	3	4	94
<i>Rosa sempervirens</i>	+	.	+	1	.	+	.	+	+	+	+	.	.	.	+	+	63
<i>Asplenium onopteris</i>	+	1	+	.	+	.	+	+	+	+	.	.	.	.	.	.	50
<i>Clematis flammula</i>	+	.	+	+	+	+	.	.	.	.	+	+	.	.	.	.	44
<i>Osyris alba</i>	.	.	.	.	.	.	.	1	1	.	+	1	+	.	+	+	44
<i>Pistacia lentiscus</i>	.	.	2	.	.	.	.	.	.	.	1	2	3	3	1	2	44
<i>Carex distachya</i>	.	+	+	1	+	+	.	.	.	.	.	.	.	.	.	+	38
<i>Carex olbiensis</i>	.	.	.	+	+	+	.	.	.	.	+	.	.	.	.	.	25
<i>Lonicera implexa</i>	.	.	.	.	.	.	.	+	+	.	.	+	.	.	.	.	19
<i>Rhamnus alaternus</i>	1	.	.	.	.	+	.	.	.	1	.	.	.	.	.	.	19
<i>Carex divulsa</i>	+	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	13
<i>Viburnum tinus</i>	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	6
<i>Carex halleriana</i>	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	6
<b>Other species</b>																	
<i>Asphodelus ramosus</i>	+	+	+	+	+	+	+	+	+	+	+	.	.	.	.	.	69
<i>Crataegus monogyna</i>	1	.	+	1	.	+	.	.	1	+	1	.	.	.	1	+	56
<i>Rubus ulmifolius</i>	+	+	+	1	+	+	.	+	+	.	+	.	.	.	.	.	56
<i>Lonicera etrusca</i>	.	1	.	.	+	.	.	.	+	.	+	.	.	.	+	+	38
<i>Prunus spinosa</i>	+	.	.	+	+	.	.	.	.	.	+	.	.	.	.	.	25
<i>Silene latifolia subsp. alba</i>	+	.	.	+	+	+	.	.	.	.	.	.	.	.	.	.	25
<i>Catapodium rigidum</i>	.	.	+	1	+	+	.	.	.	.	.	.	.	.	.	.	25
<i>Dactylis glomerata</i>	.	.	.	+	+	.	.	.	.	.	+	.	.	.	.	.	19
<i>Euonymus europaeus</i>	+	.	.	.	.	.	.	.	+	+	.	.	.	.	.	.	19
<i>Piptatherum miliaceum</i>	.	.	+	+	.	1	.	.	.	.	.	.	.	.	.	.	19
<i>Fallopia convolvulus</i>	.	.	.	+	+	+	.	.	.	.	.	.	.	.	.	.	19
<i>Loncomelos brevistylus</i>	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	+	13
<i>Hypericum perforatum</i>	.	.	+	+	.	.	.	.	.	.	.	.	.	.	.	.	13
<i>Clinopodium vulgare</i>	.	.	.	1	.	+	.	.	.	.	.	.	.	.	.	.	13
<i>Geranium purpureum</i>	.	.	.	+	.	.	.	+	.	.	.	.	.	.	.	.	13

Table 3 (Tabela 3): *Melico uniflorae-Quercetum cerridis*

Relevé number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Altitude (m a.s.l.)	440	420	580	460	510	420	470	160	240	420	390	377	350	400	380	450	440	483	430	480	300	225	480	330	300
Aspect	ENE	ENE	WSW	NE	ENE	NNW	N	N	N	NE	N	E	NNW	ENE	WNW	E	SW	S	SW	S	E	ENE	ESE	NW	NW
Slope (°)	25	35	5	0	5	10	<1	25	10	40	15	25	20	20	15	15	20	20	20	15	30	20	15	10	15
Cover bare rock (%)	1	5	10	<5	<5	5	<5	10	<5	13	10	15	10	10	5	5	10	10	5	10	<5	5	10	<5	5
Relevé area (m <sup>2</sup> )	400	250	500	400	300	200	250	200	150	400	250	150	200	130	250	200	200	150	200	100	250	200	150	300	150

**Melico uniflorae-Quercetum cerridis**

<i>Melica uniflora</i>	1	1	1	1	1	1	1	3	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	2	1	100
<i>Cornus mas</i>	2	2	.	2	.	.	.	2	2	.	1	1	3	1	1	1	2	2	1	.	2	2	+	3	2	76
<i>Brachypodium sylvaticum</i>	+	1	+	.	2	2	2	.	+	.	+	.	+	+	+	+	1	+	+	2	.	1	.	1	+	76
<i>Oenanthe pimpinelloides</i>	.	+	1	.	.	+	.	.	.	+	+	+	+	+	+	+	1	+	.	+	+	+	+	2	1	72
<i>Euphorbia amygdaloides</i>	1	+	+	+	.	.	.	+	+	.	+	+	+	.	+	+	+	+	+	.	.	+	.	+	+	64
<i>Crataegus laevigata</i>	+	+	.	.	.	1	.	.	.	+	1	1	1	2	2	2	.	1	.	2	1	.	.	1	+	60
<i>Festuca heterophylla</i>	1	1	2	1	+	1	1	.	+	.	.	.	.	.	.	.	+	+	.	+	.	.	.	.	.	44

**Crataego laevigatae-Quercion cerridis**

<i>Malus sylvestris</i>	+	+	.	1	+	+	+	.	.	+	+	.	.	.	1	1	2	1	1	1	1	1	1	1	1	68
<i>Poa sylvicola</i>	.	.	+	.	.	+	+	.	.	1	1	1	.	.	+	1	2	+	+	1	2	.	+	+	+	64
<i>Teucrium siculum</i>	1	1	1	.	1	+	+	.	.	.	+	.	.	.	.	.	+	.	.	.	.	+	.	.	.	36
<i>Echinops ritro</i> subsp. <i>siculus</i>	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	+	+	+	+	.	+	+	+	+	32
<i>Mespilus germanica</i>	+	.	1	.	+	1	+	.	1	+	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	32
<i>Iris foetidissima</i>	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	+	.	.	.	.	+	.	.	.	.	28
<i>Quercus petraea</i>	2	2	1	.	+	2	2	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	28
<i>Erica arborea</i>	+	+	.	+	+	+	+	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	28
<i>Pulicaria odora</i>	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	28
<i>Ranunculus lanuginosus</i>	.	.	.	.	.	.	.	.	1	.	+	.	.	.	.	+	+	+	.	.	+	1	+	+	+	24
<i>Cytisus villosus</i>	.	.	+	.	.	.	.	.	.	+	.	.	.	.	.	+	+	+	+	.	.	+	.	.	.	20
<i>Aristolochia rotunda</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	.	.	.	.	.	20
<i>Ligustrum vulgare</i>	.	.	.	.	.	.	.	1	1	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	16
<i>Silene viridiflora</i>	+	.	1	.	+	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	16
<i>Lathyrus niger</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	16
<i>Asperula laevigata</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	12
<i>Rumex sanguineus</i>	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	8
<i>Anthoxanthum odoratum</i>	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	8
<i>Crepis leontodontoides</i>	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	8

**Quercetalia pubescenti-petraeae**

<i>Fraxinus ornus</i>	2	2	2	2	3	2	1	1	2	1	2	2	2	1	1	3	+	1	1	1	1	1	1	1	1	100
<i>Viola alba</i> subsp. <i>dehnhardtii</i>	2	+	+	1	2	+	.	2	+	+	1	+	+	1	2	1	+	1	+	+	1	1	1	1	3	96



Relevé number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	Frq.
<i>Acer campestre</i>	1	1	1	+	.	+	.	+	1	1	1	1	1	.	.	1	.	1	+	1	1	.	1	.	.	68
<i>Cruciata glabra</i>	+	+	+	1	1	1	2	.	+	.	.	.	.	+	+	+	+	+	+	+	.	.	+	+	.	68
<i>Luzula forsteri</i>	+	+	1	+	+	+	+	+	+	+	.	.	.	.	.	.	.	.	.	.	+	.	.	.	+	56
<i>Melittis melissophyllum</i>	.	.	.	+	.	.	.	.	.	.	+	.	+	+	+	+	.	.	.	.	.	.	+	+	+	36
<i>Carpinus betulus</i>	1	3	+	2	.	+	+	2	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	32
<i>Daphne laureola</i>	.	.	+	+	+	+	.	.	.	.	+	.	.	+	+	.	.	.	.	.	+	.	.	+	.	28
<i>Castanea sativa</i>	+	.	+	+	+	1	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	24
<i>Potentilla micrantha</i>	+	+	+	+	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	24
<i>Hieracium racemosum</i>	1	+	+	.	.	.	+	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	20
<i>Clematis vitalba</i>	+	+	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	20
<i>Geum urbanum</i>	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	+	+	+	+	+	.	.	.	.	.	20
<i>Calamintha nepeta</i> subsp. <i>sylvatica</i>	.	+	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	+	.	.	.	+	.	.	.	20
<i>Carex sylvatica</i>	.	1	.	.	.	+	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	16
<i>Bromus ramosus</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	+	16
<i>Hieracium murorum</i>	+	.	1	+	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	16
<i>Ulmus minor</i>	.	.	.	.	.	.	.	.	.	.	.	1	+	.	.	.	.	.	.	.	.	.	.	.	.	12
<i>Platanthera chlorantha</i>	+	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	12
<b>Quercetea ilicis</b>																										
<i>Rubia peregrina</i>	+	+	+	+	+	.	.	+	+	+	+	+	+	+	+	+	+	+	+	2	+	+	+	+	+	92
<i>Rosa sempervirens</i>	+	.	.	.	.	.	.	.	1	.	.	.	+	+	+	+	+	+	+	1	+	+	1	1	+	60
<i>Asplenium onopteris</i>	+	+	.	.	.	.	.	+	+	+	.	.	+	.	.	.	+	.	.	.	.	.	.	.	.	40
<i>Carex obliensis</i>	1	1	+	.	+	+	1	+	+	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	40
<i>Smilax aspera</i>	.	.	.	.	.	.	.	.	.	.	1	1	+	+	.	.	.	.	2	.	+	2	.	+	1	36
<i>Asparagus acutifolius</i>	.	.	.	.	.	.	.	+	.	.	.	.	+	.	.	+	+	.	+	.	.	.	.	.	.	24
<i>Quercus ilex</i>	.	.	.	.	.	1	1	1	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	20
<i>Arbutus unedo</i>	.	.	.	1	1	1	1	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	20
<i>Carex distachya</i>	.	.	.	.	+	.	.	+	.	+	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	16
<i>Phillyrea latifolia</i>	.	.	.	.	.	.	.	+	1	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	12
<i>Viburnum tinus</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	8
<b>Other species</b>																										
<i>Lonicera etrusca</i>	3	2	1	1	+	2	2	1	1	+	.	+	+	+	+	+	1	+	2	2	+	+	+	+	+	96
<i>Crataegus monogyna</i>	1	1	.	1	+	+	+	1	1	1	+	2	+	.	.	+	2	1	2	1	.	1	2	.	+	80
<i>Rubus ulmifolius</i>	+	1	+	1	1	.	.	+	+	.	.	.	+	+	+	1	+	+	+	+	.	+	+	.	+	76
<i>Euonymus europaeus</i>	+	+	+	1	.	.	.	+	1	+	+	+	+	.	+	+	1	+	2	+	+	.	.	+	+	76
<i>Dactylis glomerata</i>	1	+	+	.	+	+	+	.	.	1	.	.	+	.	.	.	+	+	+	+	+	+	.	1	+	64
<i>Prunus spinosa</i>	.	.	+	+	.	.	.	.	+	+	+	+	+	1	+	.	1	1	1	1	.	.	.	.	.	56
<i>Geranium purpureum</i>	.	.	.	.	.	.	.	.	.	2	+	.	.	.	1	+	+	+	+	.	+	.	.	+	1	44
<i>Stellaria media</i> subsp. <i>media</i>	.	.	.	.	.	.	.	+	.	2	+	+	.	.	1	+	+	+	.	.	+	.	+	1	+	36
<i>Silene latifolia</i> subsp. <i>alba</i>	.	.	.	+	+	.	.	+	.	1	.	.	+	.	+	.	.	.	.	+	.	+	.	.	.	36





**Table 4 (Tabela 4): *Melico uniflorae-Quercetum cerridis ostryetosum carpinifoliae***

Relevé number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21		
Altitude (m a.s.l.)	357	335	260	420	395	350	370	330	330	130	130	300	270	238	190	150	155	460	380	415	460		
Aspect	N	SSE	NW	NE	NW	SW	ENE	N	ENE	NW	N	NE	NE	NW	N	NW	N	NE	NNW	NNW	NE		
Slope (°)	20	25	10	40	30	20	25	20	45	25	35	15-20	0	40	30	40	10	25	30	25	10		
Cover bare rock (%)	15	10	55	15	<5	20	20	5	15	10	15	1	<5	<1	<1	<5	10	1	1	<5	<5		
Relevé area (m <sup>2</sup> )	190	200	150	200	180	200	200	250	300	250	160	170	200	80	220	150	150	150	200	350	300		
																						Frq.	
<b>Melico uniflorae-Quercetum cerridis ostryetosum carpinifoliae</b>																							
<i>Ostrya carpinifolia</i>	3	3	2	4	3	4	4	4	4	3	5	3	3	3	4	4	4	2	2	4	3	100	
<i>Melica uniflora</i>	1	+	1	+	1	1	1	2	1	+	+	+	+	.	+	.	+	1	1	1	+	90	
<i>Cornus mas</i>	2	2	2	1	.	2	2	1	2	2	2	2	1	.	.	1	1	2	2	2	2	86	
<i>Euphorbia amygdaloides</i>	+	+	.	+	+	+	+	+	+	+	.	.	.	.	.	.	.	+	+	1	+	67	
<i>Brachypodium sylvaticum</i>	+	+	+	.	1	+	+	+	+	+	.	.	.	.	.	.	.	+	.	.	+	52	
<i>Oenanthe pimpinelloides</i>	+	.	.	.	.	+	+	+	+	+	.	.	.	.	.	.	.	.	.	.	.	29	
<i>Crataegus laevigata</i>	2	.	.	1	2	.	.	1	2	.	.	1	.	.	.	.	.	.	.	.	.	29	
<i>Festuca heterophylla</i>	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	+	1	1	1	29	
<b>Crataego laevigatae-Quercion cerridis</b>																							
<i>Malus sylvestris</i>	.	.	.	1	1	.	.	+	+	.	.	1	.	.	.	.	.	1	.	.	+	33	
<i>Poa sylvicola</i>	+	.	.	.	+	+	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	+	29
<i>Echinops ritro</i> subsp. <i>siculus</i>	+	.	.	.	+	+	+	.	.	.	.	.	.	.	.	.	.	1	.	.	.	24	
<i>Mespilus germanica</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	+	+	1	19	
<i>Teucrium siculum</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	+	+	19	
<i>Quercus petraea</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	2	2	2	19	
<i>Erica arborea</i>	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	1	1	+	.	19	
<i>Iris foetidissima</i>	.	.	.	.	.	+	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	14	
<i>Cytisus villosus</i>	.	.	.	.	+	.	+	.	.	.	1	.	.	.	.	.	.	.	.	.	.	14	
<i>Ranunculus lanuginosus</i>	.	.	.	.	+	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	10	
<i>Asperula laevigata</i>	.	.	+	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	10	
<b>Quercetalia pubescenti-petraeae</b>																							
<i>Viola alba</i> subsp. <i>dehnhardtii</i>	+	1	+	+	+	1	1	+	1	1	+	1	+	.	+	.	+	1	+	1	1	90	
<i>Fraxinus ornus</i>	2	.	3	2	2	2	2	1	3	2	1	.	2	.	2	1	1	2	1	+	1	86	
<i>Cyclamen repandum</i>	1	+	+	.	.	.	.	+	+	+	1	1	.	+	.	+	+	1	1	.	.	62	
<i>Acer monspessulanum</i>	3	3	1	.	.	2	1	1	2	2	.	.	1	.	.	.	+	1	.	.	.	52	
<i>Buglossoides purpureoacerulea</i>	+	+	.	.	.	+	+	.	+	+	.	.	.	.	.	.	.	.	.	.	.	38	
<i>Scutellaria columnae</i> subsp. <i>columnae</i>	1	.	+	.	.	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	+	2	
<i>Allium triquetrum</i>	.	1	.	.	.	1	+	+	.	+	1	.	.	.	.	.	.	.	.	.	.	33	
<i>Quercus pubescens</i> s.l.	.	1	.	.	.	1	2	1	2	2	.	.	.	1	.	.	.	.	.	.	.	33	
<i>Stachys officinalis</i>	+	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	.	.	+	.	24	
<i>Arum italicum</i>	1	+	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	19	
<i>Melica arrecta</i>	.	.	.	.	.	+	+	.	.	+	.	.	.	.	.	.	.	.	.	+	.	19	
<i>Sorbus domestica</i>	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	14	
<i>Cercis siliquastrum</i>	.	.	2	.	.	.	.	.	.	+	1	.	.	.	.	.	.	.	.	.	.	14	
<i>Silene italica</i> subsp. <i>italica</i>	.	.	.	.	.	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	10	
<i>Carex flacca</i>	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	10	
<b>Fagetalia sylvaticae</b>																							
<i>Lathyrus venetus</i>	+	1	+	+	+	+	+	1	+	.	+	.	.	.	.	.	.	.	+	+	+	67	
<i>Anemone apennina</i>	2	3	1	+	.	.	.	.	1	+	1	+	.	.	.	.	.	+	1	+	.	52	
<i>Cyclamen hederifolium</i>	1	.	.	.	.	.	.	.	.	+	+	1	+	+	.	1	1	.	.	.	.	43	
<i>Ilex aquifolium</i>	.	.	.	.	.	.	.	1	.	.	.	.	.	.	1	1	.	1	2	1	+	33	
<i>Allium pendulinum</i>	+	.	.	.	.	.	.	+	.	.	.	+	.	.	.	.	.	.	+	1	+	33	
<i>Lapsana communis</i>	.	.	+	.	+	+	.	.	.	.	.	.	+	+	.	.	.	.	.	.	.	29	
<i>Moehringia trinervia</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	+	1	+	+	+	+	.	.	29	
<i>Viola reichenbachiana</i>	.	.	.	.	+	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	1	19	
<i>Alliaria petiolata</i>	.	.	+	.	.	+	+	.	.	.	.	.	.	+	.	.	.	.	.	.	.	19	
<i>Dactylorhiza maculata</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	+	14	
<i>Polystichum setiferum</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	+	.	.	.	+	.	14	

