

Study on flora and Auchenorrhyncha biocenoses (Insecta Hemiptera) in moist areas considered restricted relics of the ancient Lacus Velinus in the provinces of Terni and Rieti (Umbria and Latium, Italy)

Adalgisa Guglielmino^{1*}, Enrico Scarici¹, Alessandro De Santis² & Christoph Bückle³

¹Department of Agriculture and Forestry Science, University of Tuscia, Viterbo, Italy

²Via Colli San Silvestro 5, I-02010 Santa Rufina, Cittaducale (Rieti), Italy

³Neckarhalde 48, D-72070 Tübingen, Germany

*Corresponding author, e-mail: guglielm@unitus.it

ABSTRACT

A research on vascular plants and Auchenorrhyncha biocenoses in moist areas of the provinces of Terni (Umbria) and Rieti (Latium) was conducted from 1999 to 2015. Prevalently four areas were studied: Lago di Piediluco, Lago di Ventina, Lago Lungo and Lago Ripasottile. 267 taxa of vascular plants are recorded on the whole. Species of particular interest are *Butomus umbellatus*, *Carex acutiformis*, *C. elata*, *C. pseudocyperus*, *C. paniculata*, *Cladium mariscus*, *Epipactis palustris*, *Frangula alnus*, *Glyceria maxima*, *Hydrocharis morsus-ranae*, *Nuphar lutea*, *Oenanthe aquatica*, *Orchis incarnata*, *Ranunculus lingua*, *Rorippa amphibia*, *Rumex hydrolapathum*, *Scutellaria galericulata* and *Viburnum opulus*, all included in the Regional Red Lists of Italian Plants of Umbria and Latium. 162 Auchenorrhyncha species were collected. Four species (*Cixius remotus*, *Kelisia punctulum*, *Anakelisia fasciata* and *Megamelodes lequesnei*) are recorded for the first time for Italy, five (*Kelisia praecox*, *Struebingianella lugubrina*, *Chloriona smaragdula*, *Hishimonus cf. hamatus* and *Metalimnus formosus*) are new records for the Apennine Peninsula (“S” in the checklist of the Italian fauna). For some species of special interest, their ecology, life cycle and distribution are discussed. 60 taxa are strictly correlated with moist habitats. The investigated areas are of high relevance for nature conservation as they constitute small relics of the ancient Lacus Velinus, where several stenotopic Auchenorrhyncha species occur, associated particularly with moist vegetation.

KEY WORDS

flora; faunistics; ecology; phenology; biogeography; environmental conservation.

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INTRODUCTION

The Lacus Velinus originated in the Pleistocene and occupied a great part of the present basin of Rieti (Fig. 1). This lake formed due to the depos-

ition of material of the river Velino which developed first a strong difference in level between the plains of Rieti and Terni, originally situated on the same level. Subsequently, the sediments formed a barrier of calcarean rock at the point of the confluence of

the Velino and the river Nera (Fig. 2). This barrier blocked the passage of the water of the former, and caused the flooding of the whole valley creating a lake named by the Romans Lacus Velinus.

In the Roman period, the consul Manius Curius Dentatus proceeded to a first act of reclamation of the territory and realized in 271 BC a drainage canal, called “Cavus Curianus” which allowed the water of the Velino to merge with the river Nera. It cut the barrier of calcarean rock near the locality “Marmore” and created in this way the homonymous waterfall. During the following centuries, the drainage of the lake and the reclamation of land went on in order to avoid floodings and to increase the agricultural surface. This produced a gradual fragmentation of the original lake basin. Nowadays, some separate water basins only are left: the Lago di Piediluco in the province of Terni (Umbria) and the Lago di Ventina, Lago Ripasottile and Lago Lungo in the province of Rieti (Latium).

MATERIAL AND METHODS

In spring and summer 2015 a floristic analysis was conducted with the aim to record the vascular plants present in the studied area (only for the locality “Fiume Velino”, a detailed floristic study was not conducted). The field data, in some cases unedited, were integrated, where possible, with those gathered from former studies regarding the same sites or adjacent areas (Sorgi & Fanelli, 1993; Venanzoni & Gigante, 2000).

The floristic study concerned only marginally the hydrophytes (for a closer examination see Sorgi & Fanelli, 1993; Venanzoni & Gigante, 2000).

The Auchenorrhyncha samplings were carried out in several years (1999, 2000, 2005, 2006, 2009–2012, 2015), from April to November, at 11 localities (some of them sampled more times). We applied two collection methods: a) by entomological net and aspirator, b) directly by sight of single specimens by means of the aspirator. The distribution of Auchenorrhyncha species in Italy is cited prevalently from Servadei (1967) and completed by data published later in the following papers: Alma et al. (2009a, 2009b); Carl (2008); D’Urso (1995); Guglielmino & Bückle (2007, 2008); Guglielmino et al. (2005); Mazzoni (2005); Mazzoni et al. (2001); Vidano & Arzone (1987).

The present study includes also data gathered by a degree thesis (De Santis, 2010) conducted in 2009–2010 which aimed to study the Auchenorrhyncha populations of the Natural Reserve “Laghi Lungo e Ripasottile” from a faunistic point of view.

Investigated areas (Fig. 3, Table 1)

The Lago di Ventina (Figs. 4–7), part of the community of Colli sul Velino, is a small lake of about 10 ha, surrounded by a continuous band of helophytes.

Its flora is well preserved and very various with ca. 400 recorded species, some of which of elevated scientific interest as *Ranunculus lingua* and *Glyceria maxima*, known in Latium only in this area (Sorgi & Fanelli, 1993; Anzalone et al., 2010). The lake is bordered by pasture areas crossed by numerous ditches and surrounded by different species of willows (e.g. *Salix alba*, *S. cinerea*, *S. purpurea*) and poplars (*Populus alba* and *P. canadensis*). Presently, the lake basin and the moist areas surrounding it constitute a Site of Community Interest (pSIC) “Lago di Ventina - cod. Natura 2000 - IT6020010” because of the preserved high floristic and faunistic biodiversity.

- The Lago di Piediluco (Figs. 8, 9), including a Site of Community Interest (pSIC) (Lago di Piediluco - Monte Caperno - cod. Natura 2000 - IT5220018) and a Special Protection Zone (SPZ) (Lago di Piediluco - Monte Maro - cod. Natura 2000 - IT5220026), forms together with the “Parco fluviale del Nera” and the “Cascade delle Marmore”, a part of the system of protected areas of the region of Umbria which preserves habitats of community interest. It is the largest of the residual basins of the ancient Lacus Velinus, has an irregular shape with a perimeter of about 13 km and is surrounded by wooded areas and mountains. The area stands out for the diversity of habitats and for an interesting and rich flora and fauna.

- East of the Lago di Piediluco, near the locality Madonna della Luce (Figs. 10, 11), we studied a further habitat consisting of ditches, moist meadows, shrubs of *Salix cinerea* and adjacent fields and hedges.

- Presently, the Lago Lungo (Figs. 12, 13) and Lago Ripasottile (Figs. 14, 15) constitute the “Riserva Naturale dei Laghi Lungo e Ripasottile”.

It was established in 1985 due to its exceptional avifaunistic and geographic value, and represents one of the few moist habitats in good conservation stage in Italy. On the base of the presence of many species of community interest in according to the Birds Directive 79/409 EEC and of priority habitats in according to the Habitats Directive 92/43 EEC, a part of the plain of Rieti was designated as pSIC and SPZ with the code Natura 2000 - IT6020011 “Laghi Lungo e Ripasottile”.

- In addition, we studied two areas near Montisola,

a little village belonging to the community of Consigliano (province of Rieti): one of them (on the eastern side of the village) with ruderal vegetation near a little pond (Fig. 16), the other one (northwest of the village) consisting of a moist meadow with *Bolboschoenus maritimus* and *Carex hirta* (Fig. 17).

- Finally, we investigated one area on the river Velino, north of Pié di Moggio, in the province of Terni (Figs. 18, 19) with riparian vegetation (*Populus alba*, *Salix alba*, *Petasites hybridus*, Poaceae species).

Lago di Ventina	Rieti province; Lago Ventina, southern side; N42°30'27.1" E12°45'05.0"; 375 m	26/06/2010 (loc. 543)
	Rieti province; Lago Ventina, northwestern side; N42°30'38.5" E12°44'57.5"; 378 m	26/06/2010 (loc. 544), 18/07/2011 (loc. 601), 27/04/2012 (loc. 632), 06/06/2015 (loc. 747)
	Rieti province; Lago Ventina, southwestern side; N42°30'23.0" E12°44'50.5"; 375 m	26/06/2010 (loc. 545), 30/10/2010 (loc. 549), 25/11/2011 (loc. 618), 27/04/2012 (loc. 631), 11/08/2012 (loc. 685), 06/06/2015 (loc. 746), 13/09/2015 (loc. 758)
	Rieti province; Lago Ventina, eastern side; N42°30'31.6" E12°45'39.3"; 369 m	19/09/2015 (loc. 762)
Lago di Piediluco	Terni province; Lago di Piediluco, between Piediluco and Madonna della Luce, west of road SS 79, Km 28.6; N42°31'36.8" E12°46'10.9"; 372 m	20/08/1999 (loc. 32), 22/08/2000 (loc. 87), 10/06/2005 (loc. 131, 132), 11/06/2005 (loc. 133), 13/06/2015 (loc. 748)
Madonna della Luce	Rieti province; East of Lago di Piediluco, Madonna della Luce, SS 79 near fork Labro, Km 29.5; N42°31'15.0" E12°46'38.2"; 372 m	21/08/2000 (loc. 86), 11/06/2005 (loc. 134), 13/06/2015 (loc. 749), 13/09/2015 (loc. 759)
Lago Lungo	Rieti province; Lago Lungo, N42°28'53.3" E12°51'10.1"; 376 m	25/05/2009, 15/06/2009 (loc. 452), 22/07/2009 (loc. 454), 18/08/2009, 4/09/2009, 6/11/2010 (loc. 550)
	Rieti province; Lago Lungo; N42°28'57.7" E12°51'10.9"; 372 m	19/06/2015 (loc. 750), 13/09/2015 (loc. 760)
Lago Ripasottile	Rieti province; Lago Ripasottile; N42°28'50.0" E12°49'08.0"; 371 m	25/05/2009, 15/06/2009 (loc. 451), 22/07/2009 (loc. 455), 03/08/2009, 04/09/2009
	Rieti province; Lago Ripasottile; N42°28'57.9" E12°49'08.3"; 370 m	19/06/2015 (loc. 751), 13/09/2015 (loc. 761)
Montisola	Rieti province; Montisola, pond southeast of the village; N42°28'36.8" E12°47'48.9"; 377 m	03/08/2009, 18/07/2011 (loc. 600), 27/04/2012 (loc. 630), 19/09/2015 (loc. 764)
	Rieti province; Montisola, meadow southwest of the village; N42°28'29.7" E12°47'27.5"; 388 m	18/07/2011 (loc. 602), 19/09/2015 (loc. 763)
Fiume Velino	Terni province; SS 79 between Marmore and Rieti, river Velino near Pié di Moggio, km 23.9; N42°30'50.3" E12°44'27.0"; 371 m	06/08/2006 (loc. 281)

Table 1. List of collecting sites. In order to facilitate the comparison of data in our different papers on the Italian Auchenorrhyncha fauna we maintain the number system of collecting localities applied already in other publications.

