

CESARE CONCI

ICONOGRAPHY OF EGGS OF ITALIAN PSYLLOIDEA (*Insecta Homoptera*)

ABSTRACT - CONCI C., 2000 - Iconography of eggs of Italian *Psylloidea* (*Insecta Homoptera*).

Atti Acc. Rov. Agiati, a 250 (2000), ser. VII, vol. X, B: 5-32.

There are reported 192 figures of eggs regarding 127 species of psyllids of Italy (on a total of 205 species up to now found in our country). Besides the figures of other 15 species of probable future finding in Italy are furnished. The figures, in most part original, were obtained by the dissection of the abdomen of mature females. An attempt of classification in 11 groups of the examined eggs is proposed. However, comparative examen of the eggs did not furnish a valuable help to the general systematics of the taxon, unlike what was recently obtained from the comparative study of the nymphs. Only the eggs of the genus *Bactericera* are clearly different from the other eggs.

KEY WORDS - Psyllids eggs, Italy.

RIASSUNTO - Iconografia di uova di Psilloidei italiani (*Insecta Homoptera*).

Si espongono le caratteristiche principali delle uova del taxon in oggetto e si riportano 192 figure di uova riguardanti 127 specie di Psilloidei del nostro Paese (su un totale di 205 specie accertate), oltre alle figure di altre 15 specie il cui rinvenimento in Italia sarà possibile. Dette figure, in massima parte originali, sono state ottenute dissezionando l'addome di femmine sessualmente mature. Si espone un tentativo di classificazione delle uova esaminate, sistemandole in 11 gruppi. Dal loro esame comparato però non risulta che le uova possano fornire un apprezzabile aiuto alla sistematica generale del gruppo, a differenza di quanto è stato ottenuto dallo studio comparato delle ninfe. Solo le uova del genere *Bactericera* differiscono nettamente da tutte le altre.

PAROLE CHIAVE - uova di Psylloidea, Italia.

1. FOREWORD

The first brief descriptions of eggs of Psyllids go back to the XIX century and regard some species of practical interest. In the first decades of the XX century only few Authors reported other notices on this

subject. For example, the works of BOSELLI (1929 a, b, 1930), SPEYER (1929) and LAL (1934) could be mentioned.

HESLOP-HARRISON (1949:250, figs 3-4) represented, as produced by the Psyllid *Livia juncorum*, eggs laid by an Homopterous like the genus *Cicadella* (Auchenorrhyncha).

The figure of Heslop-Harrison was reported without comments by VONDRACEK (1957, fig. 56) and by KLIMASZEWSKI (1975, fig.56).

Only in the last decade of the XX century the taxonomists began to publish figures of an increasing number of species.

The one synthetic work of Psyllid eggs is by LOGINOVA (1979). This Soviet student reported small figures of about 190 Palaearctic species, with a classification of them.

Very little is our knowledge about the extrapalaearctic fauna.

The present contribution report figures and notices of psyllid eggs know from Italy (127 species on a total of 205) and also figures mostly from the literature of eggs of other 15 species of probable future finding in Italy.

2. MATERIALS AND METHODS

Our figures were obtained in the most cases from microscopical preparations of the author from eggs extracted from the abdomen of females in favourable moment of maturation. Only rarely eggs already deposited on the host plants have been used. Therefore the eggs are still unknown for many species that overwinter on shelter plants and are mature in the female abdomen only during a short period of time.

3. MORPHOLOGY

The psyllid eggs have in general a suboval form, more or less regular or lengthened, different according to the groups.

In the form that are considered primitive (I group), the eggs have an upper or dorsal convex margin and a lower or ventral margin, more or less straight. The eggs have an anterior extremity wider and become narrower posteriorly. The eggs have a stalk or pedicel, a process of fixation to the substratum, which is inserted entirely or partly in the tissue of the host-plant and which serves also to absorb water.

Form, position and dimension of the stalk are important character, variable according to the groups.

The posterior extremity of the egg may be roundish or more or less pointed; sometime it has an extension as a filament, more or less long and enlarged, sometimes difficult to see in the preparate. In some of our previous works this process, according to the terminology used by Boselli, was erroneously called «micropyle». In the eggs of sufficient maturation one can see the mycetocyte, the organ with the symbionts, as a roundish macula, sometimes coloured.

4. DIMENSIONS

The length of the egg normally is measured from basis to apex, with the stalk and excluding the apical filament. In the complex, the size of the eggs of the Italian Psyllids are rather homogeneous. In the most species the length is comprise between 0,3 and 0,4 mm, without a direct relation with the dimensions of the adults. A little number of eggs has smaller dimensions, but the length is not less than 0,2 mm (for example *Arytainilla barbaggioi* and *Lauritrioza alacris*). The width varies between greater limits, between 0,10 and 0,20 mm. The stalk normally is strong (*Psyllopsis*, *Homotoma*, *Trichohermes*), or thin and long (*Psylla*). In the genus *Bactericera* the stalk, already wide in the abdomen, is very long after the deposition and can exceed one mm.

5. MORPHOLOGICAL GROUPS OF EGGS

The distribution of the Psyllid eggs in homogeneous groups is not easy, owing to the relative morphological uniformity and the variability of some characters. It is proposed an attempt of division of the Italian eggs know to the author according to 11 groups. For each one we report the principal characters, the species attributed to each, with their progressive number. We also report the affinities between this classification and that by Loginova. There are however also too intermediate forms of doubtful attribution.

I Group (I type, I and II Subtypes of Loginova, 1979)

Shape suboval, asymmetrical; width about half of the length; anterior extremity rounded; posterior extremity rounded or pointed, sometimes with a terminal filament; basal margin often straight. Stalk short and stumpy, subapical or ventral, about at 2/3 of the base, towards its

anterior apex; the stalk forms an often right angle, with the longitudinal axis of the eggs; the egg is therefore fixed parallel to the substratum.

Very common group, considered as primitive. We have figured 33 species, belonging to all the principal families. Among these species, two till now were not found in Italy. The attribution to this group of *Homotoma ficus* and *Trichohermes walkeri* is doubtful. *Trioza rotundata* can be ascribed either to I or to II group.

Numbers 8, 9, 9A, 10, 12, 13, 15, 16, 38, 39, 82, 93, 94, 97, 101, 109, 110, 116, 120, 122, 123, 124, 127, 128, 128A, 133, 135, 168, 186, 187, 190, 191, 196.

II Group (I type, I and II subtypes of Loginova, 1979)

Shape suboval, extended, asymmetrical; width less than half the length. Stalk of middle length, subapical, forming an angle of about 45° in relation to the basis of the egg. The egg is fixed oblique to the substratum.

It is the more common group. We have figured 55 species, belonging to all the principal families. Among these species 5 till now were not found in Italy. The attribution to this group of *Rhinocola fusca* is doubtful.

Numbers 1, 3, 4, 6, 17, 17A, 19, 21, 21A, 22, 23, 24, 25, 25A, 26, 29, 30, 30A, 34, 35, 40, 41, 42, 43, 44, 45, 46, 47, 56, 56A, 57, 58, 59, 62, 63, 67, 68, 70, 71, 72, 73, 74, 78, 79, 80, 81, 83, 100, 105, 106, 156, 170, 189, 196, 197.

III Group (I type, I and III subtypes of Loginova, 1979)

Shape of a bean, wide, gradually narrower posteriorly. The ventral margin is almost straight, with a little recess at the insertion of the stalk; this one is long, distant from the anterior end of the egg. The apical filament is lacking. This group is present only in 5 species of the genus *Psyllopsis* (Psyllidae, one was not found in Italy) and in *Acizzia uncatoides* (Psyllidae).

Numbers 49, 50, 51, 52, 52A, 54.

According to Loginova (1979, figs. 151-153) it is present also in *Egeirotrioza* (Trioziidae).

IV Group (II type of Loginova, 1979)

Shape stumpy, as a drop or pear, widely rounded at the basis (considering the egg vertical); frequently pointed apically, sometimes with an apical filament. The largest width is in the basal third. Stalk short, about in the centre of the basis. This group is present in Italy in only 9 species, belonging to the principal families. The attribution to this group of *Trioxa urticae* is doubtful.

Numbers 7, 28, 31, 32, 32bis, 125, 126, 155, 169.

According to Loginova (1979) this group is present also in the genera *Acaerus*, *Eremopsylloides*, *Ligustrinia* and *Syringilla*, not belonging to the Italian fauna.

V Group (V type of Loginova, 1979)

Shape oval, long, as a spindle; length more than three times its width; stalk about in the centre of the base, on the same axis of the eggs; apex sometimes with a filament. This group is present, in Italy, in a half a score of species, in the families Aphalaridae, Psyllidae and over all Triozidae.

Numbers 27, 58, 89, 155, 157, 158, 164, 167, 172, 175, 193, 200bis.

According to Loginova (1979) it is present also in *Eryngiophaga*, in species not found in Italy.

Numbers 155, 200B, 200C, 200D, 200E.

VI Group (not described by Loginova, 1979)

Shape oval or lengthened, with a cylindrical stalk long and thin, inserted in the centre of the base. Group exclusive of the genus *Psylla* (*P. alni* and *P. fusca*).

Numbers 84, 86. For the remaining species of this genus the egg is undescribed.

VII Group (not described by Loginova, 1979)

With a strong anterior stalk, with a right angle as regards the longitudinal axis of the body and the substratum. Group limited to the introduced *Ctenarytaina eucalypti* (Family Spondyliaspidae).

Number 131.

VIII Group (not separated by Loginova, 1979)

Shape almost subspherical, a little longer than wider. Stalk short, in the second anterior third of the basis. Group limited to *Calophya rhois*, the only Italian species of the family Calophyidae.

Number 132.

IX Group (not separated by Loginova, 1979)

Similar to the I group, but the upper margin is wavy in a typical way. Limited to the Genus *Heterotrioza* and to *Trioza remota* and *T. ilicina*. Doubt for *Epitrioza neglecta*.

Numbers 159, 160, 161, 181, 184; 200A?.

X Group (IV type of Loginova, 1979)

Shape oval or suboval, sometimes almost symmetrical, about two times longer than wide. Stalk in the centre of the base, well developed; the length of the stalk is variable: in the deposited egg the stalk can be as long as four times the length of the egg. The stalk in the abdomen is very shorter and wider, with an evident internal canal. The egg is slightly bent on its stalk. The embryonic mycetocyte is placed in the lower part, as a red-orange sphere. The characteristic ways of deposition of this egg are described in detail by TREMBLAY (1965:104-105) of the *Bactericera tremblayi*.

This group, very clearly differentiated and limited to the genus *Bactericera*, was reported for a dozen of Italian species.

Numbers 136, 137, 138, 141, 142, 143, 144, 146, 147, 151, 152, 153.