Relevé number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	Frq.	
<i>Viola riviniana</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	.	10
<i>Fagus sylvatica</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	1	.	10
<b>Quercio-Fagetea</b>																							
<i>Quercus cerris</i>	4	3	1	2	2	3	2	3	2	2	2	2	2	2	3	3	3	4	3	2	5	100	
<i>Hedera helix</i>	1	2	1	1	2	+	1	+	1	2	+	2	1	1	4	4	1	2	3	1	2	100	
<i>Ruscus aculeatus</i>	+	+	2	+	1	3	3	2	+	1	2	2	3	.	+	+	2	1	1	1	1	95	
<i>Tamus communis</i>	3	2	+	+	+	1	+	+	1	1	1	.	.	.	+	+	+	.	+	+	.	76	
<i>Sorbus torminalis</i>	1	.	1	.	1	.	+	+	+	+	2	.	.	1	1	1	1	1	1	1	+	+	76
<i>Acer campestre</i>	1	1	1	1	1	.	+	+	.	.	.	1	.	1	.	.	.	+	.	.	.	48	
<i>Carpinus betulus</i>	.	.	.	.	1	.	.	1	.	.	.	.	.	1	3	1	2	.	2	1	1	43	
<i>Ajuga reptans</i>	+	.	+	.	1	.	+	1	.	.	+	.	.	.	.	.	.	+	.	+	+	43	
<i>Luzula forsteri</i>	.	.	.	.	.	.	.	+	.	.	.	.	.	.	+	+	2	+	+	+	+	38	
<i>Cruciata glabra</i>	.	.	.	.	+	.	.	.	+	.	.	.	.	.	.	.	.	.	1	+	1	+	29
<i>Melittis melissophyllum</i>	1	1	.	.	.	.	.	.	+	1	+	.	.	.	.	.	.	.	.	.	.	.	24
<i>Carex sylvatica</i>	.	.	.	.	+	.	.	.	.	.	+	.	.	.	.	.	.	.	+	.	2	1	24
<i>Ulmus minor</i>	+	.	1	1	.	.	.	.	1	.	+	.	.	.	.	.	.	.	.	.	.	.	24
<i>Daphne laureola</i>	+	+	+	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	19
<i>Clematis vitalba</i>	.	.	.	.	+	1	.	.	.	.	.	1	1	.	.	.	.	.	.	.	.	.	19
<i>Castanea sativa</i>	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	2	3	+	19	
<i>Bromus ramosus</i>	.	+	.	.	+	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	19
<i>Potentilla micrantha</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	+	+	14
<i>Platanthera chlorantha</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	+	.	14
<i>Hieracium murorum</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	.	10
<i>Solidago virgaurea</i> subsp. <i>virgaurea</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	+	10
<i>Hieracium racemosum</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	10
<b>Quercetea ilicis</b>																							
<i>Rubia peregrina</i>	1	+	+	+	+	1	+	+	+	1	+	1	+	+	2	1	+	+	+	+	+	+	100
<i>Smilax aspera</i>	2	2	2	1	1	2	2	1	+	2	4	2	1	1	+	1	.	.	.	.	.	.	76
<i>Asplenium onopteris</i>	+	.	+	.	+	+	+	+	.	.	.	.	.	+	1	+	+	.	+	.	.	.	52
<i>Rosa sempervirens</i>	1	.	.	.	.	1	+	+	+	1	+	.	+	+	.	.	.	.	.	.	.	.	43
<i>Quercus ilex</i>	.	.	1	.	.	.	.	.	.	.	1	1	2	2	3	3	2	+	.	.	.	43	
<i>Asparagus acutifolius</i>	+	+	+	.	.	+	+	.	+	+	.	.	.	.	.	.	.	.	.	.	.	.	38
<i>Phillyrea latifolia</i>	.	.	+	.	.	.	.	.	.	2	1	.	1	.	+	+	+	.	.	.	.	33	
<i>Carex olbiensis</i>	.	.	.	.	.	.	.	+	.	.	.	.	.	.	+	+	+	.	+	.	.	24	
<i>Viburnum tinus</i>	1	.	+	.	.	.	.	.	.	.	.	.	.	2	.	1	+	.	.	.	.	24	
<i>Clematis flammula</i>	.	.	.	.	.	.	+	.	+	+	+	.	.	.	.	.	.	.	.	.	.	19	
<i>Arbutus unedo</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	2	.	+	14	
<i>Selaginella denticulata</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	+	.	.	.	.	14	
<i>Carex distachya</i>	.	.	.	.	.	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	10	
<i>Pistacia lentiscus</i>	.	.	.	.	.	.	.	.	.	1	1	.	.	.	.	.	.	.	.	.	.	10	
<b>Other species</b>																							
<i>Lonicera etrusca</i>	2	+	+	+	2	+	+	1	+	+	1	2	.	.	+	.	+	2	2	2	3	86	
<i>Crataegus monogyna</i>	.	+	1	1	+	1	1	1	1	+	+	.	+	.	.	.	+	1	+	+	1	76	
<i>Rubus ulmifolius</i>	+	.	+	+	1	+	1	+	+	.	+	+	+	.	.	.	.	2	1	2	1	71	
<i>Euonymus europaeus</i>	+	.	+	+	+	+	+	1	.	+	.	1	+	.	.	+	.	.	1	.	.	62	
<i>Dactylis glomerata</i>	.	.	.	.	+	+	+	+	+	.	.	.	.	.	.	.	.	.	+	+	+	+	52
<i>Geranium purpureum</i>	+	2	1	.	.	1	.	.	2	.	.	1	.	.	.	+	.	.	+	.	.	38	
<i>Stellaria media</i> subsp. <i>media</i>	+	.	+	+	.	+	.	.	.	.	.	1	+	.	.	.	.	.	.	.	.	29	
<i>Galium aparine</i>	+	.	1	.	.	+	+	+	.	.	.	.	.	.	.	.	.	+	.	.	.	29	
<i>Prunus spinosa</i>	.	.	.	+	.	+	+	.	1	.	.	.	.	.	.	.	.	.	.	.	.	+	24
<i>Sedum cepaea</i>	+	.	+	.	.	.	.	.	.	.	.	.	1	.	.	+	.	.	.	.	.	19	
<i>Campanula rapunculoides</i>	.	.	+	.	+	+	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	19	
<i>Acer opalus</i> subsp. <i>obtusatum</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1	2	1	19
<i>Juniperus communis</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	+	+	14
<i>Clinopodium vulgare</i>	.	.	.	.	+	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	+	14
<i>Prunella vulgaris</i>	.	.	+	.	.	+	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	14
<i>Asphodelus ramosus</i>	.	.	.	.	.	+	.	.	+	+	.	.	.	.	.	.	.	.	.	.	.	.	14

Relevé number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	Frq.	
<i>Silene latifolia</i> subsp. <i>alba</i>	.	.	.	.	.	+	+	.	.	.	.	.	.	.	.	.	+	.	.	.	.	14	
<i>Rhamnus alaternus</i>	+	.	.	.	.	.	.	.	.	+	.	.	.	+	.	.	.	.	.	.	.	.	14
<i>Pteridium aquilinum</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	+	14
<i>Rubus canescens</i>	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	+	10
<i>Theligonum cynocrambe</i>	.	.	+	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	10
<i>Loncomelos brevistylus</i>	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	10
<i>Gladiolus italicus</i>	.	.	.	+	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	10
<i>Klasea flavescens</i> subsp. <i>cichoracea</i>	.	.	.	.	.	.	+	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	10
<i>Asplenium trichomanes</i> subsp. <i>quad-rivalens</i>	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	10
<i>Inula conyzae</i>	.	.	+	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	10
<i>Catapodium rigidum</i>	.	.	.	.	.	+	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	10
<i>Sonchus bulbosus</i>	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	.	.	.	.	.	.	.	10
<i>Vitis vinifera</i>	.	.	.	.	.	+	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	10
<i>Sonchus oleraceus</i>	.	.	+	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	10
<i>Umbilicus rupestris</i>	.	.	1	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	10
<i>Torilis nodosa</i>	.	.	.	.	.	+	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	10

**Table 5 (Tabela 5): *Melico uniflorae-Quercetum cerridis carpinetosum betuli***

Relevé number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Altitude (m a.s.l.)	140	220	200	220	223	240	455	400	470	430	495	160	330	160	140	320	475	320	420	380
Aspect	NNW	NE		NNW	NE	NE	NNW	NNW	NNW	N	NE	NNW	SW	NW	NW	NE	N	N	NNW	NNW
Slope (°)	15	<5	<5	<5	5	5	20	30	15	25	15	15	30	15	25	30	35	45	35	30
Cover bare rock (%)	20	<5	<5	<5	<1	<1	10	<5	1	<5	<1	15	15	<5	10	15	<5	5-10	10	5
Relevé area (m <sup>2</sup> )	150	100	300	150	120	110	150	150	220	250	300	250	200	150	250	200	250	200	300	300

**Melico uniflorae-Quercetum cerridis carpinetosum betuli**

	3	5	3	4	4	4	2	2	1	1	1	2	1	1	3	4	4	3	4	4	Frq.
<i>Carpinus betulus</i>	3	5	3	4	4	4	2	2	1	1	1	2	1	1	3	4	4	3	4	4	100
<i>Melica uniflora</i>	+	.	+	+	+	+	2	1	1	1	+	1	1	1	1	1	1	1	2	1	95
<i>Cornus mas</i>	1	1	2	1	1	1	3	2	2	.	+	2	2	2	2	.	1	1	2	1	90
<i>Euphorbia amygdaloides</i>	+	.	+	+	+	+	+	+	+	+	+	+	.	.	+	.	+	+	+	1	80
<i>Ostrya carpinifolia</i>	1	.	1	.	.	.	1	2	3	3	.	3	1	2	2	2	3	1	2	2	75
<i>Brachypodium sylvaticum</i>	.	.	.	2	1	+	1	+	.	.	+	+	.	+	.	+	1	.	1	+	60
<i>Crataegus laevigata</i>	.	.	.	1	.	.	2	2	1	2	2	+	1	1	.	1	.	2	.	1	60
<i>Festuca heterophylla</i>	.	.	.	+	+	+	1	1	+	+	+	.	.	.	.	.	+	.	+	+	55
<i>Oenanthe pimpinelloides</i>	+	.	+	+	.	.	+	+	.	+	1	+	+	+	.	.	.	.	.	.	50
<b>Crataego laevigatae-Quercion cerridis</b>																					
<i>Poa sylvicola</i>	+	.	1	+	.	.	1	+	+	+	.	.	+	.	.	.	+	1	+	1	60
<i>Iris foetidissima</i>	.	.	.	.	.	.	1	+	+	+	.	+	+	.	.	+	+	1	+	+	55
<i>Malus sylvestris</i>	.	1	2	1	.	.	.	1	.	1	1	.	+	.	.	+	+	.	1	.	50
<i>Ligustrum vulgare</i>	.	1	1	1	1	+	1	.	.	.	+	.	.	.	.	+	.	.	.	.	40
<i>Echinops ritro</i> subsp. <i>siculus</i>	.	.	.	1	+	.	+	.	.	+	+	+	+	.	.	.	.	.	.	.	35
<i>Mespilus germanica</i>	.	.	.	1	.	1	1	1	.	1	3	.	+	.	.	.	.	.	.	.	35
<i>Cytisus villosus</i>	2	.	.	+	.	+	.	+	.	.	+	.	+	.	.	.	.	.	.	+	35
<i>Ranunculus lanuginosus</i>	.	.	3	.	.	.	2	.	.	+	.	.	+	+	+	.	.	.	.	.	30
<i>Rumex sanguineus</i>	.	.	+	.	.	+	.	.	.	.	.	+	.	.	.	.	.	.	.	+	25
<i>Quercus petraea</i>	.	.	.	.	.	.	.	+	.	1	.	.	.	.	.	.	.	.	2	1	20
<i>Teucrium siculum</i>	.	.	.	.	.	.	+	+	.	.	.	.	.	.	.	.	.	.	.	+	15
<i>Erica arborea</i>	.	.	.	+	1	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	15
<i>Silene flos-cuculi</i>	+	.	+	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	15
<i>Silene viridiflora</i>	+	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	10

Relevé number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Frq.
<b>Quercetalia pubescenti-petraeae</b>																					
<i>Fraxinus ornus</i>	1	.	.	1	1	1	1	1	1	+	+	2	+	1	+	2	1	1	1	1	90
<i>Viola alba</i> subsp. <i>dehnhardtii</i>	+	.	.	+	.	.	+	+	+	+	+	+	1	+	+	+	+	.	+	+	75
<i>Cyclamen repandum</i>	1	+	.	.	+	+	1	1	1	.	.	+	.	1	+	.	.	2	2	2	65
<i>Acer monspessulanum</i>	1	.	.	.	.	.	1	1	.	.	.	1	2	2	2	+	.	.	.	.	40
<i>Arum italicum</i>	.	.	.	.	.	.	+	.	+	.	.	+	.	+	+	.	.	+	+	+	40
<i>Stachys officinalis</i>	+	.	.	+	.	.	+	+	.	.	1	+	.	+	.	.	.	.	.	.	35
<i>Buglossoides purpureoacerulea</i>	.	.	.	.	.	.	+	+	.	.	.	+	+	+	.	.	.	.	+	+	35
<i>Quercus pubescens</i> s.l.	.	.	.	1	.	1	.	.	.	.	1	2	2	2	.	1	.	.	.	.	35
<i>Sorbus domestica</i>	.	+	.	1	+	.	.	+	.	.	.	+	.	.	.	.	.	.	.	1	30
<i>Scutellaria columnae</i> subsp. <i>columnae</i>	+	.	.	.	+	.	.	+	.	.	.	.	+	.	.	+	.	.	.	.	25
<i>Symphytum tuberosum</i> subsp. <i>angustif.</i>	.	.	.	+	.	.	2	+	2	.	.	.	.	.	.	.	.	.	.	+	25
<i>Emerus majus</i> subsp. <i>emeroides</i>	.	.	.	.	.	.	+	1	.	.	.	+	.	.	.	1	.	.	+	.	25
<i>Allium triquetrum</i>	.	.	.	.	.	.	.	.	.	+	.	.	.	.	1	.	.	.	.	.	10
<i>Melica arrecta</i>	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	+	.	.	.	.	10
<i>Carex flacca</i>	.	.	+	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	10
<b>Fagetalia sylvaticae</b>																					
<i>Lathyrus venetus</i>	+	.	.	+	.	.	1	+	1	+	1	1	1	+	+	1	+	1	+	1	80
<i>Anemone apennina</i>	+	.	.	.	.	.	2	+	2	+	+	+	+	2	+	.	.	+	1	.	60
<i>Ilex aquifolium</i>	1	.	1	+	.	.	.	1	1	1	1	.	.	.	.	+	1	1	1	1	60
<i>Cyclamen hederifolium</i>	+	.	.	+	.	+	1	.	1	.	.	.	.	.	.	.	.	+	+	+	40
<i>Allium pendulinum</i>	+	.	.	.	.	.	1	1	+	.	.	.	+	.	.	.	.	.	+	+	35
<i>Viola reichenbachiana</i>	.	.	.	.	.	.	.	+	+	+	2	.	.	.	.	.	1	.	1	+	35
<i>Mercurialis perennis</i>	.	.	.	.	.	.	.	+	+	.	.	+	.	.	.	.	3	.	1	1	30
<i>Dactylorhiza maculata</i>	.	.	.	.	.	.	+	+	+	+	.	.	.	+	.	.	.	.	.	.	25
<i>Alliaria petiolata</i>	.	.	2	.	.	.	.	.	.	.	.	.	+	.	.	+	.	+	+	.	25
<i>Polystichum setiferum</i>	.	.	.	.	.	.	.	+	.	+	.	.	.	.	.	.	.	.	+	+	20
<i>Galanthus nivalis</i>	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	+	+	15
<i>Cardamine bulbifera</i>	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	+	1	15
<i>Loncomelos pyrenaicus</i>	.	.	.	.	.	.	+	.	.	.	.	.	.	.	+	.	.	.	.	.	10
<i>Viola riviniana</i>	.	.	+	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	10
<i>Moehringia trinervia</i>	.	.	.	.	+	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	10
<i>Rubus hirtus</i>	.	.	.	.	.	2	.	.	.	.	1	.	.	.	.	.	.	.	.	.	10
<i>Fagus sylvatica</i>	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	1	.	.	.	10
<i>Sanicula europaea</i>	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	+	.	.	.	10
<b>Quercu-Fagetea</b>																					
<i>Quercus cerris</i>	4	3	4	2	3	4	4	4	3	3	4	4	4	3	3	2	1	2	1	1	100
<i>Hedera helix</i>	1	+	2	1	1	+	1	+	2	1	2	2	+	2	+	1	2	2	1	1	100
<i>Ruscus aculeatus</i>	1	+	2	2	2	1	2	2	2	1	2	2	2	1	+	2	2	2	1	.	95
<i>Tamus communis</i>	+	.	+	.	.	+	1	+	+	+	+	2	+	2	1	+	+	2	1	1	85
<i>Acer campestre</i>	.	.	2	1	1	1	2	1	1	.	+	+	1	1	1	+	1	2	2	1	85
<i>Ajuga reptans</i>	+	.	+	+	.	.	+	1	+	+	1	1	.	+	+	.	.	.	+	+	65
<i>Luzula forsteri</i>	1	.	+	+	1	+	+	+	.	1	+	.	.	.	.	.	+	.	+	+	60
<i>Daphne laureola</i>	.	.	.	.	.	.	+	+	1	.	+	.	.	+	+	+	+	+	+	+	55
<i>Sorbus torminalis</i>	1	.	.	.	.	.	1	1	1	.	+	1	.	.	1	1	.	.	1	1	50
<i>Clematis vitalba</i>	.	+	.	.	1	.	.	.	2	+	.	.	.	.	.	+	1	1	1	1	45
<i>Corylus avellana</i>	.	.	.	.	.	.	.	.	2	3	.	.	1	.	.	3	3	2	.	2	35
<i>Carex sylvatica</i>	.	.	+	.	.	.	+	.	+	.	.	.	.	.	.	.	.	.	+	+	25
<i>Geum urbanum</i>	.	.	+	.	.	.	.	.	.	.	+	.	.	.	.	+	+	.	.	.	25
<i>Cruciata glabra</i>	.	.	.	+	.	.	.	1	.	.	+	.	.	.	.	.	+	.	.	.	20
<i>Ulmus minor</i>	.	.	+	.	.	.	.	.	.	.	.	+	.	1	.	.	.	.	.	.	15
<i>Fragaria vesca</i>	.	.	.	.	.	.	+	.	.	.	2	.	.	.	.	.	+	.	.	.	15
<i>Campanula trachelium</i>	.	.	.	.	.	.	+	.	+	.	.	.	.	.	.	.	.	.	+	.	15
<i>Melittis melissophyllum</i>	.	.	.	.	.	.	.	.	.	.	.	+	.	+	.	.	.	.	.	.	10
<i>Bromus ramosus</i>	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	+	.	.	.	10
<i>Hieracium murorum</i>	.	.	.	.	.	.	+	.	+	.	.	.	.	.	.	.	.	.	.	.	10
<i>Platanthera chlorantha</i>	.	.	.	.	.	.	+	.	+	.	.	.	.	.	.	.	.	.	.	.	10
<i>Chaerophyllum temulum</i>	.	.	.	.	.	.	.	.	.	+	.	.	+	.	.	.	.	.	.	.	10

