

CESARE CONCI e LIVIO TAMANINI

*BACTERICERA HARRISONI* IN ITALY, AND COMPARISON  
WITH *B. BOHEMICA*  
(Homoptera Psylloidea)

**Abstract** - CESARE CONCI e LIVIO TAMANINI - *Bactericera harrisoni* in Italy, and comparison with *B. bobemica* (Homoptera Psylloidea).

The rare *B. harrisoni* (Wagner, 1955) here redescribed was collected by the AA in three Regions of N. Italy (Veneto, Alto Adige and Trentino), in 15 localities, with 21 findings, between 1400 and 2450 m, in August and September, in 44 specimens, mostly on conifers; for the Italy was known only a report from Udine (Friuli-Venezia Giulia). The species is known only from Alps, Tatra and Transylvanian Alps. *B. harrisoni* is compared with *B. bobemica*, a species commoner and with larger diffusion. Twenty-eight figures of details of the two species and a distribution map of *B. harrisoni* are reported.

**Key words:** *Bactericera bobemica*, *B. harrisoni*, Redescription, Psylloidea.

**Riassunto** - CESARE CONCI e LIVIO TAMANINI - La *Bactericera harrisoni* in Italia e comparazione con la *B. bobemica* (Homoptera Psylloidea).

Si ridescrive la rara *B. harrisoni* (Wagner, 1955) raccolta dagli AA in 3 Regioni del N. Italia (Veneto, Alto Adige e Trentino), in 15 località e con 21 rinvenimenti tra i 1400 ed i 2450 m, in agosto e settembre, in 44 es., prevalentemente su conifere; per l'Italia esisteva solo una citazione per Udine (Friuli-Venezia Giulia). La specie è limitata alle Alpi, ai Monti Tatra e della Transilvania. La *B. harrisoni* viene comparata con l'affine *B. bobemica*, più comune ed a più ampia distribuzione. Si riportano 28 figure di dettaglio delle due specie ed una cartina di distribuzione della *B. harrisoni*.

**Parole chiave:** *Bactericera bobemica*, *B. harrisoni*, Redescription, Psylloidea.

## 1. INTRODUCTION

*Bactericera* (*Klimaszewskiella*) *harrisoni* (Wagner, 1955) is, in Europe, one of the rarest and most localized species of the genus.

The species was described, as *Trioza*, by W. WAGNER (1955: 24-26, figs. 98-103) on few specimens from Austria and was later reported by WAGNER & FRANZ (1961: 173) for Austria, by DOBREANU & MANOLACHE (1962: 331-333, figs. 239-241, sub *reuteri*, partim) for Rumania, by LAUTERER (1974: 137; 1977:100) for

Czechoslovakia, by BURCKHARDT (1983: 77) for Switzerland and by HODKINSON (1938: 279) for Italy. LAUTERER (1963: 152, 156) specifies that *Trioza reuteri*, re-described by DOBREANU & MANOLACHE 1962, is *T. harrisoni*; also KLIMASZEWSKI (1964: 46 and 1967: 282) agrees with this opinion. The species is not examined in the KLIMASZEWSKI's work (1968) on *Trioza* of Central Europe. In the KLIMASZEWSKI's Check-List (1973: 235) the species is attributed for the first time to the genus *Bactericera*.

The redescription by DOBREANU & MANOLACHE 1962, sub *reuteri*, has very good figures of the male: but the Rumanian Authors evidently saw no female specimens, because they published only the measurements of the male and the report of the female in the text is only a reference to their fig. 140, reported exactly by SULC 1913, t. 44, fig. 3 (this figure is therefore of *B. reuteri*). The literature reports consequently, as regards the female, only the two small and little utilizable figures of WAGNER.

*B. harrisoni* is also almost unknown from the biological point of view. We believe therefore interesting to publish our reports, with complementary new morphological notes and with new figures, compared with the nearest species *B. bohémica* (Sulc, 1913).