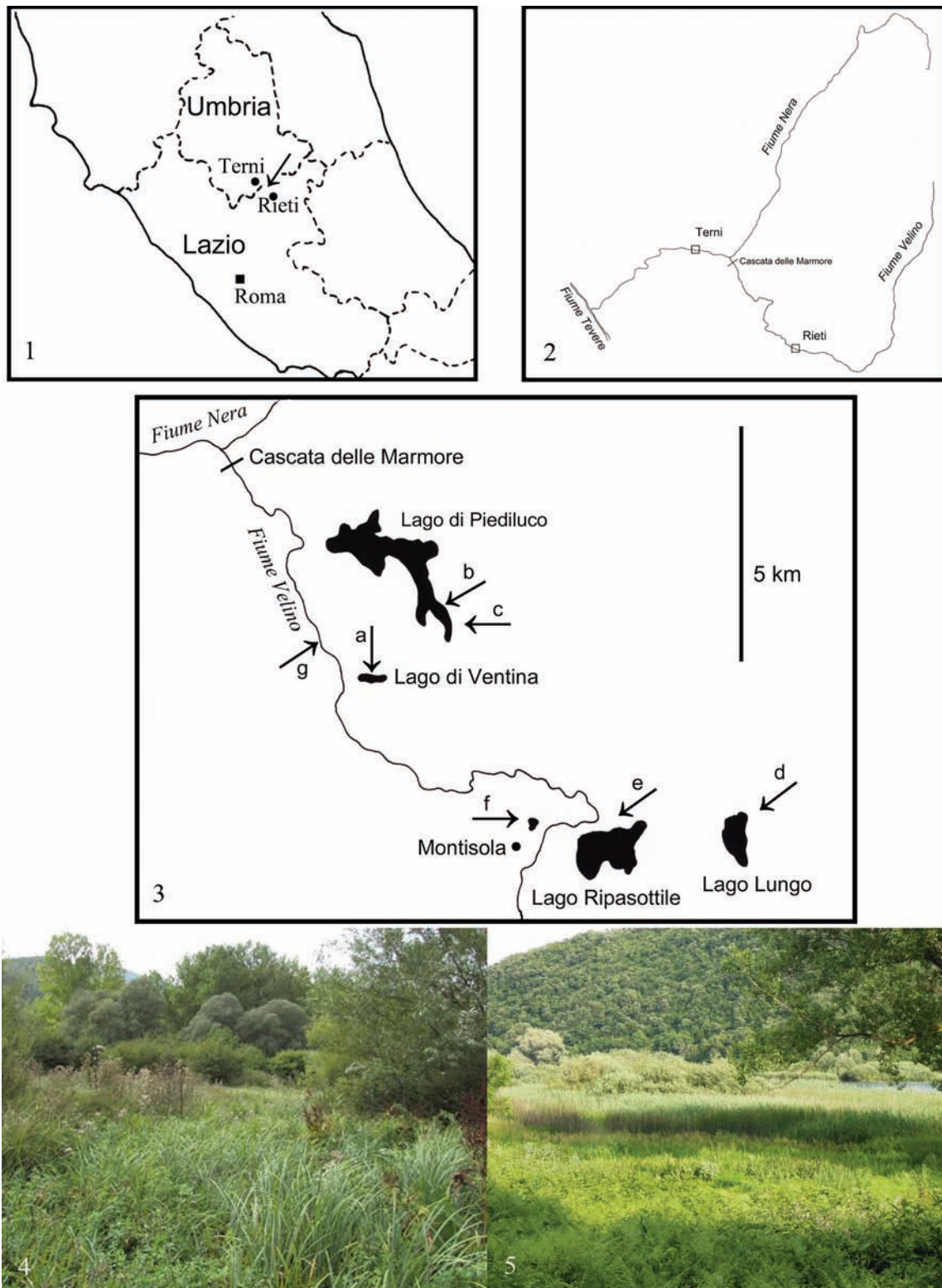


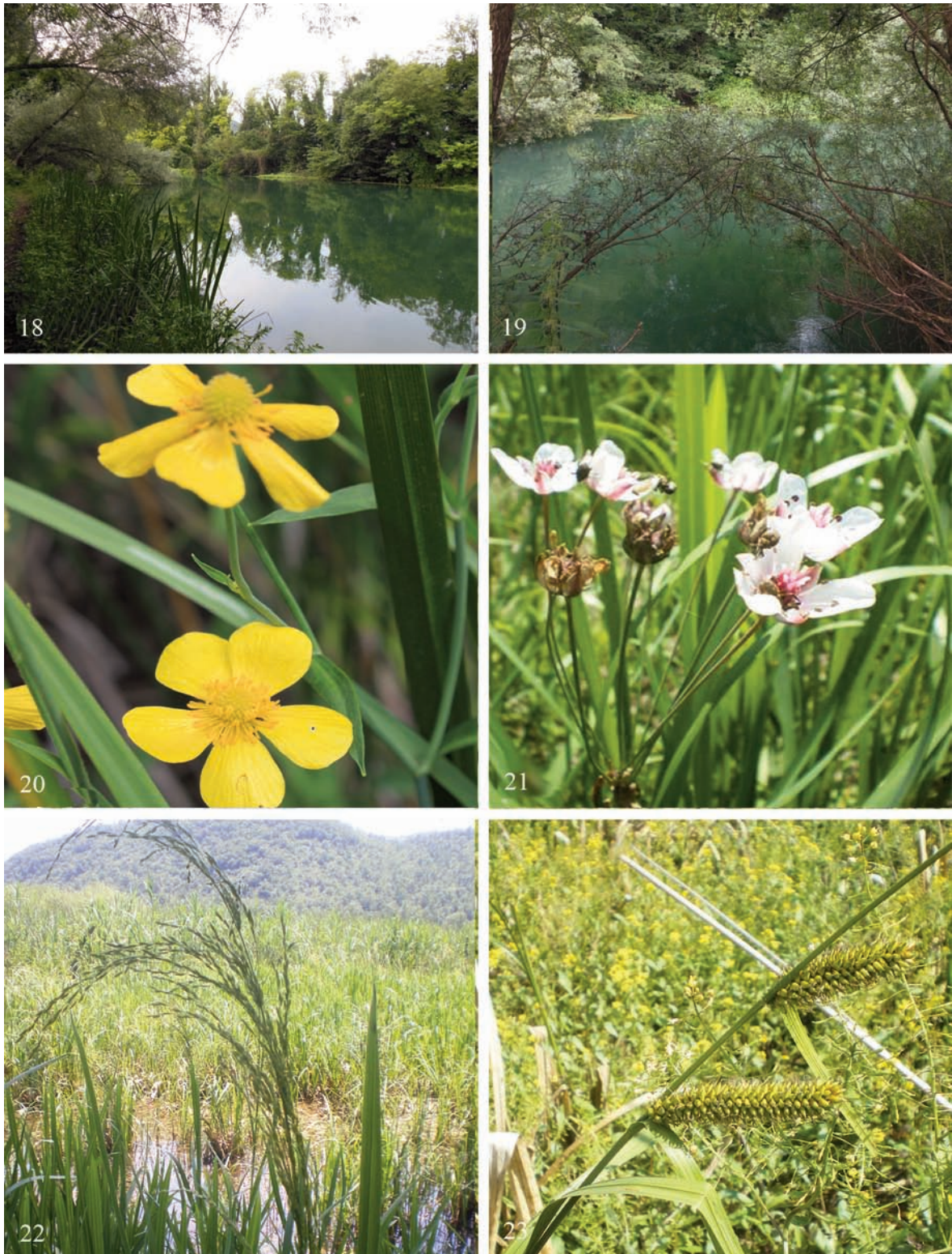
Figure 1. Outline map of Central Italy (the arrow indicates the investigated area). Figure 2. The Nera-Velino river system. Figure 3. Investigated areas. a = Lago di Ventina; b = Lago di Piediluco; c = Madonna della Luce; d = Lago Lungo; e = Lago Ripasottile; f = Montisola; g = Fiume Velino. Figures 4, 5. Lago di Ventina. Figure 4. Area east of the lake with tall sedges, willows and poplars. Figure 5. Area on the northwestern side with *Glyceria maxima*, *Phragmites australis* and *Schoenoplectus lacustris*.



Figures 6, 7. Lago di Ventina. Fig. 6: meadow on the southwestern side with *Carex hirta* and *C. distans*. Fig. 7. reed and tall sedges on the southwestern side. Figures 8, 9. Lago di Piediluco. Fig. 8: small path with different Cyperaceae and Poaceae species between willow trees. Fig. 9: undergrowth among young *Populus canadensis* trees. Figures 10, 11. Madonna della Luce. Fig. 10: moist meadow with *Carex* spp. and *Juncus* sp. along a ditch. Fig. 11: moist meadow with tall sedges, in the background *Salix cinerea*.



Figures 12, 13. Lago Lungo. Fig. 12: path along a ditch with tall sedges, *Glyceria* sp. and other Poaceae. Fig. 13: mown meadow with *Cyperus longus* and *Carex hirta*, in the background *Salix alba*. Figures 14, 15. Lago Ripasottile. Fig 14: moist meadows, ditches with sedges, reed, *Juncus* sp. and willows. Fig. 15: moist meadows with sedges, reed, *Cyperus longus*; in the background *Salix alba* and *S. cinerea*. Figures 16, 17. Montisola. Fig. 16: little pond east of the village with *Schoenoplectus lacustris* and *Phalaris arundinacea*. Fig. 17: moist meadow northwest of the village with *Carex hirta* and *Bolboschoenus maritimus*.



Figures 18, 19. Fiume Velino. Willows on the riverbanks. Figure 20. *Ranunculus lingua*. Figure 21. *Butomus umbellatus*. Figure 22. *Glyceria maxima*. Figure 23. *Carex riparia*. Photos 4–19: Christoph Bückle, 20–23 Enrico Scarici.

RESULTS

A) Flora (Table 2)

267 taxa of vascular plants have been identified belonging to 252 species, 181 genera and 57 families. The botanic nomenclature applied is the one proposed by Conti et al., 2005. The list of taxa is given in Table 2.

The florula is characterized by a significant number of remarkable taxa, characteristic of well structured and preserved moist environments, nowadays everywhere rarer and rarer. Some taxa are of particular interest as they are included in the Regional Red Lists of Italian Plants of Umbria and Latium (Conti et al., 1997). This is the case with *Carex acutiformis*, *C. elata*, *Epipactis palustris*, *Orchis incarnata*, endangered units in Umbria or with *Ranunculus lingua* (Fig. 20), *Butomus umbellatus* (Fig. 21), *Glyceria maxima* (Fig. 22), considered vulnerable in Latium. *Oenanthe aquatica* is a very rare species in Umbria and in Latium, and is considered in these regions endangered and at lower risk, respectively. Some species are also rare or very rare. They are in progressive rarefaction due to changes of the terrestrial particularly fragile humid environments. In this context may be mentioned, among others, the extremely rare species *Ranunculus lingua* and *Glyceria maxima*, present in Latium exclusively in the “Lacus Velinus” area, furthermore *Carex pseudocyperus*, *Hydrocharis morsus-ranae*, *Rorippa amphibia* and *Scutellaria galericulata*, uncommon or rare species in Latium, in addition considered at lower risk (Anzalone et al., 2010). *Frangula alnus* is regarded as rare and vulnerable in Umbria (Orsomando et al., 1998).

However, there are numerous synanthropic species as well, infesting cultures or bound to pasture and to other human activities conducted in the investigated area or in immediately adjacent zones.

In addition, we record 10 alien and invasive species with vast distribution: *Ailanthus altissima*, *Amaranthus deflexus*, *A. retroflexus*, *Artemisia verlotiorum*, *Datura stramonium*, *Erigeron canadensis*, *E. sumatrensis*, *Robinia pseudoacacia*, *Sorghum halepense* and *Xanthium orientale* subsp. *italicum* (Celesti-Grappo et al., 2010).

B) Auchenorrhyncha (Table 3)

162 species of Auchenorrhyncha have been identified belonging to 101 genera and 10 families. 60 species have host plants strictly connected with humid conditions. The list of species is given in Table 3.

Auchenorrhyncha fauna of the individual investigated areas

1) Lago di Ventina (83 species; months: IV, VI, VII, VIII, IX, X, XI)

Auchenorrhyncha species of particular interest are *Kelisia punctulum* (on *Carex acutiformis*?), *Anakelisia fasciata* (quite abundant, probably on *Carex riparia*, Fig. 23), *Megamelus notula* (on tall sedges), *Megamelodes lequesnei* (on *Carex* sp.?), *Delphacodes mulsanti* (on Cyperaceae species: *Eleocharis*?, *Cyperus*?), *Struebingianella lugubrina* (a rich population on *Glyceria maxima*), *Stroggylocephalus agrestis* (on *Carex* spp.), *Zygina lunaris* (on *Salix* sp.), *Cicadula placida* (very abundant, on *Phalaris arundinacea*, *Glyceria maxima* [and other Poaceae species ?]), and *Metalimnus formosus* (on *Carex* spp.).

Many of the species (36) found in this area are bound to humid sites. This group includes (in addition to all the taxa mentioned above) *Cixius wagneri* (on *Salix* spp.?), *Kelisia ribauti* (on *Carex* spp.), *Flastena fumipennis* (on *Cyperus longus*), and *Cicadula quadrinotata* (on *Carex* spp.), which all occur in high abundance, furthermore *Kelisia guttula* (on *Carex flacca*), *K. melanops* (on *Carex* sp.), *Stenocranus major* (on *Phalaris arundinacea*), *Conomelus lorifer dehneli* (on *Juncus* spp.), *Florodelphax leptosoma* (on *Juncus* spp.), *Javesella dubia* (on *Agrostis* sp.?), *Macropsis albae* (on *Salix alba*), *M. cerea* (on *Salix* sp.), *M. marginata* (on *Salix purpurea*), *Idiocerus stigmatalis* (on *Salix alba*), *I. vicinus* (on *Salix cinerea*), *Tremulicerus distinguendus* (on *Populus alba*), *Viridicerus ustulatus* (on *Populus alba*), *Cicadella viridis* (on *Carex* spp.), *Notus italicus* (on *Carex paniculata*), *Edwardsiana prunicola* (on *Salix* sp.), *Eupteryx thoulessi* (on *Mentha aquatica*), *Zygina lunaris* (on *Salix* sp.), *Z. nivea* (on *Populus alba*), *Balclutha nicolasi* (on *Cyperus longus*), *Cicadula lineatopunctata* (on *Carex* spp.?), and *Conosanus obsoletus* (on *Juncus* spp.).

Other taxa are rather euryecous and are generally found on meadows or ruderal places without specific characteristics. We mention here only some particularly abundant species as *Laodelphax striatella*, *Toya propinqua*, *Philaenus spumarius*, *Megophthalmus scanicus*, *Anaceratagallia laevis*, *A. ribauti*, *Aphrodes bicincta*, *Eupteryx atropunctata*, *E. melissae*, *Zyginidia* gr. *ribauti*, *Balclutha punctata*, *Macrosteles sexnotatus*, *M. viridigriseus*, *Deltocephalus pulicaris*, *Euscelis incisus*, *Psammotettix alienus*, *P. confinis*, *Jassargus bisubulatus*, and *Arthaldeus striifrons*.

2) Lago di Piediluco (89 species; months: VI, VIII)

Kelisia punctulum and *Cicadula placida* (on *Phalaris arundinacea*, *Glyceria maxima* [and other Poaceae species?]), can be mentioned as particularly interesting Auchenorrhyncha species.

There is a high number (31) of taxa with host plants correlated with moist or wet conditions. In addition to *Kelisia punctulum* and *Cicadula placida*, we mention *Cixius wagneri* (on *Salix* spp.), *Kelisia brucki* (on *Juncus* spp.), *K. guttula* (on *Carex flacca*), *K. melanops* (on *Carex* sp.), *K. ribauti* (on *Carex* spp.), *Conomelus lorifer dehnelli* (on *Juncus* spp.), *Delphax ribautianus* (on *Phragmites australis*), *Florodelphax leptosoma* (on *Juncus* spp.), *Javesella dubia* (on *Agrostis* sp.), *Flastena fumipennis* (on *Cyperus longus*), *Aphrophora pectoralis* (on *Salix* spp.), *Macropsis albae* (on *Salix alba*), *M. marginata* (on *Salix purpurea*), *M. najas* (on *Salix alba*), *M. notata* (on *Salix triandra*?), *M. vicina* (on *Populus alba*), *Idiocerus stigmatalis* (on *Salix alba*), *I. vicinus* (on *Salix purpurea*), *Metidiocerus rutilans* (on *Salix* sp.), *Viridicerus ustulatus* (on *Populus alba*), *Cicadella viridis* (on *Carex* spp.), *Kybos rufescens* (on *Salix purpurea*), *Edwardsiana prunicola* (on *Salix* spp.), *E. salicicola* (on *Salix* spp.), *Balclutha nicolasi* (on *Cyperus longus*), *Macrosteles frontalis* (on *Equisetum* sp.), *Cicadula quadrinotata* (on *Carex* spp.), *Conosanus obsoletus* (on *Juncus* spp.), and *Paralimnus phragmitis* (on *Phragmites australis*).

Out of the group of taxa of meadows or ruderal places without close connexion to wet sites we mention only the most abundant ones: *Laodelphax striatella*, *Toya propinqua*, *Dictyophara europaea*, *Trypetimorpha occidentalis*, *Cercopis vulnerata*, *Philaenus spumarius*, *Stictocephala bisonia*, *Ana-*

ceratagallia laevis, *Austroagallia sinuata*, *Alebra wahlbergi*, *Empoasca decipiens*, *Zyginidia* gr. *ribauti*, *Macrosteles laevis*, *Allygidius abbreviatus*, *Psammotettix alienus*, *P. confinis*, *Jassargus bisubulatus*, and *Arthaldeus striifrons*.

3) Madonna della Luce (65 species; months: VI, VIII, IX)

Interesting Auchenorrhyncha species are *Cixius remotus*, *Kelisia punctulum* (a rich population, on tall *Carex* (*C. acutiformis*?), *Anakelisia fasciata* (on *Carex riparia*), *Delphacodes mulsanti* (a rich population, possibly on *Eleocharis*), *Cicadula frontalis* (on tall sedges, probably *Carex riparia*), and *C. placida* (on *Phalaris arundinacea*, *Glyceria maxima* [and other Poaceae species?]).

20 taxa have host plants correlated with moist or wet conditions. In addition to the species already mentioned before except for *C. remotus*, we record *Kelisia ribauti* (on *Carex* spp.), *Florodelphax leptosoma* (on *Juncus* spp.), *Flastena fumipennis* (on *Cyperus longus*), *Macropsis prasina* (on *Salix cinerea*), *Cicadella viridis* (on *Carex* spp.), *Asymmetrasca decedens* (on *Salix* spp.), *Edwardsiana prunicola* (on *Salix* spp.), *E. salicicola* (on *Salix* spp.), *Linnavuoriana sexmaculata* (on *Salix* spp.), *Balclutha nicolasi* (on *Cyperus longus*), *Macrosteles ossiannilssoni* (on *Carex* spp.), *M. sardus* (on *Epilobium hirsutum*), *Cicadula lineatopunctata* (on *Carex* spp.), *C. quadrinotata* (on *Carex* spp.), and *Paralimnus phragmitis* (on *Phragmites australis*).

Among the other taxa we mention here only some particularly abundant species as *Laodelphax striatella*, *Dicranotropis remaniaca*, *Toya propinqua*, *Philaenus spumarius*, *Megophthalmus scanicus*, *Anaceratagallia laevis*, *A. ribauti*, *Aphrodes bicincta*, *Zyginidia* gr. *ribauti*, *Euscelis incisus*, *Psammotettix alienus*, *P. confinis*, and *Arthaldeus striifrons*.

4) Lago Lungo (61 species; months: V, VI, VII, VIII, IX, XI)

In this area several particularly interesting taxa were found: *Kelisia punctulum* (on tall *Carex* species [*C. acutiformis*?]), *Anakelisia fasciata* (on *Carex riparia*?), *Chloriona smaragdula* (on *Phragmites australis*), *Megamelodes lequesnei* (on *Carex*

sp., probably *C. hirta*), *Delphacodes mulsanti* (on *Eleocharis*?, *Cyperus* sp.?), *Ribautodelphax albostriata* (on *Poa pratensis*), *Zygina lunaris* (on *Salix* spp.), *Z. cf. ordinaria* (on *Salix* spp.), and *Cicadula placida* (on *Phalaris arundinacea*, *Glyceria maxima* [and other Poaceae species?]).