Relevé number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Frq.
<b>Quercetea ilicis</b>																					
<i>Rubia peregrina</i>	+	.	.	.	+	+	+	1	1	+	+	+	+	1	+	+	+	+	1	1	85
<i>Asplenium onopteris</i>	+	.	.	.	+	.	+	+	1	+	+	+	+	.	.	+	.	1	+	+	65
<i>Smilax aspera</i>	.	.	.	.	.	.	.	2	.	.	.	2	+	2	+	+	+	1	1	2	50
<i>Quercus ilex</i>	2	1	.	1	2	2	.	+	.	.	.	2	.	.	.	.	+	.	.	+	45
<i>Rosa sempervirens</i>	.	.	.	+	+	.	1	.	.	.	.	.	1	+	+	+	.	.	.	.	35
<i>Asparagus acutifolius</i>	.	.	.	.	.	.	.	.	.	.	.	+	+	+	+	+	+	.	+	.	35
<i>Phillyrea latifolia</i>	+	.	+	+	+	1	.	.	.	.	.	+	.	.	.	.	.	.	.	.	30
<i>Carex distachya</i>	+	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	.	.	.	15
<i>Carex olbiensis</i>	+	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	10
<i>Clematis flammula</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	10
<b>Other species</b>																					
<i>Lonicera etrusca</i>	1	+	+	+	+	.	2	2	2	+	+	+	+	+	+	+	+	1	+	2	95
<i>Rubus ulmifolius</i>	+	2	1	1	3	2	1	.	1	+	+	+	+	+	.	+	1	1	2	2	90
<i>Euonymus europaeus</i>	.	1	1	+	.	+	+	.	1	+	.	+	+	+	+	1	1	1	2	1	80
<i>Crataegus monogyna</i>	+	1	1	.	1	1	.	.	.	1	.	1	1	.	+	.	1	.	2	1	60
<i>Dactylis glomerata</i>	+	.	.	+	.	.	+	+	.	+	+	.	+	.	.	+	+	+	+	+	60
<i>Prunus spinosa</i>	.	1	+	.	+	.	1	.	.	.	1	.	+	+	.	+	+	.	.	.	45
<i>Geranium purpureum</i>	.	.	.	+	+	+	+	.	+	.	1	.	.	+	.	.	.	+	+	.	45
<i>Stellaria media</i> subsp. <i>media</i>	.	.	+	+	+	.	+	+	1	.	.	.	.	.	.	.	.	+	+	.	40
<i>Galium aparine</i>	.	.	1	+	+	+	+	.	.	+	.	1	.	.	.	.	.	.	.	.	35
<i>Sedum cepaea</i>	+	.	.	1	+	1	.	.	.	+	+	.	.	.	.	.	.	.	.	.	30
<i>Cornus sanguinea</i>	.	.	1	.	.	.	.	.	.	+	.	.	.	.	.	.	1	.	1	2	25
<i>Lathyrus aphaca</i>	.	.	+	+	+	+	.	.	.	.	+	.	.	.	.	.	.	.	.	.	25
<i>Campanula rapunculoides</i>	.	.	.	.	.	.	.	+	.	.	+	.	+	.	.	.	+	.	.	.	20
<i>Vicia grandiflora</i>	.	.	.	+	.	+	.	.	.	.	+	.	.	.	.	.	.	.	+	.	20
<i>Vicia narbonensis</i>	.	.	+	.	.	.	.	.	+	.	1	.	.	.	.	.	.	.	.	.	15
<i>Vicia hirsuta</i>	.	.	.	.	.	.	.	.	+	.	+	.	.	+	.	.	.	.	.	.	15
<i>Lonchocarpus brevistylus</i>	.	.	.	.	.	.	+	.	.	.	.	.	.	+	+	.	.	.	.	.	15
<i>Asphodelus ramosus</i>	.	.	.	.	.	.	.	.	.	.	.	.	+	+	+	.	.	.	.	.	15
<i>Acer opalus</i> subsp. <i>obtusatum</i>	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	1	1	15
<i>Asplenium trichomanes</i> subsp. <i>quadriv.</i>	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	+	.	+	.	.	15
<i>Inula conyzae</i>	.	.	.	.	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	+	15
<i>Juncus inflexus</i>	.	.	.	+	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	15
<i>Clinopodium vulgare</i>	.	.	.	+	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	10
<i>Lamium maculatum</i>	+	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	10
<i>Prunella vulgaris</i>	+	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	10
<i>Pteridium aquilinum</i>	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	+	.	.	10
<i>Lolium multiflorum</i>	.	.	1	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	10
<i>Vitis vinifera</i>	.	.	.	.	.	.	+	.	.	.	.	.	.	.	+	.	.	.	.	.	10

**Table 6 (Tabela 6): *Fraxino oxycarpae-Quercetum cerridis***

Relevé number	1	2	3	4	5	6	7	8	9
Altitude (m a.s.l.)	450	450	340	100	100	300	215	430	340
Aspect	NE	NE	N	W	NW	W	SW	NNW	WNW
Slope (°)	20-25	15	15	0	25	10	40	15	20
Cover bare rock (%)	5	5	25	10	20	<5	30	10	15
Relevé area (m <sup>2</sup> )	250	200	400	300	200	200	200	300	150

**Fraxino oxycarpae-Quercetum cerridis**

	1	2	3	4	5	6	7	8	9	Frq.
<i>Fraxinus angustifolia</i> subsp. <i>oxycarpa</i>	2	1	2	3	2	4	1	2	1	100
<i>Ajuga reptans</i>	+	+	+	1	+	1	.	+	+	89
<i>Ulmus minor</i>	.	+	.	1	+	1	+	1	2	78
<i>Ranunculus lanuginosus</i>	+	1	+	+	.	+	.	+	.	67
<i>Melittis melissophyllum</i>	1	+	.	+	.	.	1	.	+	56
<i>Malus sylvestris</i>	1	.	1	.	.	1	.	.	.	33
<i>Ligustrum vulgare</i>	.	.	.	.	.	.	+	.	.	11
<b>Crataego laevigatae-Quercion cerridis</b>										
<i>Oenanthe pimpinelloides</i>	+	+	+	+	+	1	+	2	.	89
<i>Crataegus laevigata</i>	1	2	1	.	.	.	1	+	1	67
<i>Poa sylvicola</i>	.	+	+	+	.	+	.	1	.	56
<i>Asperula laevigata</i>	.	+	+	+	.	+	.	+	.	56
<i>Rumex sanguineus</i>	.	.	+	+	.	+	.	+	.	44
<i>Aristolochia rotunda</i>	+	.	.	+	.	.	+	.	.	33
<i>Iris foetidissima</i>	+	+	.	.	.	.	.	+	.	33
<b>Quercetalia pubescenti-petraeae</b>										
<i>Acer monspessulanum</i>	2	1	1	1	1	3	3	3	1	100
<i>Viola alba</i> subsp. <i>dehnhardtii</i>	2	3	1	1	1	+	+	+	1	100
<i>Cornus mas</i>	2	3	2	1	2	.	1	2	3	89
<i>Fraxinus ornus</i>	2	3	2	1	1	.	2	1	3	89
<i>Arum italicum</i>	+	+	+	+	+	+	.	1	+	89
<i>Cyclamen repandum</i>	1	+	+	+	+	.	.	1	+	78
<i>Allium triquetrum</i>	.	1	+	+	1	.	+	.	+	67
<i>Ostrya carpinifolia</i>	.	2	2	.	.	.	1	.	1	44
<i>Quercus pubescens</i> s.l.	.	.	.	1	1	.	2	1	.	44
<i>Stachys officinalis</i>	+	+	.	.	.	+	.	+	.	44
<i>Asparagus acutifolius</i>	.	+	.	.	.	.	+	+	+	44
<i>Scutellaria columnae</i> subsp. <i>columnae</i>	.	.	.	+	.	.	.	+	.	33
<i>Buglossoides purpureo-caerulea</i>	.	.	.	.	+	.	+	.	+	33
<i>Melica arrecta</i>	.	+	.	.	.	.	+	.	.	22
<b>Fagetalia sylvaticae</b>										
<i>Anemone apennina</i>	2	3	+	+	+	+	.	3	+	89
<i>Lathyrus venetus</i>	1	+	+	+	+	.	1	1	+	89
<i>Euphorbia amygdaloides</i>	.	.	+	+	.	+	.	.	+	44
<i>Allium pendulinum</i>	1	+	.	.	.	.	.	+	.	33
<i>Cyclamen hederifolium</i>	1	+	.	.	.	.	.	.	.	22
<b>Quercio-Fagetea</b>										
<i>Quercus cerris</i>	3	4	1	2	3	1	3	3	3	100
<i>Tamus communis</i>	+	1	+	+	+	+	2	3	+	100
<i>Melica uniflora</i>	1	1	1	+	1	+	+	2	1	100
<i>Ruscus aculeatus</i>	+	+	+	2	+	.	+	3	+	89
<i>Acer campestre</i>	1	2	2	1	+	1	.	+	1	89
<i>Hedera helix</i>	2	1	.	1	1	.	1	3	1	78
<i>Clematis vitalba</i>	2	+	+	+	.	.	.	1	.	56
<i>Brachypodium sylvaticum</i>	.	+	+	1	.	.	1	1	.	56
<i>Sorbus torminalis</i>	1	2	1	.	.	.	.	.	1	44

Relevé number	1	2	3	4	5	6	7	8	9	Freq.
<i>Daphne laureola</i>	+	+	+	.	.	.	.	.	+	44
<i>Loncomelos pyrenaicus</i>	.	.	+	.	.	+	.	+	+	44
<i>Festuca heterophylla</i>	+	+	.	.	.	+	.	.	.	33
<i>Carpinus betulus</i>	.	1	2	.	.	.	.	.	.	22
<i>Geum urbanum</i>	.	.	.	+	.	.	.	+	.	22
<b>Quercetea ilicis</b>										
<i>Smilax aspera</i>	.	+	1	2	1	1	3	1	2	89
<i>Rubia peregrina</i>	+	+	+	+	+	.	+	1	+	89
<i>Asplenium onopteris</i>	+	+	+	.	+	.	.	+	.	56
<i>Rosa sempervirens</i>	+	.	+	.	.	+	+	.	+	56
<i>Carex distachya</i>	.	+	+	.	+	.	+	.	.	44
<i>Arisarum vulgare</i>	.	.	+	+	+	.	.	.	+	44
<i>Phillyrea latifolia</i>	.	.	.	+	2	.	.	2	.	33
<i>Carex divulsa</i>	.	.	.	1	.	.	.	+	.	22
<b>Other species</b>										
<i>Crataegus monogyna</i>	1	1	+	1	+	+	+	+	+	100
<i>Geranium purpureum</i>	2	2	1	3	2	2	+	1	+	100
<i>Euonymus europaeus</i>	+	+	+	+	1	.	.	+	+	78
<i>Rubus ulmifolius</i>	+	+	1	+	+	+	.	.	+	78
<i>Lonicera etrusca</i>	.	+	+	.	+	+	1	+	+	78
<i>Stellaria media</i> subsp. <i>media</i>	3	2	2	3	1	.	.	1	+	78
<i>Catapodium rigidum</i>	.	+	+	+	+	+	.	.	.	56
<i>Ranunculus bulbosus</i>	.	+	+	+	.	1	.	+	.	56
<i>Cynoglossum creticum</i>	.	.	+	+	.	+	.	.	+	44
<i>Euphorbia characias</i>	.	.	.	.	.	1	+	.	+	33
<i>Cytisophyllum sessilifolium</i>	.	+	.	.	.	+	+	.	.	33
<i>Prunella vulgaris</i>	.	.	1	+	.	2	.	.	.	33
<i>Loncomelos brevistylus</i>	.	+	.	.	.	+	.	.	+	33
<i>Legousia falcata</i>	.	+	+	.	.	+	.	.	.	33
<i>Sedum cepaea</i>	.	.	+	.	.	+	.	.	+	33
<i>Rubus canescens</i>	.	.	+	.	.	1	.	.	.	22
<i>Prunus spinosa</i>	.	.	.	.	.	+	.	.	1	22
<i>Lolium rigidum</i>	.	+	.	.	.	+	.	.	.	22
<i>Alliaria petiolata</i>	.	.	.	+	.	.	.	1	.	22
<i>Galium aparine</i>	.	+	.	.	.	.	.	+	.	22
<i>Smyrniium perfoliatum</i>	.	+	+	.	.	.	.	.	.	22
<i>Sherardia arvensis</i>	.	+	.	+	.	.	.	.	.	22
<i>Lamium bifidum</i>	+	+	.	.	.	.	.	.	.	22
<i>Bellis perennis</i>	.	.	+	.	.	+	.	.	.	22
<i>Klasea flavescens</i> subsp. <i>cichoracea</i>	.	.	.	.	.	+	+	.	.	22



**Table 7 (Tabela 7): *Acer monspessulanum* & *Acer campestre* comm.**

Relevé number	1	2	3	4	5	6	7	8	Frq.
Altitude (m a.s.l.)	420	320	130	430	100	160	350	60	
Aspect	NW	NW	NW	E	SW	W	SW	NW	
Slope (°)	10	20	5	10	20	5	10	10	
Cover bare rock (%)	5	10	10	10	5	<5	10	10	
<i>Acer monspessulanum</i>	3	3	3	3	5	4	4	3	100
<i>Acer campestre</i>	3	3	4	3	1	2	.	+	88
<b>Crataego laevigatae-Quercion cerridis</b>									
<i>Oenanthe pimpinelloides</i>	+	+	.	+	1	+	+	+	88
<i>Poa sylvicola</i>	1	.	1	2	.	+	+	+	75
<i>Fraxinus angustifolia</i> subsp. <i>oxycarpa</i>	2	1	1	1	1	.	.	.	63
<i>Malus sylvestris</i>	1	.	.	2	1	1	.	.	50
<i>Aristolochia rotunda</i>	.	.	.	.	2	+	1	.	38
<i>Ranunculus lanuginosus</i>	1	.	+	.	.	.	.	+	38
<i>Iris foetidissima</i>	+	+	.	+	.	.	.	.	38
<i>Rumex sanguineus</i>	.	.	+	.	+	+	.	.	38
<i>Crataegus laevigata</i>	.	1	.	1	.	.	.	.	25
<i>Asperula laevigata</i>	.	.	.	+	.	+	.	.	25
<b>Quercetalia pubescenti-petraeae</b>									
<i>Allium triquetrum</i>	.	+	+	+	2	+	2	3	88
<i>Viola alba</i> subsp. <i>dehnhardtii</i>	1	1	1	+	+	+	.	+	88
<i>Fraxinus ornus</i>	1	1	+	1	.	.	1	1	75
<i>Quercus pubescens</i> s.l.	1	.	.	.	2	2	1	1	63
<i>Cornus mas</i>	1	2	2	1	.	.	1	.	63
<i>Arum italicum</i>	1	+	.	+	.	+	.	+	63
<i>Stachys officinalis</i>	.	+	.	1	1	+	.	.	50
<i>Scutellaria columnae</i> subsp. <i>columnae</i>	.	+	+	+	+	.	.	.	50
<i>Asparagus acutifolius</i>	+	+	.	.	.	.	+	+	50
<i>Buglossoides purpureo-caerulea</i>	.	.	.	.	+	+	.	+	38
<i>Cyclamen repandum</i>	+	.	.	.	+	.	.	+	38
<i>Carpinus orientalis</i>	.	.	.	.	3	1	.	.	25
<i>Silene italica</i> subsp. <i>italica</i>	.	.	+	.	+	.	.	.	25
<i>Melica arrecta</i>	.	.	.	.	+	.	+	.	25
<b>Fagetalia sylvaticae</b>									
<i>Anemone apennina</i>	+	+	+	.	1	1	.	+	75
<i>Lathyrus venetus</i>	+	+	.	+	1	1	.	.	63
<i>Lapsana communis</i>	.	.	.	.	.	+	+	.	25
<b>Quercus-Fagetea</b>									
<i>Ruscus aculeatus</i>	2	+	+	+	+	+	1	1	100
<i>Tamus communis</i>	1	+	+	+	1	+	+	2	100
<i>Hedera helix</i>	1	1	1	+	1	1	+	1	100
<i>Melica uniflora</i>	1	1	+	1	1	+	+	1	100
<i>Quercus cerris</i>	2	2	.	.	2	1	1	.	63
<i>Ajuga reptans</i>	.	+	+	+	2	+	.	.	63
<i>Brachypodium sylvaticum</i>	1	+	+	.	.	.	.	1	50
<i>Ulmus minor</i>	1	.	+	+	.	+	.	.	50
<i>Geum urbanum</i>	.	.	+	+	+	+	.	.	50
<i>Melittis melissophyllum</i>	.	+	.	+	1	.	.	.	38
<i>Clematis vitalba</i>	.	+	+	+	.	.	.	.	38
<i>Loncomelos pyrenaicus</i>	.	.	.	+	+	+	.	.	38
<i>Polypodium vulgare</i>	+	.	.	.	.	.	.	+	25
<i>Daphne laureola</i>	.	+	.	.	+	.	.	.	25