## 2. COMPLEMENTARY MORPHOLOGICAL NOTES ON THE ADULT

Head as in fig. 1. Vertex with the margin with a weak pad. Eyes with their internal margin in contact with the vertex. The lateral ocelli go beyond the posterior margin of the eyes and are separated from them. Antennae (fig. 2) clearly longer than the width of the head; little rhinaria on the segments IV, VI, VIII and IX.

Forewing (fig. 3) without spots and with the upper surface with spinules in all cells; the spinules leave a free band along the veins, except that in the cell  $cu_{1b}$ , where the spinules reach the external margin in the anal zone; the distribution of the spinules is thick and homogeneous in all cells, except that in the cell  $c + sc$ , that has a narrow and irregular band of spinules only in the inferior half, and in cell  $R_1$ , that has only few spinules in the proximal part. (DOBREANU & MANOLACHE 1962 fig. 239c report the spinules as regularly present in these two cells: we cannot say if the latter aspect is a drawing mistake or a feature of the Rumanian specimens). The radular spinules form a narrow flame in the cells  $m_1$ ,  $m_2$ , and  $cu_1$ . Hind wing (fig. 4) covered in all the upper surface with thick diaphanous spinules; the veins are indicated from thicker spinules. Meracanthus strong, as in other species of the group. Base of metatibia as in fig. 5; distal part of metatibia (fig. 6) with three black spines and 8-9 long, yellow hairs.

Male genito-anal complex (fig. 7) little sclerotized. Proctiger with two long conic processes with irregular margins and with transparent apical part (figs. 8-9); the upper ring of the proctiger, that encloses the anus, is yellow, clearer than the basis of this organ, that is brown. Hairs short and scarce. Parameres (figs. 10-12) with the

terminal point bent diagonally anteriorly; the parameres appear more or less wide, according to the visual angle; the parameres have no processes, only their basal part is gradually enlarged. The hairs of the parameres are especially long and thick in their inner and posterior side; some of these hairs are longer than the diameter of the paramere, in the point of their plant. Penis (fig. 13) with its second part much shorter than the first; the terminal expansion is long-oval and is long about 1/3 of the total length of the second part of the penis. Sperm pump (fig. 7) long about the half of the parameres, with the two rings wide about three times the diameter of the body of the pump.

Genito-anal complex of the female (figs. 14-15), in lateral view, conic, long, with long hairs in the distal part. The proctiger, laterally, clearly longer than height. Proximal half of the complex slightly sclerotized: therefore the investigation, the preparation and the drawing of these part are difficult. The sclerotized band, typical of the genus, is consequently slightly visible. The anterior half of the proctiger, in lateral view, forms an angle of about 30° with the distal half. Anal ring violin-shaped, with two regular rings of glands.

