Cicadellidae of the forests of Etna (Hemiptera, Homoptera, Auchenorrhyncha)*

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ABSTRACT The forests of Etna, ranging from approximately 600 m to 2000 m a.s.l., occupy a great part of the "Mediterranean Basal belt" and of the "Mountain-Mediterranean belt" The main plant species that form true monophytic forests on Etna are: *Quercus ilex, Q. pubescens* s. l., *Q. cerris, Castanea sativa, Pinus laricio, Betula aetnensis* and *Fagus sylvatica.* 107 species of *Cicadellidae*, belonging to 10 subfamilies, were found both on monophytic and poliphytic forests of Etna. The forests where the highest number of species was found were *Quercus pubescens* s. l. and *Castanea sativa.* They are followed by *Fagus sylvatica, Quercus ilex, Pinus laricio, Betula aetnensis* and *Quercus cerris.* As far as the faunistic composition of *Cicadellidae* is concerned, the most similar forestal environments were those of *Quercus pubescens* s.l. and *Castanea sativa.* This similarity is explained by the relationship between *Castanea* and *Quercus* and with the artificial origin of the Etna chestnut woods, which have often taken the place of oak woods, especially those of *Quercus pubescens* s.l., that once were more widespread. Mixed forests did not show a characteristic fauna of their own: the species found were either those of the corresponding pure forests or poliphagous species, or monophagous and oligophagous species on plants widespread on the volcano.

Analyzing the geographic distribution pattern of the species found, it is clear that the *Cicadellidae* living in the forests of Etna are mainly thermophilic, the major portion being typically Mediterranean species; there are also cool climate elements which characterize high altitude forest formations that are suitable refuge area for them. The number of Sicilian endemic elements is very high (8), one of them, *Kybos aetnicola* Wagn. is an exclusive inhabitant of the forests of Etna.

IZVLEČEK Gozdovi na Etni segajo od približno 600 do 2000 m in pokrivajo velik del "Osnovnega mediteranskega pasu" in "Gorskega mediteranskega pasu" Glavne vrste dreves, ki tvorijo na Etni monofitske gozdove so: *Quercus ilex, Q. pubescens* s. l., *Q. cerris, Castanea sativa, Pinus laricio, Betula aetnensis* in *Fagus sylvatica.* V enovrstnih in mešanih gozdovih na Etni so našli 107 vrst škržatkov iz 10 poddružin družine Cicadellidae. Največ vrst sta avtorici ugotovili v gozdovih puhastega hrasta *Quercus pubescens* s.l. in kostanja *Castanea sativa.* Temu sledijo sestoji dreves *Fagus sylvatica, Quercus ilex, Pinus laricio, Betula aetnensis* and *Quercus cerris.* Po sestavi favne cikadelid so najpodobnejši sestoji puhastega hrasta in kostanja, kar avtorici povezujeta s povezanostjo teh sestojev in z umetnim nadomeščanjem hrasta s plemenitim kostanjem. Mešani gozdovi nimajo posebne favne, značilne le za to območje.

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Zoogeografska analiza vrst, najdenih na Etni, je pokazala, da je večina vrst termofilnih in spadajo med značilne mediteranske vrste. Zastopane pa so tudi vrste hladnega podnebja, značilne za visoke gorske lege. Število sicilskih endemov je visoko (8), ena vrsta, *Kybos aetnicola* Wagn. pa živi izključno v gozdovih na Etni.

Etna is an area of very peculiar characteristics being both an active volcano and a high, isolated Mediterranean mountain. Its climate is of the Mediterranean type, also at high altitude, though it shows great variations according to altitude and exposure.

Among the various environments present there, the forests constitute one which is quite varied, faunally rich and interesting, because of their ecological heterogeneity due to the coexistence of the arboreous vegetation with the herbaceous vegetation of the undergrowth and of the clearings and therefore also of a habitat both humid and more xeric.

The forests of Etna constitute discontinuous formations and are the remainder of a larger and a denser forest covering, which once was widespread over the volcano.