Relevé number	1	2	3	4	5	6	7	8	Frq.
<b>Quercetea ilicis</b>									
<i>Rubia peregrina</i>	+	+	.	+	+	.	+	+	75
<i>Smilax aspera</i>	+	2	+	.	.	.	+	1	63
<i>Carex distachya</i>	.	+	+	+	.	+	.	+	63
<i>Asplenium onopteris</i>	+	+	.	.	+	.	+	+	63
<i>Phillyrea latifolia</i>	1	.	.	.	1	.	2	3	50
<i>Clematis flammula</i>	.	+	.	.	+	+	.	+	50
<i>Rosa sempervirens</i>	.	+	.	+	+	+	.	.	50
<i>Carex divulsa</i>	.	+	.	.	.	+	+	.	38
<i>Rhamnus alaternus</i>	.	.	.	.	+	.	+	+	38
<i>Quercus ilex</i>	1	.	.	.	.	.	.	1	25
<i>Pistacia lentiscus</i>	.	.	.	.	+	.	.	1	25
<b>Other species</b>									
<i>Geranium purpureum</i>	4	2	2	1	+	2	2	+	100
<i>Dactylis glomerata</i>	+	+	+	+	+	+	+	.	88
<i>Euonymus europaeus</i>	.	+	+	+	+	+	.	+	75
<i>Crataegus monogyna</i>	.	+	2	1	+	.	.	+	63
<i>Rubus ulmifolius</i>	1	+	+	+	.	+	.	.	63
<i>Stellaria media</i> subsp. <i>media</i>	+	+	1	.	.	1	.	+	63
<i>Loncomelos brevistylus</i>	+	+	+	+	.	+	.	.	63
<i>Catapodium rigidum</i>	.	+	+	.	.	+	+	.	50
<i>Theligonum cynocrambe</i>	2	2	.	1	.	+	.	.	50
<i>Ranunculus bulbosus</i>	.	+	.	+	+	+	.	.	50
<i>Torilis nodosa</i>	.	+	.	+	.	+	+	.	50
<i>Lonicera etrusca</i>	.	+	.	.	1	.	.	+	38
<i>Euphorbia characias</i>	.	.	.	.	+	+	+	.	38
<i>Lolium rigidum</i>	.	.	+	1	.	+	.	.	38
<i>Asphodelus ramosus</i>	.	+	.	.	.	+	+	.	38
<i>Alliaria petiolata</i>	+	+	.	.	.	.	2	.	38
<i>Galium aparine</i>	1	.	.	.	.	.	+	+	38
<i>Rhagadiolus stellatus</i>	.	.	.	+	.	+	+	.	38
<i>Sedum cepaea</i>	.	+	+	+	.	.	.	.	38
<i>Ligustrum vulgare</i>	.	.	.	.	.	+	.	+	25
<i>Prunus spinosa</i>	.	.	.	+	.	.	+	.	25
<i>Sherardia arvensis</i>	.	.	.	+	.	+	.	.	25
<i>Prunella vulgaris</i>	.	.	1	+	.	.	.	.	25
<i>Bellis perennis</i>	.	.	+	+	.	.	.	.	25
<i>Vitis vinifera</i>	.	1	+	.	.	.	.	.	25
<i>Sonchus bulbosus</i>	.	.	.	.	1	+	.	.	25
<i>Sonchus oleraceus</i>	.	.	+	.	.	+	.	.	25
<i>Cynoglossum creticum</i>	.	.	+	.	.	+	.	.	25
<i>Legousia falcata</i>	.	.	.	+	.	.	+	.	25

**Table 8 (Tabela 8): *Cephalanthero longifoliae-Quercetum cerridis***

Relevé number	1	2	3	
Altitude (m a.s.l.)	610	615	610	
Aspect	S	S	SSE	
Slope (°)	20	25	20	
Cover bare rock (%)	<5	5	20	
Relevé area (m <sup>2</sup> )	250	200	150	
				Frq.
<b>Crataego laevigatae-Quercion cerridis</b>				
<i>Cephalanthera longifolia</i>	1	1	1	100
<i>Quercus petraea</i>	3	1	.	67
<i>Mespilus germanica</i>	1	1	.	67
<i>Teucrium siculum</i>	1	1	.	67
<i>Crepis leontodontoides</i>	1	.	.	33
<i>Cytisus villosus</i>	1	.	.	33
<i>Lathyrus niger</i>	1	.	.	33
<i>Pulicaria odora</i>	1	.	.	33
<i>Malus sylvestris</i>	.	1	.	33
<i>Erica arborea</i>	.	.	1	33
<b>Quercetalia pubescenti-petraeae</b>				
<i>Fraxinus ornus</i>	3	2	3	100
<i>Carex flacca</i>	1	1	2	100
<i>Stachys officinalis</i>	1	.	.	33
<i>Melica arrecta</i>	.	.	1	33
<i>Quercus pubescens</i> s.l.	.	.	1	33
<b>Querco-Fagetea</b>				
<i>Quercus cerris</i>	5	4	3	100
<i>Ruscus aculeatus</i>	3	2	2	100
<i>Hieracium racemosum</i>	2	2	1	100
<i>Hedera helix</i>	2	1	2	100
<i>Ilex aquifolium</i>	1	2	1	100
<i>Castanea sativa</i>	1	1	2	100
<i>Festuca heterophylla</i>	2	1	1	100
<i>Sorbus torminalis</i>	1	1	1	100
<i>Hieracium murorum</i>	1	1	1	100
<i>Solidago virgaurea</i> subsp. <i>virgaurea</i>	1	1	1	100
<i>Cruciata glabra</i>	1	1	1	100
<i>Rubus ulmifolius</i>	1	1	1	100
<i>Fagus sylvatica</i>	1	3	.	67
<i>Ostrya carpiniifolia</i>	2	.	1	67
<i>Melica uniflora</i>	1	1	.	67
<i>Daphne laureola</i>	1	.	1	67
<i>Tamus communis</i>	1	.	1	67
<i>Campanula rapunculus</i>	1	.	.	33
<i>Carpinus betulus</i>	1	.	.	33
<i>Fragaria vesca</i>	1	.	.	33
<i>Lonicera etrusca</i>	1	.	.	33
<i>Carpinus orientalis</i>	.	1	.	33
<i>Platanthera chlorantha</i>	.	1	.	33
<i>Rubus hirtus</i>	.	1	.	33
<i>Luzula forsteri</i>	.	.	1	33

Relevé number	1	2	3	Frq.
<b>Quercetea ilicis</b>				
<i>Quercus ilex</i>	1	1	3	100
<i>Rubia peregrina</i>	1	1	2	100
<i>Carex olbiensis</i>	1	.	.	33
<i>Osyris alba</i>	.	.	2	33
<b>Other species</b>				
<i>Pteridium aquilinum</i>	1	1	1	100
<i>Dactylis glomerata</i>	1	1	1	100
<i>Deschampsia flexuosa</i>	1	.	.	33

**Table 9 (Tabela 9): *Carici olbiensis-Quercetum petraeae* ass. nova**

Relevé number	1	2	3	4	5	6	7*	8	9	10
Altitude (m a.s.l.)	540	500	593	530	600	606	540	450	510	530
Aspect	WNW	ESE	E	SE	WSW	W	W	WNW	NW	SSE
Slope (°)	10	15	15	15-20	10	10	15	10	35	15
Cover bare rock (%)	5	<5	<5	<5	<5	<5	<5	<5	5	<5
Relevé area (m <sup>2</sup> )	300	300	500	300	450	350	500	250	250	200

**Carici olbiensis-Quercetum petraeae**

											Frq.
<i>Carex olbiensis</i>	+	+	+	+	+	+	+	+	+	+	100
<i>Ilex aquifolium</i>	2	1	1	2	1	2	3	.	1	1	90
<i>Rubia peregrina</i>	2	1	+	.	+	.	2	+	.	1	70
<i>Mespilus germanica</i>	1	+	1	1	1	1	1	.	.	.	70

**Crataego laevigatae-Quercion cerridis**

<i>Quercus petraea</i>	4	3	4	4	3	3	4	3	3	4	100
<i>Teucrium siculum</i>	1	+	+	+	+	.	1	+	.	+	80
<i>Cephalanthera longifolia</i>	.	.	+	+	.	.	.	.	+	+	40
<i>Erica arborea</i>	.	+	.	.	.	.	+	.	.	2	30
<i>Cytisus villosus</i>	.	.	.	+	.	.	+	.	.	.	20
<i>Malus sylvestris</i>	.	.	.	.	+	.	+	.	.	.	20
<i>Pulicaria odora</i>	.	.	.	.	+	.	.	.	.	+	20
<i>Poa sylvicola</i>	.	.	.	.	.	.	+	.	.	+	20

**Quercetalia pubescenti-petraeae**

<i>Fraxinus ornus</i>	1	2	1	2	1	2	1	1	2	3	100
<i>Viola alba</i> subsp. <i>dehnhardtii</i>	+	+	+	+	+	+	+	+	.	1	90
<i>Scutellaria columnnae</i>	+	+	.	.	+	.	+	.	+	.	50
<i>Carex flacca</i>	.	+	+	.	.	.	+	.	.	1	40
<i>Stachys officinalis</i>	+	+	+	.	.	.	.	.	.	+	40
<i>Lonicera caprifolium</i>	.	+	.	+	+	.	.	.	.	.	30
<i>Melica arrecta</i>	.	+	.	+	.	.	.	.	.	+	30
<i>Sorbus domestica</i>	.	+	.	+	.	.	.	.	.	1	30
<i>Cornus mas</i>	+	+	.	.	.	.	.	.	.	.	20

**Fagetalia sylvaticae**

<i>Fagus sylvatica</i>	2	2	3	1	2	3	2	3	3	.	90
<i>Carpinus betulus</i>	3	1	.	2	2	2	1	1	.	.	70
<i>Dactylorhiza maculata</i> subsp. <i>fuchsii</i>	+	+	+	+	.	.	.	.	1	+	60
<i>Viola reichenbachiana</i>	+	+	+	.	.	+	.	.	.	+	50
<i>Acer pseudoplatanus</i>	+	.	.	.	+	1	.	.	.	.	30
<i>Cephalanthera rubra</i>	.	.	.	.	+	.	.	.	+	.	20
<i>Rubus hirtus</i>	+	+	.	.	.	.	.	.	.	.	20

**Quercio-Fagetea**

<i>Ruscus aculeatus</i>	3	2	4	3	4	3	2	+	+	2	100
<i>Hedera helix</i>	2	3	2	2	2	3	2	1	1	+	100
<i>Castanea sativa</i>	1	3	+	1	+	1	1	2	2	2	100
<i>Sorbus torminalis</i>	+	2	+	2	+	+	2	+	+	2	100
<i>Festuca heterophylla</i>	1	+	+	1	1	3	1	+	1	+	100
<i>Cruciata glabra</i>	+	+	+	+	+	+	1	+	+	+	100
<i>Melica uniflora</i>	1	1	+	+	2	1	1	+	+	.	90
<i>Tamus communis</i>	1	+	+	+	1	.	1	+	+	1	90
<i>Solidago virgaurea</i> subsp. <i>virgaurea</i>	.	+	+	+	+	+	+	+	1	+	90
<i>Daphne laureola</i>	+	+	+	.	+	+	+	+	+	+	90
<i>Brachypodium sylvaticum</i>	+	+	+	+	+	+	+	+	.	.	80
<i>Quercus cerris</i>	.	.	1	3	1	1	2	3	.	2	70
<i>Luzula forsteri</i>	+	.	.	+	1	+	+	+	+	.	70
<i>Ostrya carpinifolia</i>	.	3	1	.	1	2	.	3	4	.	60

Relevé number	1	2	3	4	5	6	7*	8	9	10	Frq.
<i>Hieracium murorum</i>	+	+	+	.	.	.	.	.	2	+	50
<i>Fragaria vesca</i>	+	.	+	.	+	.	.	+	.	.	40
<i>Hieracium racemosum</i>	+	.	.	+	+	.	.	.	2	.	40
<i>Platanthera chlorantha</i>	.	+	+	1	+	.	.	.	.	.	40
<i>Potentilla micrantha</i>	.	+	+	.	+	+	.	.	.	.	40
<i>Acer campestre</i>	.	.	+	.	.	.	+	.	.	.	20
<b>Quercetea ilicis</b>											
<i>Quercus ilex</i>	1	+	+	+	+	.	+	1	2	+	90
<i>Arbutus unedo</i>	.	+	.	.	.	.	+	1	+	+	50
<i>Carex distachya</i>	.	.	.	.	+	.	.	+	.	.	20
<b>Other species</b>											
<i>Lonicera etrusca</i>	1	1	+	2	2	1	2	1	1	+	100
<i>Dactylis glomerata</i>	+	+	+	+	+	+	+	.	+	+	90
<i>Pteridium aquilinum</i>	.	+	+	.	+	+	+	.	+	+	70
<i>Rubus ulmifolius</i>	.	+	.	.	+	+	+	1	.	+	60
<i>Acer opalus</i> subsp. <i>obtusatum</i>	+	2	1	.	1	.	+	.	.	.	50
<i>Carpinus orientalis</i>	.	.	+	1	+	1	+	.	.	.	50
<i>Rubus canescens</i>	+	.	.	.	.	.	+	.	+	.	30
<i>Clinopodium vulgare</i>	.	+	.	.	.	.	.	.	+	.	20
<i>Galium aparine</i>	.	.	+	+	.	.	.	.	.	.	20
<i>Silene latifolia</i> subsp. <i>alba</i>	.	.	+	.	+	.	.	.	.	.	20
<i>Euonymus europaeus</i>	.	.	.	.	+	+	.	.	.	.	20
<i>Juniperus communis</i>	.	.	.	.	.	.	+	+	.	.	20
<i>Deschampsia flexuosa</i>	.	.	.	.	.	+	.	.	1	.	20

**Table 10:** *Castanea sativa* comm. **Tabela 10:** Združba z vrsto *Castanea sativa*

Relevé number	1	2	3	4	5	6	7
Altitude (m a.s.l.)	510	480	470	456	450	340	450
Aspect	N	NE	W	NNE	NW	NNW	W
Slope (°)	15	25	40	40	40	40	30
Cover bare rock (%)	<5	<5	10	<5	5	5-10	5
Relevé area (m <sup>2</sup> )	350	600	300	300	300	300	200

	1	2	3	4	5	6	7	Frq.
<b>Crataego laevigatae-Quercion cerridis</b>								
<i>Quercus petraea</i>	+	+	1	.	.	.	+	57
<i>Teucrium siculum</i>	.	+	.	.	+	+	+	57
<i>Cephalanthera longifolia</i>	.	+	.	.	+	.	+	43
<i>Erica arborea</i>	+	.	.	.	.	+	+	43
<i>Malus sylvestris</i>	+	.	.	.	+	.	.	29
<i>Cytisus villosus</i>	.	.	+	.	+	.	.	29
<i>Mespilus germanica</i>	.	+	.	.	.	.	.	14
<b>Quercetalia pubescenti-petraeae</b>								
<i>Fraxinus ornus</i>	+	1	+	+	1	3	3	100
<i>Carex depauperata</i>	.	.	.	.	+	.	+	29
<i>Sorbus domestica</i>	+	+	.	.	.	.	.	29
<i>Carex flacca</i>	.	.	.	.	.	.	+	14
<i>Cyclamen repandum</i>	.	.	.	+	.	.	.	14
<i>Limodorum abortivum</i>	.	.	.	.	.	+	.	14
<i>Digitalis ferruginea</i>	.	.	.	.	.	.	+	14
<b>Fagetalia sylvaticae</b>								
<i>Ilex aquifolium</i>	2	+	1	1	+	2	1	100
<i>Fagus sylvatica</i>	3	.	1	3	+	1	.	71
<i>Rubus hirtus</i>	.	+	.	.	+	+	+	57
<i>Galium rotundifolium</i>	.	.	.	.	+	+	.	29
<b>Quercu-Fagetea</b>								
<i>Castanea sativa</i>	4	5	5	5	5	5	4	100
<i>Tamus communis</i>	.	+	+	+	+	+	+	86
<i>Festuca heterophylla</i>	.	+	+	+	.	+	+	71
<i>Hieracium murorum</i>	.	.	+	+	+	+	+	71
<i>Ruscus aculeatus</i>	+	+	.	+	.	+	+	71
<i>Luzula forsteri</i>	.	+	+	+	.	+	.	57
<i>Melica uniflora</i>	.	.	.	+	+	.	+	43
<i>Sorbus torminalis</i>	.	+	.	+	.	.	1	43
<i>Ostrya carpinifolia</i>	+	.	.	.	.	.	2	29
<i>Fragaria vesca</i>	.	.	.	+	+	.	.	29
<i>Hedera helix</i>	.	.	.	+	.	+	.	29
<i>Campanula trachelium</i>	.	.	.	.	+	.	+	29
<i>Solidago virgaurea</i> subsp. <i>virgaurea</i>	.	.	.	.	.	+	+	29
<i>Hieracium sabaudum</i>	.	.	+	.	.	.	.	14
<b>Quercetea ilicis</b>								
<i>Arbutus unedo</i>	+	.	.	.	1	1	1	57
<i>Quercus ilex</i>	.	.	1	.	1	1	1	57
<i>Carex olbiensis</i>	.	.	.	+	+	.	+	43
<i>Rubia peregriana</i>	.	.	.	.	.	+	+	29
<b>Other species</b>								
<i>Pteridium aquilinum</i>	1	+	1	+	+	+	+	100
<i>Rubus ulmifolius</i>	.	+	.	+	+	+	+	71
<i>Cytisus scoparius</i>	.	.	+	.	+	.	+	43

**Table 11(Tabela 11): *Fraxino orni-Fagetum sylvaticae* Ubaldi 1995**

Relevé number	1	2	3	4	5	6	7	8	9	10	11
Altitude (m a.s.l.)	600	610	610	450	620	620	620	515	600	560	510
Aspect	ESE	NE	NE	N	W	NE	SW	N	NE	N	WNW
Slope (°)	5-10	5	15	10	10	20	10	15	15	15	30
Cover bare rock (%)	<5	<5	<5	<5	<5	<5	<5	<5	5	<5	5
Relevé area (m <sup>2</sup> )	400	300	300	150	250	300	200	180	600	300	400