26 species display an ecological restriction to moist areas. Besides the species mentioned above (with the exception of *Ribautodelphax albostriata*), the following taxa belong to this group: *Kelisia ribauti* (on *Carex* spp.), *Stenocranus major* (on *Phalaris arundinacea*), *Conomelus lorifer dehneli* (on tall *Juncus* species), *Delphax* sp. (on *Phragmites australis*), *Javesella dubia* (on *Agrostis* sp.?), *Flastena fumipennis* (on *Cyperus longus*), *Macropsis albae* (on *Salix alba*), *Idiocerus vicinus* (on *Salix purpurea*), *Stroggylocephalus agrestis* (on *Carex* spp.), *Cicadella viridis* (on *Carex* spp.), *Asymmetrasca decedens* (on *Salix* spp.), *Edwardsiana prunicola* (on *Salix* spp.), *Linnavuoriana sexmaculata* (on *Salix* spp.), *Eupteryx thoulessi* (on *Mentha aquatica*), *Balclutha nicolasi* (on *Cyperus longus*), *Cicadula quadrinotata* (on *Carex* spp.), *Conosanus obsoletus* (on *Juncus* spp.), and *Paralimnus phragmitis* (on *Phragmites australis*).

The most common taxa among the ecological generalists at this site are *Laodelphax striatella*, *Toya propinqua*, *Eupteryx atropunctata*, *Zyginidia* gr. *ribauti*, *Macrosteles laevis*, *Maiestas schmidtgeni*, *Psammotettix alienus*, *P. confinis*, and *Arthaldeus striifrons*.

5) Lago Ripasottile (76 species; months: V, VI, VII, VIII, IX)

Species of particular interest are *Kelisia praecox* (on *Carex* sp.), *K. punctulum* (on tall sedges), *Anakelisia fasciata* (on tall sedges), *Megamelus notula* (on tall sedges), *Delphacodes mulsanti* (on *Eleocharis* sp.?, *Cyperus* sp.?), *Kybos virgator* (on *Salix alba*), *Zygina cf. ordinaria* (on *Salix* spp.), and *Cicadula placida* (on *Phalaris arundinacea* [and other Poaceae species?]).

Including the species mentioned above, 32 taxa are correlated with moist areas: *Cixius wagneri*, *Kelisia ribauti* (on *Carex* spp.), *Stenocranus major* (on *Phalaris arundinacea*), *Chloriona unicolor* (on *Phragmites australis*), *Flastena fumipennis* (on *Cyperus longus*), *Macropsis albae* (on *Salix*

alba), *M. cerea* (on *Salix* spp.), *Idiocerus stigmatalis* (on *Salix alba*), *I. vicinus* (on *Salix purpurea*), *Populicerus albicans* (on *Populus alba*), *Viridicerus ustulatus* (on *Populus alba*), *Cicadella viridis* (on *Carex* spp.), *Kybos rufescens* (on *Salix purpurea*), *Asymmetrasca decedens* (on *Salix* spp.), *Edwardsiana prunicola* (on *Salix* spp.), *Linnavuoriana sexmaculata* (on *Salix* spp.), *Eupteryx thoulessi* (on *Mentha aquatica*), *Zygina nivea* (on *Populus alba*), *Balclutha nicolasi* (on *Cyperus longus*), *Macrosteles frontalis* (on *Equisetum* sp.), *M. sardus* (on *Epilobium hirsutum*), *Cicadula lineatopunctata* (on *Carex* sp. ?), *C. quadrinotata* (on *Carex* spp.), and *Conosanus obsoletus* (on *Juncus* spp.).

Laodelphax striatella, *Toya propinqua*, *Lepyronia coleoptrata*, *Philaenus spumarius*, *Stictoccephala bisonia*, *Anaceratagallia laevis*, *Maiestas schmidtgeni*, *Psammotettix alienus*, *P. confinis* and others are generally found on meadows or ruderal places.

6) Montisola (47 species; months: IV, VII, VIII, IX)

13 taxa found in this area are typical for humid sites: *Kelisia guttula* (on *Carex flacca*), *Kelisia ribauti* (on *Carex* spp.), *Stenocranus major* (on *Phalaris arundinacea*), *Delphacodes mulsanti* (on *Eleocharis* sp.?, *Cyperus* sp.?), *Javesella dubia* (on *Agrostis* sp.?), *Idiocerus stigmatalis* (on *Salix alba*), *Cicadella viridis* (on *Carex* spp.), *Eupteryx thoulessi* (on *Mentha aquatica*), *Macrosteles frontalis* (on *Equisetum* sp.), *M. sardus* (on *Epilobium hirsutum*), *Cicadula placida* (on *Phalaris arundinacea*, *Glyceria maxima* [and other Poaceae species?]), *C. quadrinotata* (on *Carex* spp.), and *Paramesus obtusifrons* (on *Bolboschoenus maritimus*).

Most species in this area, however, are colonizers of ruderal biotopes. The most abundant ones among them are *Laodelphax striatella*, *Agalmatum flavescens*, *Philaenus spumarius*, *Anaceratagallia laevis*, *Emelyanoviana mollicula*, *Eupteryx melissae*, *E. rostrata*, *Zyginidia* gr. *ribauti*, *Arboridia parvula*, *Neoliturus fenestratus*, *Macrosteles laevis*, *M. sexnotatus*, *Allygidius furcatus*, *Euscelis incisus*, *Psammotettix alienus*, and *P. confinis*.

7) Fiume Velino (14 species; months: VIII)

Aphrophora salicina (on *Salix* spp.), *Macropsis albae* (on *Salix alba*), *M. vicina* (on *Populus alba*), *Viridicerus ustulatus* (on *Populus alba*), and *Zygina nivea* (on *Populus alba*) are generally found on the arboreal riverside flora. *Eupteryx petasitidis* (on *Petasites hybridus*) is often found on its host plant along rivers as well.

Dicranotropis remaniaca, *Anaceratagallia laevis* and *Eupteryx curtisii* occur in more or less shadowy and not too dry meadows.

C) Phenology (Table 4)

Auchenorrhyncha hibernate in the egg, nymph or adult stage. The last condition is rather rare. It is recorded for Central Europe among others for the genera *Asiraca* Latreille, 1796, *Stenocranus* Fieber 1866 and *Delphacodes* Fieber 1866 in Delphacidae, for Tettigometridae, for some Agalliinae and Idiocerinae, the genera *Empoasca* Walsh, 1862, *Zygina* Fieber, 1866 and *Arboridia* Zakhvatkin, 1946 in Typhlocybiniae, and for the genera *Balclutha* and *Mocysiopsis* Ribaut 1939 in Deltocephalinae. Taxa that hibernate in the adult stage should be present both in advanced autumn and in spring. The data that we can gather from our present research are from 6th and 25th of November and from 27th of April, respectively. Thus, there is a gap of about five months without samplings. Of course, the insects have a reduced metabolism under winter conditions or even pass this period in some type of quiescence. In comparison to Central Europe or to mountain areas, however, this period is to be expected rather short in southern Europe and at low altitude (< 400 m). In these areas, indeed, December, March and April may offer mild weather rather than snow and frost. This implies on the one side that the late summer generation of egg overwinterers may extend until late autumn, and on the other side that nymph overwinterers reach the adult stage already in spring or early summer.

If we study the results of the seasonal distribution in our research, we find seven taxa that were collected both in late autumn and in spring: *Kelisia ribauti*, *Anakelisia fasciata*, *Stenocranus major*, *Emelyanoviana mollicula*, *Psammotettix alienus*, and *Psammotettix confinis*. For *Kelisia ribauti* and *Anakelisia fasciata*, adult overwintering is possible,

but perhaps only as females. For both species only females were observed in spring with a much reduced abundance. The *Psammotettix* taxa, however, occur also in late April in rich populations including male specimens. Adult hibernation is therefore probable, in contrast to the conditions in Central Europe, where these taxa overwinter apparently in the egg stage. For *Stenocranus major* adult overwintering is probable, as the species of this genus generally hibernate in the adult stage. For *Cicadula quadrinotata* and *Emelyanoviana mollicula* we suppose equally adult overwintering. The *Cicadula* specimens (males and females) in November have apparently grown under short day conditions (strong melanism), thus they are no old summer specimens, and both sexes were found in April as well. As to *Emelyanoviana*, we found in Sardinia populations with both males and females already at the beginning of April.

Other adult overwinterers are surely among the taxa that were collected in November only, so for example the Agalliinae. Also some *Eupteryx* taxa (*E. rostrata*, *E. zelleri*) possibly hibernate in the adult stage. Particular is the case of *Megamelodes lequesnei*. This species was found exclusively in November (brachypterous males and females). Thus, this taxon has in central Italy apparently a different phenology (hibernation as adults) in respect of the central European populations (egg hibernation with two generations), in addition to a different host plant (see below).

Hibernation in the nymph stage is often observed among the Auchenorrhyncha, above all in Cixiidae, many Delphacidae, in Cercopidae and a few Deltocephalinae. Nymph overwinterers in our material are above all the taxa found in spring and early summer.

Many species collected already in April (*Eurybregma nigrolineata*, *Laodelphax striatella*, *Dicranotropis remaniaca*, *Struebingianella lugubrina*, *Xanthodelphax straminea*, *Javesella dubia*, *Ribautodelphax imitans*, *Flastena fumipennis*, *Cercopis sanguinolenta*) belong to this group, in addition to many taxa collected in June.

The third group comprises the egg overwinterers. Aphrophoridae, Macropsinae, Aphrodinae, Cicadellinae and most genera of Typhlocybiniae and Deltocephalinae belong to this group. They occur generally from June to autumn. Most cicadellids in our material belong to this group.

Taxon	LV	PL	ML	LL	LR	M
<i>Acer campestre</i> L.	+	+				
<i>Achillea millefolium</i> L. s.l.	+	+	+			
<i>Agrimonia eupatoria</i> L. subsp. <i>eupatoria</i>	+					+
<i>Agrostis stolonifera</i> L.	+	+		+	+	
<i>Ailanthus altissima</i> (Mill.) Swingle	+					
<i>Alisma plantago-aquatica</i> L.	+		+			
<i>Althaea officinalis</i> L.	+		+	+	+	+
<i>Amaranthus deflexus</i> L.	+					
<i>Amaranthus retroflexus</i> L.				+		
<i>Anacamptis pyramidalis</i> (L.) Rich.		+		+		
<i>Anagallis arvensis</i> L. subsp. <i>arvensis</i>		+	+	+	+	
<i>Angelica sylvestris</i> L. subsp. <i>sylvestris</i>		+			+	
<i>Arctium lappa</i> L.	+	+		+	+	
<i>Arenaria serpyllifolia</i> L. subsp. <i>serpyllifolia</i>	+					
<i>Artemisia verlotiorum</i> Lamotte				+		
<i>Artemisia vulgaris</i> L.	+					
<i>Atriplex prostrata</i> Boucher ex DC.	+					
<i>Avena barbata</i> Pott. ex Link	+					
<i>Avena fatua</i> L.			+			
<i>Avena sativa</i> L. subsp. <i>sativa</i>	+					
<i>Avena sterilis</i> L.	+					
<i>Ballota nigra</i> L. subsp. <i>meridionalis</i> (Bég.) Bég.	+					
<i>Bellis perennis</i> L.	+					
<i>Berula erecta</i> (Huds.) Coville	+					
<i>Bidens tripartita</i> L. s.l.	+	+			+	
<i>Blackstonia perfoliata</i> (L.) Huds. subsp. <i>perfoliata</i>		+				
<i>Bolboschoenus maritimus</i> (L.) Palla	+					+
<i>Brachypodium rupestre</i> (Host) Roem. et Schult.	+	+	+			
<i>Bromus</i> cfr. <i>commutatus</i> Schrad.	+		+			
<i>Bromus hordeaceus</i> L. subsp. <i>hordeaceus</i>	+	+	+			
<i>Bromus sterilis</i> L.	+	+	+		+	
<i>Butomus umbellatus</i> L.	+					
<i>Calystegia sepium</i> (L.) R. Br. subsp. <i>sepium</i>	+	+	+	+	+	+
<i>Campanula rapunculus</i> L.	+					
<i>Carduus pycnocephalus</i> L. subsp. <i>pycnocephalus</i>	+					
<i>Carex acutiformis</i> Ehrh.	+	+		+	+	
<i>Carex caryophyllea</i> Latourr.		+				
<i>Carex depauperata</i> Curtis ex With.		+				
<i>Carex distans</i> L.	+	+	+			
<i>Carex elata</i> All. subsp. <i>elata</i>		*				
<i>Carex flacca</i> Schreb. subsp. <i>serrulata</i> (Biv.) Greuter		+	+			
<i>Carex hirta</i> L.	+	+		+	+	+
<i>Carex otrubae</i> Podp.	+		+			
<i>Carex paniculata</i> L. subsp. <i>paniculata</i>	+	*				

Table 2/1. List of vascular plant species and their collecting localities. LV = Lago di Ventina; LP = Lago di Piediluco; ML = Madonna della Luce; LL = Lago Lungo; LR = Lago Ripasottile; M = Montisola. Records from bibliographic data which were not confirmed by direct observations are marked by an asterisk (*).

Taxon	LV	PL	ML	LL	LR	M
<i>Carex pseudocyperus</i> L.	+	+				
<i>Carex riparia</i> Curtis	+	+	+	+	+	
<i>Carthamus lanatus</i> L. subsp. <i>lanatus</i>	+					
<i>Centaurea calcitrapa</i> L.	+					
<i>Centaurea solstitialis</i> L. subsp. <i>solstitialis</i>	+					
<i>Cephalanthera rubra</i> (L.) Rich.		+				
<i>Chenopodium album</i> L. subsp. <i>album</i>				+	+	
<i>Chenopodium polyspermum</i> L.	+					
<i>Chenopodium urbicum</i> L.						+
<i>Cerastium</i> sp.	+	+	+			
<i>Cichorium intybus</i> L.	+	+	+			+
<i>Cirsium arvense</i> (L.) Scop.	+	+	+	+	+	+
<i>Cirsium creticum</i> (Lam.) d'Urv. subsp. <i>triumfettii</i> (Lacaíta) Werner			+			
<i>Cirsium vulgare</i> (Savi) Ten.	+			+		+
<i>Cladium mariscus</i> (L.) Pohl		*				
<i>Clematis vitalba</i> L.	+	+				
<i>Conium maculatum</i> L. subsp. <i>maculatum</i>		+				
<i>Convolvulus arvensis</i> L.	+		+			+
<i>Cornus sanguinea</i> L. s.l.	+	+	+	+	+	+
<i>Corylus avellana</i> L.		+				
<i>Cota tinctoria</i> (L.) J. Gay subsp. <i>tinctoria</i>	+					
<i>Crataegus monogyna</i> Jacq.	+	+				
<i>Crepis vesicaria</i> L. s.l.			+			
<i>Cruciata laevipes</i> Opiz	+	+	+			
<i>Cynodon dactylon</i> (L.) Pers.	+		+	+		+
<i>Cynoglossum creticum</i> Mill.	+					
<i>Cyperus longus</i> L.	+	+	+	+	+	
<i>Dactylis glomerata</i> L. subsp. <i>glomerata</i>		+	+	+		
<i>Dasypyrum villosum</i> (L.) P. Candargy, non Borbás	+					
<i>Datura stramonium</i> L. subsp. <i>stramonium</i>	+					
<i>Daucus carota</i> L. subsp. <i>carota</i>	+	+	+	+	+	+
<i>Digitaria sanguinalis</i> (L.) Scop. s.l.		+		+		
<i>Dipsacus fullonum</i> L.	+		+			
<i>Dorycnium herbaceum</i> Vill.		+				
<i>Echinocloa crus-galli</i> (L.) P. Beauv.	+		+	+	+	+
<i>Echium plantagineum</i> L.	+					
<i>Eleocharis palustris</i> (L.) Roem. et Schult. subsp. <i>palustris</i>	+		+			+
<i>Elymus repens</i> (L.) Gould. subsp. <i>repens</i>	+		+	+	+	+
<i>Epilobium hirsutum</i> L.	+		+	+	+	+
<i>Epipactis palustris</i> (L.) Crantz	*	*				
<i>Equisetum arvense</i> L. subsp. <i>arvense</i>	+	+		+	+	+
<i>Equisetum palustre</i> L.	+	+				
<i>Equisetum telmateja</i> Ehrh.	+		+	+		
<i>Erigeron annuus</i> (L.) Desf. (= <i>Aster annuus</i> L.)	+					

Table 2/2. List of vascular plant species and their collecting localities. LV = Lago di Ventina; LP = Lago di Piediluco; ML = Madonna della Luce; LL = Lago Lungo; LR = Lago Ripasottile; M = Montisola. Records from bibliographic data which were not confirmed by direct observations are marked by an asterisk (*).