XI Group (not reported by Loginova, 1979)

Egg little, oval-lengthened, completely without stalk. Group limited to *Arytainilla barbaggioi*. It is the only example, in the world, of stalk lacking. According to RAPISSA (1989:27): «The absence of a system to insert the egg into the tissues of the host plant is probably due to the peculiar method of oviposition shown by this species (Figs 3B and 10a). Infact the egg of *A. barbaggioi* are driven into the longitudinal grooves of the stems of *Genista aetnensis*, where they are retained by the sides of the same grooves».

Number 64.

6. OBSERVATIONS

The eggs of the Italian *Psylloidea* are homogeneous, with a typical and characteristic morphology, comparable to that of the eggs of some *Aleyrodoidea*. Only the eggs of the genus *Bactericera* are strongly different, with some likeness with the eggs of Neuroptera Chrysopidae. The eggs of *Arytainilla barbagalloi* forms an exception. It is therefore difficult at present to express general considerations or use the eggs for a phylogenetic examen of the taxon, as it has been attempted in the study of nymphal stages of Psyllids.

ACKNOWLEDGEMENTS

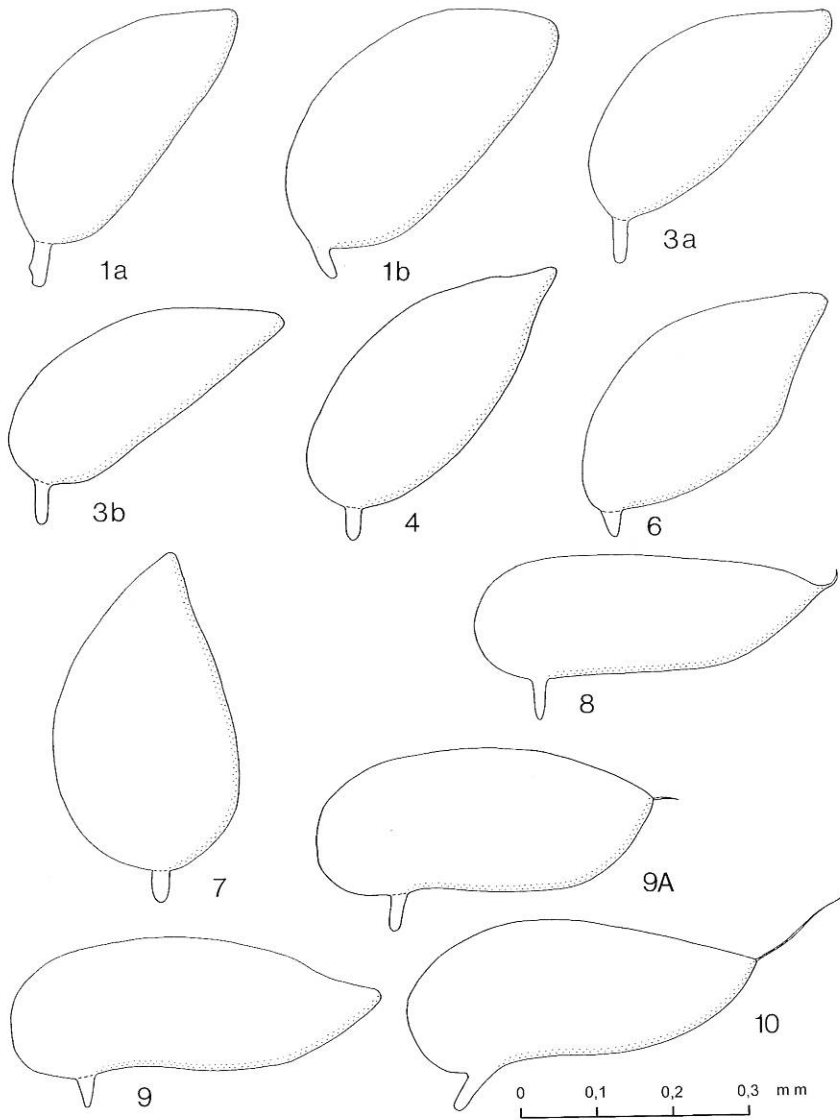
I thank: Dr. Luigi Cagnolaro, Director of the Civic Museum of Natural History of Milan, for many facilitations; Graziella Perini and Claudio Pagliarin for the final drawing up of the figures; Dr. Carlo Violani for the kind help in the English translation.

EXPLICATION OF THE ILLUSTRATIONS

The illustrations are arranged in systematic order, following, for convenience (with very few alterations), the nomenclature and the series published by CONCI *et al.* (1993, 1996), with the related progressive number. In a little number of cases also eggs of species so far not found in Italy, but of probable future finding there, are represented; for these species, marked with an asterisk (*) after their progressive number, a capital letter is reported.

The illustrations are in the most of cases original and at the same magnification. It is reported the indicative locality of finding of the species, and the date of the month of finding, shorted. These elements can be of interest for the knowledge of the biology of some species. The size of the species reported only by the literature is indicative.

At the end it is reported, for all the species, with a roman number, the group to which the egg is assigned.



Figs 1a,b: *Livia junci*, Spain, June, group II.
 Figs 3a,b: *Euphyllura olivina*, N Italy, April, II.
 Fig. 4: *Euphyllura phillyreae*, N Italy, Oct., II.
 Fig. 6: *Colposcena tamaricis*, Sardinia, June, II.
 Fig. 7: *Colposcena aliena*, N Italy, Oct., IV.
 Fig. 8: *Aphalara exilis* (from BURCKHARDT & LAUTERER, 1997), I.
 Fig. 9: *Aphalara sauteri*, N Italy, May, I.
 Fig. 9A: * *Aphalara ulicis* (from BURCKHARDT & LAUTERER, 1997).
 Fig. 10: *Aphalara maculipennis* (from BURCKHARDT & LAUTERER, 1997).

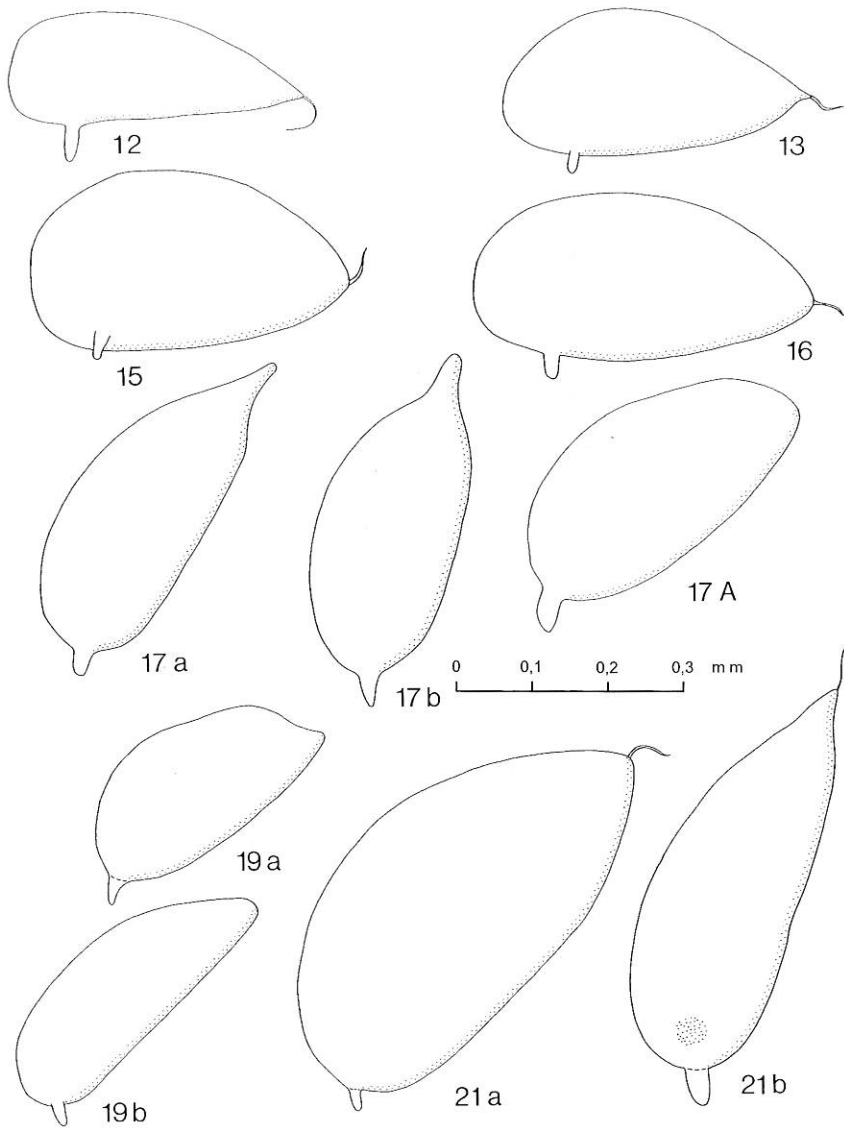


Fig. 12: *Aphalara borealis*, (from LOGINOVA, 1979, fig. 67), I.

Fig. 13: *Aphalara freji*, N Italy, July, I.

Fig. 15: *Aphalara avicularis*, N Italy, July, I.

Fig. 16: *Aphalara calthae*, Sweden, July, I.

Figs 17a,b: *Craspedolepta malachitica*, N Italy, July, II.

Fig. 17A: * *Craspedolepta artemisiae* (from LOGINOVA, 1979, fig. 82).

Figs 19a,b: *Xanioptera conspersa*, N Italy, June, II.

Figs 21a,b: *Magnaphalara flavipennis*, N Italy, July, II.