	1	2	3	4	5	6	7	8	9	10	11	Frq.
<b>Fraxino orni-Fagetum sylvaticae</b>												
<i>Festuca heterophylla</i>	1	2	1	+	2	2	1	2	1	1	+	100
<i>Ilex aquifolium</i>	1	3	1	.	2	1	3	1	2	3	2	91
<i>Fraxinus ornus</i>	+	+	.	1	1	.	1	1	.	.	+	64
<b>Geranio versicoloris-Fagion sylvaticae</b>												
<i>Allium pendulinum</i>	.	+	+	.	.	+	.	.	+	+	.	45
<i>Lathyrus venetus</i>	+	.	.	.	.	.	.	.	.	.	.	9
<b>Fagetalia sylvaticae</b>												
<i>Fagus sylvatica</i>	4	4	4	3	3	4	3	4	4	4	5	100
<i>Acer pseudoplatanus</i>	.	+	+	.	1	+	+	.	.	+	.	55
<i>Solidago virgaurea</i>	+	.	.	.	+	.	.	1	1	+	.	45
<i>Lactuca muralis</i>	.	+	+	.	+	+	+	.	.	.	.	45
<i>Dactylorhiza maculata</i>	.	+	.	.	+	.	.	+	+	.	.	36
<i>Viola reichenbachiana</i>	+	.	.	.	+	.	.	.	.	.	.	18
<i>Cephalanthera longifolia</i>	+	.	.	.	.	.	.	.	+	.	.	18
<i>Galium rotundifolium</i>	.	.	.	.	.	.	.	+	.	+	.	18
<b>Quercetalia pubescenti-petraeae</b>												
<i>Scutellaria columnae</i>	+	1	+	.	+	.	.	.	.	.	.	36
<i>Carex depauperata</i>	+	.	.	.	+	.	+	.	.	.	.	27
<i>Viola alba</i> subsp. <i>dehnhardtii</i>	+	.	.	.	.	.	+	.	.	.	.	18
<i>Teucrium siculum</i>	+	.	.	.	.	.	.	1	.	.	.	18
<b>Quercu-Fagetea</b>												
<i>Ruscus aculeatus</i>	3	4	4	+	2	2	3	+	1	1	+	100
<i>Castanea sativa</i>	1	2	2	2	+	1	+	+	4	2	1	100
<i>Hedera helix</i>	2	2	1	2	2	1	2	2	1	1	+	100
<i>Melica uniflora</i>	+	1	1	+	+	1	2	1	1	1	.	91
<i>Quercus petraea</i>	2	3	4	.	1	1	.	2	2	2	1	82
<i>Mespilus germanica</i>	.	1	1	+	+	.	+	1	+	+	.	73
<i>Daphne laureola</i>	+	+	+	+	+	+	.	.	.	+	.	64
<i>Tamus communis</i>	+	+	+	+	+	.	+	.	.	+	.	64
<i>Carpinus betulus</i>	3	3	1	1	.	1	1	1	.	.	.	64
<i>Hieracium murorum</i>	+	.	.	.	+	+	.	2	1	1	.	55
<i>Luzula forsteri</i>	+	+	.	.	1	.	.	1	+	1	.	55
<i>Ostrya carpinifolia</i>	.	.	1	3	4	3	2	.	.	1	.	55
<i>Hieracium racemosum</i>	+	.	+	.	.	+	.	1	.	+	.	45
<i>Platanthera chlorantha</i>	+	.	.	+	+	.	+	+	.	.	.	45
<i>Brachypodium sylvaticum</i>	+	.	.	+	.	1	+	.	.	.	.	36
<i>Potentilla micrantha</i>	.	+	+	.	+	.	.	+	.	.	.	36
<i>Carex sylvatica</i>	.	.	.	+	.	.	.	+	+	.	.	27
<i>Cruciata glabra</i>	+	+	.	.	.	.	.	1	.	.	.	27
<i>Sorbus torminalis</i>	.	+	.	1	.	.	.	1	.	.	.	27
<i>Quercus cerris</i>	.	.	.	.	.	.	3	2	.	.	.	18
<b>Quercetea ilicis</b>												
<i>Quercus ilex</i>	+	2	+	.	+	.	+	1	+	1	1	82
<i>Rubia peregrina</i>	+	.	+	+	.	.	+	1	.	+	.	55
<i>Carex olbiensis</i>	+	.	.	+	.	.	.	+	.	+	.	36
<i>Asplenium onopteris</i>	.	+	.	.	.	.	+	+	.	.	.	27
<i>Laurus nobilis</i>	+	.	.	.	.	.	.	+	.	.	.	18

Relevé number	1	2	3	4	5	6	7	8	9	10	11	Frq.
<b>Other species</b>												
<i>Lonicera etrusca</i>	+	2	2	1	1	+	2	+	+	1	.	91
<i>Pteridium aquilinum</i>	+	+	.	.	+	+	+	.	+	+	.	64
<i>Dactylis glomerata</i>	+	+	.	.	+	.	.	+	.	+	.	45
<i>Rubus ulmifolius</i>	.	+	+	3	.	+	+	.	.	.	.	45
<i>Acer opalus</i> subsp. <i>obtusatum</i>	+	.	.	.	+	.	1	+	.	.	.	36
<i>Rubus canescens</i>	.	+	.	.	+	.	.	.	.	.	+	27
<i>Euonymus europaeus</i>	+	.	+	.	.	.	.	.	.	.	.	18
<i>Viola riviniana</i>	.	2	.	.	.	.	.	.	.	1	.	18
<i>Cytisus scoparius</i>	.	+	.	.	.	.	.	+	.	.	.	18
<i>Carpinus orientalis</i>	.	.	.	.	2	.	1	.	.	.	.	18
<i>Lonicera caprifolium</i>	.	.	.	.	.	+	.	.	.	+	.	18

**Table 12 (Tabela 12):** *Polysticho setiferi-Alnetum glutinosae* ass. nova

Relevé number	1*	2	3	4	5	6	7	8	9	10	11
Altitude (m a.s.l.)	360	360	340	300	280	176	330	325	215	190	160
Aspect	N	NE	N	E	E	NNE	W	W			
Slope (°)		5-40	5-45	5-40	5-40	5-30	5-40	5-40	0-35	0-40	0-40
Cover bare rock (%)		15				30					
Relevé area (m <sup>2</sup> )		300	250	300	200	300	150	200	500	400	600

<b>Polysticho setiferi-Alnetum glutinosae</b>												Frq.
<i>Polystichum setiferum</i>	2	2	1	2	3	1	2	.	1	2	3	91
<i>Ilex aquifolium</i>	2	2	3	2	.	.	.	.	2	2	2	64
<i>Hypericum androsaemum</i>	1	1	+	+	+	.	.	.	1	.	+	64
<i>Blechnum spicant</i>	1	1	.	.	1	.	+	2	1	1	.	64
<b>Osmundo-Alnion</b>												
<i>Osmunda regalis</i>	3	3	2	3	3	.	.	2	+	+	.	73
<b>Populetalia</b>												
<i>Athyrium filix-femina</i>	3	4	2	+	2	2	3	3	2	1	1	100
<i>Alnus glutinosa</i>	5	4	4	4	3	5	.	.	3	4	4	82
<i>Carex remota</i>	2	2	2	2	2	2	+	+	.	.	.	73
<i>Carex pendula</i>	.	+	.	+	.	1	2	2	2	1	2	73
<b>Quercetalia pubescenti-petraeae</b>												
<i>Fraxinus ornus</i>	1	1	+	3	+	+	1	1	2	2	2	100
<i>Cyclamen repandum</i>	+	.	+	.	.	.	.	.	+	2	2	45
<i>Scutellaria columnae</i>	+	.	.	.	+	.	+	2	.	.	.	36
<i>Viola alba</i> subsp. <i>dehnhardtii</i>	.	+	1	1	+	.	.	.	.	.	.	36
<i>Cornus mas</i>	1	.	.	2	1	.	.	.	.	.	.	27
<i>Rumex sanguineus</i>	.	.	.	.	.	+	.	+	.	+	.	27
<i>Arum italicum</i>	.	.	.	.	.	.	.	.	.	+	1	18
<b>Fagetalia sylvaticae</b>												
<i>Viola reichenbachiana</i>	+	1	2	2	1	1	+	1	1	1	1	100
<i>Carpinus betulus</i>	2	2	3	3	4	.	1	2	1	2	1	91
<i>Lactuca muralis</i>	1	+	+	+	+	+	+	1	.	.	.	73
<i>Sanicula europaea</i>	+	+	.	2	1	.	2	2	+	.	.	64
<i>Circaea lutetiana</i>	2	.	+	.	.	1	.	1	+	1	1	64
<i>Lathyrus venetus</i>	.	.	.	+	1	+	1	.	.	.	+	45
<i>Euphorbia amygdaloides</i>	+	.	.	.	+	+	.	+	.	.	.	36
<i>Fagus sylvatica</i>	+	1	.	.	.	.	5	4	.	.	.	36
<i>Dactylorhiza maculata</i> subsp. <i>fuchsii</i>	+	+	.	+	.	.	.	.	.	.	.	27



Relevé number	1*	2	3	4	5	6	7	8	9	10	11	Frq.
<i>Cyclamen hederifolium</i>	.	.	+	.	.	.	+	+	.	.	.	27
<i>Mercurialis perennis</i>	.	.	.	.	.	2	.	.	.	+	2	27
<i>Anemone nemorosa</i>	.	.	.	.	.	.	.	.	3	+	2	27
<i>Rubus hirtus</i>	+	.	.	.	+	.	.	.	.	.	.	18
<i>Cardamine impatiens</i>	+	.	.	.	.	.	.	.	.	+	.	18
<i>Helleborus bocconeii</i> subsp. <i>bocconeii</i>	.	.	.	.	.	.	.	.	+	.	1	18
<b>Quercu-Fagetea</b>												
<i>Hedera helix</i>	3	3	4	4	4	3	3	4	3	2	2	100
<i>Melica uniflora</i>	1	2	1	1	1	1	1	+	1	1	2	100
<i>Acer campestre</i>	+	+	+	+	+	1	1	.	1	+	1	91
<i>Tamus communis</i>	1	+	+	1	+	+	.	.	1	+	1	82
<i>Brachypodium sylvaticum</i>	1	+	1	+	+	1	1	.	1	.	.	73
<i>Clematis vitalba</i>	+	+	+	.	1	+	.	.	2	1	2	73
<i>Quercus petraea</i>	+	1	+	+	+	.	.	.	1	1	.	64
<i>Carex sylvatica</i>	.	.	+	+	1	.	+	.	1	+	+	64
<i>Ranunculus lanuginosus</i>	+	.	+	1	.	.	.	.	+	1	2	55
<i>Ruscus aculeatus</i>	.	.	+	+	+	.	.	.	+	2	1	55
<i>Castanea sativa</i>	1	1	1	.	.	.	+	1	.	.	.	45
<i>Sorbus torminalis</i>	+	1	.	+	.	.	.	+	+	.	.	45
<i>Corylus avellana</i>	.	.	.	.	2	1	.	.	2	2	2	45
<i>Festuca heterophylla</i>	.	+	1	+	+	.	.	.	.	.	.	36
<i>Cruciata glabra</i>	.	.	+	+	+	.	.	.	.	.	.	27
<i>Ostrya carpinifolia</i>	.	.	.	.	.	.	.	.	2	1	1	27
<i>Malus sylvestris</i>	.	+	+	.	.	.	.	.	.	.	.	18
<i>Ajuga reptans</i>	.	.	+	.	.	.	.	+	.	.	.	18
<i>Quercus cerris</i>	.	.	.	+	.	.	.	.	1	.	.	18
<i>Luzula forsteri</i>	.	.	.	.	+	.	.	+	.	.	.	18
<i>Dryopteris filix-mas</i>	.	.	.	.	.	.	.	.	1	+	.	18
<b>Quercetea ilicis</b>												
<i>Rubia peregrina</i>	1	1	+	+	+	.	+	.	+	.	+	73
<i>Quercus ilex</i>	.	.	1	1	1	.	2	+	1	+	1	73
<i>Asplenium onopteris</i>	.	.	.	+	+	.	1	+	+	1	+	64
<i>Carex olbiensis</i>	.	+	.	.	.	.	+	.	.	.	.	18
<i>Arbutus unedo</i>	.	+	.	.	.	.	.	.	1	.	.	18
<i>Laurus nobilis</i>	.	.	.	.	.	.	.	+	1	.	.	18
<b>Other species</b>												
<i>Rubus ulmifolius</i>	2	2	3	+	2	2	2	+	.	.	.	73
<i>Pteridium aquilinum</i>	1	+	+	1	1	.	+	.	.	.	.	55
<i>Crataegus monogyna</i>	+	+	1	+	1	.	.	.	+	.	.	55
<i>Lonicera etrusca</i>	2	1	2	1	1	.	.	.	.	.	.	45
<i>Euonymus europaeus</i>	+	.	.	+	.	+	.	+	.	.	.	36
<i>Sambucus nigra</i>	.	.	.	.	.	3	.	2	.	1	1	36
<i>Acer opalus</i> subsp. <i>obtusatum</i>	+	+	+	.	.	.	.	.	.	.	.	27
<i>Rubus canescens</i>	.	.	+	+	+	.	.	.	.	.	.	27
<i>Cornus sanguinea</i>	.	.	.	.	.	2	.	.	+	.	1	27
<i>Asplenium trichomanes</i> subsp. <i>quadrivalens</i>	.	.	.	.	.	.	.	+	.	+	+	27
<i>Primula vulgaris</i>	.	.	.	.	.	.	.	.	1	1	2	27
<i>Rubus caesius</i>	.	.	.	.	.	.	.	.	2	1	1	27
<i>Symphytum bulbosum</i>	.	.	.	.	.	.	.	.	1	1	1	27
<i>Prunus spinosa</i>	1	.	+	.	.	.	.	.	.	.	.	18
<i>Lonicera caprifolium</i>	+	.	.	.	.	.	.	.	+	.	.	18
<i>Polypodium vulgare</i>	.	.	.	.	.	.	.	.	.	+	1	18

**Table 13 (Tabela 13): *Cyclamino repandi-Quercetum ilicis***

Relevé number	1	2	3	4	5	6	7	8	9	10	11	12	13	14*	15	16	
Altitude (m a.s.l.)	45	100	40	140	60	80	70	133	130	110	65	50	30	43	40	100	
Aspect	NNW	WSW	NW	S	SSW	SW	SW	ESE	ESE	SW	WNW	SW	NW	W	WSW	WNW	
Slope (°)	20	15	5	25	10	10	15	25	10	55	15	<5	5	<5	15	20	
Cover bare rock (%)	5	10	10	10	<5	5	5	5	5	40	<5	<5	5	10	20	5	
Relevé area (m <sup>2</sup> )	280	110	150	110	180	110	110	110	100	150	150	150	120	300	180	100	
<b>Cyclamino repandi-Quercetum ilicis</b>																	
<i>Pistacia lentiscus</i>	1	1	2	3	3	3	4	2	1	3	3	3	1	1	1	3	Frq. 100
<i>Cyclamen repandum</i>	1	+	+	+	1	+	+	.	.	.	2	1	1	3	2	+	81
<i>Arisarum vulgare</i>	.	+	.	+	1	1	.	+	1	.	.	.	.	.	+	.	44
<i>Emerus majus</i> subsp. <i>emeroides</i>	.	.	.	.	.	.	.	.	.	+	.	+	.	.	+	.	19
<i>Myrtus communis</i>	.	.	.	+	.	.	.	.	.	.	.	1	.	.	.	2	19
<i>Ampelodesmos mauritanicus</i>	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	6
<b>Cyclamino-Quercetum ilicis quercetosum cerridis subass. nov.</b>																	
<i>Quercus cerris</i>	.	.	.	.	.	.	.	.	.	.	1	1	2	3	1	1	38
<i>Brachypodium sylvaticum</i>	+	.	+	.	.	.	+	+	.	.	.	+	.	.	+	.	38
<i>Viola alba</i> subsp. <i>dehnhardtii</i>	.	.	+	.	.	.	.	.	.	.	.	+	.	+	.	.	19
<i>Anemone apennina</i>	.	.	.	.	.	.	.	.	.	.	.	.	+	+	+	.	19
<b>Quercion ilicis &amp; Quercetalia ilicis</b>																	
<i>Phillyrea latifolia</i>	2	1	2	3	3	3	3	3	1	1	+	3	2	2	1	4	100
<i>Quercus ilex</i>	5	4	4	4	4	4	4	5	5	3	5	4	5	4	5	3	100
<i>Carex halleriana</i>	.	.	+	1	.	.	.	.	.	+	1	1	.	.	+	+	44
<i>Carex distachya</i>	.	.	+	.	+	.	.	.	.	.	.	.	+	+	.	.	25
<i>Viburnum tinus</i>	+	.	.	.	.	.	1	.	.	2	.	.	.	.	.	.	19
<i>Laurus nobilis</i>	+	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	13
<b>Quercetea ilicis</b>																	
<i>Rubia peregrina</i>	+	+	1	+	+	.	+	+	+	1	1	1	1	+	+	+	94
<i>Smilax aspera</i>	2	2	1	1	2	.	2	1	1	.	2	3	2	2	2	1	88
<i>Osyris alba</i>	+	+	1	+	+	.	+	+	+	+	+	+	+	.	.	1	75
<i>Clematis flammula</i>	.	.	+	+	+	+	+	+	+	1	+	+	+	.	.	.	63
<i>Asparagus acutifolius</i>	.	.	+	+	+	.	.	+	+	+	+	+	+	.	.	.	56
<i>Rosa sempervirens</i>	.	.	+	+	.	.	+	.	.	.	+	+	+	.	+	.	44
<i>Rhamnus alaternus</i>	+	.	1	.	+	.	.	+	2	+	.	.	.	.	.	.	38
<i>Lonicera implexa</i>	.	.	.	+	.	.	.	.	.	+	.	.	.	.	.	.	13
<i>Arbutus unedo</i>	.	.	.	1	.	.	.	.	.	+	.	.	.	.	.	.	13
<i>Erica arborea</i>	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	3	13
<b>Quercetalia pubescenti-petraeae &amp; Quercio-Fagetea</b>																	
<i>Acer monspessulanum</i>	.	1	1	1	2	1	1	.	.	1	1	2	1	3	1	1	81
<i>Quercus pubescens</i> s.l.	2	3	3	.	.	+	+	1	.	2	1	3	2	1	1	2	81
<i>Fraxinus ornus</i>	.	1	+	1	1	.	.	.	.	1	+	1	1	.	1	1	63
<i>Allium triquetrum</i>	.	.	+	.	.	.	.	.	.	.	+	+	+	+	+	.	38
<i>Cyclamen hederifolium</i>	.	.	.	.	.	.	.	.	.	.	2	+	+	.	+	+	31
<i>Lathyrus venetus</i>	.	.	+	.	.	.	.	.	.	.	.	.	+	.	.	.	13
<i>Stachys officinalis</i>	.	.	+	.	.	.	.	.	.	.	.	+	.	.	.	.	13
<i>Cercis siliquastrum</i>	.	.	.	.	.	.	+	.	.	+	.	.	.	.	.	.	13
<b>Other species</b>																	
<i>Tamus communis</i>	2	1	1	+	1	2	2	+	1	1	+	+	+	+	2	.	94
<i>Ruscus aculeatus</i>	1	+	+	.	.	.	.	.	.	+	1	+	+	1	+	+	63
<i>Crataegus monogyna</i>	.	.	+	.	.	.	.	.	.	+	.	+	.	.	.	.	19
<i>Rubus ulmifolius</i>	+	.	.	.	.	+	.	.	.	.	.	.	.	.	+	.	19
<i>Sonchus oleraceus</i>	.	.	.	+	.	.	.	.	.	.	+	.	.	+	+	.	25
<i>Hedera helix</i>	+	.	+	.	.	.	.	.	.	+	.	.	.	.	.	.	19
<i>Pulicaria odora</i>	.	.	+	.	.	.	.	.	.	.	+	+	.	.	.	.	19
<i>Klasea flavescens</i> subsp. <i>cichoracea</i>	.	.	+	.	.	.	.	.	.	+	.	+	.	.	.	.	19
<i>Carex olbiensis</i>	+	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	13
<i>Melica arrecta</i>	.	.	.	.	.	.	.	.	.	+	.	.	.	.	+	.	13

