

Ann. Mus. civ. Rovereto	Sez.: Arch., St., Sc. nat.	Vol. 5 (1989)	205-218	1990
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CACOPSYLLA ITEOPHILA IN ALTO ADIGE AND TRENTINO,
NEW FOR ITALY
(*Homoptera Psylloidea*)

Abstract - CESARE CONCI & LIVIO TAMANINI - *Cacopsylla iteophila* in Alto Adige and Trentino, new for Italy (*Homoptera Psylloidea*).

The examen of the bibliography regarding *C. iteophila* (Löw, 1876) shows that only one fourth of the works supplies original reliable data of this rare species, limited to Central and South-Central Europe. The AA report, on many specimens collected in Alto Adige and Trentino (NE Italy) on *Salix elaeagnos* and *Salix* sp., a new morphological description of the adult (in particular of the very complex parameres) and the figures of the egg; elements of life history, host plants, distribution and affinities are added. The present note has 18 figures.

Key words: *Cacopsylla iteophila*, Italy, *Psylloidea*.

Riassunto - CESARE CONCI & LIVIO TAMANINI - *Cacopsylla iteophila* in Alto Adige e Trentino, nuova per l'Italia (*Homoptera Psylloidea*).

L'esame della bibliografia relativa alla *C. iteophila* (Löw, 1876) mostra che appena un quarto dei lavori riportano dati originali attendibili su questa rara specie, esclusiva dell'Europa Centrale e Centro-meridionale. Gli AA trattano, sulla base di numerosi esemplari raccolti su *Salix elaeagnos* e *Salix* sp. in Alto Adige e Trentino (Italia nordorientale): ridescrizione dell'adulto (in particolare dei complicatissimi parameri), figurazione dell'uovo, dati biologici, piante nutrici primarie, distribuzione ed affinità. Il lavoro è corredato da 18 figure.

Parole chiave: *Cacopsylla iteophila*, Italia, *Psylloidea*.

INTRODUCTION

The findings of numerous specimens of *Cacopsylla iteophila* (Löw, 1876) in Alto Adige and Trentino (NE Italy) enable us the study of this rare and localized species.

LOEW 1876 (pages 196-199, pl. I, figs. 4-5) sub *Psylla iteophila* n. sp. published a long description and two small and unprecise figures, on an undefined number of adults and nymphs collected in Austria near Wien in Weidlingbachthale on *Salix incana*. LOEW (1879: 602; 1882b: 241; 1884: 149; 1888: 19) added nothing more.

CHICOTE (1880: 202) reported the species for Spain, Madrid, from *Rosa canina*, but this determination is unreliable. REUTER (1880: 233; 1881: 242; 1882: 155; 1883: 178) cited *P. iteophila* from Finland, Pargas, Abo, but also this determination is erroneous (Ossiannilsson in litteris 30.VIII.1989) and it was not published in the careful catalogue of the psyllids from Fennoscandia (LINDBERG & OSSIANNILSSON 1960) and in the recent Checklist by HULDÉN & HEIKINHEIMO (1984).

SULC (1909: 15, 24) examined the Types, reported that *P. iteophila* was collected only by Loew and redescribed the parameres. SULC (1910: 19) inserted *iteophila* in his key of the genus *Psylla* and at pag. 38 quoted the species from Austria and Finland, in contradiction with his own publication of 1909.

The Catalogues (LOEW 1882a: 212, PUTON 1886: 92, PUTON 1899: 112, OSHANIN 1907: 36, OSHANIN 1910: 13, OSHANIN 1912: 127) reported Austria, Spain and Scandinavia without criticism; OSHANIN quoted also the erroneous synonymy with *Psylla salicicola*. AULMANN (1913: 17-18) erroneously added Germany and Bohemia.

PROHASKA (1928: 4) reported two females from Austria, Kärnten, Gaital: the data are doubtful because the female of *iteophila* is indeterminable. HAUPT (1935: 239, figs. 477-478) referred Austria and published two small figures of forewing and male terminalia, probably from specimens by Löw.