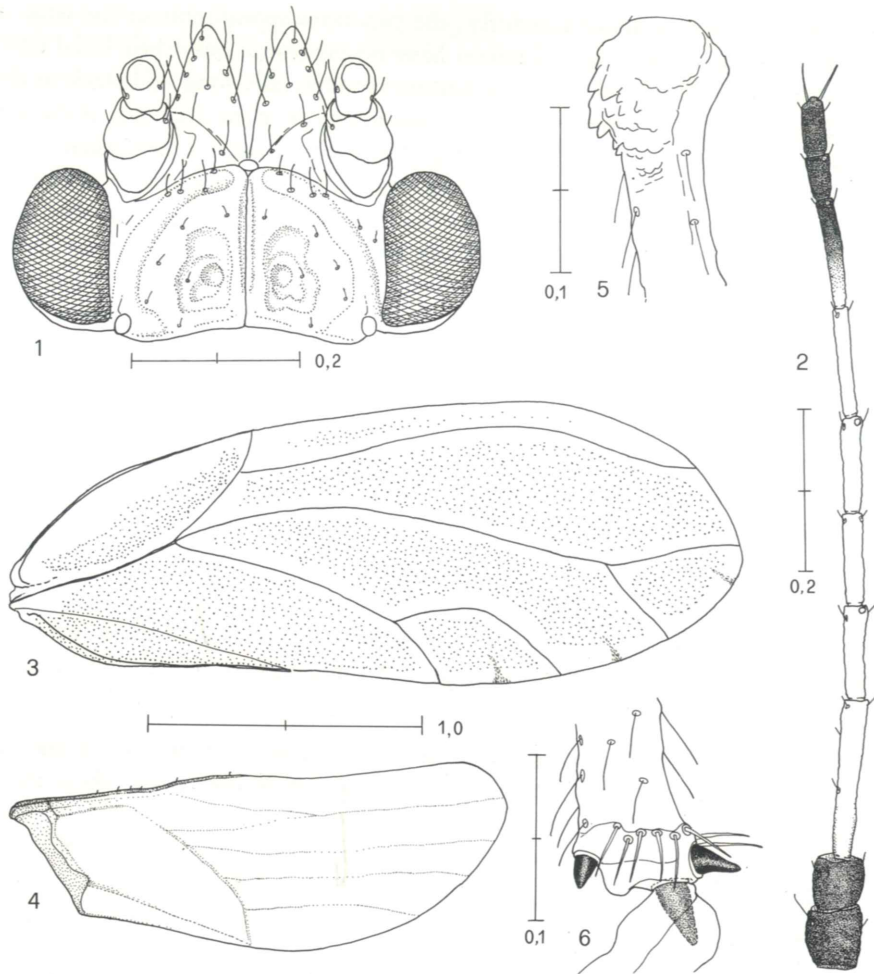
*Colouration.* The specimens are brown-black and pale yellow, as reported in the description of WAGNER. The distribution of these colours is about alike in *harrisoni*, *bohémica* and *femoralis* and therefore is useless for the separation of these species, but is helpful for the separation from other taxa of the genus. Antennal segments I, II, IX, X and distal part of VIII dark (fig. 2).

*Measurements.* The measurements of some specimens, in mm, give us the following data, that agree with WAGNER and DOBREANU & MANOLACHE's data (the last only for the male, sub *reuteri*):