**Table 14 (Tabela 14): *Arbuto unedonis-Quercetum ilicis* ass.nova**

Relevé number	1	2	3	4	5	6	7*	8	9	10	11	12	13	14	15	16	
Altitude (m a.s.l.)	275	200	150	180	240	190	170	180	115	230	140	120	180	274	280	195	
Aspect	SW	NE	SW	SSW	S	ESE	ESE	N	N	ESE	E	ENE	NNW	NE	N	WNW	
Slope (°)	25	15	40	20	<10	20	25	45	10	10	10	35	70	15	15	20	
Cover bare rock (%)	<5	<5	5		<5	5	5	<5	5-15	<5	10	15	7-8		20	5	
Relevé area (m <sup>2</sup> )	160	100	200	230	140	100	250	100	150	200	200	150	230	100	150	120	
<b>Arbuto unedonis-Quercetum ilicis</b>																	
<i>Fraxinus ornus</i>	2	+	2	2	1	1	2	2	1	1	2	2	2	2	2	2	Frq. 100
<i>Asplenium onopteris</i>	+	+	1	1	+	+	1	1	+	+	+	+	1	+	+	+	100
<i>Quercus cerris</i>	2	2	1	1	1		2	2	2	2	2	2	1	1	1	1	94
<i>Arbutus unedo</i>	1	.	.	1	3	1	2	+	.	.	1	.	2	2	2	2	69
<i>Acer monspessulanum</i>	1	1	2	1	.	1	1	1	2	.	2	2	1	.	.	.	69
<i>Erica arborea</i>	2	1	.	1	1	1	1	2	.	.	.	.	1	.	.	.	50
<b>Quercion ilicis</b>																	
<i>Quercus ilex</i>	3	4	3	4	4	4	4	3	5	5	4	4	3	3	4	4	100
<i>Cyclamen repandum</i>	2	+	2	1	+	+	2	+	3	+	1	+	1	+	+	+	100
<i>Ruscus aculeatus</i>	1	+	+	1	+	+	1	+	2	+	1	1	+	+	.	+	94
<i>Phillyrea latifolia</i>	3	3	.	1	2	1	1	2	1	+	1	1	1	+	.	+	88
<i>Viburnum tinus</i>	.	.	.	.	1	.	2	2	1	.	1	1	2	2	.	.	50
<i>Carex distachya</i>	.	+	.	+	.	+	.	+	+	.	+	.	.	.	.	.	38
<i>Laurus nobilis</i>	.	.	.	.	.	.	.	.	+	.	.	.	3	2	.	.	19
<b>Quercetalia ilicis &amp; Quercetea ilicis</b>																	
<i>Rubia peregrina</i>	+	+	1	1	+	2	1	+	1	+	2	+	1	+	.	1	94
<i>Smilax aspera</i>	+	+	+	+	2	+	+	1	1	+	1	+	1	2	.	1	94
<i>Myrtus communis</i>	1	1	.	.	+	.	.	+	.	.	.	.	.	1	1	.	38
<i>Asparagus acutifolius</i>	+	.	.	.	+	.	+	.	+	.	.	.	.	.	.	.	25
<b>Quercetalia pubescenti-petraeae &amp; Querco-Fagetea</b>																	
<i>Quercus pubescens</i> s.l.	1	2	1	3	1	3	2	1	2	1	2	1	.	.	2	1	88
<i>Carex olbiensis</i>	+	.	.	.	.	+	.	.	1	+	+	+	.	.	.	.	38
<i>Hedera helix</i>	.	.	.	.	.	.	.	.	.	+	2	1	+	.	.	1	31
<i>Anemone apennina</i>	+	.	.	.	.	.	+	+	1	.	+	.	.	.	.	.	31
<i>Sorbus torminalis</i>	.	.	.	.	.	.	.	1	.	+	+	+	.	+	.	.	31
<i>Moehringia trinervia</i>	.	.	.	+	.	+	.	.	.	.	+	.	+	.	.	+	31
<i>Arum italicum</i>	.	.	+	.	.	.	.	.	.	.	+	+	+	.	.	.	25
<i>Sorbus domestica</i>	.	.	.	.	.	.	.	.	.	+	1	1	.	1	.	.	25
<i>Viola alba</i> subsp. <i>dehnhardtii</i>	.	.	.	.	+	.	.	.	.	+	+	+	.	.	.	.	25
<i>Ostrya carpinifolia</i>	.	.	.	.	.	.	1	.	.	+	.	.	.	.	.	2	19
<i>Celtis australis</i>	.	.	.	.	.	.	.	.	.	.	+	+	.	.	+	.	19
<i>Luzula forsteri</i>	.	.	.	.	.	.	+	.	1	.	.	.	.	.	.	.	13
<i>Rubus hirtus</i>	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	13
<i>Melica uniflora</i>	.	.	.	.	.	.	.	+	.	.	.	+	.	.	.	.	13
<i>Silene latifolia</i> subsp. <i>alba</i>	.	.	.	.	.	.	.	.	+	.	+	.	.	.	.	.	13
<i>Acer campestre</i>	.	.	.	.	.	.	.	.	.	.	.	1	.	.	2	.	13
<i>Allium triquetrum</i>	.	.	r	+	.	.	.	.	.	.	.	.	.	.	.	.	6
<b>Other species</b>																	
<i>Tamus communis</i>	+	.	1	+	+	+	+	.	+	1	.	1	+	+	1	.	81
<i>Asplenium trichomanes</i> subsp. <i>quadriv.</i>	.	.	2	.	.	.	.	1	+	+	.	+	.	.	.	.	38
<i>Selaginella denticulata</i>	.	.	+	+	.	+	+	.	.	.	.	+	.	.	.	.	38
<i>Geranium purpureum</i>	.	.	.	.	.	.	+	+	+	+	.	+	.	.	.	.	38
<i>Cyclamen hederifolium</i>	1	.	.	.	.	.	2	+	.	+	.	.	.	.	.	.	25
<i>Cytisus villosus</i>	.	.	.	+	.	.	+	.	1	.	.	.	.	.	+	.	25
<i>Lathyrus clymenum</i>	.	.	2	+	.	.	.	.	.	.	.	.	.	.	.	.	13
<i>Fumaria flabellata</i>	.	.	1	.	.	.	.	.	.	.	.	.	+	.	.	.	13
<i>Stellaria media</i> subsp. <i>media</i>	.	.	+	.	.	.	.	.	+	.	.	.	.	.	.	.	13
<i>Rubus ulmifolius</i>	.	.	.	.	.	+	.	.	+	.	.	.	.	.	.	.	13
<i>Polypodium vulgare</i>	.	.	.	.	.	.	+	.	+	.	.	.	.	.	.	.	13

Relevé number	1	2	3	4	5	6	7*	8	9	10	11	12	13	14	15	16	Frq.
<i>Piptatherum miliaceum</i>	.	.	.	.	.	.	.	.	1	+	.	.	.	.	.	.	13
<i>Galium aparine</i>	.	.	.	.	.	.	.	.	1	.	+	.	.	.	.	.	13
<i>Fumaria capreolata</i>	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	+	13
<i>Sambucus nigra</i>	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	13
<i>Sedum cepaea</i>	.	.	.	.	.	.	.	.	.	.	.	+	.	.	+	.	13

**Table 15:** *Quercus suber* comm.

**Tabela 15:** Združba z vrsto *Quercus suber*

Relevé number	1	2	3	4
Altitude (m a.s.l.)	280	300	450	460
Aspect	WNW	SE	SE	SW
Slope (°)	20	30-40	15	15
Cover bare rock (%)	10	30	<5	<5
Relevé area (m <sup>2</sup> )	120	150	120	100

<b>Quercion ilicis &amp; Quercetalia ilicis</b>					Frq.
<i>Quercus suber</i>	3	4	3	2	100
<i>Quercus ilex</i>	1	2	1	+	100
<i>Ruscus aculeatus</i>	1	+	2	1	100
<i>Asplenium onopteris</i>	+	+	.	+	75
<i>Carex distachya</i>	+	.	.	+	50
<i>Cyclamen repandum</i>	.	.	+	+	50
<i>Phillyrea latifolia</i>	1	2	.	.	50
<b>Quercetea ilicis</b>					
<i>Arbutus unedo</i>	2	3	1	1	100
<i>Asparagus acutifolius</i>	+	+	+	+	100
<i>Rubia peregrina</i>	+	+	+	+	100
<i>Erica arborea</i>	3	.	1	+	75
<i>Smilax aspera</i>	+	2	+	.	75
<i>Lonicera implexa</i>	+	+	.	.	50
<i>Osyris alba</i>	+	1	.	.	50
<b>Quercetalia pubescenti-petraeae</b>					
<i>Fraxinus ornus</i>	+	1	1	1	100
<i>Quercus cerris</i>	2	.	1	2	75
<i>Quercus pubescens</i> s.l.	2	2	.	.	50
<i>Sorbus domestica</i>	+	.	.	1	50
<i>Allium triquetrum</i>	.	.	+	+	50
<i>Brachypodium sylvaticum</i>	.	.	+	+	50
<i>Melica uniflora</i>	.	.	+	+	50
<b>Querco-Fagetea</b>					
<i>Hedera helix</i>	+	+	2	1	100
<i>Tamus communis</i>	.	+	+	+	75
<i>Castanea sativa</i>	.	.	2	1	50
<i>Viola reichenbachiana</i>	.	.	+	+	50
<b>Other species</b>					
<i>Myrtus communis</i>	2	1	.	.	50
<i>Cistus salvifolius</i>	+	.	+	.	50
<i>Cytisus villosus</i>	+	.	+	.	50
<i>Rubus ulmifolius</i>	.	.	+	1	50

Table 16 (Tabela 16): *Erico arboreae-Arbutetum unedonis*

Relevé number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Altitude (m a.s.l.)	350	350	360	400	370	350	345	340	230	240	240	235	200	210	240	280	100	174	310	195	320	300	300	220	
Aspect	S	SSE	SSE	NW	W	SE	ESE	NE	NW	S	ENE	SW	WNW	W	NE	W	SE	WSW	SE	NE	SE	NNW	NNE	SW	
Slope (°)	5-10	10	10	15	15	20	20	15	10	<10	10	15	30	25	<5	20	30-35	25	25	20-25	30	20	15	30	
Cover bare rock (%)	20	10	5	25	10	10	20	20	5	<5	<5	15	<10	10	10	15	20	20	25	10	15	5	<5	10	
Relevé area (m <sup>2</sup> )	200	120	130	60	120	100	100	130	120	140	80	100	80	150	70	120	120	100	120	180	120	100	120	120	
<b>Erico arboreae-Arbutetum unedonis</b>																									
<i>Arbutus unedo</i>	5	5	5	4	4	5	4	4	2	3	3	3	3	4	2	3	3	3	3	3	2	2	2	2	100
<i>Erica arborea</i>	2	2	2	1	2	1	3	3	1	1	2	2	2	2	3	2	1	3	1	1	1	2	1	3	100
<i>Pulicaria odora</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	+	13
<b>Thermophilous variant differential species</b>																									
<i>Quercus ilex</i>	.	1	1	1	+	.	+	1	2	4	3	2	2	1	3	2	4	2	4	2	3	3	3	2	100
<i>Phillyrea latifolia</i>	1	.	.	1	1	.	.	1	2	2	1	2	3	1	3	2	2	2	2	2	1	2	1	1	2
<i>Myrtus communis</i>	.	.	.	.	.	.	.	.	1	+	2	+	.	1	1	2	1	+	.	2	1	1	1	1	81
<i>Viburnum tinus</i>	.	.	.	.	.	.	.	+	1	1	1	3	1	.	.	.	.	.	.	.	.	.	.	.	31
<b>Mesophilous variant differential species</b>																									
<i>Quercus petraea</i>	+	.	1	1	1	1	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	0
<i>Melica uniflora</i>	.	+	.	.	.	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	0
<i>Castanea sativa</i>	.	.	.	.	1	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	0
<b>Quercetalia ilicis</b>																									
<i>Asplenium onopteris</i>	.	.	.	+	.	.	+	+	.	+	.	.	+	.	.	+	+	1	+	1	.	.	.	+	56
<i>Asparagus acutifolius</i>	.	.	.	.	+	.	.	.	.	+	.	.	.	.	+	+	.	+	.	+	.	.	.	+	38
<i>Carex distachya</i>	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	+	+	25
<i>Carex olbiensis</i>	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	6
<b>Quercetalia ilicis</b>																									
<i>Rubia perigrina</i>	1	2	+	+	+	1	1	1	.	+	+	+	+	+	2	+	+	+	+	1	1	+	.	+	88
<i>Smilax aspera</i>	+	.	.	.	+	2	+	.	2	2	1	1	1	3	1	2	.	.	1	2	2	2	.	+	81
<i>Selaginella denticulata</i>	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	+	.	.	.	.	.	.	13
<i>Carex halleriana</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	13
<b>Quercetalia pubescenti-petraeae</b>																									
<i>Fraxinus ornus</i>	1	3	2	1	2	2	2	2	100	1	1	1	2	2	1	1	1	1	+	2	2	2	2	2	94
<i>Acer monspessulanum</i>	1	.	.	.	.	.	+	2	38	.	.	.	.	.	2	1	1	1	.	.	.	.	.	.	25
<i>Quercus pubescens</i> s.l.	1	1	.	.	+	.	.	.	38	1	1	2	1	1	1	2	.	1	.	.	.	.	.	1	69
<i>Sorbus domestica</i>	1	.	1	.	.	.	+	.	38	.	.	.	.	1	.	.	.	1	.	.	.	.	.	.	13
<i>Cyclamen repandum</i>	.	+	.	.	.	.	.	.	13	+	+	+	+	.	+	1	+	1	.	1	.	.	+	1	75
<i>Allium triquetrum</i>	.	.	.	.	.	.	.	.	0	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	13
<i>Viola alba</i> subsp. <i>dehnhardtii</i>	.	.	.	.	.	.	+	.	13	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	6

Relevé number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Frq.	
<b>Quercus-Fagetea</b>																										
<i>Tamus communis</i>	1	+	+	.	+	+	+	+	88	1	+	+	1	+	.	1	+	1	+	1	+	+	+	+	94	
<i>Hedera helix</i>	.	+	.	+	+	+	+	+	75	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	6
<i>Quercus cerris</i>	1	1	3	.	.	.	1	1	50	1	.	.	1	2	.	.	.	.	.	.	.	.	.	1	25	
<i>Brachypodium sylvaticum</i>	+	+	.	.	.	.	+	.	38	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	6	
<i>Sorbus torminalis</i>	1	.	.	.	1	+	+	38	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	6	
<i>Ilex aquifolium</i>	.	.	.	.	+	.	.	.	25	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	0	
<i>Ruscus aculeatus</i>	+	.	.	.	.	.	+	+	25	+	+	.	.	2	+	+	+	+	+	+	.	.	+	+	56	
<i>Ostrya carpinifolia</i>	.	.	.	.	.	.	1	.	13	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	13	
<b>Other species</b>																										
<i>Lonicera caprifolium</i>	+	+	.	.	.	.	.	.	25	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	0
<i>Crataegus monogyna</i>	.	.	+	.	.	.	+	.	25	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	6	
<i>Rubus ulmifolius</i>	.	.	.	.	.	+	+	.	25	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	6
<i>Lonicera etrusca</i>	.	.	.	.	.	.	+	.	13	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	6	
<i>Piptatherum miliaceum s.l.</i>	.	.	.	.	.	.	+	.	13	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	6	
<i>Cytisus villosus</i>	.	.	.	.	.	.	.	+	13	.	.	.	.	.	.	.	+	+	+	.	.	.	.	.	25	
<i>Fumaria capreolata</i>	.	.	.	.	.	.	.	.	0	.	.	.	+	.	.	.	.	.	.	.	.	.	+	.	19	
<i>Pistacia lentiscus</i>	.	.	.	.	.	.	.	.	0	.	.	.	.	.	.	.	1	1	.	.	.	.	.	.	19	
<i>Asplenium trichomanes subsp. quadriv.</i>	.	.	.	.	.	.	.	.	0	.	.	.	+	.	.	.	+	.	.	.	.	.	.	.	13	
<i>Moehringia trinervia</i>	.	.	.	.	.	.	.	.	0	.	.	.	.	.	.	.	+	.	.	.	.	.	.	+	13	
<i>Geranium purpureum</i>	.	.	.	.	.	.	.	.	0	.	.	.	.	.	.	.	.	.	.	.	.	.	+	2	13	
<i>Stellaria media</i>	.	.	.	.	.	.	.	.	0	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	13	

**Table 17:** Synoptic Table of the thermophilous *Quercus cerris* forests in central Italy.  
**Tabela 17:** Sinoptična tabela termofilnih cerovih (*Quercus cerris*) gozdov srednje Italije.