SCHAEFER (1949a: 34, 78, 83; 1949b: 30) 73 years after the description by Loew, finally published new reliable data (Switzerland, Wallis, 11 ex. from *Salix fragilis*, 22 ex. from *Salix* sp. and 3 ex. from *Pinus* sp., May).

LOGINOVA (1955: 777) reported *P. iteophila* from Crimea.

VONDRACEK (1957: 102, 205, 219-221, figs. 115-116) redescribed the species with new drawings, probably from specimens by Löw because he published that *iteophila* was not found in Czechoslovakia. VONDRACEK (1959: 12) comprised the species in its key of the *Psylla* of willow trees.

WAGNER & FRANZ (1961: 166) reported three specimens collected in Austria, Steiermark, Eisenherz, 2.VII.43.

KLIMASZEWSKI (1963: 377, 396-397, 449, figs. 106-112) redescribed the species and reported the finding of one female from Poland, Tatry, Kopieniec, which he figured; the male figure is taken from Vondracek. KLIMASZEWSKI published the same data in 1967: 20, 38, 39; 1969: 22, 55, figs. 158-159; 1973: 211; 1975: 187-188, ecc., figs. 342-343).

LAUTERER (1963: 148, 155) reported three males and four females collected in Czechoslovakia, N Slovakia, 17.VII.62, on *Salix* sp.; this report was confirmed

by LAUTERER 1977: 99. LAUTERER (1982: 139) reported his findings in S Yugoslavia (S Serbien and Montenegro) and published that *iteophila* was abundant in these countries.

LOGINOVA (1967) in her study on the *Psylla* of willows, supplied a new figure of the parameres, different from the figures of LOEW, HAUPT and VONDRACEK, but corresponding well with our specimens. In this work Loginova affirmed (pags. 435, 453) that *iteophila* does not belong to USSR fauna, in discrepancy with her 1955 publication. LOGINOVA (1978: 822) ascribes *iteophila* to subgenus *Hepatopsylla*.

BURCKHARDT (1983: 63), at last, supplies new findings in Switzerland: Aargau (Brugg) and Graubünden (Engadin).

On the whole, on a total of not less than 39 bibliographical reports, only 7 works (LOEW 1876, SULC 1909, SULC 1910, HAUPT 1935, VONDRACEK 1957, KLIMASZEWSKI 1963 and LOGINOVA 1967) publish original morphological data or original figures, almost all probably derived from specimens by Löw.

As regarding the geographical distribution, only 6 works report new and sure data, for Austria (2 finding), Switzerland (3 findings), Czechoslovakia (1 finding) and Yugoslavia (2 findings).

The remaining 28 works repeat only preceding data without criticism, or report unreliable or erroneous data.

The examined situation of *C. iteophila* corresponds enough with the situation of many of the rarest European psyllids: less than one third of the literature reports new data; two thirds report data of the literature without criticism.