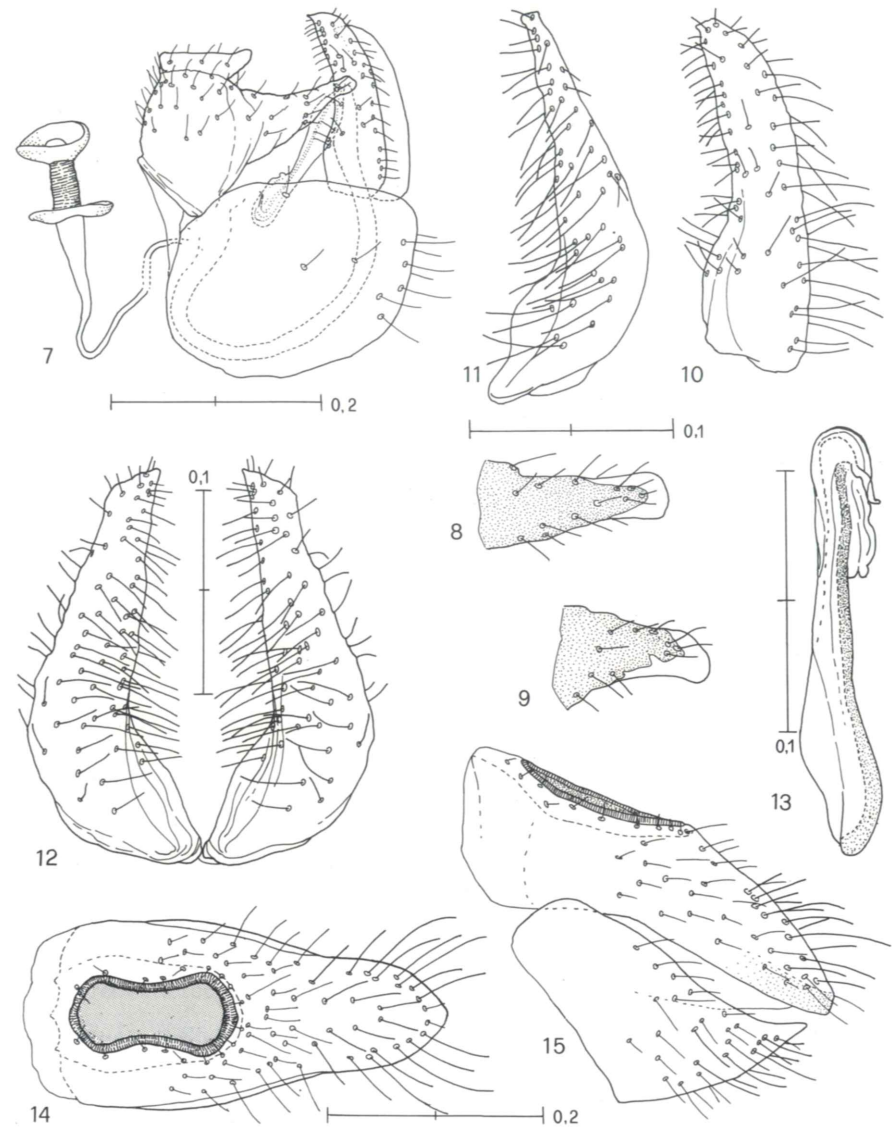
total length (body + wings in resting position): ♂♂ 3,1-3,3; ♀♀ 3,2-3,6;  
 head width: ♂♂ 0,54-0,56; ♀♀ 0,55-0,58;  
 vertex length: ♂♂ 0,15-0,19; ♀♀ 0,19-0,23;  
 vertex width: ♂♂ 0,31-0,35; ♀♀ 0,31-0,34;  
 genal cones length: ♂♂ 0,15-0,16; ♀♀ 0,15-0,16;  
 antennal length: ♂♂ 0,98-1,02; ♀♀ 1,02-1,09;  
 forewing length: ♂♂ 2,51-2,62; ♀♀ 2,52-2,74;  
 forewing width: ♂♂ 1,01-1,09; ♀♀ 0,98-1,25;  
 hindwing length: ♂♂ 1,80;  
 hindwing width: ♂♂ 0,62;  
 $cu_1$  length: ♂♂ 0,39-0,41; ♀♀ 0,39-0,43;  
 $cu_1$  height: ♂♂ 0,27-0,30; ♀♀ 0,27-0,35;  
 proctiger length: ♀♀ 0,43-0,45;  
 paramere length: ♂♂ 0,17-0,19.

### *Ratios:*

total length/head width: ♂♂ 5,47-5,92; ♀♀ 5,65-6,06;  
 genal cones length/vertex length: ♂♂ 0,80-0,87; ♀♀ 0,78-0,84;  
 antennal length/head width: ♂♂ 1,78-1,85; ♀♀ 1,78-1,87;  
 forewing length/forewing width: ♂♂ 2,35-2,51; ♀♀ 2,33-2,72;  
 forewing length/head width: ♂♂ 4,52-4,78; ♀♀ 4,60-5,00;  
 $cu_1$  length/ $cu_1$  height: ♂♂ 1,31-1,42; ♀♀ 1,26-1,42;  
 parameres length/head width: ♂♂ 0,30-0,35;  
 proctiger length/head width: ♀♀ 0,78-0,80.



*Bactericera harrisoni*, male. - Fig. 1: head. - Fig. 2: antenna. - Fig. 3: forewing. - Fig. 4: hindwing. - Fig. 5: base of metatibia. - Fig. 6: apex of metatibia.