Taxon	LV	PL	ML	LL	LR	M
<i>Erigeron canadensis</i> L. [= <i>Conyza canadensis</i> (L.) Cronq.]	+			+	+	
<i>Erigeron sumatrensis</i> Retz.	+			+		
<i>Euonymus europaeus</i> L.	+	+	+			+
<i>Eupatorium cannabinum</i> L. subsp. <i>cannabinum</i>	+	+	+	+	+	
<i>Euphorbia platyphyllos</i> L. s.l.	+				+	
<i>Festuca</i> sp.			+			
<i>Festuca arundinacea</i> Schreb. subsp. <i>arundinacea</i>	+	+	+	+		+
<i>Festuca heterophylla</i> Lam.		+				
<i>Ficus carica</i> L.		+				
<i>Fragaria viridis</i> Duchesne subsp. <i>viridis</i>	+					
<i>Frangula alnus</i> L.		+				
<i>Fraxinus angustifolia</i> Vahl subsp. <i>oxycarpa</i> (Willd.) Franco et Rocha		+				
<i>Galega officinalis</i> L.	+	+	+		+	+
<i>Galium aparine</i> L.	+	+				
<i>Galium mollugo</i> L. subsp. <i>erectum</i> Syme (= <i>G. album</i> Mill.)	+	+	+			+
<i>Galium mollugo</i> L. subsp. <i>mollugo</i>			+			
<i>Galium palustre</i> L. s.l.	+	+	+			+
<i>Geranium dissectum</i> L.	+		+	+		
<i>Geum urbanum</i> L.	+		+			
<i>Glyceria fluitans</i> (L.) R. Br.	+			+		
<i>Glyceria maxima</i> (Hartm.) Holmb.	+					
<i>Hedera helix</i> L. subsp. <i>helix</i>	+					
<i>Heliotropium europaeum</i> L.				+		
<i>Helleborus foetidus</i> L. subsp. <i>foetidus</i>			+			
<i>Helminthotheca echioides</i> (L.) Holub (= <i>Picris echioides</i> L.)	+		+	+		+
<i>Holcus lanatus</i> L.	+	+	+	+		
<i>Hordeum murinum</i> L. subsp. <i>leporinum</i> (Link) Arcang.	+					
<i>Humulus lupulus</i> L.	+	+	+	+	+	
<i>Hydrocharis morsus-ranae</i> L.	*					
<i>Hypericum perforatum</i> L.	+	+	+		+	
<i>Hypericum tetrapterum</i> Fr.	+			+	+	
<i>Hypochaeris radicata</i> L.	+					
<i>Inula conyzae</i> (Griess.) Meikle	+					
<i>Iris pseudacorus</i> L.	+	+	+	+	+	
<i>Juncus articulatus</i> L.	+	+	+	+		
<i>Juncus effusus</i> L. subsp. <i>effusus</i>	+			+	+	
<i>Juncus gerardii</i> Loisel.	+		+			
<i>Juncus inflexus</i> L.			+			
<i>Juniperus communis</i> L.	+	+				
<i>Lactuca saligna</i> L.	+					
<i>Lactuca serriola</i> L.	+			+	+	
<i>Lamium maculatum</i> L.		+				
<i>Leucanthemum</i> sp.	+	+	+			
<i>Ligustrum vulgare</i> L.	+	+				

Table 2/3. List of vascular plant species and their collecting localities. LV = Lago di Ventina; LP = Lago di Piediluco; ML = Madonna della Luce; LL = Lago Lungo; LR = Lago Ripasottile; M = Montisola. Records from bibliographic data which were not confirmed by direct observations are marked by an asterisk (*).

Taxon	LV	PL	ML	LL	LR	M
<i>Linaria vulgaris</i> Mill. subsp. <i>vulgaris</i>	+					
<i>Linum bienne</i> Mill.	+	+				
<i>Lolium multiflorum</i> Lam. subsp. <i>multiflorum</i>	+					
<i>Lolium perenne</i> L.	+	+	+	+		
<i>Lonicera caprifolium</i> L.		+				
<i>Lotus</i> sp.		+				
<i>Lotus corniculatus</i> L. subsp. <i>corniculatus</i>	+		+			+
<i>Lycopus europaeus</i> L. s.l.	+	+		+	+	+
<i>Lysimachia vulgaris</i> L.	+	+		+	+	+
<i>Lythrum salicaria</i> L.	+		+	+	+	+
<i>Malva sylvestris</i> (L.) Mill.	+		+			
<i>Medicago lupulina</i> L.	+	+	+			
<i>Medicago minima</i> (L.) L.	+					
<i>Medicago orbicularis</i> (L.) Bartal.	+					
<i>Medicago sativa</i> L.	+		+			+
<i>Mentha aquatica</i> L. subsp. <i>aquatica</i>	+	+	+	+		+
<i>Mentha arvensis</i> L.	+		+			+
<i>Mentha longifolia</i> (L.) Huds.	+	+	+	+	+	+
<i>Mentha suaveolens</i> Ehrh. subsp. <i>suaveolens</i>	+	+				
<i>Mercurialis annua</i> L.					+	
<i>Nigella damascena</i> L.	+					
<i>Nuphar lutea</i> (L.) Sm.	+					
<i>Odonthites vulgaris</i> Moench subsp. <i>vulgaris</i>	+					+
<i>Oenanthe aquatica</i> (L.) Poir.	*	*				
<i>Ophrys apifera</i> Huds.		+				
<i>Orchis incarnata</i> L.	*	*				
<i>Pallenis spinosa</i> (L.) Cass. subsp. <i>spinosa</i>	+					
<i>Papaver rhoeas</i> L. subsp. <i>rhoeas</i>	+					
<i>Paspalum distichum</i> L.	+					
<i>Pastinaca sativa</i> L. subsp. <i>urens</i> (Req. ex Godr.) Celak.	+		+			+
<i>Persicaria maculosa</i> (L.) Gray	+			+	+	+
<i>Petrorhagia prolifera</i> (L.) P.W. Ball et Heywood	+					
<i>Phalaris aquatica</i> L.			+			
<i>Phalaris arundinacea</i> L. subsp. <i>arundinacea</i> [= <i>Typhoides arundinacea</i> (L.) Moench]	+	+		+	+	+
<i>Phragmites australis</i> (Cav.) Trin. ex Steud. subsp. <i>australis</i>	+	+	+	+	+	
<i>Phyllostachys bambusoides</i> Siebold et Zucc.		+				
<i>Picris hieracioides</i> L. subsp. <i>hieracioides</i>	+	+	+	+		+
<i>Plantago lanceolata</i> L.	+	+	+	+	+	+
<i>Plantago major</i> L. subsp. <i>major</i>	+	+	+	+	+	+
<i>Poa bulbosa</i> L.	+					
<i>Poa trivialis</i> L. subsp. <i>trivialis</i>	+	+	+			
<i>Polygonum arenastrum</i> Boreau subsp. <i>arenastrum</i>			+			
<i>Polygonum aviculare</i> L. s.l.			+	+	+	+
<i>Populus alba</i> L.	+	+		+		

Table 2/4. List of vascular plant species and their collecting localities. LV = Lago di Ventina; LP = Lago di Piediluco; ML = Madonna della Luce; LL = Lago Lungo; LR = Lago Ripasottile; M = Montisola. Records from bibliographic data which were not confirmed by direct observations are marked by an asterisk (*).

Taxon	LV	PL	ML	LL	LR	M
<i>Populus canadensis</i> Moench	+	+	+			+
<i>Populus tremula</i> L.	+					
<i>Potentilla reptans</i> L.	+	+	+	+	+	+
<i>Prunella vulgaris</i> L. subsp. <i>vulgaris</i>	+		+			
<i>Prunella</i> x <i>intermedia</i> Link	+					
<i>Prunus spinosa</i> L. subsp. <i>spinosa</i>	+	+	+			
<i>Pteridium aquilinum</i> (L.) Kuhn subsp. <i>aquilinum</i>	+					
<i>Pulicaria dysenterica</i> (L.) Bernh.	+		+	+	+	+
<i>Ranunculus lingua</i> L.	+					
<i>Ranunculus repens</i> L.	+	+	+	+		+
<i>Ranunculus sardous</i> Crantz s.l.	+		+			
<i>Ranunculus trichophyllus</i> Chaix subsp. <i>trichophyllus</i>	+					
<i>Raphanus raphanistrum</i> L. subsp. <i>landra</i> (DC.) Bonnier et Layens					+	
<i>Rhinanthus</i> sp.		+				
<i>Robinia pseudacacia</i> L.	+	+				
<i>Rorippa amphibia</i> (L.) Besser	+					
<i>Rosa canina</i> s.l.	+		+			
<i>Rosa sempervirens</i> L.	+					
<i>Rosa</i> sp.		+				
<i>Rubia peregrina</i> L. subsp. <i>peregrina</i>		+				
<i>Rubus caesius</i> L.	+	+	+		+	+
<i>Rubus</i> sp.	+					
<i>Rubus ulmifolius</i> Schott	+	+				
<i>Rumex crispus</i> L.	+		+	+		+
<i>Rumex hydrolapathum</i> Huds.	+	+				
<i>Rumex obtusifolius</i> L. subsp. <i>obtusifolius</i>				+		+
<i>Rumex pulcher</i> subsp. <i>pulcher</i>			+			
<i>Ruscus aculeatus</i> L.		+				
<i>Sagittaria sagittifolia</i> L.			+			
<i>Salix alba</i> L.	+	+	+	+	+	+
<i>Salix cinerea</i> L.	+	+	+	+	+	+
<i>Salix purpurea</i> L. s.l.	+	+				
<i>Salix triandra</i> L. subsp. <i>amygdalina</i> (L.) Schübl. et G. Martens						+
<i>Sambucus ebulus</i> L.	+	+				
<i>Sambucus nigra</i> L.	+	+			+	
<i>Sanguisorba minor</i> Scop. subsp. <i>balearica</i> (Bourg. ex Nyman) Munoz Garm. et C. Navarro	+	+	+	+		
<i>Schoenoplectus lacustris</i> (L.) Palla	+	+		+		+
<i>Scirpoides holoschoenus</i> (L.) Soják			+			
<i>Scrophularia umbrosa</i> Dumort. subsp. <i>umbrosa</i>	+	*		+		
<i>Scutellaria galericulata</i> L.	+					
<i>Securigera securidiana</i> (L.) Degen et Dörfl.	+					
<i>Senecio erraticus</i> Bertol. subsp. <i>erraticus</i>	+				+	
<i>Setaria verticillata</i> (L.) P. Beauv.						+
<i>Setaria viridis</i> (L.) P. Beauv. subsp. <i>viridis</i>	+				+	

Table 2/5. List of vascular plant species and their collecting localities. LV = Lago di Ventina; LP = Lago di Piediluco; ML = Madonna della Luce; LL = Lago Lungo; LR = Lago Ripasottile; M = Montisola. Records from bibliographic data which were not confirmed by direct observations are marked by an asterisk (*).

Taxon	LV	PL	ML	LL	LR	M
<i>Sherardia arvensis</i> L.	+					
<i>Sideritis romana</i> L. subsp. <i>romana</i>	+					
<i>Silene conica</i> L.	+					
<i>Silene latifolia</i> L. subsp. <i>alba</i> (Mill.) Greuter et Burdet	+	+	+	+		+
<i>Silene vulgaris</i> (Moench) Garcke s.l.		+	+			
<i>Sisymbrium officinale</i> (L.) Scop.	+					
<i>Solanum dulcamara</i> L.	+	+	+	+		
<i>Solanum nigrum</i> L.					+	
<i>Solidago gigantea</i> Aiton		+				
<i>Sonchus asper</i> (L.) Hill subsp. <i>asper</i>	+				+	
<i>Sorghum halepense</i> (L.) Pers.	+			+	+	+
<i>Sparganium erectum</i> L. subsp. <i>erectum</i>	+					
<i>Stachys palustris</i> L.	+	+			+	+
<i>Stachys germanica</i> L. subsp. <i>salviifolia</i> (Ten.) Gams.	+					
<i>Stellaria aquatica</i> (L.) Scop.	+					
<i>Stellaria media</i> Viv. subsp. <i>media</i>	+					
<i>Taraxacum officinale</i> s.l.	+	+	+			+
<i>Teucrium scordium</i> L. subsp. <i>scordioides</i> (Schreb.) Arcang.	+					
<i>Thalictrum lucidum</i> L.	+	+			+	+
<i>Torilis</i> sp.	+					
<i>Trifolium campestre</i> Schreb.	+					
<i>Trifolium echinatum</i> M. Bieb.	+					
<i>Trifolium fragiferum</i> L. subsp. <i>fragiferum</i>	+					
<i>Trifolium pratense</i> L. subsp. <i>pratense</i>	+	+	+			
<i>Trifolium repens</i> L. subsp. <i>repens</i>	+	+				
<i>Trifolium resupinatum</i> L.	+			+		
<i>Typha angustifolia</i> L.	+	+	+			
<i>Typha latifolia</i> L.			+	+		
<i>Ulmus minor</i> Mill. subsp. <i>minor</i>		+				
<i>Urtica dioica</i> L. subsp. <i>dioica</i>	+	+	+	+	+	+
<i>Valeriana officinalis</i> L.		+				
<i>Valerianella</i> sp.	+	+	+			
<i>Verbascum blattaria</i> L.	+					
<i>Verbascum densiflorum</i> Bertol.				+	+	
<i>Verbascum</i> cf. <i>pulverulentum</i> Vill.				+		
<i>Verbascum sinuatum</i> L.	+					
<i>Verbena officinalis</i> L.	+	+	+	+	+	+
<i>Veronica anagallis-aquatica</i> L. subsp. <i>anagallis-aquatica</i>	+					
<i>Veronica arvensis</i> L.	+					
<i>Veronica montana</i> L.	+					
<i>Viburnum opulus</i> L.		+				
<i>Vicia hybrida</i> L.	+					
<i>Vicia sativa</i> L. s.l.	+	+	+			
<i>Vicia sativa</i> L. subsp. <i>cordata</i> (Hoppe) Batt.	+					
<i>Vicia sativa</i> L. subsp. <i>nigra</i> (L.) Ehrh.	+		+			
<i>Viola arvensis</i> Murray s.l.	+					
<i>Xanthium orientale</i> L. subsp. <i>italicum</i> Moretti) Greuter (= <i>X. italicum</i> Moretti)	+			+	+	+

Table 2/6. List of vascular plant species and their collecting localities. LV = Lago di Ventina; LP = Lago di Piediluco; ML = Madonna della Luce; LL = Lago Lungo; LR = Lago Ripasottile; M = Montisola. Records from bibliographic data which were not confirmed by direct observations are marked by an asterisk (*).