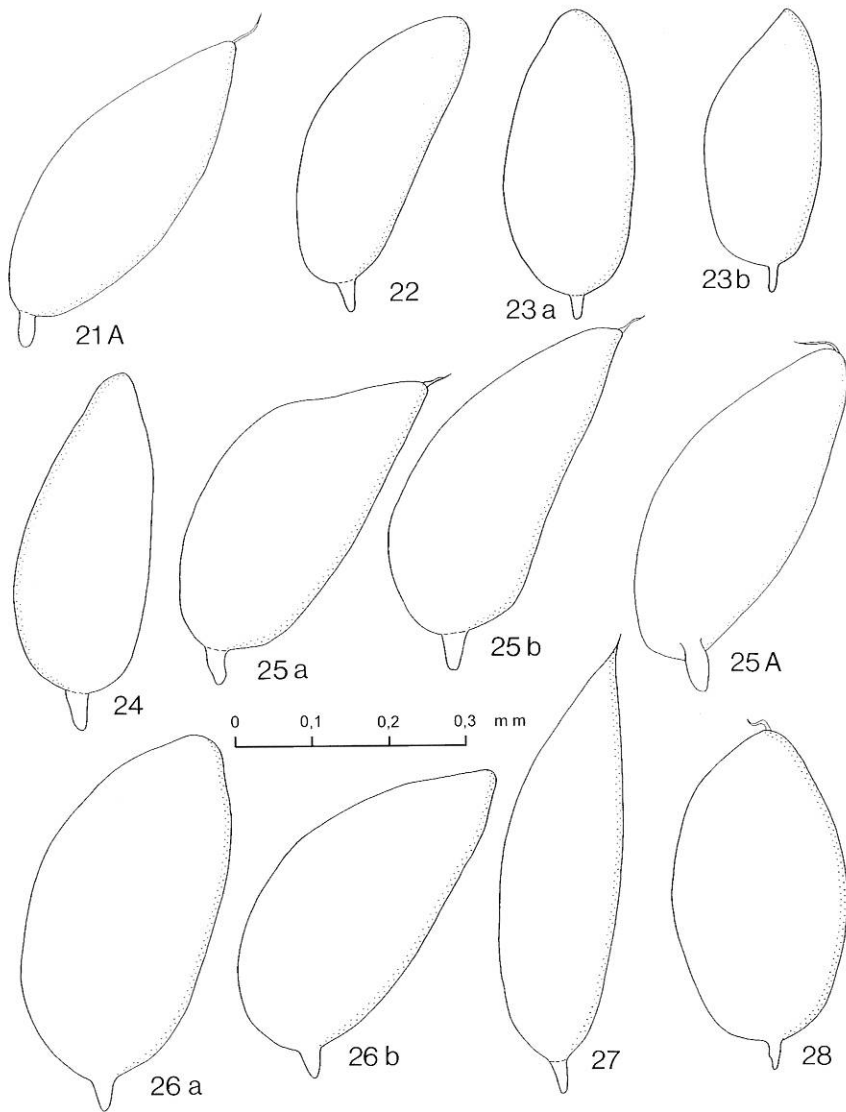


Fig. 21A: * *Magnaphalara sonchi* (from LOGINOVA, 1979, fig. 77), II.

Fig. 22: *Magnaphalara nervosa*, Sardinia, May, II.

Figs 23a,b: *Magnaphalara bulgarica*, Sardinia, May, II.

Fig. 24: *Magnaphalara santolinae*, Sardinia, May, II.

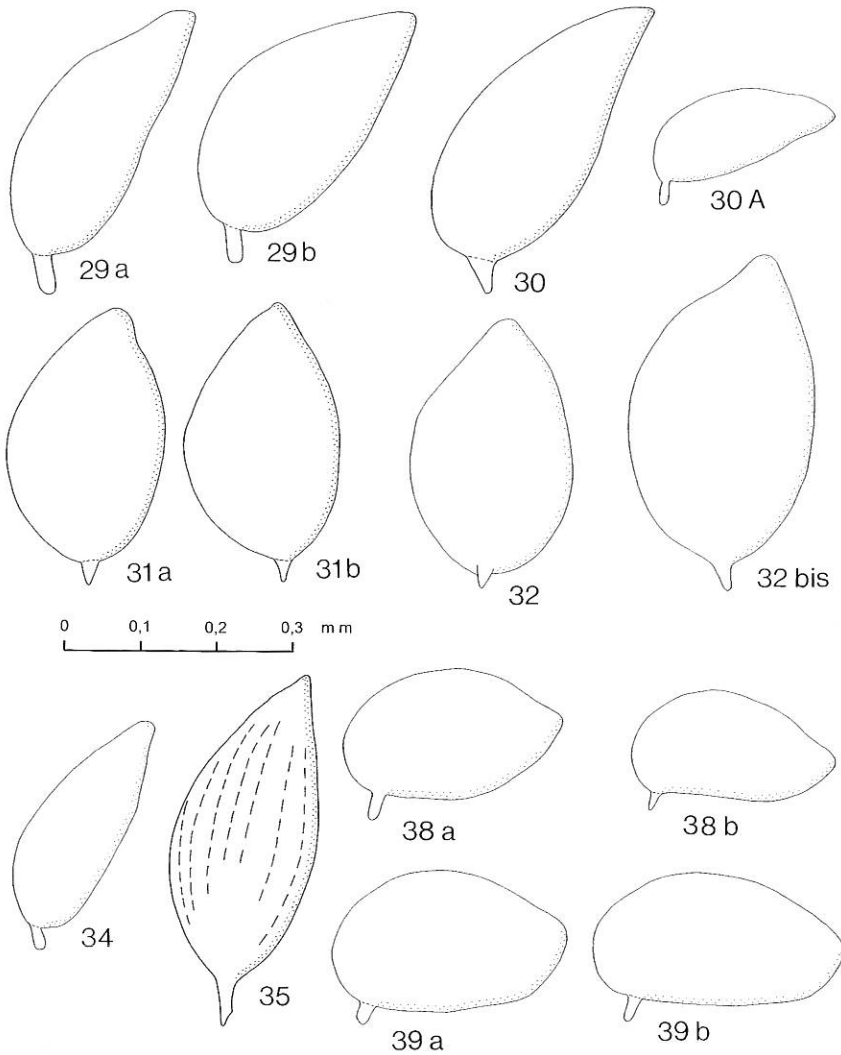
Figs 25 a,b: *Magnaphalara pontica*, Central Italy, June, II-

Fig. 25A: * *Magnaphalara innoxia* (from LOGINOVA, 1979, fig. 75), II.

Figs 26a,b: *Magnaphalara omissa*, N Italy, Aug., II.

Fig. 27: *Neocraspedolepta subpunctata*, N Italy, July, VII.

Fig. 28: *Paracraspedolepta nebulosa*, N Italy, June, IV (?).



- Figs 29a,b: *Rhodochlanis bicolor*, N Italy, July, Aug., II.
 Fig. 30: *Rhodochlanis salsolae*, S Italy, May, II.
 Fig. 30A: * *Eumetoecus kochiae* (from LOGINOVA, 1979, fig. 53), II.
 Figs 31a,b: *Camarotoscena speciosa*, N Italy, May, IV.
 Fig. 32: *Camarotoscena subrubescens*, N Italy, July, IV.
 Fig. 32 bis: *Camarotoscena fulgidipennis*, N Italy, July, IV.
 Fig. 34: *Strophingia ericae* (from LOGINOVA, 1979, fig. 26), II.
 Fig. 35: *Strophingia cinereae*, N Italy, Aug., II.
 Figs 38a,b: *Agonosцена targionii*, N Italy, Aug., I.
 Figs 39a,b: *Agonosцена succincta*, N Italy, May, Agu., I.

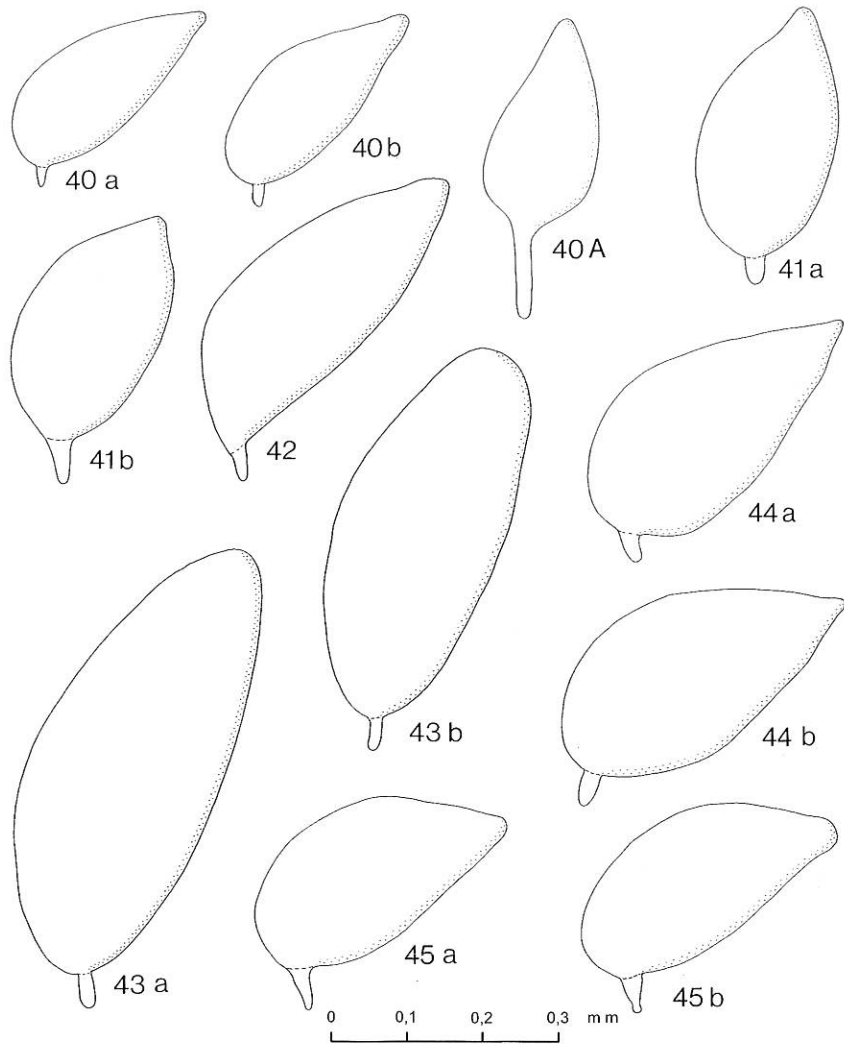


Fig. 40a,b: *Agonoscena cisti*, N Italy, Mar., II.

Fig. 40A: * *Megagonoscena gallicola* (from BURCKHARDT & LAURTERER, 1989, fig. 186), group ?.