*Bactericera harrisoni*. - Fig. 7: genito-anal complex of the male, lateral. - Figs. 8-9: apex of the processes of the proctiger. - Fig. 10: left paramere, outer. - Fig. 11: paramere, posterior, diagonally. - Fig. 12: parameres, posterior. - Fig. 13: penis. - Fig. 14: genito-anal complex of the female, dorsal. - Fig. 15: idem, lateral.

### 3. PREIMAGINAL STAGES, HOST PLANT AND LIFE HISTORY

Preimaginal stages and host plant unknown, in spite of findings by capable specialists. The host plant is probably herbaceous; we hypothesize that it belongs to the Rosaceae family, with distribution limited to mountains from Central Europe to Rumania.

Very few biological data are so far published on *B. harrisoni*. In Italy, we found the species only in late summer, between 4th August and 30th September, on conifers in 18 findings and only in four sweeping the grass of meadows. Besides Italy, the literature reports findings in May and from August to October, on conifers or without precisations.

Probably, *B. harrisoni* overwinters as adult, but till now no findings are known for winter.

Concerning the sex ratio, out of 44 specimens collected (18 ♂♂ and 26 ♀♀) there is a sex ratio 0,7.

*B. harrisoni* in Italy was found 9 times (on a total of 21 findings) with the related *B. bobemica*, that is another mountain species, which lives also at lower height. *B. harrisoni* was probably sometime mistaken for *B. bobemica*. *B. bobemica* was found in Switzerland till 2550 m in *Firmetum* and *Curvetum* (DETHIER 1980: 987).

### 4. DISTRIBUTION (fig. 16)

For Italy we have the following findings, in greatest part collected by L. Tamadini:

Veneto, Province Vicenza, Commune Asiago, Malga Larici, m 1700, 22.IX.68, 4 ♂♂ on *Picea excelsa*; Asiago, Bocchetta di Portule, m 1975, 22.IX.68, 1 ♂, 1 ♀ on *Juniperus*; Commune Lastebasse, Fiorentini, Le Fratte, m 1400, 5.IX.83, 1 ♀ on *Picea excelsa*. Province Verona, Erbezzo, M. Castelberto, m 1500, 19.VII.85, 1 ♂, 2 ♀♀ on *Picea excelsa*.

Alto Adige-Süd Tirol, Province Bolzano-Bozen, Bressanone-Brixen, Plose, m 2100, 13.IX.75, 1 ♂ on *Juniperus communis*; id.id., 25.VIII.85, 1 ♀ on *Picea excelsa* and 1 ♀ juv. on meadow; Castelrotto-Kastelruth, Alpe di Siusi-Seiser Alp, m 1850, 23.IX.70, 1 ♀ on *Picea excelsa*; Malles Venosta-Mals, Malga Mazia-Matscheralm, m 2200, 30.IX.67, 3 ♂♂, 1 ♀ on *Pinus cembra*, id.id., near the Lago di Pleres-Pleres-See, m 2450, 30.IX.67, 1 ♂ on *Pinus cembra*.

Trentino, Province Trento, Commune Pozza di Fassa, Ciampedie, Pra Martini, m 2100, 7.IX.85, 1 ♂, 1 ♀ on *Pinus cembra*; id.id., m 2200, 15.IX.85, 1 ♂ on meadow; id.id., m 2100, 20.IX.85, 1 o on *Picea excelsa*; Vigo di Fassa, Ciampedie, m 1980, 7.IX.85, 2 ♀♀ on meadow; id.id., 15.IX.85, 2 ♀♀ on *Picea excelsa*; id.id., 20.IX.85, 3 ♀♀ on *Picea excelsa*; Tesero, Pampeago, m 1850, 26.VIII.64, 2 ♂♂, 4 ♀♀ on *Pinus cembra*; Tesero, Pampeago, Passo del Feudo, m 2120, 26.VIII.64, 1 ♂