Taxon	Locality	LV	LP	ML	LL	LR	M	FV
<i>Cixius nervosus</i> (Linnaeus, 1758)			(+)	(+)				
<i>Cixius remotus</i> Edwards, 1888 ¹				++				
<i>Cixius wagneri</i> China, 1942 ⁴		+	(+)			+		
<i>Reptalus quinquecostatus</i> (Dufour, 1833)						+		
<i>Hyalesthes obsoletus</i> Signoret, 1865						+		
<i>Kelisia brucki</i> Fieber, 1878			++					
<i>Kelisia guttula</i> (Germar, 1818) ^{3,4}		(+)	++				+	
<i>Kelisia melanops</i> Fieber, 1878 ^{3,4}		+	++					
<i>Kelisia praecox</i> Haupt, 1935 ²						(+)		
<i>Kelisia punctulum</i> (Kirschbaum, 1868) ¹		(+)	+	++	+	(+)		
<i>Kelisia ribauti</i> Wagner, 1938 ⁴		++	+	++	++	+	+	
<i>Anakelisia fasciata</i> (Kirschbaum, 1868) ¹		++		+	(+)	+		
<i>Stenocranus major</i> (Kirschbaum, 1868)		+			+	(+)	++	
<i>Eurybregma nigrolineata</i> Scott, 1875		+						
<i>Conomelus lorifer dehneli</i> Nast, 1966 ⁴		+	+		+			
<i>Delphax ribautianus</i> Asche et Drosopoulos, 1982 ⁴			+					
<i>Delphax</i> sp.			+		+			
<i>Chloriona smaragdula</i> (Stål, 1853) ²					++			
<i>Chloriona unicolor</i> (Herrich-Schäffer, 1835)						(+)		
<i>Megamelus notula</i> (Germar, , 1830) ³		+				(+)		
<i>Laodelphax striatella</i> (Fallén, 1826)		++	++	+	++	++	+	
<i>Megamelodes lequesnei</i> Wagner, 1963 ¹		(+)			+			
<i>Delphacodes mulsanti</i> (Fieber, 1866) ³		+		++	(+)	+	(+)	
<i>Muirodelphax aubei</i> (Perris, 1857) ⁴			(+)	+				
<i>Dicranotropis remaniaca</i> Guglielmino, D'Urso et Bückle, 2016		(+)		++	+	+	(+)	+
<i>Florodelphax leptosoma</i> (Flor, 1861) ⁴		++	+	+				
<i>Struebingianella lugubrina</i> (Boheman, 1847) ²		++						
<i>Xanthodelphax straminea</i> (Stål, 1858) ⁴		+	+					
<i>Toya propinqua</i> (Fieber, 1866)		+	++	++	++	++	(+)	
<i>Javesella dubia</i> (Kirschbaum, 1868) ⁴		+	+		+		(+)	
<i>Ribautodelphax albostrata</i> (Fieber, 1866) ³					+			
<i>Ribautodelphax imitans</i> (Ribaut, 1953) ⁴		+	(+)	+				
<i>Flastena fumipennis</i> (Fieber, 1866) ⁴		++	+	+	+	+		
<i>Neomenocria advena</i> (Spinola , 1839) ³		+						
<i>Dictyophara europaea</i> (Linnaeus, 1767)			+		(+)	+	(+)	
<i>Trypetimorpha occidentalis</i> Huang et Bourgoin, 1993			+					
<i>Agalmatium flavescens</i> (Olivier, 1791)							+	
<i>Issus coleoptratus</i> (Fabricius, 1781)			+					(+)
<i>Cercopis arcuata</i> (Fieber, 1844)					(+)	(+)		
<i>Cercopis sanguinolenta</i> (Scopoli, 1763)		(+)						
<i>Cercopis vulnerata</i> Rossi, 1807		+	+	(+)				

Table 3/1. List of collected Auchenorrhyncha species and their collecting localities. LV = Lago di Ventina; LP = Lago di Piediluco; ML = Madonna della Luce; LL = Lago Lungo; LR = Lago Ripasottile; M = Montisola; FV = Fiume Velino; 1 = new for Italy; 2 = new for peninsular Italy; 3 = new for Latium; 4 = new for Umbria.

Taxon	Locality	LV	LP	ML	LL	LR	M	FV
<i>Lepyronia coleoptrata</i> (Linnaeus, 1758)		+	+		+	++	(+)	
<i>Neophilaenus campestris</i> (Fallén, 1805)			+					
<i>Aphrophora alni</i> (Fallén, 1805)		+	+					
<i>Aphrophora pectoralis</i> Matsumura, 1903 ⁴			+					
<i>Aphrophora salicina</i> (Goeze, 1778)								+
<i>Philaenus spumarius</i> (Linnaeus, 1758)		+	+	+	+	++	+	
<i>Centrotus cornutus</i> (Linnaeus, 1758)			(+)					
<i>Stictocephala bisonia</i> Kopp et Yonke, 1977 ⁴		+	+	(+)	+	++	(+)	
<i>Megophthalmus scanicus</i> (Fallén, 1806)		++	+	+	(+)	(+)		
<i>Macropsis albae</i> Wagner, 1950 ⁴		+	+		++	+		+
<i>Macropsis cerea</i> (Germar, 1837)		+				(+)		
<i>Macropsis glandacea</i> (Fieber, 1868) ⁴			(+)					
<i>Macropsis marginata</i> (Herrich-Schäffer, 1836)		+	+					
<i>Macropsis najas</i> Nast, 1981 ⁴			+					
<i>Macropsis notata</i> (Prohaska, 1923) ⁴			+					
<i>Macropsis prasina</i> (Boheman, 1852) ³				+				
<i>Macropsis vicina</i> Horváth, 1897 ⁴			+					+
<i>Hephathus nanus</i> (Herrich-Schäffer, 1835)				(+)				
<i>Anaceratagallia laevis</i> (Ribaut, 1935)		+	++	+	+	++	+	+
<i>Anaceratagallia ribauti</i> (Ossiannilsson, 1938)		+	+	+	+	+	+	
<i>Austroagallia sinuata</i> (Mulsant et Rey, 1855)			+	+		+		
<i>Idiocerus stigmatalis</i> Lewis, 1834 ⁴		+	(+)			+	(+)	
<i>Idiocerus vicinus</i> Melichar, 1898 ⁴		(+)	(+)		+	+		
<i>Balcanocerus larvatus</i> (Herrich-Schäffer, 1835)				+				
<i>Metidiocerus rutilans</i> (Kirschbaum, 1868) ⁴			+					
<i>Populicerus albicans</i> (Kirschbaum, 1868)						+		
<i>Tremulicerus distinguendus</i> (Kirschbaum, 1868)		(+)						
<i>Viridicerus ustulatus</i> (Mulsant et Rey, 1855)		(+)	+			+		(+)
<i>Iassus scutellaris</i> (Fieber, 1868)			+	+				
<i>Penthimia nigra</i> (Goeze, 1778)			(+)					
<i>Eupelix cuspidata</i> (Fabricius, 1775) ⁴		(+)	(+)			(+)	(+)	
<i>Aphrodes bicincta</i> (Schränk, 1776)		+		+		+		
<i>Aphrodes makarovi</i> Zachvatkin, 1948		+	+	(+)				
<i>Anoscopus albifrons mappus</i> Guglielmino et Bückle, 2015				(+)				
<i>Anoscopus serratulae</i> (Fabricius, 1775)		(+)						
<i>Stroggylocephalus agrestis</i> (Fallén, 1806)		(+)			(+)			
<i>Evacanthus acuminatus</i> (Fabricius, 1794)			+					
<i>Cicadella viridis</i> (Linnaeus, 1758)		+	+	+	++	++	+	
<i>Alebra wahlbergi</i> (Boheman, 1845)		(+)	+	++				
<i>Emelyanoviana mollicula</i> (Boheman, 1845)		+	+	(+)	+	+	+	

Table 3/2. List of collected Auchenorrhyncha species and their collecting localities. LV = Lago di Ventina; LP = Lago di Piediluco; ML = Madonna della Luce; LL = Lago Lungo; LR = Lago Ripasottile; M = Montisola; FV = Fiume Velino; 1 = new for Italy; 2 = new for peninsular Italy; 3 = new for Latium; 4 = new for Umbria.

Taxon	Locality	LV	LP	ML	LL	LR	M	FV
<i>Dikraneura variata</i> Hardy, 1850				(+)				
<i>Wagneriala sinuata</i> (Then, 1897) ⁴		(+)	+					
<i>Notus italicus</i> Wagner, 1954 ³		++						
<i>Kybos rufescens</i> Melichar, 1896 ⁴			+			(+)		
<i>Kybos virgator</i> (Ribaut, 1933) ³						(+)		
<i>Empoasca decipiens</i> Paoli, 1930			++	(+)	+	+	+	
<i>Empoasca pteridis</i> (Dahlbom, 1850)			+			+		
<i>Empoasca vitis</i> (Göthe, 1875)					(+)	+		
<i>Empoasca</i> sp.		(+)	+		+	+	(+)	
<i>Asymmetrasca decedens</i> Paoli, 1932 ³				(+)	+	+		
<i>Edwardsiana diversa</i> (Edwards, 1914)			(+)					
<i>Edwardsiana prunicola</i> (Edwards, 1914) ⁴		+	+	+	(+)	+		
<i>Edwardsiana salicicola</i> (Edwards, 1885) ⁴			+	+				
<i>Edwardsiana</i> sp.		(+)	+		(+)	+		
<i>Linnavuoriana sexmaculata</i> (Hardy, 1850)				+	+	(+)		
<i>Ribautiana cruciata</i> Ribaut, 1931				+				
<i>Ribautiana debilis</i> (Douglas, 1876) ³				(+)				
<i>Ribautiana tenerrima</i> (Herrich-Schäffer, 1834) ⁴			+					
<i>Eupteryx atropunctata</i> (Goeze, 1778)		+			++	++	+	(+)
<i>Eupteryx curtisii</i> (Flor, 1861)		+	+		+			+
<i>Eupteryx decemnotata</i> Rey, 1891 ³							(+)	
<i>Eupteryx melissae</i> Curtis, 1837 ⁴		++	+		+	(+)	+	
<i>Eupteryx notata</i> Curtis, 1837 ³		(+)					(+)	
<i>Eupteryx petasitidis</i> Ferrari, 1882 ⁴								++
<i>Eupteryx rostrata</i> Ribaut, 1936 ⁴		+	+		(+)	(+)	+	
<i>Eupteryx thoulessi</i> Edwards, 1926		+			++	+	+	
<i>Eupteryx urticae</i> (Fabricius, 1803)		(+)				(+)		
<i>Eupteryx zelleri</i> (Kirschbaum, 1868)		+	+		+	+	(+)	
<i>Zyginidia</i> gr. <i>ribauti</i> Dworakowska, 1970		+	++	+	++	+	+	
<i>Zygina discolor</i> Horváth, 1897 ⁴			(+)	+				
<i>Zygina lunaris</i> (Mulsant et Rey, 1855) ³		(+)			+	(+)		
<i>Zygina nivea</i> (Mulsant et Rey, 1855) ^{3,4}		(+)				+		+
<i>Zygina</i> cf. <i>ordinaria</i> (Ribaut, 1936) ³					+	+		
<i>Arboridia parvula</i> (Boheman, 1845)			(+)			+	+	
<i>Arboridia spathulata</i> (Ribaut, 1931)				(+)				
<i>Arboridia</i> sp.			(+)			(+)		
<i>Fruticidia bisignata</i> (Mulsant et Rey, 1855)							(+)	
<i>Goniagnathus brevis</i> (Herrich-Schäffer, 1835)			+			+		
<i>Hishimonus</i> cf. <i>hamatus</i> Kuoh, 1976 ²				(+)		(+)		
<i>Neoliturus fenestratus</i> (Herrich-Schäffer, 1834)				+		+	+	(+)
<i>Balclutha nicolasi</i> (Lethierry, 1876) ⁴		+	++	++	+	++		
<i>Balclutha punctata</i> (Fabricius, 1775)		++	+					

Table 3/3. List of collected Auchenorrhyncha species and their collecting localities. LV = Lago di Ventina; LP = Lago di Piediluco; ML = Madonna della Luce; LL = Lago Lungo; LR = Lago Ripasottile; M = Montisola; FV = Fiume Velino; 1 = new for Italy; 2 = new for peninsular Italy; 3 = new for Latium; 4 = new for Umbria.

Taxon	Locality	LV	LP	ML	LL	LR	M	FV
<i>Balclutha rosea</i> (Scott, 1876)						+		
<i>Balclutha saltuella</i> (Kirschbaum, 1868)						(+)		
<i>Macrosteles forficula</i> (Ribaut, 1927)							(+)	
<i>Macrosteles frontalis</i> (Scott, 1875) ⁴			++			+	+	
<i>Macrosteles laevis</i> (Ribaut, 1927)	(+)		++		++	+	++	(+)
<i>Macrosteles ossiannilssoni</i> Lindberg, 1954				(+)				
<i>Macrosteles quadripunctulatus</i> (Kirschbaum, 1868) ⁴			+					
<i>Macrosteles sardus</i> Ribaut, 1948				(+)		+	+	
<i>Macrosteles sexnotatus</i> (Fallén, 1806)	+			(+)	(+)		++	
<i>Macrosteles viridigriseus</i> (Edwards, 1924) ⁴	+	+			(+)		+	
<i>Macrosteles</i> sp.	+	+	+	+	++	(+)	++	
<i>Deltocephalus pulicaris</i> (Fallén, 1806)	+					+	+	
<i>Maiestas schmidgeni</i> (Wagner, 1939)	+	+	+	+	++	++		
<i>Chiasmus conspurcatus</i> (Perris, 1857)	(+)	+			+	+		
<i>Doratura paludosa</i> Melichar, 1897					+			
<i>Phlogotettix cyclops</i> (Mulsant et Rey, 1855) ⁴			(+)					
<i>Exitianus taeniaticeps</i> (Kirschbaum, 1868)	(+)							
<i>Anoplotettix fuscovenosus</i> (Ferrari, 1882)				+				
<i>Lamprotettix nitidulus</i> (Fabricius, 1787)	(+)							
<i>Allygus modestus</i> Scott, 1876 ⁴			+					
<i>Allygidius abbreviatus</i> (Lethierry, 1878)			+	(+)				
<i>Allygidius atomarius</i> (Fabricius, 1794)				+				
<i>Allygidius furcatus</i> (Ferrari, 1882)							+	
<i>Phlepsius</i> sp.						(+)		
<i>Graphocraerus ventralis</i> (Fallén, 1806)			+	+	+	+		
<i>Cicadula frontalis</i> (Herrich-Schäffer, 1835) ³				+				
<i>Cicadula lineatopunctata</i> (Matsumura, 1908)	+			+		(+)		
<i>Cicadula placida</i> (Horváth, 1897) ^{3,4}	++	++	+	+	+	+	++	
<i>Cicadula quadrinotata</i> (Fabricius, 1794) ⁴	++	++	+	++	+	+	+	
<i>Mocydia crocea</i> (Herrich-Schäffer, 1837)	(+)				(+)	(+)	(+)	
<i>Thamnotettix zelleri</i> (Kirschbaum, 1868) ⁴			(+)	+				
<i>Conosanus obsoletus</i> (Kirschbaum, 1858)	+	+	+	+	+	+		
<i>Euscelis incisus</i> (Kirschbaum, 1858)	+			+	+	+	+	
<i>Euscelis lineolatus</i> Brullé, 1832				(+)				
<i>Euscelis</i> sp.								(+)
<i>Artianus manderstjernii</i> (Kirschbaum, 1868)				(+)	+	(+)	(+)	
<i>Paramesus obtusifrons</i> (Stål, 1853)							+	
<i>Paralimnus phragmitis</i> (Boheman, 1847) ⁴			+	+	+			
<i>Metalimnus formosus</i> (Boheman, 1845) ²	++							
<i>Arocephalus longiceps</i> (Kirschbaum, 1868) ⁴	(+)	+			(+)			
<i>Psammotettix alienus</i> (Dahlbom, 1850)	+	+	++	++	++	++	+	
<i>Psammotettix confinis</i> (Dahlbom, 1850)	++	++	++	++	++	++	+	
<i>Adarrus exornatus</i> Ribaut, 1952 ⁴			+					
<i>Jassargus bisubulatus</i> (Then, 1896)	+	++						
<i>Arthaldeus striifrons</i> (Kirschbaum, 1868)	+	+	+	+	++			

Table 3/4. List of collected Auchenorrhyncha species and their collecting localities. LV = Lago di Ventina; LP = Lago di Piediluco; ML = Madonna della Luce; LL = Lago Lungo; LR = Lago Ripasottile; M = Montisola; FV = Fiume Velino; 1 = new for Italy; 2 = new for peninsular Italy; 3 = new for Latium; 4 = new for Umbria.