Column number	1	2	3	4	5	6	7	Column number	1	2	3	4	5	6	7
Number of relevés per column	23	16	11	17	10	9	8	Number of relevés per column	23	16	11	17	10	9	8
<b>Crataego laevigatae-Quercion cerridis</b>															
<i>Ligustrum vulgare</i>	9	6	45	100	40	78	75	<i>Rubus hirtus</i>	4	.	.	.	.	.	.
<i>Malus sylvestris</i>	9	13	18	65	40	11	.	<i>Thalictrum aquilegiifolium</i>	.	.	9	.	.	.	.
<i>Oenanthe pimpinelloides</i>	74	13	9	.	20	.	13	<i>Geranium robertianum</i>	.	.	.	24	.	.	.
<i>Pulicaria odora</i>	48	50	.	.	.	.	50	<i>Moehringia trinervia</i>	.	.	.	12	.	.	.
<i>Aristolochia rotunda</i>	26	.	.	12	.	.	50	<i>Vicia sepium</i>	.	.	.	6	.	.	.
<i>Echinops ritro</i> subsp. <i>siculus</i>	22	19	.	59	.	.	.	<i>Anemone nemorosa</i>	.	.	.	.	20	.	.
<i>Ranunculus lanuginosus</i>	22	6	.	.	.	11	25	<i>Cephalanthera rubra</i>	.	.	.	.	.	22	.
<i>Lathyrus niger</i>	17	.	.	6	50	.	.	<i>Salvia glutinosa</i>	.	.	.	.	.	11	.
<i>Crataegus laevigata</i>	22	.	.	47	.	.	38	<i>Mercurialis perennis</i>	.	.	.	.	.	.	13
<i>Cytisus villosus</i>	9	38	.	.	.	.	13	<b>Quercio-Fagetea</b>							
<i>Erica arborea</i>	.	81	.	6	90	.	.	<i>Quercus cerris</i>	100	100	100	100	100	100	75
<i>Pyracantha coccinea</i>	.	.	.	29	30	22	.	<i>Tamus communis</i>	100	88	64	76	40	67	75
<i>Teucrium siculum</i>	22	.	.	6	.	.	.	<i>Ruscus aculeatus</i>	91	94	64	94	70	100	88
<i>Arbutus unedo</i>	.	44	.	.	40	.	.	<i>Hedera helix</i>	83	69	82	94	90	100	88
<i>Mespilus germanica</i>	.	19	.	29	.	.	.	<i>Brachypodium sylvaticum</i>	83	63	.	88	60	22	38
<i>Cytisus scoparius</i>	.	.	.	24	50	.	.	<i>Acer campestre</i>	52	44	27	88	60	100	88
<i>Poa sylvicola</i>	26	.	.	.	.	.	.	<i>Clematis vitalba</i>	4	.	36	6	30	22	25
<i>Iris foetidissima</i>	13	.	.	.	.	.	.	<i>Melica uniflora</i>	83	44	.	71	.	11	75
<i>Fraxinus angustifolia</i> subsp. <i>oxycarpa</i>	.	.	.	6	.	.	.	<i>Ulmus minor</i>	35	25	.	18	20	11	13
<i>Silene viridiflora</i>	.	.	.	6	.	.	.	<i>Sorbus torminalis</i>	22	25	.	53	20	22	.
<i>Genista tinctoria</i>	.	.	.	6	.	.	.	<i>Crucjata glabra</i>	22	.	36	59	100	.	13
<i>Erica scoparia</i>	.	.	.	.	70	.	.	<i>Luzula forsteri</i>	9	31	18	59	30	.	.
<i>Carex depauperata</i>	.	.	.	.	.	11	.	<i>Ajuga reptans</i>	48	13	.	12	30	22	.
<i>Vinca major</i>	.	.	.	.	.	22	.	<i>Carex sylvatica</i>	4	6	.	12	.	22	38
<i>Silene coronaria</i>	.	.	.	.	.	.	38	<i>Helleborus bocconei</i> subsp. <i>bocconei</i>	.	.	45	18	50	33	.
<i>Quercus frainetto</i>	.	.	.	.	.	.	25	<i>Melittis melissophyllum</i>	83	31	.	71	50	22	.
<b>Quercetalia pubescenti-petraeae</b>								<i>Daphne laureola</i>	30	.	82	53	.	.	.
<i>Fraxinus ornus</i>	100	94	100	94	30	100	63	<i>Bromus ramosus</i>	13	.	9	35	.	.	.
<i>Cornus mas</i>	74	25	18	100	40	89	63	<i>Festuca heterophylla</i>	.	.	27	65	80	.	.
<i>Sorbus domestica</i>	35	38	27	88	50	44	13	<i>Viola reichenbachiana</i>	.	.	.	18	30	44	.
<i>Quercus pubescens</i> s.l.	100	63	100	59	70	.	63	<i>Geum urbanum</i>	4	.	.	6	.	.	.
<i>Viola alba</i> subsp. <i>dehnhardtii</i>	91	56	64	94	80	44	.	<i>Epipactis helleborine</i> s.l.	.	.	18	6	.	.	.
<i>Stachys officinalis</i>	87	25	27	59	100	.	13	<i>Fragaria vesca</i> subsp. <i>vesca</i>	.	.	18	.	70	.	.
<i>Ostrya carpinifolia</i>	39	19	36	29	.	33	50	<i>Prunus avium</i>	.	.	9	.	.	11	.
<i>Buglossoides purpureoaeerulea</i>	91	6	.	71	70	22	25	<i>Lonicera caprifolium</i>	.	.	.	94	.	.	38
<i>Carex flacca serrulata</i>	70	31	55	71	80	.	.	<i>Symphytum tuberosum</i> subsp. <i>angustifolium</i>	.	.	.	47	.	.	25
<i>Cyclamen repandum</i>	61	75	.	53	.	33	13	<i>Quercus petraea</i>	.	.	.	12	80	.	.
<i>Emerus majus</i> subsp. <i>emeroides</i>	13	.	64	53	.	67	.	<i>Lilium bulbiferum</i> subsp. <i>croceum</i>	.	.	.	12	.	11	.
<i>Brachypodium rupestre</i>	4	.	91	71	100	.	.	<i>Loncomelos pyrenaicus</i>	35	.	.	.	.	.	.
<i>Acer monspessulanum</i>	100	38	.	82	.	.	.	<i>Calamintha nepeta</i> subsp. <i>sylvatica</i>	9	.	.	.	.	.	.
<i>Scutellaria columnae</i>	30	.	.	47	.	.	13	<i>Leontodon tuberosus</i>	4	.	.	.	.	.	.
<i>Carpinus orientalis</i>	22	.	.	.	.	100	100	<i>Alliaria petiolata</i>	.	19	.	.	.	.	.
<i>Serratula tinctoria</i>	4	.	.	12	40	.	.	<i>Platanthera bifolia</i>	.	.	18	.	.	.	.
<i>Cercis siliquastrum</i>	48	6	.	.	.	11	.	<i>Rosa arvensis</i>	.	.	.	47	.	.	.
<i>Melica arrecta</i>	39	.	.	6	.	.	.	<i>Potentilla micrantha</i>	.	.	.	29	.	.	.
<i>Allium triquetrum</i>	35	56	.	.	.	.	.	<i>Carpinus betulus</i>	.	.	.	24	.	.	.
<i>Arum italicum</i>	30	.	.	.	.	.	13	<i>Lathyrus sylvestris</i>	.	.	.	18	.	.	.
<i>Silene italica</i>	9	.	18	.	.	.	.	<i>Luzula sylvatica</i>	.	.	.	6	.	.	.
<i>Agrimonia eupatoria</i>	9	.	.	18	.	.	.	<i>Campanula trachelium</i>	.	.	.	.	20	.	.
<i>Rumex sanguineus</i>	9	.	.	.	.	.	25	<i>Aremonia agrimonoides</i>	.	.	.	.	.	11	.
<i>Malus florentina</i>	4	.	.	35	.	.	.	<i>Castanea sativa</i>	.	.	.	.	.	.	25

Column number	1	2	3	4	5	6	7	Column number	1	2	3	4	5	6	7
Number of relevés per column	23	16	11	17	10	9	8	Number of relevés per column	23	16	11	17	10	9	8
<i>Vicia grandiflora</i>	4	.	.	6	.	.	.	<i>Corylus avellana</i>	.	.	.	.	.	.	38
<i>Hypericum montanum</i>	.	.	.	6	20	.	.	<i>Lonicera xylosteum</i>	.	.	.	.	.	78	.
<i>Asperula laevigata</i>	9	.	.	.	.	.	.	<i>Hepatica nobilis</i>	.	.	.	.	.	11	.
<i>Biarum tenuifolium</i>	4	.	.	.	.	.	.	<i>Hieracium murorum</i>	.	.	.	.	.	.	13
<i>Asparagus tenuifolius</i>	.	.	.	47	.	.	.	<i>Primula vulgaris</i>	.	.	.	.	.	.	13
<i>Aristolochia lutea</i>	.	.	.	18	.	.	.	<i>Viola odorata</i>	.	.	.	.	.	.	88
<i>Orchis purpurea</i>	.	.	.	18	.	.	.	<b>Quercetea ilicis</b>							
<i>Helleborus foetidus</i>	.	.	.	6	.	.	.	<i>Rubia peregrina</i>	96	100	82	82	30	78	75
<b>Fagetalia sylvaticae</b>								<i>Rosa sempervirens</i>	91	63	55	100	90	56	63
<i>Cyclamen hederifolium</i>	22	56	.	41	.	56	50	<i>Smilax aspera</i>	91	88	.	6	.	78	63
<i>Lathyrus venetus</i>	61	6	.	65	.	22	.	<i>Phillyrea latifolia</i>	74	94	.	65	20	33	.
<i>Anemone apennina</i>	57	31	.	29	.	11	.	<i>Asplenium onopteris</i>	35	50	.	18	30	.	38
<i>Euphorbia amygdaloides</i>	39	.	.	.	.	44	13	<i>Clematis flammula</i>	91	44	18	.	50	.	.
<i>Allium pendulinum</i>	9	.	.	18	.	.	.	<i>Asparagus acutifolius</i>	87	94	73	.	60	67	100
<i>Dactylorhiza maculata</i>	4	.	.	.	.	.	.	<i>Quercus ilex</i>	39	100	27	53	60	78	.
<i>Osyris alba</i>	35	44	.	.	.	.	25	<i>Urospermum dalechampii</i>	9	.	.	.	.	.	.
<i>Carex distachya</i>	30	38	.	.	.	11	.	<i>Cynosurus echinatus</i>	9	.	.	.	.	.	.
<i>Rhamnus alaternus</i>	26	19	.	.	.	22	.	<i>Reichardia picroides</i>	9	.	.	.	.	.	.
<i>Viburnum tinus</i>	26	6	27	.	.	44	.	<i>Euphorbia characias</i>	26	.	.	.	.	.	.
<i>Lonicera implexa</i>	26	19	.	.	.	.	.	<i>Anemone hortensis</i>	9	.	.	.	.	.	.
<i>Pistacia lentiscus</i>	26	44	.	.	20	.	.	<i>Sherardia arvensis</i>	9	.	.	.	.	.	.
<i>Carex halleriana</i>	17	6	.	30	.	.	.	<i>Lathyrus clymenum</i>	4	.	.	.	.	.	.
<i>Carex divulsa</i>	13	13	.	.	.	.	.	<i>Theligonum cynocrambe</i>	30	.	.	.	.	.	.
<i>Laurus nobilis</i>	13	.	.	.	11	.	.	<i>Sonchus bulbosus</i>	61	.	.	.	.	.	.
<i>Carex olbiensis</i>	4	25	.	.	.	.	.	<i>Klasea flavescens</i>	57	.	.	.	.	.	.
<i>Quercus suber</i>	.	38	.	.	.	.	.	<i>Stachys heraclea</i>	17	.	.	.	.	.	.
<i>Myrtus communis</i>	.	44	.	.	.	.	.	<i>Cynoglossum creticum</i>	13	.	.	.	.	.	.
<i>Phillyrea angustifolia</i>	.	.	.	40	.	.	.	<i>Crepis vesicaria</i>	13	.	.	.	.	.	.
<i>Daphne gnidium</i>	.	.	.	50	.	.	.	<i>Asplenium trichomanes</i>	13	.	.	.	.	.	.
<b>Other species</b>								<i>Ranunculus velutinus</i>	13	.	.	.	.	.	.
<i>Crataegus monogyna</i>	96	56	100	100	100	100	100	<i>Carduus pycnocephalus</i>	9	.	.	.	.	.	.
<i>Euonymus europaeus</i>	74	19	9	88	50	44	.	<i>Torilis nodosa</i>	9	.	.	.	.	.	.
<i>Prunus spinosa</i>	57	25	64	82	90	67	.	<i>Inula conyzae</i>	9	.	.	.	.	.	.
<i>Rubus ulmifolius</i>	48	56	73	76	60	75	.	<i>Vitis vinifera</i>	9	.	.	.	.	.	.
<i>Dactylis glomerata</i>	78	19	45	35	30	.	.	<i>Torilis arvensis</i>	9	.	.	.	.	.	.
<i>Lonicera etrusca</i>	96	38	91	.	80	13	.	<i>Fallopia convolvulus</i>	.	19	.	.	.	.	.
<i>Rubus canescens</i>	13	.	9	.	30	22	.	<i>Piptatherum miliaceum</i>	.	19	.	.	.	.	.
<i>Pyrus communis</i>	9	.	.	88	50	33	.	<i>Hypericum perforatum</i>	.	13	.	.	.	.	.
<i>Cornus sanguinea</i>	.	.	45	35	40	56	.	<i>Cupressus sempervirens</i>	.	.	36	.	.	.	.
<i>Ranunculus bulbosus</i>	52	.	18	6	.	.	.	<i>Tanacetum corymbosum</i>	.	.	36	.	.	.	.
<i>Cytisophyllum sessilifolium</i>	22	.	.	12	.	13	.	<i>Pinus nigra</i> subsp. <i>laricio</i>	.	.	18	.	.	.	.
<i>Rosa canina</i>	.	.	64	6	30	.	.	<i>Rubus glandulosus</i>	.	.	18	.	.	.	.
<i>Galium aparine</i>	22	.	.	12	11	.	.	<i>Polypodium interjectum</i>	.	.	18	.	.	.	.
<i>Clinopodium vulgare</i>	.	13	.	6	50	.	.	<i>Bellis sylvestris</i>	.	.	18	.	.	.	.
<i>Juniperus communis</i>	.	.	82	76	80	.	.	<i>Festuca robustifolia</i>	.	.	18	.	.	.	.
<i>Geranium sanguineum</i>	13	.	.	6	50	.	.	<i>Pteridium aquilinum</i>	.	.	9	.	.	.	.
<i>Rosa gallica</i>	.	.	9	12	20	.	.	<i>Vicia bithynica</i>	.	.	.	29	.	.	.
<i>Prunella vulgaris</i>	13	.	.	.	11	.	.	<i>Vicia sativa</i>	.	.	.	18	.	.	.
<i>Anthericum liliago</i>	9	.	.	6	.	.	.	<i>Vicia loiseleurii</i>	.	.	.	12	.	.	.
<i>Campanula rapunculoides</i>	9	.	.	.	20	.	.	<i>Astragalus glycyphyllos</i>	.	.	.	6	.	.	.
<i>Asphodelus ramosus</i>	65	69	.	.	.	.	.	<i>Filipendula vulgaris</i>	.	.	.	.	30	.	.
<i>Catapodium rigidum</i>	9	25	.	.	.	.	.	<i>Ranunculus polyanthemus</i>	.	.	.	.	30	.	.
<i>Spartium junceum</i>	13	.	.	.	20	.	.	<i>Lathyrus hirsutus</i>	.	.	.	.	20	.	.
<i>Geranium purpureum</i>	57	13	.	.	.	.	.	<i>Lotus corniculatus</i>	.	.	.	.	20	.	.
<i>Stellaria media</i> subsp. <i>media</i>	30	.	.	6	.	.	.	<i>Paliurus spina-christi</i>	.	.	.	.	20	.	.
<i>Lathyrus aphaca</i>	13	.	.	12	.	.	.	<i>Vicia cracca</i>	.	.	.	.	50	.	.



Column number	1	2	3	4	5	6	7	Column number	1	2	3	4	5	6	7
Number of relevés per column	23	16	11	17	10	9	8	Number of relevés per column	23	16	11	17	10	9	8
<i>Silene latifolia</i> subsp. <i>alba</i>	9	25	.	.	.	.	.	<i>Teucrium scorodonia</i>	.	.	.	.	20	.	.
<i>Teucrium chamaedrys</i>	43	.	18	.	.	.	.	<i>Cytisus hirsutus</i>	.	.	.	.	20	.	.
<i>Sedum cepaea</i>	9	.	.	6	.	.	.	<i>Sanicula europaea</i>	.	.	.	.	.	11	.
<i>Laburnum anagyroides</i>	.	.	.	.	.	11	13	<i>Lamium bifidum</i>	.	.	.	.	.	11	.
<i>Loncomelos brevistylus</i>	26	13	.	.	.	.	.	<i>Cruciata laevipes</i>	.	.	.	.	.	.	25
<i>Allium subhirsutum</i>	17	.	.	.	.	.	.	<i>Poa trivialis</i>	.	.	.	.	.	.	13
<i>Gladiolus italicus</i>	22	.	.	.	.	.	.								
<i>Bromus erectus</i>	17	.	.	.	.	.	.								
<i>Achnatherum bromoides</i>	4	.	.	.	.	.	.								

**Table 18:** Synoptic Table of *Quercus ilex* forests developed on acid substrates in central and southern Italy.  
**Tabela 18:** Sinoptična tabela gozdov črničevja (*Quercus ilex*) na kislih substratih v srednji in južni Italiji.

Column number	1	2	3	4	5	6	7	Column number	1	2	3	4	5	6	7
Number of relevés per column	16	6	6	3	10	20	16	Number of relevés per column	16	6	6	3	10	20	16
<b>Arbuto unedonis-Quercetum ilicis</b>															
<i>Arbutus unedo</i>	100	80	100	100	100	75	69	<i>Geranium purpureum</i>	40	100	.	.	.	.	24
<i>Asplenium onopteris</i>	60	100	100	33	.	45	100	<i>Polypodium cambricum</i>	40	100	.	.	.	.	13
<i>Fraxinus ornus</i>	.	60	100	.	.	20	100	<i>Tamus communis</i>	.	100	.	.	.	.	35
<i>Acer monspessulanum</i>	.	.	17	.	.	.	69	<i>Teucrium flavum</i>	.	.	33	.	10	10	.
<i>Quercus cerris</i>	.	.	.	.	.	.	94	<i>Quercus pubescens</i> s.l.	.	.	100	.	.	20	88
<b>Quercion ilicis</b>								<i>Rubus ulmifolius</i>	.	.	67	.	.	30	13
<i>Asparagus acutifolius</i>	60	100	100	67	70	85	41	<i>Hedera helix</i>	.	.	33	.	.	50	52
<i>Cyclamen repandum</i>	.	.	.	100	60	45	100	<i>Cistus creticus</i> subsp. <i>eriocephalus</i>	40	40	.	.	.	5	.
<i>Lonicera etrusca</i>	.	.	100	.	.	25	.	<i>Euphorbia dendroides</i>	40	20	.	.	.	.	.
<i>Laurus nobilis</i>	.	.	.	.	.	5	19	<i>Pteridium aquilinum</i>	60	20	.	.	.	.	.
<i>Carex halleriana</i>	.	.	.	.	.	25	.	<i>Teline monspessulana</i>	20	40	.	.	.	.	.
<i>Pinus pinea</i>	.	.	.	.	.	10	.	<i>Euphorbia characias</i>	.	.	100	.	.	5	.
<b>Quercetalia ilicis</b>								<i>Cyclamen hederifolium</i>	.	.	100	.	.	25	.
<i>Quercus ilex</i>	100	100	100	100	100	100	100	<i>Arum italicum italicum</i>	.	.	50	.	.	25	.
<i>Erica arborea</i>	100	100	100	.	100	40	50	<i>Selaginella denticulata</i>	.	.	.	.	.	10	38
<i>Carex distachya</i>	20	100	.	100	70	25	38	<i>Sorbus domestica</i>	.	.	.	.	.	10	25
<i>Phillyrea latifolia</i>	40	.	100	67	80	45	88	<i>Sorbus torminalis</i>	.	.	.	.	.	10	31
<i>Daphne gnidium</i>	60	100	.	33	10	5	.	<i>Melica arrecta</i>	60	.	.	.	.	.	.
<i>Rosa sempervirens</i>	.	.	83	100	20	45	.	<i>Asparagus officinalis</i>	.	100	.	.	.	.	.
<i>Cistus salviifolius</i>	40	80	83	.	.	.	.	<i>Spartium junceum</i>	.	.	100	.	.	.	.
<i>Rhamnus alaternus</i>	40	.	.	.	40	35	.	<i>Acanthus mollis mollis</i>	.	.	67	.	.	.	.
<i>Carex olbiensis</i>	.	.	.	33	.	5	38	<i>Brachypodium sylvaticum</i>	.	.	67	.	.	.	.
<i>Quercus suber</i>	.	.	.	33	10	5	.	<i>Polystichum setiferum</i>	.	.	50	.	.	.	.
<i>Viburnum tinus</i>	.	.	.	.	20	40	50	<i>Ranunculus neapolitanus</i>	.	.	50	.	.	.	.
<i>Luzula forsteri</i>	.	.	.	33	.	.	13	<i>Pimpinella peregrina</i>	.	.	33	.	.	.	.
<i>Clematis cirrhosa</i>	.	.	33	.	.	.	.	<i>Brachypodium rupestre</i>	.	.	.	.	.	30	.
<i>Viola alba</i> subsp. <i>dehnhardtii</i>	.	.	.	.	.	.	25	<i>Ampelodesmos mauritanicus</i>	.	.	.	.	.	25	.
<b>Pistacio-Rhamnetalia alaterni</b>								<i>Brachypodium retusum</i>	.	.	.	.	.	25	.
<i>Pistacia lentiscus</i>	80	100	100	100	80	85	.	<i>Emerus majus</i> subsp. <i>emeroides</i>	.	.	.	.	.	20	.
<i>Myrtus communis</i>	40	.	.	67	90	60	38	<i>Crataegus monogyna</i>	.	.	.	.	.	10	.
<i>Phillyrea angustifolia</i>	60	.	.	100	100	20	.	<i>Erica multiflora</i>	.	.	.	.	.	10	.
<i>Prasium majus</i>	40	40	.	.	.	10	.	<i>Teucrium fruticans</i>	.	.	.	.	.	5	.
<i>Clematis flammula</i>	.	.	.	67	20	45	.	<i>Asplenium trichomanes</i>	.	.	.	.	.	38	.
<i>Juniperus phoenicea</i>	.	.	.	.	20	10	.	<i>Anemone apennina</i>	.	.	.	.	.	31	.
<i>Osyris alba</i>	.	.	.	.	10	15	.	<i>Moehringia trinervia</i>	.	.	.	.	.	31	.
<i>Juniperus oxycedrus</i> subsp. <i>macrocarpa</i>	.	.	.	.	10	5	.	<i>Celtis australis</i> subsp. <i>australis</i>	.	.	.	.	.	19	.