The forests of Etna range approximately from 600 m to 2000 m a.s.l. with a varying range of altitude according to climatic conditions of the incline. They occupy the meso and supramediterranean horizons of the "Mediterranean Basal belt" and the lower horizon (geranio-fagion) of the "Mountain-Mediterranean belt" (POLI, MAUGERI, RONSISVALLE, 1981; POLI MARCHESE, 1983).

The main tree species that form true though discontinuous forests on Etna are: *Quercus ilex*, *Quercus pubescens* sensu latu, *Quercus cerris*, *Castanea sativa*, *Pinus laricio*, *Betula aetnensis*, *Fagus sylvatica*.

On the contrary *Acer obtusatum* and, more often, *Populus tremula* do not form forests but are found in isolated groups or along with other tree species.

The forests made of two or more tree species are more widespread on Etna than pure forests; the latter, though, are faunally more significant.

Pure forests and the more characteristic mixed forests as a whole will be individually discussed. Within each kind of forest, were determined *Cicadellidae* on the leaves, on the herbaceous vegetation of the undergrowth and of the clearings (Table 1).

a) *Quercus ilex* forest

The ilex forest characterizes the mesomediterranean horizon of the "Mediterranean Basal belt". Such a horizon rises from 500/600 m to 1000/1100 m a. s. l., except for the west incline, which is more thermoxeric, and extends to 1450 m. This vegetation belt was vastly modified by man and pure ilex forests are, at the present, limited to small areas located mainly on the west incline.

Ilex groves on Etna are rather thick but with a sparse undergrowth.

All in all, in ilex groves 29 Cicadellid species were found, one of which, *Zygina* cfr. *suavis* R., is occasional.

Ilex groves on Etna are characterized by thermophile fauna, in fact, 50 % of the species found is of Mediterranean distribution and about 22 % is comprised of species with Turanic or Centrasiatic distributions. As expected, the percentage of Siberian species, represented by *Thamnotettix dilutior* (Kbm), which is largely widespread in oak and chestnut woods, is very low.

The endemic elements in Sicily are three: *Zygindia serpentina* (Mats.), *Arocephalus punctum siculus* D'Urso, and *Platymetopius verae* Guglielmino.

The species which better characterize ilex groves are the arboreal *Stegelytra erythoneura* Hpt and *Typhlocyba chobauti* Rib., monophagous on *Quercus ilex*. Other species that characterize ilex woods and, generally, oak groves, are those which on Etna prefer deciduous and evergreen oak environments: the arboreal *Lindbergina aurovittata* (Dgl.), and *Platymetopius verae* Guglielmino, *Selenocephalus obsoletus* (Germ.) and *Thamnotettix dilutior* (Kbm) which, though not specifically arboreal, are often found on trees as well.

b) Deciduous oak forests (*Quercus pubescens* sensu latu and *Quercus cerris*).

Deciduous oak forests reach their maximum development on the supramediterranean horizon of the "Mediterranean Basal belt" from 1000/1100 m to 1500 m. In particular, the groves of Turkey oaks, once widespread on the volcano, occupy now only the highest altitudes of this horizon and the only large grove left is on the east incline. It shows rare pure areas, since it more often forms a mixed forest togethet with *Q. pubescens* s. l.

The greatest number of species (53) was found in *Q. pubescens* s. l. forests, there of which, *Chiasmus conspurcatus* (Perr.), *Alnetoidia alneti* (Dhlb.) and *Zygina* cfr. *suavis* R., are occasional.

In the rare pure groves of Turkey oaks only 12 species were found, all in conjunction with the *Q. pubescens* s. l. forest, except for *Allygus modestus* Scott.

The deciduous oak forests, in particular the *Q. pubescens* forests, have a less thermophile fauna compared to that found in ilex groves; the species with Mediterranean and Turanic or Centrasiatic distribution prevail though at a lower rate (35 % and 18 % respectively), but the number of Siberian species grows considerably (*Thamnotettix dilutior* (Kbm), *Arboridia versuta* (Mel.), and *Doratura paludosa* Mel.), togethet with the strictly European species (7) which reach the southern limit of their distribution area in the Sicilian mountains.