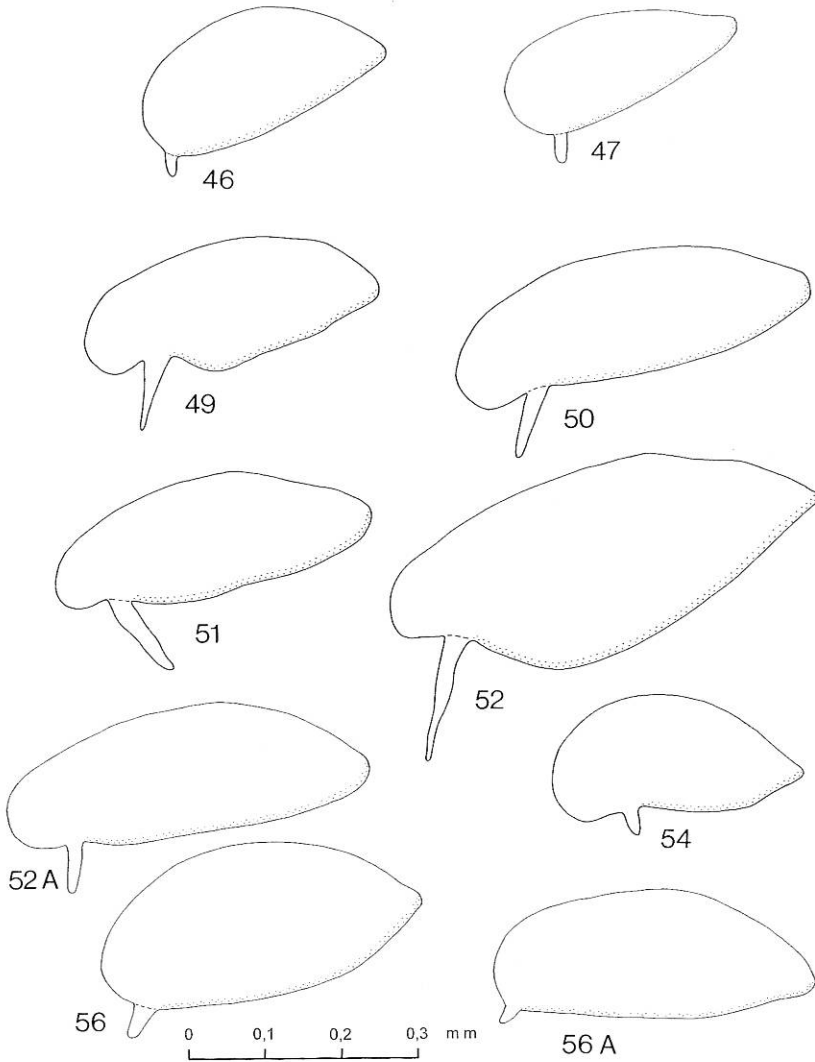
Figs 41a,b: *Lisronia varicicosta*, N Italy, May, II.

Fig. 42: *Rhinocola aceris*, Central Italy, June, II.

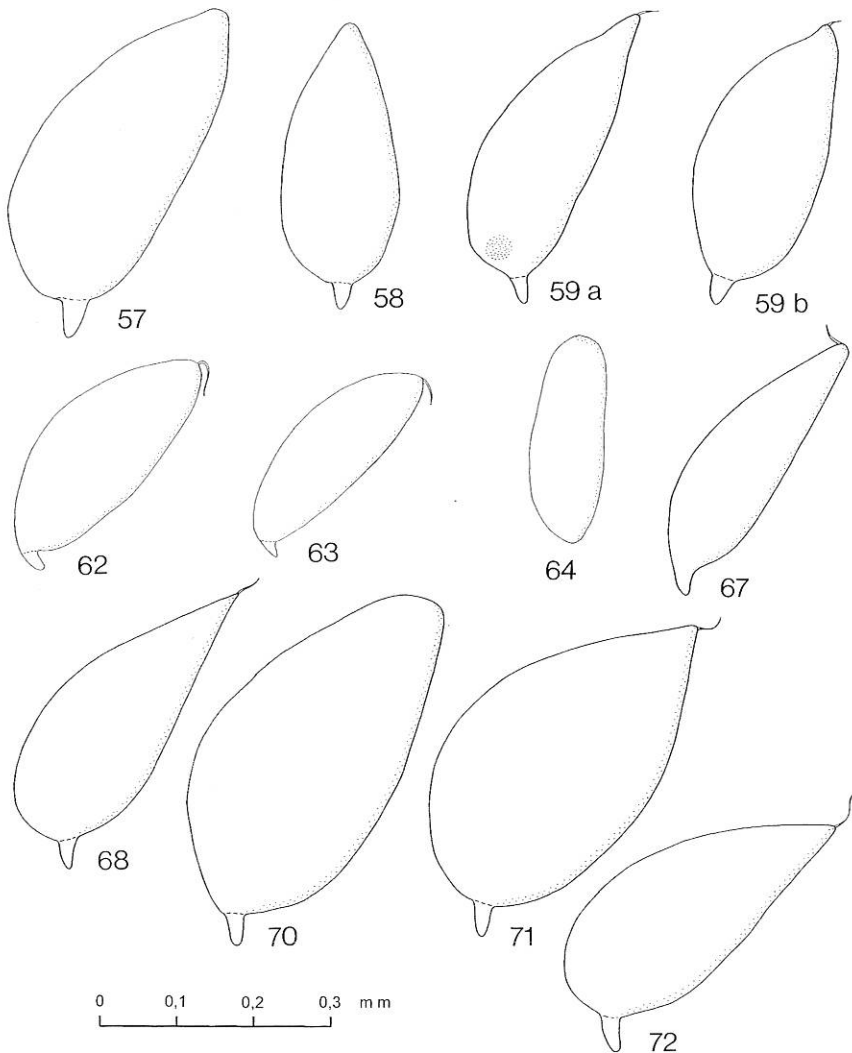
Figs 43a,b: *Rhinocola fusca*, Central and S Italy, June, II.

Figs 44a,b: *Diaphorina lycii*, S Italy, Mar., II.

Figs 45a,b: *Diaphorina putonii*, Sardina, May, II.



- Fig. 46: *Diaphorina continua*, Sardinia, May, II.
 Fig. 47: *Diaphorina chobauti* (from LOGINOVA, 1979, fig. 103, sub *D. convolvulina*), II.
 Fig. 49: *Psyllopsis fraxinicola*, N Italy, Aug., III.
 Fig. 50: *Psyllopsis meliphila*, N Italy, July, III.
 Fig. 51: *Psyllopsis discrepans*, S Italy, June, III.
 Fig. 52: *Psyllopsis fraxini*, N Italy, July, III.
 Fig. 52A: * *Psyllopsis distinguenda* (from LOGINOVA, 1979, fig. 128), III.
 Fig. 54: *Acizzia uncatoides*, N Italy, May, III.
 Fig. 56: *Cyamophila probaskai*, N Italy, II.
 Fig. 56A: * *Cyamophila medicaginis* (from LOGINOVA, 1979, fig. 120), II.



- Fig. 57: *Arytaina genistae*, N Italy, Jan., II.
 Fig. 58: *Arytaina maculata*, S Italy, May, V?.
 Figs 59a,b: *Arytaina adenocarpi*, Sicily, April, II.
 Fig. 62: *Arytainilla spartiophila*, N Italy, June, II.
 Fig. 63: *Arytainilla spartiicola*, S Italy, May, II.
 Fig. 64: *Arytainilla barbagalloi*, Sicily (from RAPISARDA, 1989), May, XI.
 Fig. 67: *Arytainilla cytisi*, N Italy, May, II.
 Fig. 68: *Livilla ulicis*, N Italy, May, II.
 Fig. 70: *Livilla cognata*, N Italy, Aug., II.
 Fig. 71: *Livilla horvatbi*, Central Italy, June, II.
 Fig. 72: *Livilla vittipennella*, N Italy, June, II.

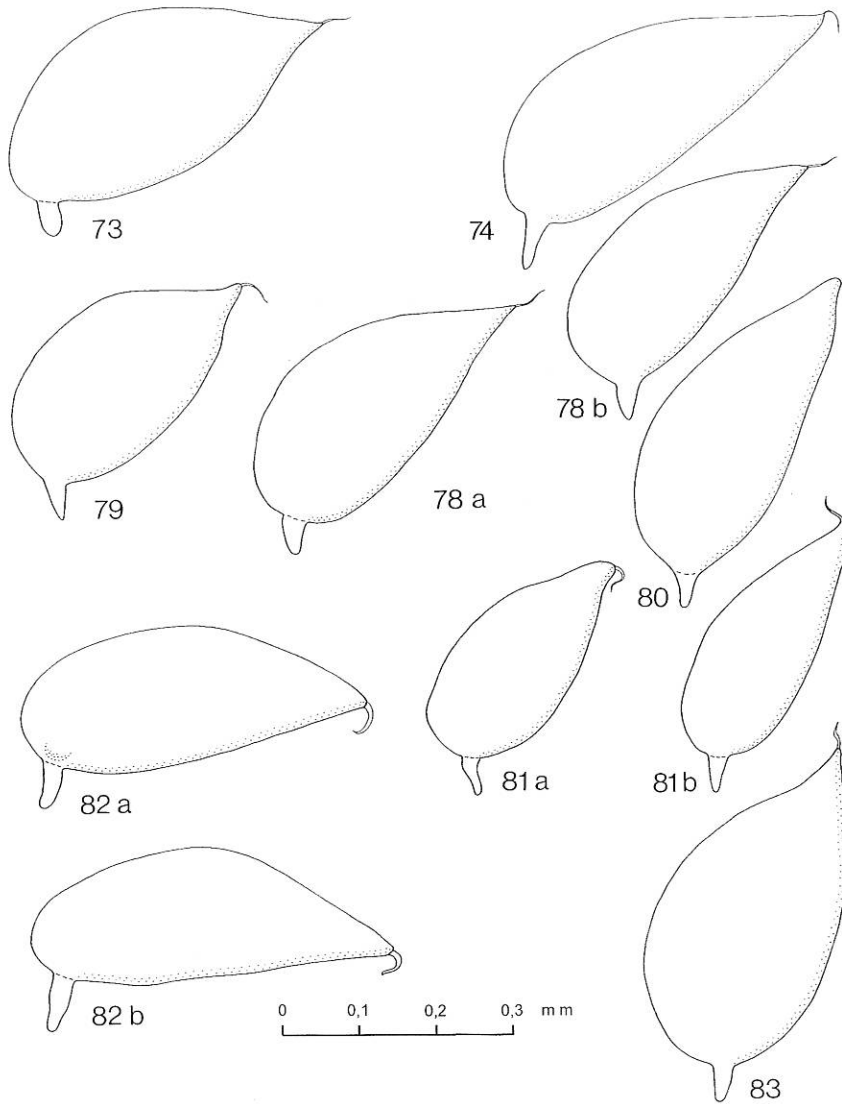


Fig. 73: *Livilla radiata*, S Italy, June, II.

Fig. 74: *Livilla retamae* (from LOGINOVA, 1979, fig. 112), II.

Fig. 78a,b: *Livilla pyrenaea*, N Italy, June, II.