Taxon	month	IV	V	VI	VII	VIII	IX	X	XI
<i>Cixius nervosus</i> (Linnaeus, 1758)				+		+			
<i>Cixius remotus</i> Edwards, 1888				+					
<i>Cixius wagneri</i> China, 1942				+	+		+		
<i>Reptalus quinquecostatus</i> (Dufour, 1833)					+	+			
<i>Hyalesthes obsoletus</i> Signoret, 1865					+				
<i>Kelisia brucki</i> Fieber, 1878				+					
<i>Kelisia guttula</i> (Germar, 1818)				+			+		
<i>Kelisia melanops</i> Fieber, 1878				+					+
<i>Kelisia praecox</i> Haupt, 1935							+		
<i>Kelisia punctulum</i> (Kirschbaum, 1868)				+			+		
<i>Kelisia ribauti</i> Wagner, 1938	+			+	+	+	+	+	+
<i>Anakelisia fasciata</i> (Kirschbaum, 1868)	+			+	+		+	+	+
<i>Stenocranus major</i> (Kirschbaum, 1868)	+			+	+	+	+	+	+
<i>Eurybregma nigrolineata</i> Scott, 1875	+								
<i>Conomelus lorifer dehneli</i> Nast, 1966				+	+		+		
<i>Delphax ribautianus</i> Asche et Drosopoulos, 1982						+			
<i>Chloriona smaragdula</i> (Stål, 1853)					+	+	+		
<i>Chloriona unicolor</i> (Herrich-Schäffer, 1835)							+		
<i>Megamelus notula</i> (Germar, 1830)				+			+	+	+
<i>Laodelphax striatella</i> (Fallén, 1826)	+			+	+	+	+		
<i>Megamelodes lequesnei</i> Wagner, 1963									+
<i>Delphacodes mulsanti</i> (Fieber, 1866)				+			+	+	+
<i>Muirodelphax aubei</i> (Perris, 1857)				+		+			
<i>Dicranotropis remaniaca</i> Guglielmino, D'Urso et Bückle, 2016	+			+	+	+			
<i>Florodelphax leptosoma</i> (Flor, 1861)				+		+		+	
<i>Struebingianella lugubrina</i> (Boheman, 1847)	+						+		
<i>Xanthodelphax straminea</i> (Stål, 1858)	+					+	+		
<i>Toya propinqua</i> (Fieber, 1866)		+	+	+	+	+	+		+
<i>Javesella dubia</i> (Kirschbaum, 1868)	+			+	+		+		
<i>Ribautodelphax albostrata</i> (Fieber, 1866)					+		+		
<i>Ribautodelphax imitans</i> (Ribaut, 1953)	+			+		+			
<i>Flastena fumipennis</i> (Fieber, 1866)	+			+	+	+	+		
<i>Neomenocria advena</i> (Spinola, 1839)				+					
<i>Dictyophara europaea</i> (Linnaeus, 1767)					+	+			
<i>Trypetimorpha occidentalis</i> Huang et Bourgoïn, 1993						+			
<i>Agalmatium flavescens</i> (Olivier, 1791)					+				
<i>Issus coleoptratus</i> (Fabricius, 1781)				+		+			
<i>Cercopis arcuata</i> (Fieber, 1844)			+	+					
<i>Cercopis sanguinolenta</i> (Scopoli, 1763)	+								
<i>Cercopis vulnerata</i> Rossi, 1807				+					

Table 4/1. Table 4. List of Auchenorrhyncha species and their collecting months.

Taxon	month	IV	V	VI	VII	VIII	IX	X	XI
<i>Lepyronia coleoptrata</i> (Linnaeus, 1758)				+	+	+	+		
<i>Neophilaenus campestris</i> (Fallén, 1805)				+					
<i>Aphrophora alni</i> (Fallén, 1805)				+			+		
<i>Aphrophora pectoralis</i> Matsumura, 1903				+					
<i>Aphrophora salicina</i> (Goeze, 1778)						+			
<i>Philaenus spumarius</i> (Linnaeus, 1758)			+	+	+	+	+	+	+
<i>Centrotus cornutus</i> (Linnaeus, 1758)				+					
<i>Stictocephala bisonia</i> Kopp et Yonke, 1977					+	+	+		
<i>Megophthalmus scanicus</i> (Fallén, 1806)				+			+		
<i>Macropsis albae</i> Wagner, 1950				+	+	+			
<i>Macropsis cerea</i> (Germar, 1837)				+					
<i>Macropsis glandacea</i> (Fieber, 1868)				+					
<i>Macropsis marginata</i> (Herrich-Schäffer, 1836)				+					
<i>Macropsis najas</i> Nast, 1981				+					
<i>Macropsis notata</i> (Prohaska, 1923)				+					
<i>Macropsis prasina</i> (Boheman, 1852)				+					
<i>Macropsis vicina</i> Horváth, 1897				+		+			
<i>Hephathus nanus</i> (Herrich-Schäffer, 1835)				+					
<i>Anaceratagallia laevis</i> (Ribaut, 1935)				+	+	+	+	+	+
<i>Anaceratagallia ribauti</i> (Ossiannilsson, 1938)				+	+	+	+	+	+
<i>Austroagallia sinuata</i> (Mulsant et Rey, 1855)					+	+			
<i>Idiocerus stigmatalis</i> Lewis, 1834				+	+		+		
<i>Idiocerus vicinus</i> Melichar, 1898					+	+	+		
<i>Balcanocerus larvatus</i> (Herrich-Schäffer, 1835)				+					
<i>Metidiocerus rutilans</i> (Kirschbaum, 1868)				+					
<i>Populicerus albicans</i> (Kirschbaum, 1868)					+				
<i>Tremulicerus distinguendus</i> (Kirschbaum, 1868)							+		
<i>Viridicerus ustulatus</i> (Mulsant et Rey, 1855)				+	+	+	+		
<i>Iassus scutellaris</i> (Fieber, 1868)				+		+			
<i>Penthimia nigra</i> (Goeze, 1778)				+					
<i>Eupelix cuspidata</i> (Fabricius, 1775)				+	+		+		
<i>Aphrodes bicincta</i> (Schrank, 1776)				+					
<i>Aphrodes makarovi</i> Zachvatkin, 1948				+					
<i>Anoscopus albifrons mappus</i> Guglielmino et Bückle, 2015				+					
<i>Anoscopus serratulae</i> (Fabricius, 1775)				+					
<i>Stroggylocephalus agrestis</i> (Fallén, 1806)					+			+	
<i>Evacanthus acuminatus</i> (Fabricius, 1794)				+					
<i>Cicadella viridis</i> (Linnaeus, 1758)			+	+	+	+	+		
<i>Alebra wahlbergi</i> (Boheman, 1845)				+					
<i>Emelyanoviana mollicula</i> (Boheman, 1845)		+		+	+	+	+		+

Table 4/2. Table 4. List of Auchenorrhyncha species and their collecting months.

Taxon	month	IV	V	VI	VII	VIII	IX	X	XI
<i>Dikraneura variata</i> Hardy, 1850				+					
<i>Wagneriata sinuata</i> (Then, 1897)				+					
<i>Notus italicus</i> Wagner, 1954				+			+		
<i>Kybos rufescens</i> Melichar, 1896				+	+				
<i>Kybos virgator</i> (Ribaut, 1933)					+				
<i>Empoasca decipiens</i> Paoli, 1930				+	+	+	+		+
<i>Empoasca pteridis</i> (Dahlbom, 1850)					+	+			
<i>Empoasca vitis</i> (Göthe, 1875)					+				
<i>Asymmetrasca decedens</i> Paoli, 1932				+	+	+			
<i>Edwardsiana diversa</i> (Edwards, 1914)				+					
<i>Edwardsiana prunicola</i> (Edwards, 1914)				+	+	+	+		
<i>Edwardsiana salicicola</i> (Edwards, 1885)				+		+			
<i>Linnavuoriana sexmaculata</i> (Hardy, 1850)					+	+	+		
<i>Ribautiana cruciata</i> Ribaut, 1931				+					
<i>Ribautiana debilis</i> (Douglas, 1876)				+					
<i>Ribautiana tenerrima</i> (Herrich-Schäffer, 1834)				+					
<i>Eupteryx atropunctata</i> (Goeze, 1778)					+	+	+	+	+
<i>Eupteryx curtisii</i> (Flor, 1861)				+	+	+			+
<i>Eupteryx decemnotata</i> Rey, 1891					+				
<i>Eupteryx melissae</i> Curtis, 1837				+	+	+	+	+	
<i>Eupteryx notata</i> Curtis, 1837				+	+		+		
<i>Eupteryx petasitidis</i> Ferrari, 1882						+			
<i>Eupteryx rostrata</i> Ribaut, 1936				+	+	+	+		+
<i>Eupteryx thoulessi</i> Edwards, 1926				+	+		+		+
<i>Eupteryx urticae</i> (Fabricius, 1803)					+				
<i>Eupteryx zelleri</i> (Kirschbaum, 1868)				+	+				+
<i>Zyginidia</i> gr. <i>ribauti</i> Dworakowska, 1970	+			+	+	+	+		
<i>Zygina discolor</i> Horváth, 1897				+					
<i>Zygina lunaris</i> (Mulsant et Rey, 1855)				+	+		+		
<i>Zygina nivea</i> (Mulsant et Rey, 1855)					+	+	+		
<i>Zygina</i> cf. <i>ordinaria</i> (Ribaut, 1936)					+				
<i>Arboridia parvula</i> (Boheman, 1845)					+	+			
<i>Arboridia spathulata</i> (Ribaut, 1931)				+		+			
<i>Fruticidia bisignata</i> (Mulsant et Rey, 1855)							+		
<i>Goniagnathus brevis</i> (Herrich-Schäffer, 1835)				+		+			
<i>Hishimonus</i> cf. <i>hamatus</i> Kuoh, 1976							+		
<i>Neoaliturus fenestratus</i> (Herrich-Schäffer, 1834)				+	+	+	+		
<i>Balclutha nicolasi</i> (Lethierry, 1876)				+	+	+	+		+
<i>Balclutha punctata</i> (Fabricius, 1775)				+					
<i>Balclutha rosea</i> (Scott, 1876)				+			+		

Table 4/3. Table 4. List of Auchenorrhyncha species and their collecting months.

Taxon	month	IV	V	VI	VII	VIII	IX	X	XI
<i>Balclutha saltuella</i> (Kischbaum, 1868)							+		
<i>Macrosteles forficula</i> (Ribaut, 1927)					+				
<i>Macrosteles frontalis</i> (Scott, 1875)				+	+	+	+		
<i>Macrosteles laevis</i> (Ribaut, 1927)					+	+	+		
<i>Macrosteles ossiannilssoni</i> Lindberg, 1954						+			
<i>Macrosteles quadripunctulatus</i> (Kirschbaum, 1868)						+			
<i>Macrosteles sardus</i> Ribaut, 1948					+	+	+		
<i>Macrosteles sexnotatus</i> (Fallén, 1806)				+	+	+			
<i>Macrosteles viridigriseus</i> (Edwards, 1924)				+	+	+	+		
<i>Deltocephalus pulicaris</i> (Fallén, 1806)				+	+	+	+		+
<i>Maiestas schmidtgeni</i> (Wagner, 1939)				+	+	+	+		
<i>Chiasmus conspurcatus</i> (Perris, 1857)				+		+	+		
<i>Doratura paludosa</i> Melichar, 1897					+				
<i>Phlogotettix cyclops</i> (Mulsant et Rey, 1855)						+			
<i>Exitianus taeniaticeps</i> (Kirschbaum, 1868)							+		
<i>Anoplotettix fuscovenosus</i> (Ferrari, 1882)				+					
<i>Lamprotettix nitidulus</i> (Fabricius, 1787)				+					
<i>Allygus modestus</i> Scott, 1876				+					
<i>Allygidius abbreviatus</i> (Lethierry, 1878)				+		+			
<i>Allygidius atomarius</i> (Fabricius, 1794)				+					
<i>Allygidius furcatus</i> (Ferrari, 1882)					+				
<i>Phlepsius</i> sp.					+		+		
<i>Graphocraerus ventralis</i> (Fallén, 1806)			+	+					
<i>Cicadula lineatopunctata</i> (Matsumura, 1908)				+		+			
<i>Cicadula frontalis</i> (Herrich-Schäffer, 1835)				+			+		
<i>Cicadula placida</i> (Horváth, 1897)				+	+	+	+	+	+
<i>Cicadula quadrinotata</i> (Fabricius, 1794)	+	+	+	+	+	+	+	+	+
<i>Mocydia crocea</i> (Herrich-Schäffer, 1837)	+				+				
<i>Thamnotettix zelleri</i> (Kirschbaum, 1868)				+					
<i>Conosanus obsoletus</i> (Kirschbaum, 1858)				+	+	+	+		+
<i>Euscelis incisus</i> (Kirschbaum, 1858)				+	+	+			
<i>Euscelis lineolatus</i> Brullé, 1832				+					
<i>Artianus manderstjernii</i> (Kirschbaum, 1868)				+	+				
<i>Paramesus obtusifrons</i> (Stål, 1853)					+				
<i>Paralimnus phragmitis</i> (Boheman, 1847)				+		+			
<i>Metalimnus formosus</i> (Boheman, 1845)				+	+		+	+	+
<i>Arocephalus longiceps</i> (Kirschbaum, 1868)	+			+	+				
<i>Psammotettix alienus</i> (Dahlbom, 1850)	+			+	+	+	+		+
<i>Psammotettix confinis</i> (Dahlbom, 1850)	+			+	+	+	+		+
<i>Adarrus exornatus</i> Ribaut, 1952				+		+			
<i>Jassargus bisubulatus</i> (Then, 1896)	+			+	+	+			
<i>Arthaldeus striifrons</i> (Kirschbaum, 1868)				+	+	+	+		+

Table 4/4. Table 4. List of Auchenorrhyncha species and their collecting months.

OBSERVATIONS ON SOME TAXA OF SPECIAL INTEREST

Cixius remotus Edwards, 1881 (Fig. 24)

New record for Italy.

A small population of this species was found near Madonna della Luce in June on herbaceous vegetation. The species is recorded from western Europe, UK and the Balkan Peninsula. Little is known about its biology.

Kelisia praecox Haupt, 1935 (Fig. 25)

New record for peninsular Italy.

One male was found near the Lago Ripasottile in September. In Italy, the species is recorded from Piemonte (Alma et al., 2009b). Host plants are *Carex brizoides* and other *Carex* species (Nickel, 2003; Nickel et Remane, 2002). The host plant of the population in the Lago Ripasottile area is unknown.

Kelisia punctulum (Kirschbaum, 1868) (Fig. 26)

New record for Italy.