The Sicilian endemism rate is high (5).

The species which better characterize the *Q. pubescens* s. l. forests, and the deciduous oak forests in general, are the arboreal *Arboridia versuta* (Mel.) (which clearly prefers *Q. pubescens* s. l.), *Anoplotettix etnensis* Wagn., *Iassus lanio* (L.), *Alebra albostriella* (Fall.), *Alebra wahlbergi* (Boh.), *Eurhadina concinna* (Germ.), *Eurhadina kirschbaumi* Wagn., *Ribautiana alces* (Rib.) and *Ribautiana scalaris* (Rib.).

In the undergrowth and clearings of this kind of oak groves, species such as *Platimetopius verae* Guglielmino, *Allygus mixtus* (F.), *Selenocephalus obsoletus* (Germ.) and *Thamnotettix dilutior* (Kbm) are often found both on herbaceous vegetation and on trees.

c) *Castanea sativa* forest.

Chestnut woods on Etna are of artificial origin, some of them coppice ruled: they have substituted the oak groves once more widespread between 1000 m and 1500 m.

They generally have an undergrowth with sparse and little characteristic vegetation and the prevailing botanic element is *Pteridium aquilinum*.

In the chestnut grove 44 species were found in all. Among these *Stenidiocerus poecilus* (H.-S.), *Zygina rhamni* Ferr. and *Iassus lanio* (L.) are to be considered occasional.

It is interesting to note the similarity between the fauna of *Cicadellidae* found in the chestnut groves and that of oak groves in general, and of *Q. pubescens* s. l. forest in particular.

In fact, 31 species are common to both environments. On Etna, the arboreal species *Alebra albostriella* (Fall.) and *Alebra wahlbergi* (Boh.), for example, were only found on *Quercus* spp. and *Castanea sativa*. Another species, *Anoplotettix etnensis* Wagn., was only found on *Q. pubescens* s.l. and *Castanea sativa*.

Such similarity is due to the fact that *Castanea sativa* and *Quercus* spp. are arboreous elements related to each other, they occupy corresponding areas and form forests with similar ecologic characteristics.

As true for deciduous oak forests, the chestnut fauna shows a prevailing number of thermophilic species with Mediterranean and Turanic or Centrasiatic distributions, a comparatively lower rate of species with a Siberian distribution represented by *Thamnotettix dilutior* (Kbm), and those strictly European. The rate of Sicilian endemisms is high (about 10 %) and it is represented by 4 species.

d) *Pinus laricio* forest.

On Etna, a *Pinus laricio* forest, extending from 1000 m to 1800/1900 m, occupies the highest altitude of the supramediterranean horizon of the "Mediterranean Basal belt" and has its greatest distribution in old and often irregular soil in the most xeric areas of the "Mountain-Mediterranean belt".

Pinus laricio forms quite thick forests with an undergrowth relatively poor of plant species. We found 28 species of *Cicadellidae* in this kind of forest. One of them, *Fagocyba cruenta* (H.-S.), is occasional.

Pine woods are characterized by a composite fauna. The rate of elements with Siberian and Turanic or Centrasiatic distributions is remarkably high and the latter is represented by euryoecous species largely widespread on the volcano; the number of strictly Mediterranean thermophilic elements decreases and many of them are endemic of Sicily (15 %). The species which better characterize the pine woods are *Glypotes puncticollis* (H.-S.) and *Wagneripteryx germari* (Zett.), arboreal species oligophagous on *Pinus*.

e) *Betula aetnensis* forest.

Betula aetnensis, endemic of Etna, is the only species of birch tree present in Sicily. On the east versant of Etna, in an area little suitable for the growth of the pine or beech tree, it forms open brush woods with poor flora, reaching the timber line.

23 species were found in the birch forest, two of them, *Arboridia versuta* (Mel.) and *Zygina* cfr. *suavis* R., being occasional.