Fig. 16: *Bactericera harrisoni*, distribution. - A) Switzerland, Bern; B) Switzerland, Schwytz and Luzern; C) Switzerland, Valais; D) Switzerland, Graubünden; E) Austria, Salzburg; F) Austria, Steiermark (type locality); G) Austria, Kärntern; H) Czechoslovakia, Bohemia; L) Czechoslovakia, Slovakia, Tatra Park; M) Italy, Alto Adige, Val Venosta; N) Italy, Alto Adige, Bressanone; O) Italy, Trentino, Bezzecca; P) Italy, Trentino and Veneto; R) Italy, Friuli-Venezia Giulia, Udine; S) Rumania, Transylvanian Alps.

1 ♀ on meadows; Folgaria, M. Cornetto, m 1700, 23.VIII.67, 1 ♂ on *Juniperus communis*; Isera, M. Biavena, m 1600, 20.IX.56, 1 ♀ on *Picea excelsa*; id.id., 4.VIII.71, ♀ o on *Larix decidua*; Bezzecca, M. Cadria, m 1600, 6.IX.59, 2 ♂♂ on *Abies alba*.

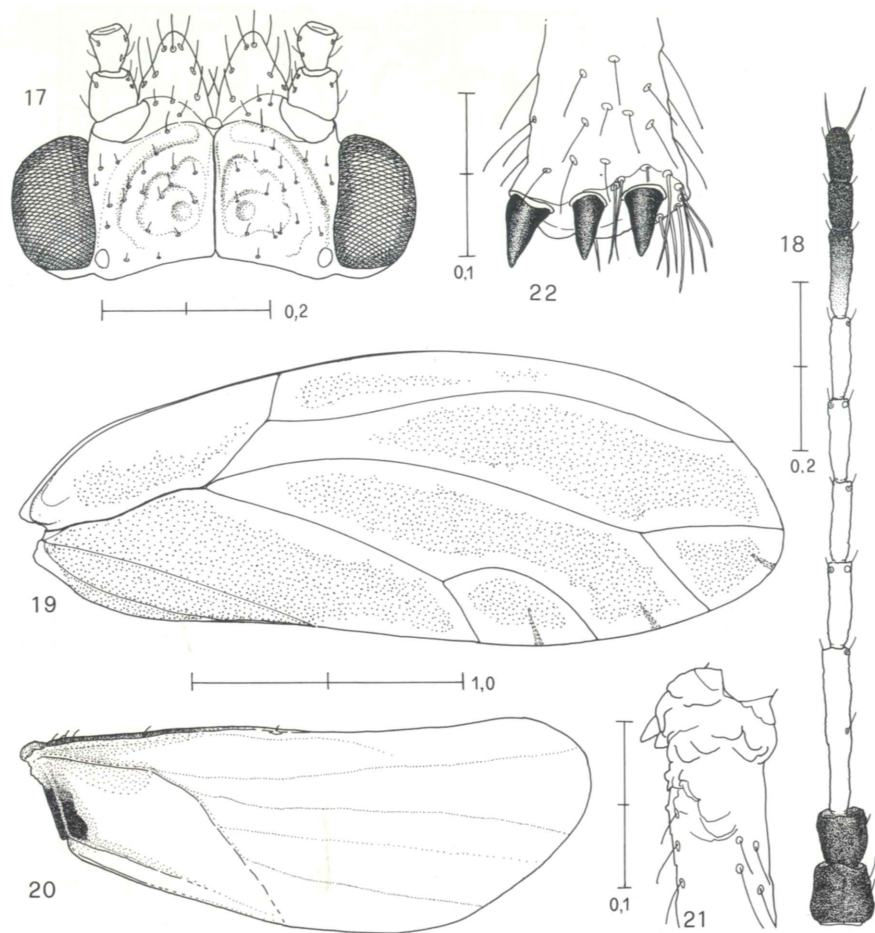
Moreover, the following finding is to be added, from the bibliography:

Friuli-Venezia Giulia, Province Udine, Commune Udine, Godia, m 130, leg. P.G.Coceano in yellow water trays (HODKINSON 1983: 279) without data and number of specimens.