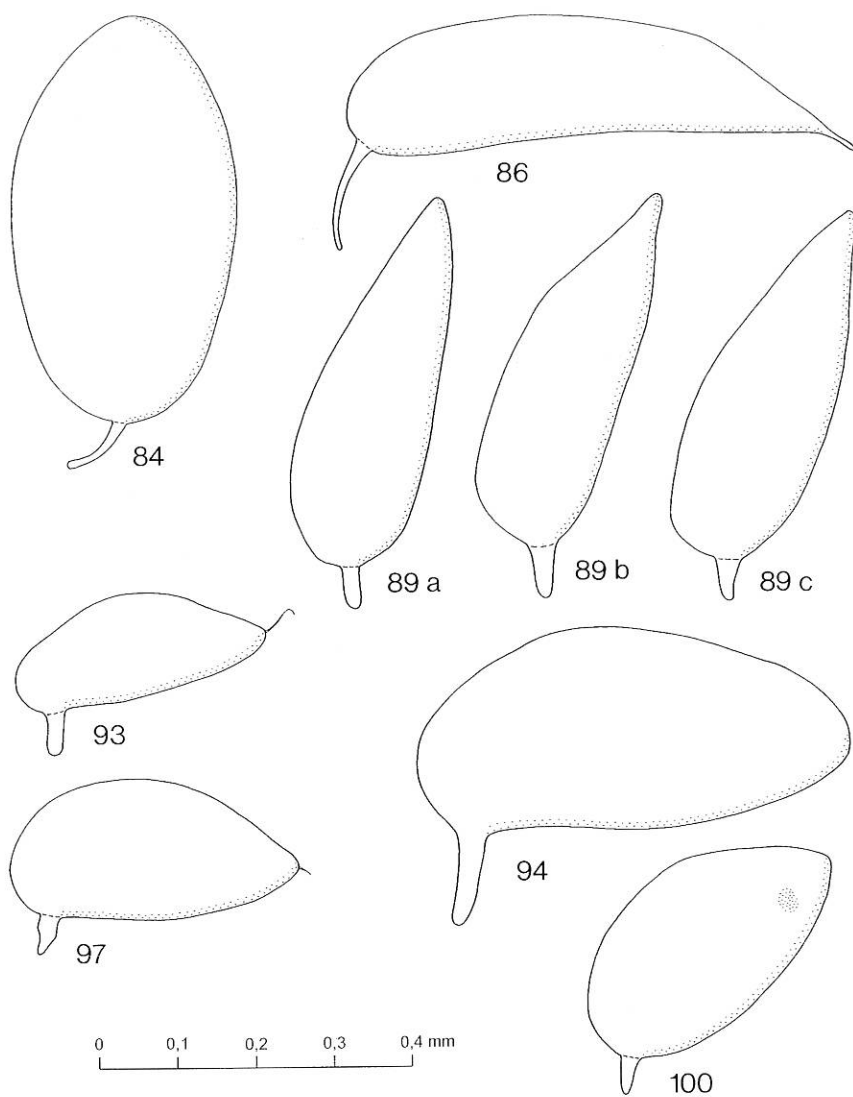
Fig. 79: *Livilla bimaculata*, Sardinia, June, II.

Fig. 80: *Livilla magna*, Sardinia, May, II.

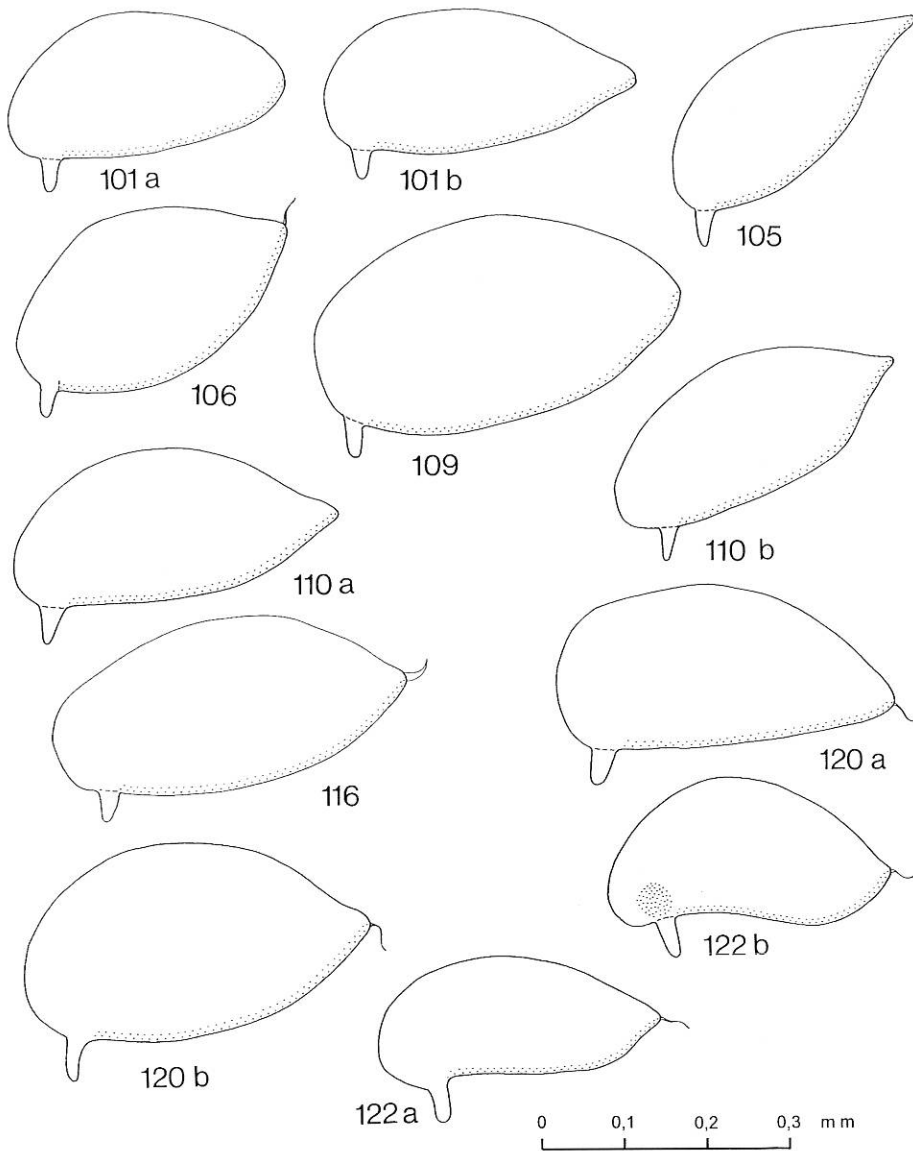
Figs 81a,b: *Livilla poggii*, Sardinia, May, II.

Figs 82 a,b: *Livilla spectabilis*, S Italy, Sep., I.

Fig. 83: *Livilla variegata*, N Italy, May, II.



- Fig. 84: *Psylla alni*, N Italy, Aug., VI.
 Fig. 86: *Psylla fusca*, N Italy, Aug., VI.
 Figs 89a,b,c: *Asphagidella buxi*, N Italy, Aug., Sep., V.
 Fig. 93: *Cacopsylla mali*, N Italy, Sep., I.
 Fig. 94: *Cacopsylla sorbi*, N Italy, Aug., I.
 Fig. 97: *Cacopsylla pyrisuga*, N Italy, Apr., I.
 Fig. 100: *Cacopsylla melanoneura*, N Italy, Apr., II.



Figs 101a,b: *Cacopsylla crataegi*, N Italy, Apr., May, I.

Fig. 105: *Cacopsylla alaterni*, N Italy, May, II.

Fig. 106: *Cacopsylla myrthi*, N Italy, May, II.

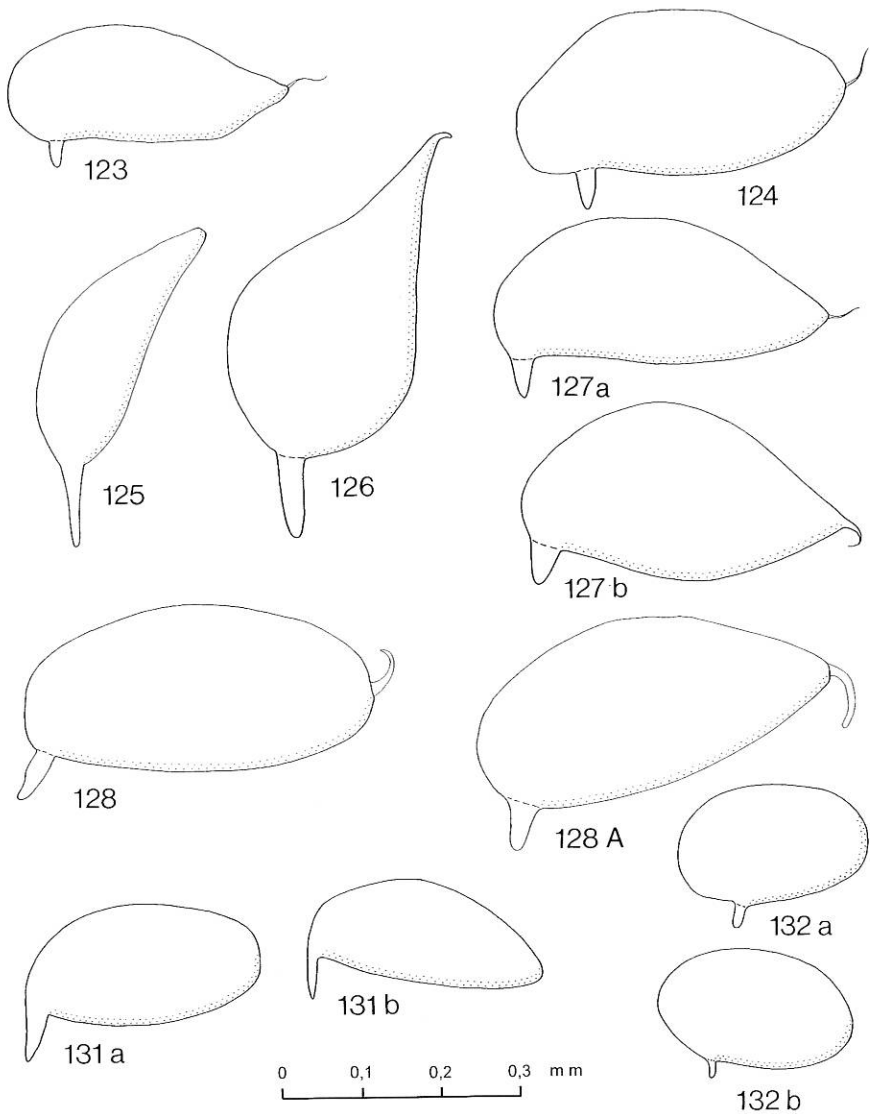
Fig. 109: *Cacopsylla pulchella*, N Italy, May, I.

Figs 110a,b: *Cacopsylla ambigua*, S Italy, June, I.

Fig. 116: *Cacopsylla propinqua*, N Italy, July, I.

Figs 120a,b: *Cacopsylla iteophila*, N Italy, Apr., I.

Figs 122a,b: *Cacopsylla bidens*, N Italy, Sep., I.