In the birch forest, the fauna is mostly mesophilic; in fact it is characterized by a high rate of species with a Siberian distribution and endemic elements, all of them typical of cool climates (*Kybos aetnicola* Wagn., *Arocephalus punctum siculus* D'Urso and *Rhytistylus proceps lavicus* D'Urso, high altitude species, and *Jassargus lagrecai* D'Urso, present at medium and high altitudes of the volcano). The species exclusive of birch woods are *Kybos aetnicola* Wagn., endemic on Etna and monophagous on *Betula aetnensis*, and *Oncopsis flavicollis* (L.), *Oncopsis subangulata* (J. Shlb.) and *Oncopsis tristis* (Zett.), oligophagous within the genus *Betula*.

f) *Fagus sylvatica* forest.

The beech areas present on Etna are the most southern ones reached by this arboreous element. *Fagus sylvatica* is mostly widespread on the north incline of the volcano, on the mountain slope facing north and in more mesophilic areas. It is the prevailing element which characterizes the geranio-fagion horizon of the "Mountain-Mediterranean belt" which ranges from 1500 m to 2000/2200 m.

The beech woods on Etna have a great biogeographic meaning, since they are thermophilic relics of the oceanic period of the Postglacial. In beech woods, 33 species were found in all, one of which, *Lindbergina aurovittata* (Dgl.), is occasional.

The thermophilic state of beech woods on Etna matches the composition of *Cicadellidae* species. In fact, the latter is characterized by both a low rate of elements with a Siberian distribution (only 3 %, represented by

Edwardsiana diversa (Edw.) and by a high rate of thermophilic elements mostly with a Mediterranean distribution (25 %, which represents the lowest rate of Mediterranean elements found on woods of Etna). There are also cool climate elements, especially of those with European distribution, such as *Fagocyba cruenta* (H.-S.), *Lamprotettix nitidulus* (F.), and *Edwardsiana flavescens* (F.).

As for all the woods on Etna, the rate of Sicilian endemism is high (almost 13 %) with elements both of cool climate (*Arocephalus punctum siculus* D'Urso and *Jassargus lagrecai* D'Urso) and more thermophilic (*Zyginidia serpentina* Mats.) and *Adarrus messinicus* Dlab.).

The presence of *Typhlocyva quercus* (F.), must be noted; it is an arboreal poliphagous species which, on Etna, was only found on beechis in large groups, especially at high altitude.

g) *Populus tremula.*

This element is also present in the beech horizon where it prefers the cool areas and valleys. *Populus tremula* is found in small groups, generally mixed with other elements such as *Pinus laricio* and *Fagus sylvatica* in isolated and fragmentary stands. Since aspens do not form true forests, it cannot be said that there is a flora and therefore a fauna on Etna typical of the undergrowth and clearings related to this tree.

In the small stands of *Populus tremula*, among the species found the most significant are *Macropsis fuscinervis* (Boh.), *Populicerus laminatus* (Fl.), *Kybos populi* (Edw.), and *Tremulicerus tremulae* (Estl.) oligophagous arboreals within the *Populus* species present only in poplar groves.

h) *Acer obtusatum.*

On Etna, this element is mostly represented by single trees and more rarely by small groups mixed with other arboreal elements such as *Quercus pubescens* s. l. and *Pinus laricio.*

Among the species found on *Acer obtusatum*, *Acericerus heydenii* (Kbm), oligophagous on *Acer*, and *Zyginella pulchra* Low, are particularly interesting. On Etna the latter, though poliphagous, prefers maples.

i) Mixed forests.

Mixed woods characterized by two or more species of trees are largely widespread on Etna and are found both at mid low and high altitude.

The most common mixed woods are those of *Quercus pubescens* s. l. and *Castanea sativa*, *Q. ilex* and *Q. cerris*, *Q. ilex* and *Q. pubescens* s.l., *Q. cerris* and *Q. pubescens* s.l., *Q. pubescens* s.l. and *Pinus laricio*, *Q. pubescens* s.l. *P. laricio Populus tremula Betula aetnensis*, *P. laricio* and *Fagus sylvatica*, *Q. cerris Q. pubescens* s.l. - *F. sylvatica.*

The wood in Milo must be mentioned since it represents one of the few areas with relict vegetation dating back to the Atlantic period of the Postglacial, of the "mixed wood" belonging to the *Quercus*, *Tilia* and *Acer* belt, also present in Sicily.