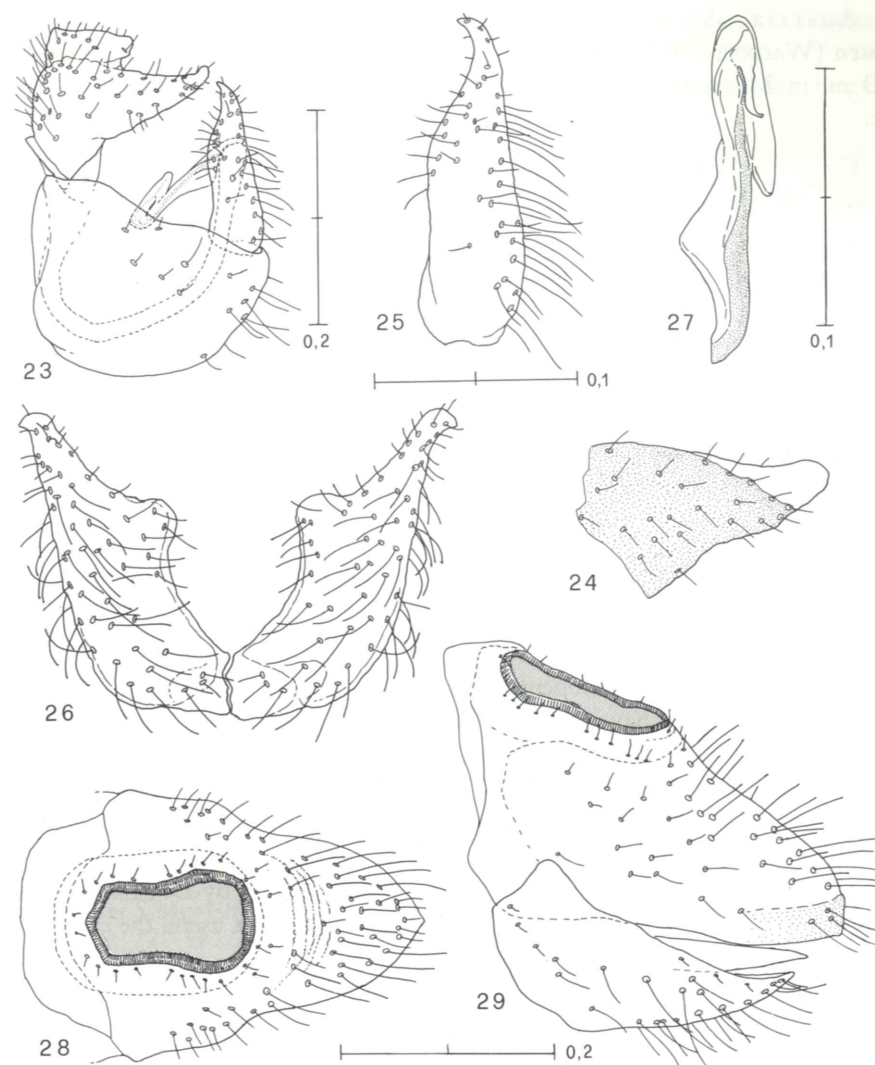
On the whole, *B. harrisoni* was collected by us in 3 Regions and 15 localities of North Italy, with 21 findings, between 1400 and 2450 m, in 18 ♂♂ and 26 ♀♀ from 4 August to 30 September, on conifers and, rare, on meadows. Furthermore the literature reports the finding of Godia, the only report in the plain: it is probably specimens carried from the wind.

Besides Italy:

Switzerland, six localities from the Cantons of Berna, Schwytz, Lucern, Valais and Graubünden (BURCKHARDT 1983: 77).