- Fig. 123: *Cacopsylla notata*, Sardinia, May, I.
 Fig. 124: *Cacopsylla pyri*, Sardinia, May, I.
 Fig. 125: *Cacopsylla hippophaes*, (from LOGINOVA, 1979, fig. 141), IV.
 Fig. 126: *Cacopsylla zetterstedti*, N Italy, July, IV.
 Fig. 127a,b: *Cacopsylla rhododendri*, N Italy, Sep., I.
 Fig. 128: *Cacopsylla myrtilli*, N Italy, Oct., I.
 Fig. 128A: * *Cacopsylla ledi*, (from LAUTERER, 1998), I.
 Figs 131a,b: *Ctenarytaina eucalypti*, N Italy, Feb., Apr., VII.
 Figs 132a,b: *Calophya rhois*, N Italy, June, IX.

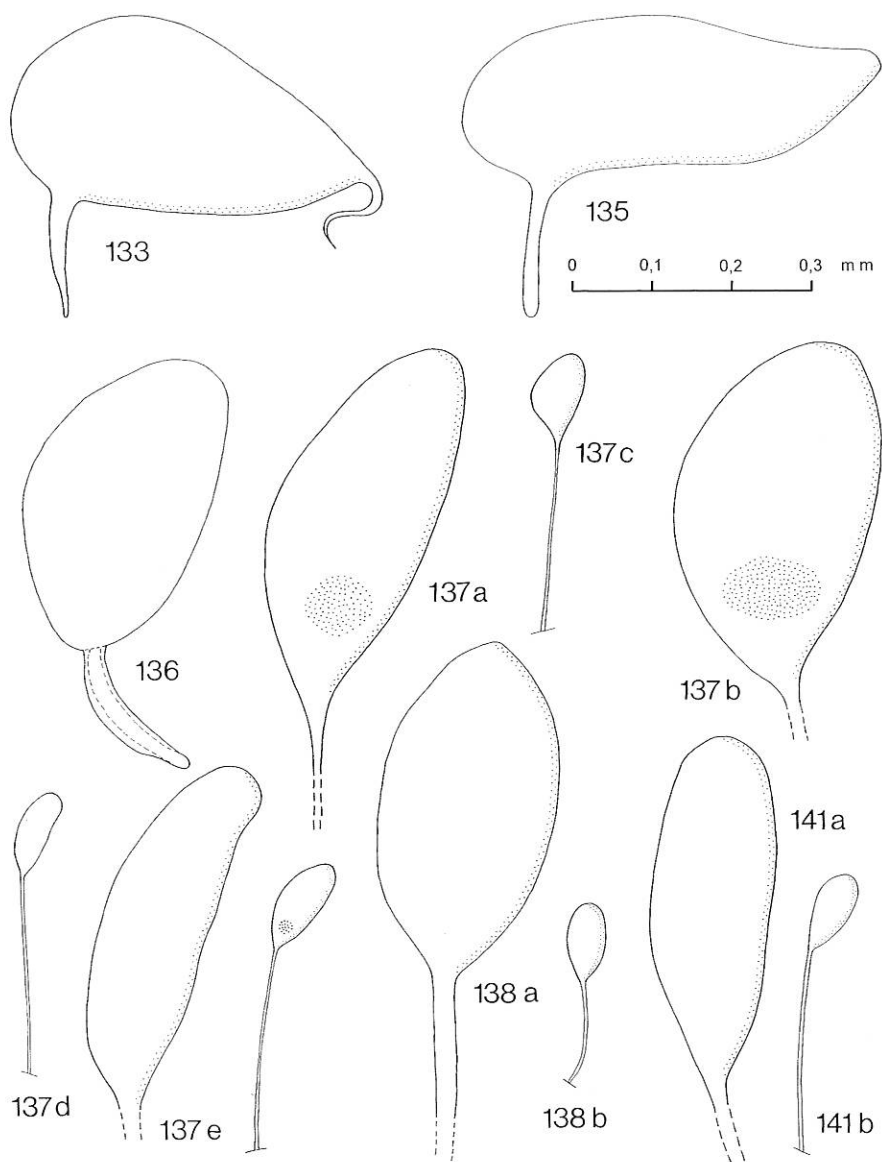


Fig. 133: *Homotoma ficus*, N Italy, Sep., I ?.

Fig. 135: *Trichobermes walkeri* (from LAUTERER, 1982), I ?

Fig. 136: *Bactericera perrisii*, N Italy, Aug., X.

Figs. 137 a,b,c,d,e: *Bactericera kratochvili*, N Italy, Apr., June, X.

Figs 138a,b: *Bactericera femoralis*, N Italy, May, X.

Figs 141a,b: *Bactericera bucegica*, N Italy, July, X.

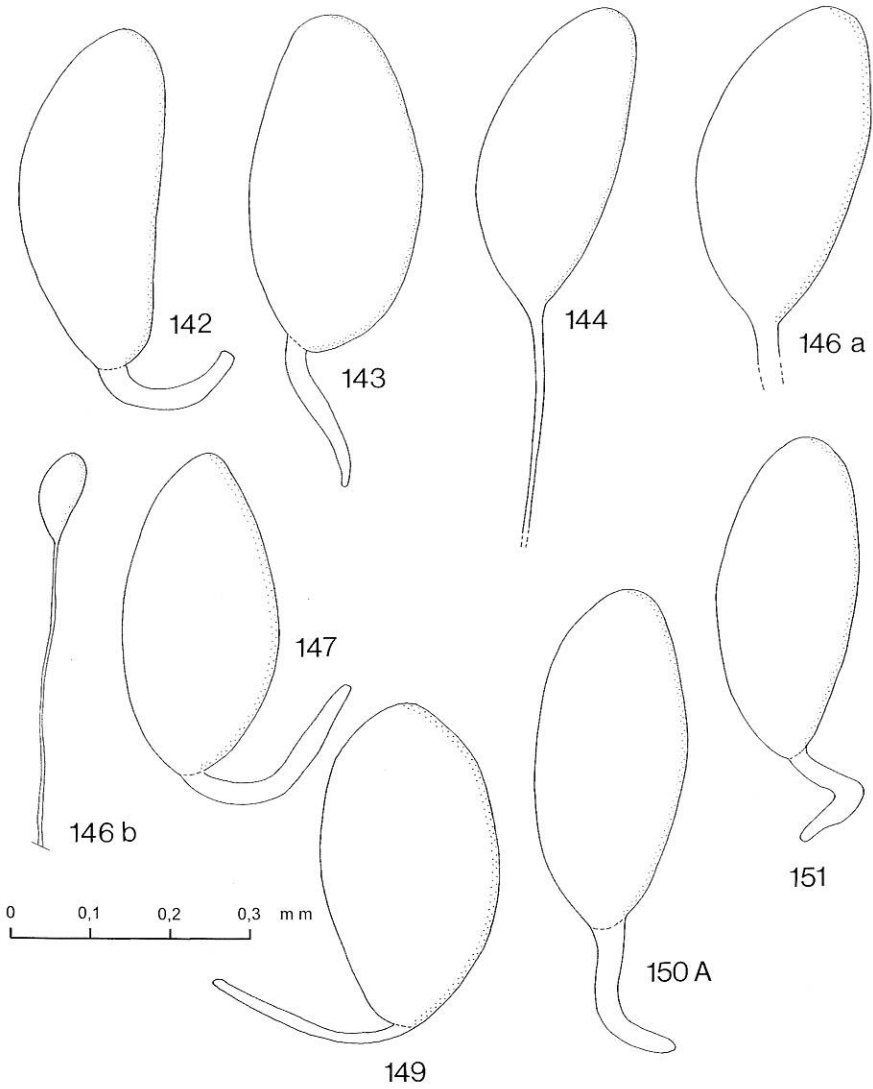


Fig. 142: *Bactericera modesta*, N Italy, Feb., X.

Fig. 143: *Bactericera nigricornis* (from LOGINOVA, 1979, fig. 180), X.

Fig. 144: *Bactericera tremblayi*, S Italy (from TREMBLAY, 1965), X.

Figs 146a,b: *Bactericera chrythmi*, N Italy, June, X.

Fig. 147: *Bactericera curvatineris* (from LOGINOVA, 1979, fig. 191), X.

Fig. 149: *Bactericera striola*, N Italy, July, X.

Fig. 151: *Bactericera salicivora* (from LOGINOVA, 1979, fig. 188), X.

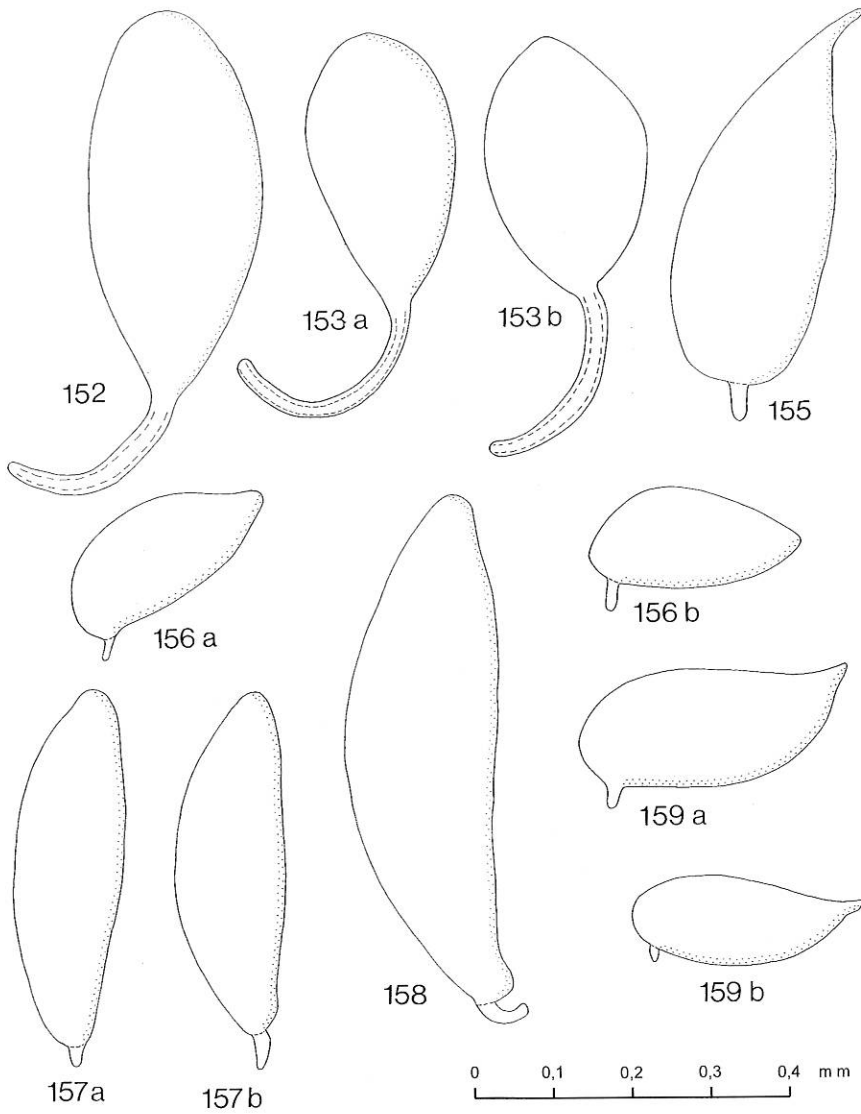


Fig. 152: *Bactericera versicolor*, S Italy, Sep., X.
 Figs 153 a,b: *Bactericera albiventris*, N Italy, July, X.
 Fig. 155: *Phyllopecta trisignata*, N Italy, Apr., IV.
 Figs 1556 a,b: *Lauritrioza alacris*, N Italy, Apr., July, Sep., II.
 Figs 157 a,b: *Spanioza galii*, N Italy, Aug., V.
 Fig. 158: *Spanioza tamaninii*, N Italy, July, V.
 Figs 159 a,b: *Heterotrioza chenopodii*, N Italy, Oct., IX.