Analyzing the *Cicadellidae* species found on the various kind of mixed woods, it is obvious that none of them is typical of this environment. In fact, in each mixed wood there are species characterizing the corresponding monophytic peopling, monophagous or oligophagous species linked to plants largely widespread on Etna, and also poliphagous species easily found in different environments. We also believe that species such as *Zyginidia servadeii* Vid., *Mocydiopsis oranensis* (Mats.), *Placotettix taeniatifrons* (Kbm), found only in some of these woods, cannot be considered typical. In fact, *Mocydiopsis oranensis* (Mats.) and *Zyginidia servadeii* Vid. are related to *Gramineae* and *Placotettix taeniatifrons* (Kbm) is bound to different trees and shrubs.

To our present knowledge, in the forests of Etna there are 107 species of *Cicadellidae* belonging to 10 subfamilies (D'Urso, Ippolito, Lombardo, 1984; Vidano and Arzone, 1987; Guglielmino, in print).

The species which better characterize the woods of Etna are surely the arboreal ones (34 out of 107) and in particular the stenophagous ones which give a typical identity to the various kinds of forests.

The herbaceous species (56) and those which can be found both on grass and on trees (17) are usually of little importance since they can be found in open environments and in forests; some of these though, at least on Etna, prefer woody environments. This is true, for example, for *Dikraneura variata* Hardy, *Thamnotettix dilutior* (Kbm), *Selenocephalus obsoletus* (Germ.), *Platymetopius verae* Guglielmino, which prefer oak and chestnut environments, and for the high altitude species *Lamprotettix nitidulus* (F.) and *Empoasca alsiosa* Rib..

It is interesting to note that on Etna, *Idiocerinae*, *Iassinae* and *Stegelytrinae* subfamilies are represented by species living exclusively in woods. *Idiocerinae*, which are present with 4 arboreal stenophagous species, characterize the forest formations where poplar and maple are present; *Stegelytrinae* and *Iassinae*, both with one arboreal stenophagous species, are related to the ilex groves (the former) and to the chestnut and oakwoods (the latter).

The 4 species of *Macropsinae* found in the woods are stenophagous arboreals and characterize birch groves or *Populus tremula* formations.

Typhlocybinae are well represented in the forests with 41 species, 25 of which are exclusive or prefer forest environment. The most significant of these are surely 7 arboreal stenophagous species (*Kybos aetnicola* Wagn., *Kybos populi* (Edw.), *Ribautiana alces* (Rib.), *Ribautiana scalaris* (Rib.), *Wagneripteryx germari* (Zett.), *Arboridia versuta* (Mel.), *Typhlocyba*

chobauti Rib.). The largest amount of species found in the woods is comprised of Deltocephalinae (46) which are mostly represented by herbaceous and euriphagous species; only 4 species (*Grypotes puncticollis* (H.-S.), *Anoplotettix etnensis* Wagn., *Lamprotettix nitidulus* (F.), *Platymetopius verae* Guglielmino) are exclusively or preferably arboreal.

The 4 remaining subfamilies represented in wood formations (*Megophthalminae, Agallinae, Dorycephalinae* and *Aphrodinae*) do not have arboreal species.

Analyzing the geographic distribution pattern of the species found, it is clear that the *Cicadellidae* of the forests of Etna are mainly thermophilic with a predominant number of typically Mediterranean species.

The high altitude of Etna and the variety of environments there allow the existence of cool climate elements which characterize high altitude forest formations that are a suitable refugee area for them.

The number of Sicilian endemic elements is very high (8), one of them (*Kybos aetnicola* Wagn.) is exclusive inhabitant of the forests of Etna. They are neoendemic and, except for *Zyginidia serpentina* (Mats.) and *Adarrus messinicus* Dlab., elements of a cool climate and a high altitude.