Column number	1	2	3	4	5	6	7	Column number	1	2	3	4	5	6	7
Number of relevés per column	16	6	6	3	10	20	16	Number of relevés per column	16	6	6	3	10	20	16
<i>Calicotome infesta</i>	.	.	100	.	.	.	.	<i>Ostrya carpinifolia</i>	.	.	.	.	.	.	19
<i>Pinus halepensis</i>	.	.	.	.	.	25	.	<i>Fumaria capreolata</i>	.	.	.	.	.	.	13
<i>Pistacia terebinthus</i>	.	.	.	.	.	10	.	<i>Fumaria flabellata</i>	.	.	.	.	.	.	13
<b>Quercetea ilicis</b>								<i>Galium aparine</i>	.	.	.	.	.	.	13
<i>Smilax aspera</i>	60	20	100	100	70	90	94	<i>Lathyrus clymenum</i>	.	.	.	.	.	.	13
<i>Rubia peregrina</i>	80	.	100	100	100	100	94	<i>Melica uniflora</i>	.	.	.	.	.	.	13
<i>Arisarum vulgare</i>	40	100	100	33	.	30	.	<i>Piptatherum miliaceum</i>	.	.	.	.	.	.	13
<i>Lonicera implexa</i>	40	20	.	100	60	30	.	<i>Sambucus nigra</i>	.	.	.	.	.	.	13
<i>Calicotome villosa</i>	60	60	.	.	20	5	.	<i>Sedum cepaea</i>	.	.	.	.	.	.	13
<i>Pulicaria odora</i>	.	.	100	.	.	20	.	<i>Silene latifolia</i> subsp. <i>alba</i>	.	.	.	.	.	.	13
<i>Olea europaea</i>	.	.	67	.	.	.	.	<i>Stellaria media</i>	.	.	.	.	.	.	13
<b>Other species</b>								<i>Acer campestre</i>	.	.	.	.	.	.	13
<i>Cytisus villosus</i>	40	100	.	.	60	10	25	<i>Allium triquetrum</i>	.	.	.	.	.	.	6
<i>Ruscus aculeatus</i>	.	.	100	100	40	70	94								

**Table 19:** Synoptic Table of *Quercus petraea* forests in central and southern Italy.  
**Tabela 19:** Sinoptična tabela hrastovih gozdov (*Quercus petraea*) v srednji in južni Italiji.

Column number	1	2	3	4	5	6	Column number	1	2	3	4	5	6
Number of relevés per column	10	17	12	18	8	7	Number of relevés per column	10	17	12	18	8	7
<b>Character. Carici-Quercetum petraeae</b>							<i>Tamus communis</i>	90	24	58	39	25	71
<i>Rubia peregrina</i>	70	.	.	17	88	86	<i>Acer campestre</i>	20	29	31	17	25	57
<i>Mespilus germanica</i>	70	.	.	22	.	43	<i>Luzula forsteri</i>	70	76	83	.	50	14
<i>Carex olbiensis</i>	100	.	.	.	.	.	<i>Cruciata glabra</i>	100	100	.	17	50	14
<b>Character. Hieracio-Quercetum petraeae</b>							<i>Festuca heterophylla</i>	100	100	.	39	88	71
<i>Serratula tinctoria</i> s.l.	71	.	.	11	.	14	<i>Solidago virgaurea</i>	90	82	.	22	63	43
<i>Veronica officinalis</i>	47	.	.	.	13	.	<i>Quercus cerris</i>	70	94	.	72	50	14
<i>Potentilla erecta</i>	88	.	.	.	.	.	<i>Carpinus betulus</i>	70	18	.	17	75	57
<i>Succisa pratensis</i>	71	.	.	.	.	.	<i>Melica uniflora</i>	90	.	100	11	13	86
<i>Molinia caerulea</i> s.l.	41	.	.	.	.	.	<i>Brachypodium sylvaticum</i>	80	76	25	39	63	.
<b>Character. Ilici-Quercetum petraeae</b>							<i>Hieracium murorum</i>	50	71	.	.	13	57
<i>Quercus petraea</i>	100	100	100	100	100	100	<i>Sorbus torminalis</i>	100	.	.	83	88	100
<i>Ilex aquifolium</i>	90	.	100	94	100	.	<i>Symphytum tuberosum</i>	.	.	25	6	25	14
<i>Aquilegia sicula</i>	.	.	31	.	.	.	<i>Potentilla micrantha</i>	40	47	58	.	.	.
<b>Character. Frangulo-Quercetum petraeae</b>							<i>Daphne laureola</i>	90	.	100	.	50	.
<i>Castanea sativa</i>	100	.	.	72	13	14	<i>Prunus avium</i>	.	53	.	39	.	43
<i>Frangula alnus</i>	.	59	.	56	.	.	<i>Corylus avellana</i>	.	6	.	11	.	14
<i>Quercus robur</i>	.	65	.	6	.	.	<i>Fragaria vesca</i>	40	88	.	.	.	.
<b>Crataego laevigatae-Quercion cerridis</b>							<i>Lonicera caprifolium</i>	30	100	.	.	.	.
<i>Lonicera etrusca</i>	100	.	8	56	38	86	<i>Platanthera bifolia</i>	.	18	.	17	.	.
<i>Malus sylvestris</i>	20	41	17	17	38	.	<i>Ostrya carpinifolia</i>	60	.	.	.	50	.
<i>Erica arborea</i>	30	.	.	17	13	57	<i>Lilium bulbiferum</i> subsp. <i>croceum</i>	.	.	.	.	25	29
<i>Cytisus villosus</i>	20	.	.	11	13	.	<i>Acer opalus</i> subsp. <i>obtusatum</i>	50	.	.	.	.	.
<i>Lathyrus niger</i>	.	29	.	.	.	29	<i>Platanthera chlorantha</i>	40	.	.	.	.	.
<i>Ranunculus lanuginosus</i>	.	.	17	.	.	14	<i>Rosa arvensis</i>	.	100	.	.	.	.
<i>Teucrium siculum</i>	80	.	42	.	.	.	<i>Ajuga reptans</i>	.	53	.	.	.	.
<i>Crataegus laevigata</i>	.	88	.	.	13	.	<i>Bromus ramosus</i>	.	18	.	.	.	.
<i>Cephalanthera longifolia</i>	40	.	.	.	.	.	<i>Vinca minor</i>	.	.	.	.	.	100
<i>Poa sylvicola</i>	20	.	.	.	.	.	<i>Pulmonaria vallisae</i>	.	.	.	.	.	57
<i>Pulicaria odora</i>	20	.	.	.	.	.	<i>Melittis melissophyllum</i>	.	.	.	.	.	29
<i>Malus florentina</i>	.	82	.	.	.	.	<i>Laburnum anagyroides</i>	.	.	.	.	.	14

Column number	1	2	3	4	5	6	Column number	1	2	3	4	5	6
Number of relevés per column	10	17	12	18	8	7	Number of relevés per column	10	17	12	18	8	7
<i>Genista tinctoria</i>	.	71	.	.	.	.	<i>Ulmus minor</i>	.	.	.	.	.	14
<i>Oenanthe pimpinelloides</i>	.	71	.	.	.	.	<i>Primula vulgaris</i>	.	.	50	.	.	.
<i>Silene flos-cuculi</i>	.	35	.	.	.	.	<i>Chaerophyllum temulum</i>	.	.	8	.	.	.
<i>Pyracantha coccinea</i>	.	.	.	.	38	.	<i>Luzula sylvatica</i>	.	.	.	.	13	.
<b>Quercetalia pubescenti-petraeae</b>							<i>Carex sylvatica</i>	.	.	.	.	13	.
<i>Fraxinus ornus</i>	100	6	.	83	88	100	<b>Rhamno-Prunetea</b>						
<i>Viola alba dehnhardtii</i>	90	35	.	17	38	14	<i>Euonymus europaeus</i>	20	6	8	11	13	14
<i>Cornus mas</i>	20	47	.	.	75	43	<i>Juniperus communis</i>	20	94	.	39	38	29
<i>Sorbus domestica</i>	30	.	.	33	50	29	<i>Prunus spinosa</i>	.	35	25	11	.	14
<i>Stachys officinalis</i>	40	94	.	.	25	.	<i>Crataegus monogyna</i>	.	.	17	28	38	29
<i>Carex flacca</i> s.l.	40	53	.	6	.	.	<i>Rubus canescens</i>	30	.	83	28	.	.
<i>Cyclamen repandum</i>	.	35	17	.	75	.	<i>Rubus ulmifolius</i>	60	.	.	44	75	.
<i>Emerus majus</i> subsp. <i>emeroides</i>	.	.	.	.	38	43	<i>Pyrus communis</i>	.	6	.	6	38	.
<i>Carpinus orientalis</i>	50	.	.	.	.	.	<i>Clematis vitalba</i>	.	.	17	.	.	14
<i>Scutellaria columnae</i>	50	.	.	.	.	.	<i>Ligustrum vulgare</i>	.	47	.	.	13	.
<i>Melica arrecta</i>	30	.	.	.	.	.	<i>Cornus sanguinea</i> s.l.	.	24	.	.	.	.
<i>Hypericum montanum</i>	.	24	.	.	.	.	<i>Prunus mahaleb</i>	.	6	.	.	.	.
<i>Orchis purpurea</i>	.	6	.	.	.	.	<i>Rosa canina</i>	.	.	83	.	.	.
<i>Asparagus acutifolius</i>	.	.	.	.	.	29	<i>Geum urbanum</i>	.	.	31	.	.	.
<i>Arum italicum</i>	.	.	.	.	.	14	<b>Quercetea ilicis</b>						
<i>Asperula laevigata</i>	.	.	8	.	.	.	<i>Quercus ilex</i>	90	.	25	39	100	86
<i>Asparagus tenuifolius</i>	.	.	.	11	.	.	<i>Arbutus unedo</i>	50	.	.	50	88	71
<i>Acer monspessulanum</i>	.	.	.	.	50	.	<i>Asplenium oopteris</i>	.	.	31	6	43	.
<b>Quercetalia robori petraeae</b>							<i>Laurus nobilis</i>	.	.	.	11	.	100
<i>Pteridium aquilinum</i>	70	76	50	61	.	.	<i>Viburnum tinus</i>	.	.	.	.	50	71
<i>Hieracium racemosum</i>	40	47	.	6	.	.	<i>Carex distachya</i>	20	.	.	.	.	.
<i>Physospermum cornubiense</i>	.	.	.	39	75	100	<i>Phillyrea latifolia</i>	.	.	.	.	38	.
<i>Teucrium scorodonia</i>	.	.	.	39	38	14	<i>Smilax aspera</i>	.	.	.	.	25	.
<i>Cytisus scoparius</i>	.	.	.	6	.	29	<i>Rosa sempervirens</i>	.	.	.	.	13	.
<i>Genista germanica</i>	.	82	.	.	13	.	<b>Other species</b>						
<i>Genista pilosa</i>	.	.	.	.	13	14	<i>Ruscus aculeatus</i>	100	94	83	89	38	100
<i>Erica scoparia</i>	.	.	.	17	13	.	<i>Dactylis glomerata</i> s.l.	90	24	8	6	25	.
<i>Deschampsia flexuosa</i>	20	.	.	.	.	.	<i>Clinopodium vulgare</i>	20	.	42	.	.	.
<i>Calluna vulgaris</i>	.	88	.	.	.	.	<i>Populus tremula</i>	.	18	.	6	.	.
<i>Quercus pubescens</i> s.l.	.	.	.	6	.	.	<i>Anthoxanthum odoratum</i>	.	.	.	6	.	14
<i>Melampyrum italicum</i>	.	.	.	.	25	.	<i>Polypodium vulgare</i>	.	.	.	17	.	14
<i>Poa nemoralis</i> s.l.	.	.	.	.	25	.	<i>Galium aparine</i>	20	.	.	.	.	.
<i>Lathyrus linifolius</i>	.	.	.	.	13	.	<i>Silene latifolia</i> subsp. <i>alba</i>	20	.	.	.	.	.
<b>Fagetalia sylvaticae</b>							<i>Agrostis stolonifera</i>	.	94	.	.	.	.
<i>Viola reichenbachiana</i>	50	94	31	6	25	.	<i>Calamintha nepeta</i>	.	59	.	.	.	.
<i>Anemone nemorosa</i>	.	6	.	39	50	86	<i>Carex pallescens</i>	.	59	.	.	.	.
<i>Cyclamen hederifolium</i>	.	.	58	22	63	57	<i>Holcus lanatus</i>	.	41	.	.	.	.
<i>Anemone apennina</i>	.	.	31	.	.	86	<i>Vicia cassubica</i>	.	53	.	.	.	.
<i>Allium pendulinum</i>	.	.	17	.	.	43	<i>Prunella vulgaris</i>	.	24	.	.	.	.
<i>Lathyrus venetus</i>	.	.	67	.	.	14	<i>Limodorum abortivum</i>	.	12	.	.	.	.
<i>Dactylorhiza maculata</i> s.l.	60	.	.	.	.	43	<i>Viburnum opulus</i>	.	6	.	.	.	.
<i>Fagus sylvatica</i>	90	.	50	.	.	.	<i>Stellaria media</i>	.	.	42	.	.	.
<i>Acer pseudoplatanus</i>	30	.	.	6	.	.	<i>Trifolium pratense</i>	.	.	42	.	.	.
<i>Rubus hirtus</i>	20	.	.	39	.	.	<i>Geranium robertianum</i>	.	.	42	.	.	.
<i>Polygonatum multiflorum</i>	.	6	.	11	.	.	<i>Myosotis gussoni</i>	.	.	31	.	.	.
<i>Cephalanthera rubra</i>	20	.	.	.	.	.	<i>Silene italica</i> subsp. <i>sicula</i>	.	.	31	.	.	.
<i>Euphorbia dulcis</i>	.	6	.	.	.	.	<i>Bellis perennis</i>	.	.	17	.	.	.
<i>Scrophularia nodosa</i>	.	18	.	.	.	.	<i>Pinus sylvestris</i>	.	.	.	6	.	.
<i>Neottia nidus-avis</i>	.	.	.	.	.	57	<i>Brachypodium rupestre</i>	.	.	.	17	.	.
<i>Geranium versicolor</i>	.	.	83	.	.	.	<i>Molinia caerulea</i> subsp. <i>arundinacea</i>	.	.	.	67	.	.
<i>Lamium flexuosum</i>	.	.	92	.	.	.	<i>Pinus pinaster</i> s.l.	.	.	.	94	.	.

Column number	1	2	3	4	5	6	Column number	1	2	3	4	5	6
Number of relevés per column	10	17	12	18	8	7	Number of relevés per column	10	17	12	18	8	7
<i>Polystichum aculeatum</i>	.	.	83	.	.	.	<i>Robinia pseudacacia</i>	.	.	.	17	.	.
<i>Galium rotundifolium</i>	.	.	50	.	.	.	<i>Cytisus nigricans</i> s.l.	.	.	.	6	.	.
<i>Aremonia agrimonoides</i>	.	.	31	.	.	.	<i>Melampyrum pratense</i> s.l.	.	.	.	11	.	.
<i>Euphorbia amygdaloides</i>	.	.	31	.	.	.	<i>Loranthus europaeus</i>	.	.	.	.	13	.
<i>Athyrium filix-femina</i>	.	.	8	.	.	.	<i>Carex digitata</i>	.	.	.	.	25	.
<i>Doronicum orientale</i>	.	.	17	.	.	.	<i>Digitalis lutea</i> subsp. <i>australis</i>	.	.	.	.	25	.
<i>Hypochaeris laevigata</i>	.	.	8	.	.	.	<i>Sanicula europaea</i>	.	.	.	.	25	.
<i>Lactuca muralis</i>	.	.	8	.	.	.	<i>Ruscus hypoglossum</i>	.	.	.	.	13	.
<i>Luzula sicula</i>	.	.	17	.	.	.	<i>Anthericum liliago</i>	.	.	.	.	.	14
<i>Milium effusum</i>	.	.	17	.	.	.	<i>Dactylorhiza romana</i>	.	.	.	.	.	14
<i>Luzula pilosa</i>	.	.	.	6	.	.	<i>Osyris alba</i>	.	.	.	.	.	14
<i>Moehringia trinervia</i>	.	.	.	.	13	.	<i>Ranunculus millefoliatus</i>	.	.	.	.	.	14
<b>Quercus-Fagetea</b>							<i>Sambucus nigra</i>	.	.	.	.	.	14
<i>Hedera helix</i>	100	35	25	72	88	100	<i>Silene italica</i> subsp. <i>italica</i>	.	.	.	.	.	14