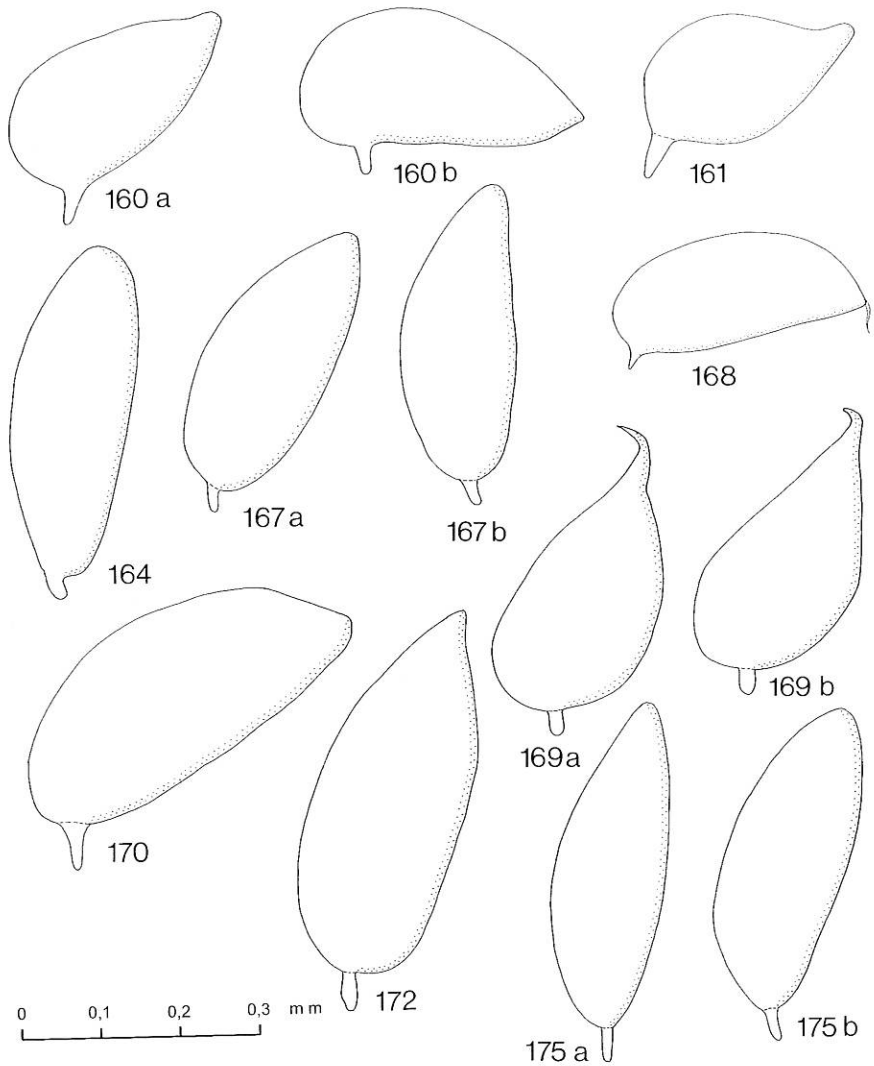


Fig. 160a,b: *Heterotrioza portulacoides*, S Italy, Sep., IX.

Fig. 161: *Heterotrioza sablbergi*, S Italy, May, IX.

Fig. 164: *Dyspersa laserpitii*, N Italy, July, IX.

Figs 167a,b: *Dyspersa pallida*, N Italy, IX.

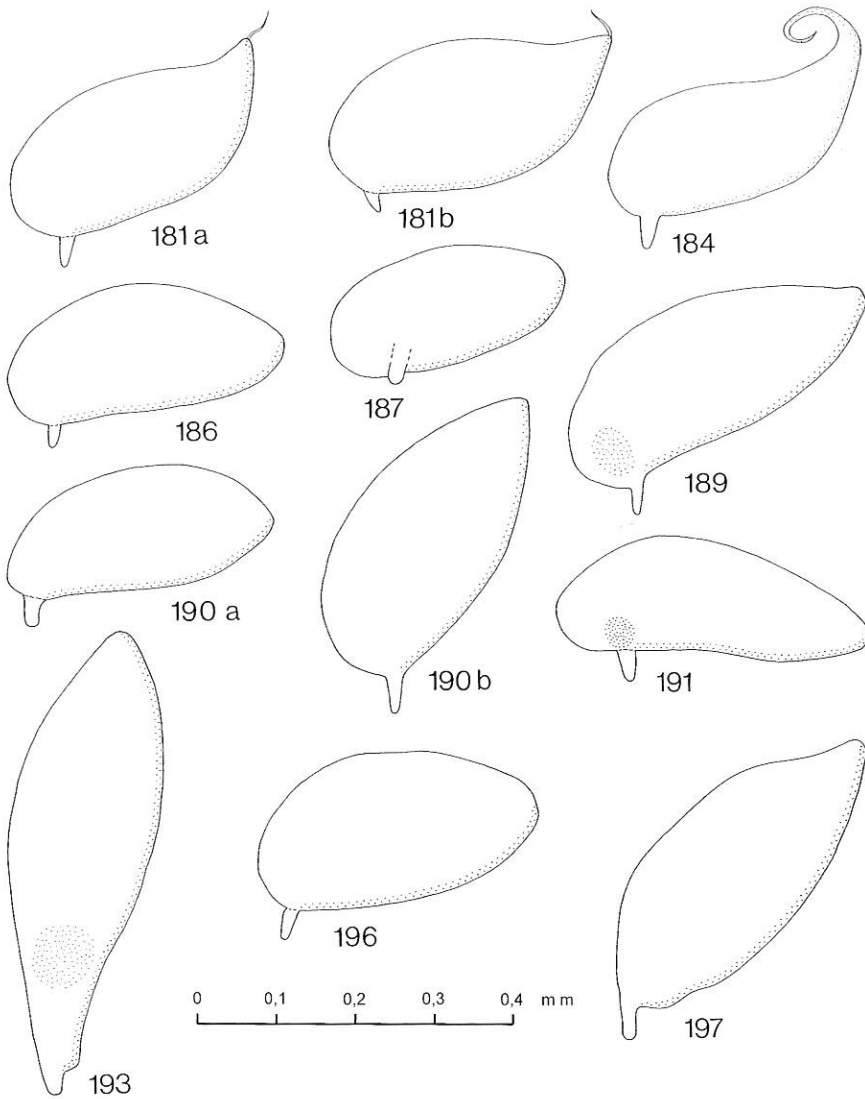
Fig. 168: *Hippophaetrioza binotata*, N Italy, I.

Figs 169a,b: *Trioza urticae*, C Italy, June, IV.

Fig. 170: *Trioza abdominalis*, N Italy, Sep., II.

Fig. 172: *Trioza* near *cirstii*, N Italy, July, V.

Fig. 175a,b: *Trioza senecionis*, N Italy, July, V.



- Figs 181a,b: *Trioza remota*, N Italy, Apr., IX.
 Fig. 184: *Trioza ilicina*, Sardinia, May., IX.
 Fig. 186: *Trioza marginepunctata*, N Italy, Feb., I.
 Fig. 187: *Trioza kiefferi*, Sicily, Feb., I.
 Fig. 189: *Trioza rapisardai*, N Italy, July, II.
 Figs 190a,b: *Trioza rotundata*, N Italy, May, I and II.
 Fig. 191: *Trioza rumicis*, N Italy, June, I.
 Fig. 193: *Trioza schrankii*, N Italy, July, V.
 Fig. 196: *Trioza tripteridis*, N Italy, July, V.
 Fig. 197: *Trioza centranthi*, C Italy, June, II.

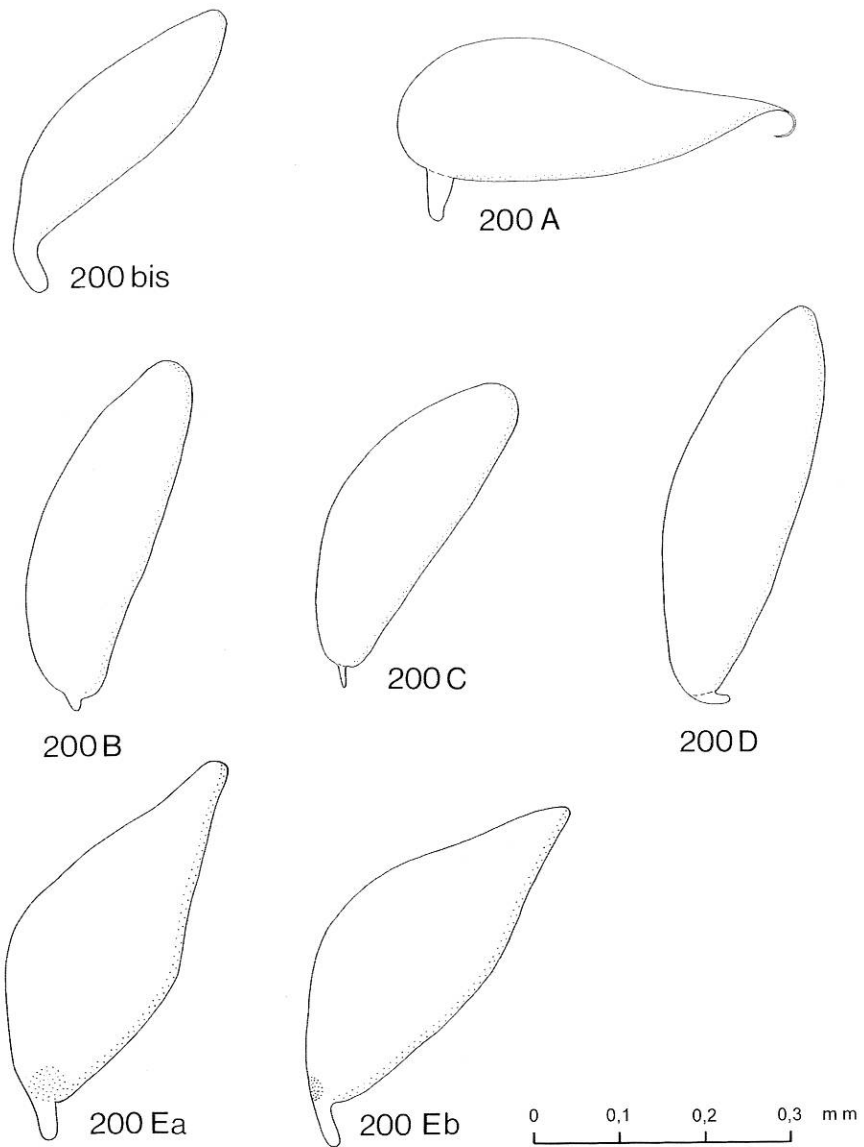


Fig. 200bis: *Egeirotrioza populi*, S Italy, Apr. (from PEDATA, 1998), V.