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Tab. 1 List of the species found. t=trees; u=underwood; c=clearing; +=personal or personally checked findings; *= occasional findings personally checked; /=findings reported from literature; =occasional findings reported from literature. I=species widely widespread; II=mainly Siberian species; III=mainly Centralasian or Turanic species; IV=mainly European species; V=mainly Mediterranean species; E=Sicilian endemic species. →

		PURE FORESTS														MIXED FORESTS															
		Querc. ilex		Querc. pubesc.		Querc. cerris		Cast. sativa		Pinus laric.		Betula aetn.		Fagus sylv.		Popul. trem.		Acer obtus.		Q.p./ C.s.		Q.i./ Q.p.		Q.p./ Q.c.		Q.i./ Q.c.		F.s./ P.l.		P.l./ B.a.		P.l./ Q.p.		Qp/Pl Pt/Ba		Bosco Milo		Fs/Qp Qc	
		t	u c	t	u c	t	u c	t	u c	t	u c	t	u c	t	u c	t	u c	t	u c	t	u c	t	u c	t	u c	t	u c	t	u c	t	u c	t	u c	t	u c	t	u c
Megophthalmus scabripennis	V	+		+				+		+												+															
Macropsis fuscinervis	I															+																+					
Oncopsis flavicollis	I											+																		+		+					
Oncopsis subangulata	II											+																		+		+					
Oncopsis tristis	I											+																		+		+					
Agallia cfr. consobrina	IV		+	+	+	+	+	+	+	+	+			+	+							+			+		+	+			+			+		+	+
Anaceratagallia laevis	III							+	+						+							+						+				+					
Anaceratagallia ribauti	II									+																											
Anaceratagallia venosa	I			+					+				+		+														+	+	+					
Austroagallia sinuata	III	+		+							+	+	+		+	+						+					+		+			+					
Acericerus heydenii	IV																	+																			
Populicerus laminatus	III															+																+					
Stenidiocerus poecilus	I							•																													
Tremulicerus tremulae	III															+																+					
Iassus lanio	IV			+	•	•		•	•																					+	•		•				
Eupelix cuspidata	I				+																																
Anoscopus gr. albifrons					+			+	+																												
Anoscopus histrionicus	III				+			+																													
Aphrodes makarovi	I				+			+	+									•						+													
Stegelytra erythoneura	V	+																				+												+			
Alebra albostriella	V			+		+		+	•																					+	•						
Alebra wahlbergi	V			+		+		+																+						+		+					
Dikraneura variata	I			+	+	+			+											+	+							+									
Emelyanoviana mollicula	I																													+							
Micantulina micantula	I													•	+													•									
Micantulina stigmatipennis	III	•	+																																		
Empoasca alsiosa	V		+					•	+		+	Δ				•		•												+						•	
Empoasca decipiens	III			+		•	+	•	+		+	+	Δ	•	+	•	+	•						•	+			•	+		+		+				•	+
Empoasca vitis	I												/							+																	
Kybos aetnicola	E												+																	+		+					
Kybos populi	I															+																+					
Edwardsiana avellanae	IV																							•													
Edwardsiana diversa	II													•		•		•																		•	
Edwardsiana flavescens	IV													+		+																					
Edwardsiana rosae	I													•		•	+											+								•	
Eupteryx castelvecchius	V												+							+								+	+				+				