*Bactericera bobemica*. - Fig. 17: head, female. - Fig. 18: antenna, male. - Fig. 19: forewing, male. - Fig. 20: hindwing, male. - Fig. 21: base of metatibia, female. - Fig. 22: apex of metatibia, female.



*Bactericera bobemica*. - Fig. 23: genito-anal complex of the male, lateral. - Fig. 24: apex of one process of the proctiger. - Fig. 25: left paramere, outer. - Fig. 26: parameres, posterior. - Fig. 27: penis. - Fig. 28: genito-anal complex of the female, dorsal. - Fig. 29: idem, lateral.

Austria, almost 8 localities from Salzburg, Steiermark (Type locality) and Kärnten (WAGNER 1955: 184; WAGNER & FRANZ 1961: 173) between 900 and 1700 m, in May and August-October, on conifers or without indication of host plant.

Czechoslovakia, Slovakia, Tatra National Park (LAUTERER 1974: 137); Bohemia and Slovakia (LAUTERER 1977: 100).

Rumania, Transsylvanian Alps, Muntii Bucegi, Jepii Mari, IX.1958 (DOBREANU & MANOLACHE 1962: 333), on *Pinus mugo*.

On the whole, it appears from the few published data, that the reports were always in a very little number of specimens.

The collected material of *B. harrisoni* from Italy (Plesiotypes) is preserved in the Natural History Museum of Milano and Trento, in the British Museum Natural History, in the Museum Nat. Hist. Nat. Paris and in the collections of Dr. C. Rapisarda (Catania) and of the Authors.

#### 5. AFFINITIES

*B. harrisoni* belongs to subgenus *Klimaszewskiella* and to the «*femoralis group*», that includes species that have Rosaceae as host plant: for Europe, *acutipennis* (Zett.), *bobemica* (Sulc), *femoralis* (Förster), *harrisoni* (Wagner), *reuteri* (Sulc) and perhaps *bucegiana* (Dobr. & Man.).

*B. harrisoni* is very like *B. bobemica*, for the morphology and for the colouration. For a better comparison of these two species, we report also drawings of *B. bobemica* (figs. 17-29). *B. bobemica* was more times figured, f.e. by DOBREANU & MANOLACHE (1962: 328-331, figs. 236-238). However we think useful the comparison with drawings done by the same hand.

A obvious distinctive character, but useful only for mature specimens, is the colour of forewings: the wings of *harrisoni* are diaphanous or yellowish, while the wings of *bobemica* are darker, till brown.

WAGNER (1955: 185) reports that forewings of *harrisoni* are more tapered than the ones of *bobemica*: we do not confirm this characters. Clear and sure differences are only in the genito-anal complex.

The males of *harrisoni* have the parameres, in posterior vision, gradually restricted till the apex, that is curved inside (fig. 12); on the contrary, in *bobemica*, the parameres, in posterior vision, have a large process, like a tubercle, protruding inside; the apical part of the parameres is strongly restricted, and curved outside (fig. 26). The penis in *harrisoni* has the expanded part long about 1/3 of the terminal segment (fig. 13); on the contrary, the expanded part of the penis in *bobemica* is long 1/2 of the terminal segment (fig. 27).

The female of *harrisoni* has the anal segment clearly longer (fig. 14) than *bo-*

*mica* (fig. 28). The same anal segment, laterally, in *harrisoni* is about three times longer than high (fig. 29).

*B. harrisoni* clearly differs from *B. reuteri*, that we have not seen, for the genito-anal complex of the male.

*B. harrisoni* and *B. bobemica* differ clearly from *B. femoralis* for the antennal articles IV and VI with only one rhinarium, whereas in *femoralis* those segments have some rhinaria, furthermore for the spinulae of the forewing, that leave a free band along the veins, whereas in *femoralis*, the spinulae reach the veins.

The distribution in Italy of *B. bobemica* is in CONCI & TAMANINI 1984: 268.

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