Fig. 200A: * *Epitrioza neglecta* (from LOGINOVA, 1979, fig. 175), IX.

Fig. 200B: * *Eryngiophaga deserta* (from LOGINOVA, 1979, fig. 163), V.

Fig. 200C: * *Eryngiophaga dlabolai* (from LOGINOVA, 1979, fig. 164), V.

Fig. 200D: * *Eryngiophaga lautereri* (from LOGINOVA, 1979, fig. 162), V.

Fig. 200E a,b: * *Eryngiophaga mesomela*, France, July, V.

BIBLIOGRAPHY

- BOSELLI F. B., 1929a - Studii sugli Psyllidi. I-II. Contributo alla conoscenza della Psylla del fico (*Homotoma ficus* L.) - *Boll. Lab. Zool. gen. agr. Portici*, 21: 218-264, 18 gr. figs.
- BOSELLI F. B., 1929b - Studii sugli Psyllidi. IV. Biologia e sviluppo della *Spanioza galii aspinovelutina* (Sulc) - *Boll. Lab. Zool. gen. agr. Portici*, 23: 13-27, 8 gr. figs.
- BOSELLI F. B., 1930 - Studii sugli Psyllidi. VIII - Biologia e sviluppo della *Rhinocola succincta* Hegeer - *Boll. Lab. Zool. gen. agr. Portici*, 24:211-222, 5 gr. figs.
- BOSELLI F. B., 1960 - Studi sugli Psyllidi. XI. Biologia e sviluppo di *Diaphorina putoni* Loew, specie nuova per la fauna italiana - *Annali Speriment. agr.*, Roma, N. S. (6), Suppl: CXXXIX - CLVI, 8 gr. figs.
- BURCKHARDT D. & LAUTERER P., 1989 - Systematics and biology of the Rhinocolinae - *J. Nat. Hist.*, 23: 643-714, 220 figs.
- BURCKHARDT D. & LAUTERER P., 1997 - Systematics and biology of the *Aphalara exilis* (Weber & Mohr) species assemblage - *Entomologica scandinavica*, 28: 271-305, 94 figs.
- CONCI C., RAPISARDA C. & TAMANINI L., 1993 - Annotated Catalogue of the Italian Psylloidea. First Part - *Atti Accad. roveretana Agiati*, Rovereto, Ser. VII, 2, B, 1992: 33-135, 15 figs.
- CONCI C., RAPISARDA C. & TAMANINI L., 1996 - Annotated Catalogue of the Italian Psylloidea. Second Part - *Atti Accad. roveretana Agiati*, Rovereto, Ser. VII, 5, B: 5-207, figs. 16-39.
- HESLOP-HARRISON G., 1949 - The Subfamily Psyllidae. Part 2 - *Annals Mag. nat. Hist., London*, Ser. XII, 2 (16): 241-270, 4 gr. figs.
- KLIMASZEWSKI S.M. - 1975 - Psylloidea. Koliszki - Fauna Polski - *Polska Akademia Nauk*, Warszawa 3:1-295, 512 figs.
- LAL K. B., 1934 - The biology of Scottish Psyllidae - *Trans. R. ent. Soc. London*, 82 (2): 363-385, Tavv. XI-XIV.
- LAUTERER P., 1982 - New data on the occurrence, bionomics and taxonomy of some Czechoslovakian Psylloidea - *Acta Musei Moraviae, Sci. nat.*, Brno, 67: 133-162, 22 figs.
- LAUTERER P., 1998 - Notes on the distribution and egg shape of several European Psyllid species (Homoptera, Psylloidea) - *Acta Mus. Moraviae, Sci. biol.*, Brno, 82: 157-161, 6 figs.
- LOGINOVA M.M., 1979 - Eggs of the Psylloidea (Homoptera) use peculiarities of their morphology in Systematics of these Insects - *Trudy zool. Inst. Leningrad*, 82: 23-39, 192 figs.
- PEDATA P. A., 1998 - Morpho-biological observations on *Egeirotrioza (Astutia) populi* (Horváth, new for Italy) - *Atti Accad. rover. Agiati*, Ser. VII, 8, B: 75-86, 23 figs.
- RAPISARDA C., 1989 - A new Sicilian species of *Arytainilla* Loginova, from *Genista aetnensis* (Biv.) DC., with notes on its biology - *Frustula entomologica*, Pisa, New Series, 9: 23-39, 11 figs. (4 col. photos).

- SPEYER W., 1929 - Der Apfelblattsauger *Psylla mali* Schmidberger - Monographien zum Pflanzenschutz, 1 - Verlag J. Springer, Berlin, VII+127 pp., 59 figs.
- TREMBLAY E., 1965 - Studio morfo-biologico sulla *Trioza tremblayi* Wagner - *Boll. Labor. Ent. Agr. «Filippo Silvestri»*, Portici, 23: 37-138, 34 groups of figs.
- VONDRAČEK K. K., 1957 - Mery-Psyloidea - Fauna CSR, NCSAV, Praha, 1-432, 265 gr. figs.

INDEX OF THE SPECIES OF WHICH EGGS ARE FIGURED, WITH THE NUMBER OF THE RELATED ILLUSTRATION

<i>abdominalis</i>	170	<i>fusca</i> (P.)	86	<i>pulchella</i>	109
<i>aceris</i>	42	<i>fusca</i> (R.)	43	<i>putonii</i>	45
<i>adenocarpis</i>	59	<i>galii</i>	157	<i>pyrenaea</i>	78
<i>alacris</i>	156	<i>gallicola</i>	40A	<i>pyri</i>	124
<i>alaterni</i>	105	<i>genistae</i>	57	<i>pyrisuga</i>	97
<i>albiventris</i>	153	<i>hippophaes</i>	125	<i>radiata</i>	73
<i>aliena</i>	7	<i>horvathi</i>	71	<i>rapisardai</i>	189
<i>alni</i>	84	<i>ilicina</i>	184	<i>remota</i>	181
<i>ambigua</i>	110	<i>innoxia</i>	25A	<i>retamae</i>	74
<i>artemisiae</i>	17A	<i>iteophila</i>	120	<i>rbododendri</i>	127
<i>avicularis</i>	15	<i>junci</i>	1	<i>rbois</i>	132
<i>barbagalloi</i>	64	<i>kiefferi</i>	187	<i>rotundata</i>	190
<i>bicolor</i>	29	<i>kochiae</i>	30A	<i>rumicis</i>	191
<i>bidens</i>	122	<i>kratochvili</i>	137	<i>sablbergi</i>	161
<i>bimaculata</i>	79	<i>laserpitii</i>	164	<i>salicivora</i>	151
<i>binotata</i>	168	<i>lautereri</i>	200D	<i>salsolae</i>	30
<i>borealis</i>	12	<i>ledi</i>	128A	<i>santolinae</i>	24
<i>bucegica</i>	141	<i>lycii</i>	44	<i>sauteri</i>	9
<i>bulgarica</i>	23	<i>maculata</i>	58	<i>schrankii</i>	193
<i>buxi</i>	89	<i>maculipennis</i>	10	<i>senecionis</i>	175
<i>calthae</i>	16	<i>magna</i>	80	<i>sonchi</i>	21A
<i>centranthi</i>	197	<i>malachitica</i>	17	<i>sorbi</i>	94
<i>chenopodii</i>	159	<i>mali</i>	93	<i>spartiicola</i>	63
<i>chobauti</i>	47	<i>marginepunctata</i>	186	<i>spartiophila</i>	62
<i>cinereae</i>	35	<i>maura</i>	150A	<i>speciosa</i>	31
<i>cisii</i> (near)	172	<i>medicaginis</i>	56A	<i>spectabilis</i>	82
<i>cisti</i>	40	<i>melanoneura</i>	100	<i>striola</i>	149
<i>cognata</i>	68	<i>meliphila</i>	50	<i>subpunctata</i>	27
<i>consersa</i>	19	<i>mesomela</i>	200E	<i>subrubescens</i>	32
<i>continua</i>	46	<i>modesta</i>	142	<i>succincta</i>	39
<i>crataegi</i>	101	<i>myrthi</i>	106	<i>tamaninii</i>	158
<i>cribmi</i>	146	<i>myrtilli</i>	128	<i>tamaricis</i>	6
<i>curvatinervis</i>	147	<i>nebulosa</i>	28	<i>targionii</i>	38
<i>cytisi</i>	67	<i>neglecta</i>	200A	<i>tremblayi</i>	144
<i>deserta</i>	200B	<i>nervosa</i>	22	<i>tripteridis</i>	196
<i>discrepas</i>	51	<i>nigricornis</i>	143	<i>trisignata</i>	155
<i>distinguenda</i>	52A	<i>notata</i>	123	<i>ulicis</i> (A.)	9A
<i>dlabolai</i>	200C	<i>olivina</i>	3	<i>ulicis</i> (L.)	68
<i>ericae</i>	34	<i>omissa</i>	26	<i>uncatoides</i>	54
<i>eucalypti</i>	131	<i>pallida</i>	167	<i>urticae</i>	169
<i>exilis</i>	8	<i>perrisii</i>	136	<i>varicicosta</i>	41
<i>femoralis</i>	138	<i>pbillyreae</i>	4	<i>variegata</i>	83
<i>figus</i>	133	<i>poggii</i>	81	<i>versicolor</i>	152
<i>flavipennis</i>	21	<i>pontica</i>	25	<i>vittipennella</i>	72
<i>fraxini</i>	52	<i>populi</i>	200 bis	<i>walkeri</i>	135
<i>fraxinicola</i>	49	<i>portulacoides</i>	160	<i>zetterstedti</i>	126
<i>freji</i>	13	<i>probaskai</i>	56		
<i>fulgidipennis</i>	32bis	<i>propinqua</i>	116		

Indirizzo dell'autore:

Prof. Cesare Conci, Museo Civico di Storia Naturale, Corso Venezia 55,
I-20121 Milano, Italia