PURE FORESTS

		Querc. ilex			Querc. pubesc.			Querc. cerris			Cast. sativa			Pinus laric.			Betula aetn.			Fagus sylv.			Popul. trem.			Acer obtus.		
		t	u	c	t	u	c	t	u	c	t	u	c	t	u	c	t	u	c	t	u	c	t	u	c	t	u	c
Eupteryx filicum	III			+	•	+		•				+			+			+		•	+	+						
Eupteryx rostrata	V			+		+													+									
Eupteryx urticae	I																			•				+				
Eupteryx zelleri	IV			+																								
Eurhadina concinna	IV				+																							
Eurhadina kirschbaumi	IV				+			+																				
Fagocyba cruenta	IV				+										•		/			+		•						
Lindbergina aurovittata	V	+			+															•								
Ribautiana alces	V				+			+																				
Ribautiana scalaris	IV				+	•																						
Ribautiana tenerrima	IV				•	+											•					+						
Typhlocyba chobauti	V	+																										
Typhlocyba quercus	III																			+		•						
Wegneripteryx germari	I													+														
Zyginella pulchra	V																									+		
Alnetoidia alneti	I						•										/											
Arboridia versuta	II				+	•											Δ											
Hauptidia lapidicola	V												+															
Hauptidia provincialis	IV				+	+					+	+								+		+						
Zygina cfr. discolor	III																											
Zygina rhamni	III										•																	
Zygina cfr. schneideri	IV																											
Zygina cfr. suavis	II	•			•												Δ											
Zyginidia serpentina	E			+		+	+					+	+		+	+						+						
Zyginidia servadeii	V																											
Grypotes puncticollis	IV													+														
Goniagnathus brevis	III		+			+	+					+	+		+	+												
Neoaliturus fenestratus	I		+	+		+	+					+	+		+	+		+	+		+	+						
Neoaliturus haematoceps	I			+		+	+					+	+								+							
Balclutha punctata	I																			•		+						
Balclutha saltuella	I			+																								
Chiasmus conspurcatus	III						•																					
Doratura paludosa	II						+									+	•	+										
Synophropsis lauri	V	+		+																								
Placotettix taeniatifrons	V																											
Exitianus fasciolatus	I											+																

MIXED FORESTS

		Q.p./ C.s.			Q.i./ Q.p.			Q.p./ Q.c.			Q.i./ Q.c.			F.s./ P.l.			P.l./ B.a.			P.l./ Q.p.			Qp/Pl Pl/Ba			Bosco Milo			Fs/Qp Qc		
		t	u	c	t	u	c	t	u	c	t	u	c	t	u	c	t	u	c	t	u	c	t	u	c	t	u	c	t	u	c
Eupteryx filicum	III			+		+	+	•	+							+				•	+				+				•	+	
Eupteryx rostrata	V			+												+			+						+						
Eupteryx urticae	I			+												+			+										•	+	
Eupteryx zelleri	IV			+																					+						
Eurhadina concinna	IV																														
Eurhadina kirschbaumi	IV																														
Fagocyba cruenta	IV	+												+	•	•															
Lindbergina aurovittata	V				+						+			•		•															
Ribautiana alces	V	+						+												+	•								+		
Ribautiana scalaris	IV																														
Ribautiana tenerrima	IV	•		+																	+		•		+				+		
Typhlocyba chobauti	V																														
Typhlocyba quercus	III													+																	
Wegneripteryx germari	I													+			+			+											
Zyginella pulchra	V																														
Alnetoidia alneti	I																														
Arboridia versuta	II							+																					+		
Hauptidia lapidicola	V																														
Hauptidia provincialis	IV		+			+		+	+						+	+					+						+	+	+	+	
Zygina cfr. discolor	III																												•		
Zygina rhamni	III																														
Zygina cfr. schneideri	IV																												•		
Zygina cfr. suavis	II																												•		
Zyginidia serpentina	E			+			+								+	+					+										
Zyginidia servadeii	V																				+						+				
Grypotes puncticollis	IV													+	•		+			+											
Goniagnathus brevis	III																														
Neoaliturus fenestratus	I			+					+						+			+	+		+	+									
Neoaliturus haematoceps	I													•	+																
Balclutha punctata	I																														
Balclutha saltuella	I																														
Chiasmus conspurcatus	III																														
Doratura paludosa	II																	+			+										
Synophropsis lauri	V					+																									
Placotettix taeniatifrons	V																									+					
Exitianus fasciolatus	I																														