This taxon is widely distributed in the studied area (Lago di Ventina, Lago di Piediluco, Madonna della Luce, Lago Lungo and Lago Ripasottile). It was collected in June on tall sedges. As host plant is recorded *Carex acutiformis* (Nickel, 2003). *Kelisia punctulum* is widely distributed and not rare in western, central, eastern and southeastern Europe, but apparently absent in most parts of the Mediterranean region.

Anakelisia fasciata (Kirschbaum, 1868) (Fig. 27)

New record for Italy.

The species is present in high abundance at the Lago di Ventina, but was found at the Lago Lungo, Lago Ripasottile and Madonna della Luce as well. Adults were collected from April to November. *Anakelisia fasciata* is recorded for Germany as univoltine. Hibernating takes place in the egg stage with some females hibernating as adults (Nickel, 2003). A similar condition is observed on the Lago di Ventina. Many specimens were found in autumn, with a percentage of males decreasing from October to November. In April only females were found. Only few specimens were collected in summer (end of June, mid-July), including one male. The species

is monophagous on *Carex riparia* (Nickel, 2003), but possibly it uses also other tall sedges as host plants. It is widely distributed in most parts of Europe except for the northernmost regions and the Iberian Peninsula.

Chloriona smaragdula (Stål, 1853) (Figs. 28, 29)

New record for peninsular Italy.

The species was collected on the Lago Lungo in July. It is monophagous on *Phragmites australis* and is recorded from most parts of Europe except for the Iberian Peninsula.

In Italy there are records from Trentino Alto Adige (Carl, 2008), Veneto and Emilia Romagna (Servadei, 1967).

Megamelus notula (Germar, 1830) (Figs. 30, 31)

New record for Latium.

The species was found on the Lago di Ventina in September and October and is apparently sedentary in this area as all collected specimens are brachypterous. One macropterous specimen was collected also on the Lago Ripasottile, in June.

Megamelus notula lives on *Carex* spp. (Nickel, 2003). In northern Italia there are records from Trentino Alto Adige, Friuli-Venezia Giulia and Emilia (Servadei, 1967); in peninsular Italy, the species is recorded from Abruzzo (Guglielmino et al., 2005).

Megamelodes lequesnei Wagner, 19631 (Fig. 32)

New record for Italy.

Brachypterous males were collected in November both on the Lago di Ventina and the Lago Lungo. In Germany, the species is bivoltine and hibernates in the egg stage; host plants are *Juncus effusus* and *J. inflexus* (Bückle & Guglielmino, 2005), possibly also other tall *Juncus* species.

In the investigated areas, however, it lives on *Carex* spp., probably *Carex hirta*. Apparently, it hibernates in the adult stage.

The species is recorded from several European regions including Spain, the British Islands and the Balkan region.

Delphacodes mulsanti (Fieber, 1866) (Fig. 33)

New record for Latium.

The taxon is widely distributed in the studied areas (Madonna della Luce, Lago Lungo, Lago Ripasottile and Montisola). The specimens were collected in June, September, October and November, possibly on *Eleocharis* sp.

Fieber (1866) described this taxon from southern France. As usual in those times, he did not consider the aedeagus morphology. Subsequent description of further *Delphacodes* taxa based principally on the aedeagus shape, raised the question of their relationship or possible identity with *D. mulsanti*. Until 1983, four further taxa of this group had been described: (1) *D. ornatipennis* (Haupt, 1927), based on one female from Palestina, (2) *D. audrasi* Ribaut, 1954, from eastern France, (3) *D. fascia* (Lindberg, 1960), from Portugal, and (4) *D. linnavuorii* (Le Quesne, 1960), described from central Italy (Toscana) on a specimen figured by Linnavuori (1957) as *D. mulsanti*. Asche & Remane (1983) discussed this problem in a long article in which they described an additional species, (5) *D. nastasi*, from Greece. Out of these taxa, four are recorded by D'Urso (1995) from Italy: *D. mulsanti*, *D. linnavuorii*, *D. audrasi* and *D. nastasi*.

In the meantime, Asche (pers. com.) had the opportunity to study the type of *D. audrasi* and material on which Fieber's original description of *Delphax mulsanti* was based. In addition, he studied a rich *Delphacodes* material from Irak, collected by R. Linnavuori, which displays a surprisingly high variability in the aedeagus morphology. All the species of the *mulsanti* group mentioned above are represented in the variation spectre of these populations. Our own material from Sardinia and peninsular Italy comprises at least the aedeagus morphology of *D. fascia*, *D. nastasi* and transitional forms. A quite different aedeagus shape is represented by the specimen figured by Linnavuori (1957) from Toscana as *D. mulsanti*, and later described by Le Quesne (1960) as *D. linnavuorii*. Nevertheless, the aedeagus shape of this specimen as well is within the spectre of variability of the material from Irak observed by Asche.

These observations suggest clearly that the five species mentioned above are conspecific with *D. mulsanti*. We propose the following synonymies:

Delphax mulsanti, Fieber, 1866 = *Megamelus ornatipennis* Haupt, 1927 = *Delphacodes audrasi* Ribaut, 1954 = *Calligypona fascia* Lindberg, 1960 = *Megamelodes linnavuorii* Le Quesne, 1960 =

Delphacodes nastasi Asche et Remane, 1983 (syn. nov.) (see also Haupt, 1927; Lindberg, 1960; Ribaut, 1954).

Struebingianella lugubrina (Boheman, 1847) (Figs. 34, 35)

New record for peninsular Italy.

A very rich population of this species was found on the Lago di Ventina, in April and September, on *Glyceria maxima*. As host plant is recorded also *G. fluitans* (Nickel, 2003). The species hibernates in the nymph stage, and has two generations (Nickel, 2003).

It was recorded in Italy only from Friuli-Venezia Giulia (Servadei, 1967).

Interestingly, a high number (about 30%) of the collected males have a mirror image symmetric aedeagus in respect of the aedeagus type generally observed in the populations from central Europe (as figured e.g. in Ossiannilsson, 1978, Figs. 510–512).

Ribautodelphax albostrata (Fieber, 1866) (Fig. 36)

New record for Latium.

Brachypterous and macropterous adults were found on the Lago Lungo in July and September. The species is monophagous on *Poa pratensis*. In Italy there are records from Valle d'Aosta (Alma et al., 2009a), Trentino Alto Adige (Remane & Hellrigl, 1996), Friuli Venezia Giulia, Liguria (Guglielmino & Bückle, 2007), Emilia Romagna (Guglielmino & Bückle, 2008), Toscana, Abruzzo (Guglielmino et al., 2005). The species hibernates in the nymph stage and has two generations (Nickel, 2003). It is widely distributed and rather common in central Italy.

Macropsis prasina (Boheman, 1852) (Fig. 37)

The species was found near Madonna della Luce in June.

This taxon is mentioned in the Servadei catalogue apparently as *M. virescens* (Fabricius, 1794) and recorded for Piemonte, Liguria and Trentino-Alto Adige. Generally, there was much confusion in the past about the taxonomy of this genus, and until today *Macropsis* is one of the most complicated Cicadellidae genera in Europe. Therefore, old records are unclear and may be interpreted in different ways. Species discrimination, above all

among the green species, is sometimes impossible without the indication of the host plant; as material from old collections is normally devoid of such information its identification is particularly difficult. We found no specimens in the Servadei collection that can be attributed surely to *M. prasina* (most of the specimens belonging to the label “*prasina*” display the ovipositor features of *M. marginata*).

Notus italicus Wagner, 1954 (Fig. 38)

New record for Latium.

The species was found only on the Lago di Ventina, and is apparently restricted there to *Carex paniculata* as host plant.

The species is described from Trentino-Alto Adige and Veneto, and there are records from several other regions in northern Italy (Servadei, 1967). On the Apennine Peninsula it is recorded from Abruzzo (Guglielmino et al., 2005) and Calabria (Servadei, 1967).

Kybos virgator (Ribaut, 1933) (Fig. 39)

During our research one male was collected on *Salix alba* near the Lago Ripasottile.

In Italy there are records only from Veneto and Sardinia (Servadei, 1967). The species feeds primarily on *S. alba* and *S. fragilis* (Nickel, 2003).

In 2011, a new *Kybos* species, *K. albitalicus* Guglielmino, Poggi, Bückle, 2011 was described (Guglielmino et al., 2011). This taxon feeds on *S. alba* as well (and on *S. eleagnos*), is quite common in central Italy and is distinguishable from *K. virgator* mainly by the morphology of its tymbal organ. Therefore, records before 2011 are to be checked; they may refer possibly to *K. albitalicus*. The male collected in the Lago Ripasottile area displays long, well developed apodemes of the second abdominal sternum; thus, it belongs clearly to *K. virgator*.

Zygina lunaris (Mulsant et Rey, 1855) (Fig. 40)

New record for Latium.

Adults were found on the Lago Lungo, Lago Ripasottile and Lago di Ventina, on *Salix alba* in July and September. The species lives prevalently on narrow-leaved *Salix* species (*S. alba*, *S. fragilis*, *S. purpurea*, etc.) (Nickel, 2003). In Italy there are

records from Piemonte (Alma et al., 2009b) and Toscana (Mazzoni et al., 2001).

Zygina* cf. *ordinaria (Ribaut, 1936) (Fig. 41)

New record for Latium.

Adults were collected on the Lago Lungo and Lago Ripasottile, on *Salix alba*, in July. The species lives on narrow-leaved *Salix* species (*S. alba*, *S. viminalis*, *S. fragilis*, *S. purpurea*, etc.) (Nickel, 2003).

This taxon is generically recorded from Italy by Vidano and Arzone (1987); recently, it was collected in Trentino Alto Adige (Carl, 2008), Emilia Romagna (Guglielmino & Bückle, 2008) and Toscana (Mazzoni, 2005).

Hishimonus* cf. *hamatus Kuoh, 1976 (Fig. 42)

New record for peninsular Italy.

One specimen was collected in September near Madonna della Luce and the Lago Ripasottile, respectively.

This species was recently introduced in Europe and is present in Slovenia (Seljak, 2013) and northern Italy (Lombardy: Francesco Poggi, unpublished data).

Cicadula frontalis (Herrich-Schäffer, 1835) (Fig. 43)

New record for Latium.

The species was found in June and September only in a restricted area near Madonna della Luce, on *Carex acutiformis* and/or *C. riparia*.

The species is widely distributed in most parts of Europe. In Italy there are records from Emilia and Calabria (Servadei, 1967). In the Servadei collection of the museum of Verona there are no specimens of this taxon from Italy.

Cicadula placida (Horváth, 1897) (Fig. 44)

New record for Latium.

The taxon is widely distributed and common in the studied area (Lago di Ventina, Lago di Piediluco, Madonna della Luce, Lago Lungo, Lago Ripasottile and Montisola). Adults were collected in June, July, October and November. The species feeds on *Phalaris arundinacea*, *Glyceria maxima*, and possibly also on other tall Poaceae species. Spe-

cimens collected in June were light yellow-green, specimens collected in November brown.

The species is recorded in Italy from Piemonte (Servadei, 1967) and Toscana (Mazzoni, 2005).

Metalimnus formosus (Boheman, 1845) (Fig. 45)

New record for peninsular Italy.

Specimens of this taxon were collected on the Lago di Ventina from June to November. The species feeds on *Carex* spp. In Germany *C. acuta* and *C. elata* are recorded as host plants (Nickel, 2003). In the Lago di Ventina area, the species feeds on *Carex riparia*, *C. paniculata* and possibly further *Carex* species.

In Italy it is recorded from Piemonte, Trentino Alto Adige and Friuli Venezia Giulia (Servadei, 1967).

CONCLUSIONS

The number of vascular plants (267) and Auchenorrhyncha species (162) emphasizes the high biodiversity of the Lacus Velinus area. However, not only the quantity of species but also the particular interest of some of them is an important result. Among the vascular plants are to be recorded in this context *Butomus umbellatus*, *Carex acutiformis*, *C. elata*, *C. pseudocyperus*, *C. paniculata*, *Cladium mariscus*, *Epipactis palustris*, *Frangula alnus*, *Glyceria maxima*, *Hydrocharis morsus-ranae*, *Nuphar lutea*, *Oenanthe aquatica*, *Orchis incarnata*, *Ranunculus lingua*, *Rorippa amphibia*, *Rumex hydrolapathum*, *Scutellaria galericulata* and *Viburnum opulus*, all included in the Regional Red Lists of Italian Plants of Umbria and Latium.

Among the Auchenorrhyncha we mention four species (*Cixius remotus*, *Kelisia punctulum*, *Anakelisia fasciata* and *Megamelodes lequesnei*) as new for Italy and five (*Kelisia praecox*, *Struebingianella lugubrina*, *Chloriona smaragdula*, *Hishimonus* cf. *hamatus* and *Metalimnus formosus*) as new for the Apennine Peninsula (“S” in the checklist of the Italian fauna). Besides, most of the collection sites even seen in isolation present impressively rich Auchenorrhyncha communities. 83 species were found at the Lago di Ventina, 89 at the Lago di Piediluco, 65 near Madonna della Luce, 61 at the Lago Lungo, 76 at the Lago Ripasottile, 47 near

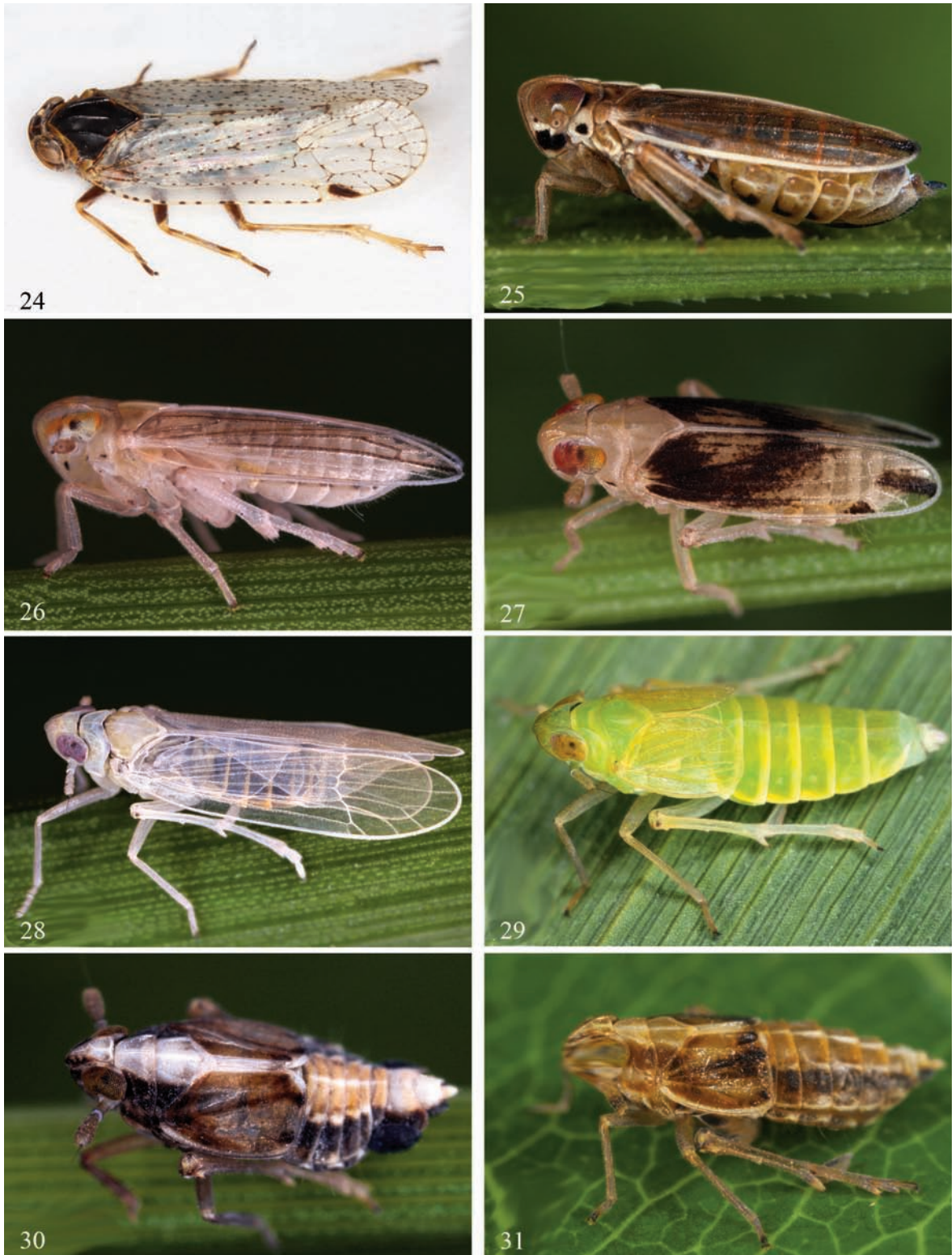
Montisola and 14 on the river Velino. The different numbers are in part due to a different sampling intensity and a different spatial, ecological and temporal extension of the collecting sites and periods. However, the low species number in the localities near Montisola and on the river Velino in respect of the other sites is in part correlated with a lower diversity of plants in those distinctly disturbed habitats.

In addition to the high number of taxa occurring in the investigated area, a very important result consists in the high number of 60 taxa that are strictly correlated with moist habitats. Most of the species recorded for the first time in Italy or peninsular Italy belong to this group.

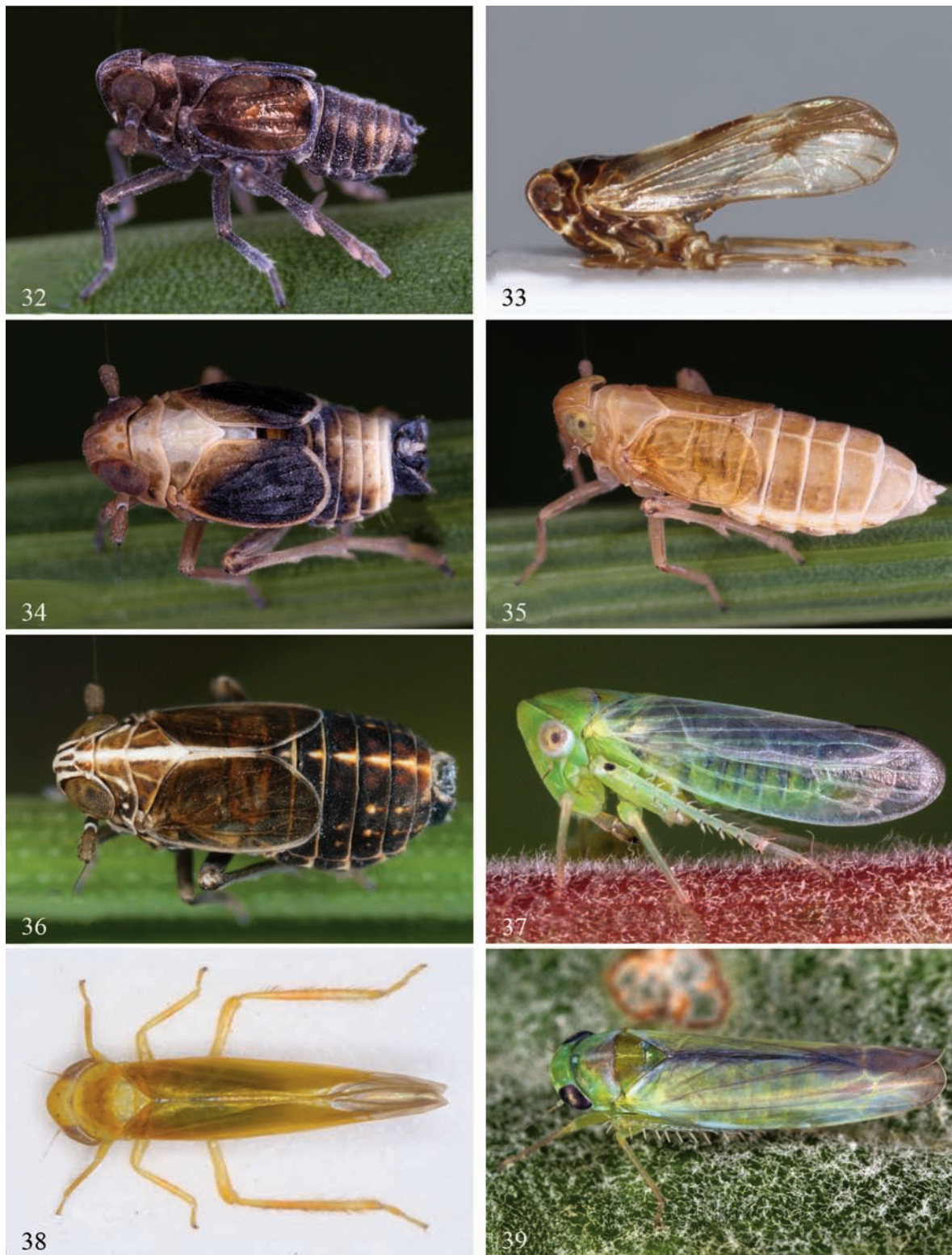
The present research emphasizes also the lack of data concerning the Auchenorrhyncha species in Latium and above all in Umbria. While 18 taxa of Auchenorrhyncha are new records for Latium (from six sampling localities), no less than 44 are new for Umbria (in spite of this region being represented by only two sampling localities). However, a subdivision of our results in data from Latium and from Umbria makes little sense. The investigated area is a single ecological and geological unit, despite of its belonging to two different administrative entities. The site of the Lago di Piediluco (in Umbria), for example, is only about 250 m distant from the border of Latium and about 1km distant from the site “Madonna della Luce” (in Latium).

Nowadays humid habitats in central Italy are generally rare. Often they have been destroyed or at least severely compromised already in Roman times. Therefore, an area with such high number of hygrophilous plants and Auchenorrhyncha taxa as the “Lacus Velinus” region deserves particularly high attention and protection. This not only in view of the Flora and the Auchenorrhyncha fauna (and the Avifauna), but also in regard of other groups of animals which are unexplored until now, and may be expected to be represented by many further rare and interesting taxa. The uncontrolled diffusion of alien and invasive plant species may become a serious risk for the conservation of the biodiversity of this area, the remarkable naturalistic interest of which this research has confirmed.

Even if the studied areas furnished very important results, we are far from an approximately complete knowledge on their Auchenorrhyncha fauna. Additional investigations should include more localities, biotopes and collecting seasons.



Figures 24–31. Auchenorrhyncha from study areas. Figure 24. *Cixius remotus*. Figure 25. *Kelisia praecox*. Figure 26. *Kelisia punctulum*. Figure 27. *Anakelisia fasciata*. Figure 28. *Chloriona smaragdula*, macropterous male. Figure 29. *Chloriona smaragdula*, brachypterous female. Figure 30. *Megamelus notula*, male. Figure 31. *Megamelus notula*, female. Figures 25–31: Photos Gernot Kunz.



Figures 32–39. Auchenorrhyncha from study areas. Figure 32. *Megamelodes lequesnei*. Figure 33. *Delphacodes mulsanti*. Figure 34. *Struebingianella lugubrina*, male. Figure 35. *Struebingianella lugubrina*, female. Figure 36. *Ribautodelphax albostrata*. Figure 37. *Macropsis prasina*. Figure 38. *Notus italicus*. Figure 39. *Kybos virgator*. Figures 32, 34–37, 39: Photos Gernot Kunz; Figures 33, 38: Photos Massimo Vollaro.



Figures 40–45. Auchenorrhyncha from study areas. Figure 40. *Zygina lunaris*. Figure 41. *Zygina ordinaria*. Figure 42. *Hishimonus* cf. *hamatus*. Figure 43. *Cicadula frontalis*. Figure 44. *Cicadula placida*. Figure 45. *Metalimnus formosus*. Photos Gernot Kunz.

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REFERENCES

Alma A., Bocca M., Čermak V., Chen P., D'Urso V.,

Exnervova A., Goula M., Guglielmino A., Kunz G., Lauterer P., Malenovský I., Mazzoglio P.J., Nicoli Aldini R., Ouvrad D., Remane R., Rinttala T., Seljak G., Söderman G., Soulier-Perkins A., Stys P., Tavella L., Tedeschi R. & Wilson M., 2009a. Insecta Hemiptera collected in the Mont Avic Natural Park (Aosta Valley, Northwest Italy). *Revue valdôtaine d'histoire naturelle*, 63: 109–124.

Alma A., Chen P., D'Urso V., Guglielmino A., Hollier J., Kunz G., Lauterer P., Malenovský I., Mazzoglio P.J., Nickel H., Nicoli Aldini R., Rinttala T., Seljak G., Seyring M., Söderman G., Wilson M. & Witsack W., 2009b. Auchenorrhyncha collected in the Canavese

- district (Northwest Italy) (Hemiptera, Auchenorrhyncha). *Cicadina*, 10: 121–127.
- Anzalone B., Iberite M. & Lattanzi E., 2010. La Flora vascolare del Lazio. *Informatore Botanico Italiano*, 42: 187–317.
- Asche M. & Remane R., 1983. Zur Problematik von *Delphacodes mulsanti* (Fieber, 1866) und zur Kenntnis einiger benachbarter Taxa (Homoptera Auchenorrhyncha Fulgoromorpha Delphacidae) (Vorläufige Mitteilung). *Marburger Entomologische Publikationen* 1: 25–56.
- Bückle C. & Guglielmino A., 2005. Untersuchungen zur Zikadenfauna des Benninger Rieds bei Memmingen mit Anmerkungen zu Ökologie, Biologie und Systematik einzelner Arten. *Beiträge zur bayerischen Entomofaunistik*, 7: 187–208.
- Carl M., 2008. Die Zikaden (Insecta, Auchenorrhyncha) des Schlern (Südtirol, Italien). *Gredleriana*, 8: 321–340.
- Celesti-Grapow L., Pretto F., Carli E. & Blasi C. (Eds.), 2010. Flora alloctona ed invasiva d'Italia. Casa Editrice Università La Sapienza, Roma: 181–207.
- Conti F., Abbate G., Alessandrini A. & Blasi C. (Eds.), 2005. An Annotated Checklist of the Italian Vascular Flora. Palombi & Partner, Roma.
- Conti F., Manzi A. & Pedrotti F., 1997. Liste Rosse Regionali delle piante d'Italia. WWF Italia, Società Botanica Italiana, Tipar Poligrafica Editrice, Camerino, 139 pp.
- De Santis A., 2010. Il popolamento ad Auchenorrhyncha (Insecta, Hemiptera) della Riserva Naturale dei Laghi Lungo e Ripasottile. Tesi di laurea, Università degli Studi della Tuscia, Viterbo, 102 pp.
- D'Urso V., 1995. Homoptera Auchenorrhyncha. In: Minelli A., Ruffo S. & La Posta S. (Eds.), Checklist delle specie della fauna italiana, 41. Calderini, Bologna, 1–35.
- Fieber F.X., 1866. Grundzüge zur generischen Theilung der Delphacini. *Verhandlungen der Zoologisch-Botanischen Gesellschaft Wien*, 16: 517–534.
- Guglielmino A. & Bückle C., 2007. Contributo alla conoscenza della fauna ad Auchenorrhyncha (Hemiptera, Fulgoromorpha et Cicadomorpha) di Liguria e dell'Italia meridionale. *Frustula entomologica*, n.s. 30 (43): 149–159.
- Guglielmino A. & Bückle C., 2008. Contribution to the knowledge on the Auchenorrhyncha fauna (Hemiptera: Fulgoromorpha et Cicadomorpha) of the Tuscanian-Emilian Apennines. *Redia*, 91: 3–23.
- Guglielmino A., Bückle C. & Remane R. 2005. Contribution to the knowledge of the Auchenorrhyncha fauna of Central Italy (Hemiptera, Fulgoromorpha et Cicadomorpha). *Marburger Entomologische Publikationen*, 3: 13–98.
- Guglielmino A., Poggi F. & Bückle C., 2011. Contribution to the knowledge on Typhlocybinae (Hemiptera, Cicadellidae) in Italy with description of two new species. *Zootaxa*, 2979: 41–59.
- Haupt H., 1927. Homoptera Palestinae I. *Bulletin of Palestine Agricultural Experiment Station*, 8: 5–43.
- Le Quesne W.J., 1960. Some further taxonomic observations on Delphacidae (Hom.), including a synonymic change and a new European species. *The Entomologist* (September 1960): 186–188.
- Lindberg H., 1960. Eine Zikaden-Ausbeute aus Portugal 1959. *Notulae Entomologicae*, 40: 45–55.
- Linnavuori R., 1957. Remarks on some Italian Delphacidae (Hemiptera Homoptera). *Bollettino della Società Entomologica Italiana*, 87: 49–52.
- Mazzoni V., 2005. Contribution to the knowledge of the Auchenorrhyncha (Hemiptera Fulgoromorpha and Cicadomorpha) of Tuscany (Italy). *Redia*, 88: 85–102.
- Mazzoni V., Cosci F, Lucchi A. & Santini L., 2001. Occurrence of leafhoppers (Auchenorrhyncha, Cicadellidae) in three vineyards of the Pisa district. *Integrated Control in Viticulture IOBC wprs Bulletin*, 24: 267–271.
- Nickel H., 2003. The Leafhoppers and Planthoppers of Germany (Hemiptera, Auchenorrhyncha): Patterns and strategies in a highly diverse group of phytophagous insects. Pensoft, Sofia, 460 pp.
- Nickel H. & Remane R., 2002. Artenliste der Zikaden Deutschlands, mit Angaben zu Nährpflanzen, Nahrungsbreite, Lebenszyklen, Areal und Gefährdung (Hemiptera, Fulgoromorpha et Cicadomorpha). *Beiträge zur Zikadenkunde*, 5: 27–64.
- Orsomando E., Bini G. & Catorci A., 1998. Aree di rilevante interesse naturalistico dell'Umbria. Regione dell'Umbria, SPI Perugia.
- Ossiannilsson F., 1978. The Auchenorrhyncha (Homoptera) of Fennoscandia and Denmark. Part I. *Fauna Entomologica Scandinavica*, 7: 1–222.
- Remane R. & Hellrigl K., 1996. Ordnung Auchenorrhyncha (Cicadina) - Zikaden. In: Hellrigl K. (Ed.), Die Tierwelt Südtirols. Kommentiertes systematisch - faunistisches Verzeichnis der auf dem Gebiet der Provinz Bozen - Südtirol (Italien) bekannten Tierarten. Band 1 der Veröffentlichungen des Naturmuseums Südtirol, Bozen, 365–383.
- Ribaut H., 1954. *Delphacodes audrasi* n. sp. (Homoptera, Araeopidae). *Bulletin Mensuel de la Société Linnéenne de Lyon*, 23: 189–181.
- Seljak G., 2013. *Hishimonus hamatus* Kuoh (Hemiptera: Cicadellidae): a new alien leafhopper in Europe. *Acta entomologica slovenica*, 21: 123–130.
- Servadei A., 1967. Rhynchota (Heteroptera, Homoptera Auchenorrhyncha). *Fauna d'Italia*, volume 9, Calderini Editore, Bologna, 851 pp.
- Sorgi S. & Fanelli G., 1993. Flora e vegetazione del laghetto di Ventina. *Atlante Rieti-Terni*: 199–211.

Venanzoni R. & Gigante D., 2000. Contributo alla conoscenza della vegetazione degli ambienti umidi dell' Umbria. *Fitosociologia*, 37: 13–63.

Vidano C. & Arzone A., 1987. Typhlocybinae of

broadleaved trees and shrubs in Italy. 2. Betulaceae. *Bollettino dell'Istituto di Entomologia "Guido Grandi" dell'Università degli Studi di Bologna*, 41: 257–267.