PURE FORESTS

		Querc. ilex			Querc. pubesc.			Querc. cerris			Cast. sativa			Pinus laric.			Betula aetn.			Fagus sylv.			Popul. trem.			Acer obtus.		
		t	u	c	t	u	c	t	u	c	t	u	c	t	u	c	t	u	c	t	u	c	t	u	c	t	u	c
Platymetopius gr. undatus	-										•	+			+													
Platymetopius verae	E	+		+	+	+	+	+	+		+	+	+															
Proceps acicularis	V												+															
Anoplotettix etnensis	E				+						+																	
Lamprotettix nitidulus	IV																			+								
Allygidius abbreviatus	V											+	+		+													
Allygus maculatus	IV				+																							
Allygus mixtus	III				+	+	+				+	+			+													
Allygus modestus	V							+	+																			
Phlepsius spinulosus	V			+		+																						
Selenocephalus obsoletus	V	+		+	+	+	+	+	+			+	+							•		+						
Rhytistylus proceps lavicus	E																	+										
Eohardya fraudulenta	III			+		+	+					+									+	+	•	+				
Rhopalopyx elongatus	IV					+	+					+	+			+						+		+	+			
Elymana sulphurella	I											+	+			+									+			
Mocydia crocea	V			+		+						+										+						
Mocydiopsis longicauda	IV					+	+					+						+										
Mocydiopsis monticola	V					+																+						
Mocydiopsis oranensis	V																											
Thamnotettix dilutior	II	+		+	+	+	+	+	+		+	+																
Conosanus obsoletus	V																											
Euscelis incisus	I			+		+	+						+									+						
Euscelis lineolatus	III						+								+													
Euscelis remanei	V					+																						
Streptanus josifovi	V			+								+				+						+						
Artianus manderstjernii	V					+	+					+	+															
Arocephalus longiceps	III			+		+			+			+	+		+	+					+	+		+	+			
Arocephalus punctum siculus	E			+		+										+		+	+			+						
Psammotettix alienus	I												+															
Psammotettix confinis	I															+												
Psammotettix helvolus	II															+												
Psammotettix provincialis	I					+	+					+	+															
Psammotettix striatus	I			+	•	+						+	+		+	+						+		+		•		
Adarrus messinicus	E					+									+	+						+						
Jassargus lagrecai	E											+			+	+		+				+						
TOTAL SPECIES		29			53			12			44			28			23			33			16			7		

MIXED FORESTS

		Q.p./C.s.			Q.i./Q.p.			Q.p./Q.c.			Q.i./Q.c.			F.s./P.l.			P.l./B.a.			P.l./Q.p.			Qp/Pl Pl/Ba			Bosco Milo			Fs/Qp Qc		
		t	u	c	t	u	c	t	u	c	t	u	c	t	u	c	t	u	c	t	u	c	t	u	c	t	u	c	t	u	c
Platymetopius gr. undatus	-																			•	+				+						
Platymetopius verae	E																														
Proceps acicularis	V																														
Anoplotettix etnensis	E																														
Lamprotettix nitidulus	IV																														
Allygidius abbreviatus	V											+									+				+						
Allygus maculatus	IV																														
Allygus mixtus	III																														
Allygus modestus	V																														
Phlepsius spinulosus	V																														
Selenocephalus obsoletus	V					+		+	+			+																			
Rhytistylus proceps lavicus	E																		+												
Eohardya fraudulenta	III			+								+	+			+			+		+						+				
Rhopalopyx elongatus	IV			+												+			+			+			+						
Elymana sulphurella	I														+	+					+										
Mocydia crocea	V																										+				
Mocydiopsis longicauda	IV			+									+		+										+						
Mocydiopsis monticola	V																							+							
Mocydiopsis oranensis	V																								+						
Thamnotettix dilutior	II			+		+		+	+			+								+	+						+		+	+	
Conosanus obsoletus	V					+																									
Euscelis incisus	I																•		+												
Euscelis lineolatus	III																														
Euscelis remanei	V																														
Streptanus josifovi	V																														
Artianus manderstjernii	V																		+												
Arocephalus longiceps	III		+	+		+	+								+	+		+	+		+	+		+	+		+	+			
Arocephalus punctum siculus	E																		+		+				+						
Psammotettix alienus	I			+																											
Psammotettix confinis	I			+			+									+			+												
Psammotettix helvolus	II																								+						
Psammotettix provincialis	I																														
Psammotettix striatus	I			+											+	+			+	•	+				+						
Adarrus messinicus	E			+					+						+	+					+						+				
Jassargus lagrecai	E			+																	+										
TOTAL SPECIES		23			15			11			8			28			23			28			29			10			15		