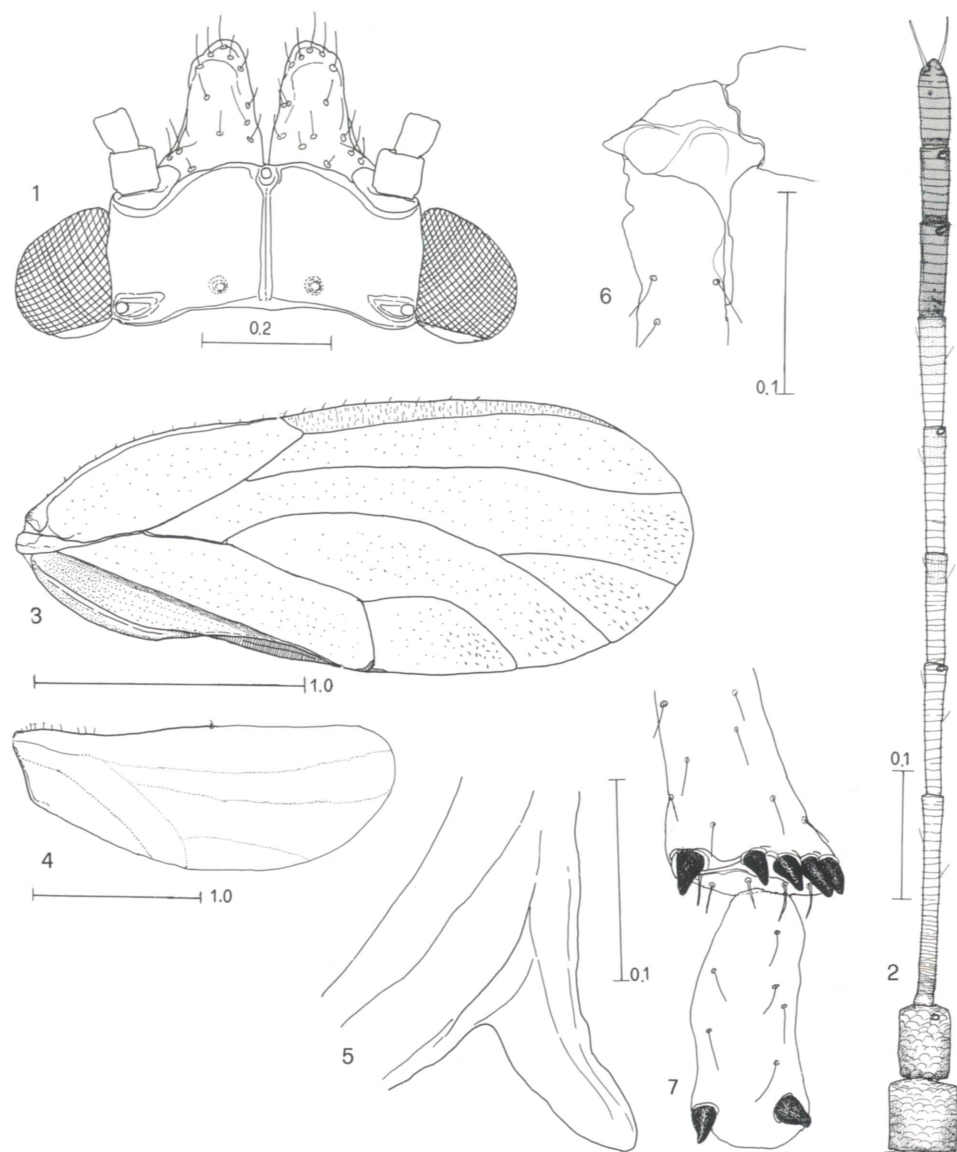
DESCRIPTION OF THE ADULT

Terminology follows HODKINSON & WHITE 1979.

The two sexes differ in the structure of the terminalia.

Head (fig. 1) with flat vertex, with two rounded hollows, slightly incavate and darker. Genal cones great, with sides in part subparallel, rounded at the apex, as in other species of *Cacopsylla* of willows. Antennae (fig. 2) very long and with little rhinaria on the IV, VI, VIII and IX segments; the II antennal segment has a very small sensillus.

Pronotum, from above, narrower than the head; mesopraescutum as wide as the pronotum and narrower than the mesoscutum. Forewing (fig. 3) similar to *C. saliceti*, and widest in their apical third. Rs vein slightly bent. Membrane with thin, upper microsculpture in all cells, with wide bands adjacent the veins free from spinules; spinules more dense and small in the anal zone and near the clavus. Hind wings (fig. 4) very thin and fine. Meracanthus as in fig. 5. Base of



Figs. 1-7: *Cacopsylla iteophila*, male from Trentino, Ton, La Rocchetta. Fig. 1: head. - Fig. 2: antenna. - Fig. 3: forewing; the zone yellowish is figured with parallel lines. - Fig. 4: hind wing. - Fig. 5: meracanthus. - Fig. 6: base of metatibia. - Fig. 7: apex of metatibia.

metatibia as in fig. 6; apex of metatibia (fig. 7) with 5 black spurs; apex of the first tarsal segment with 2 spurs.

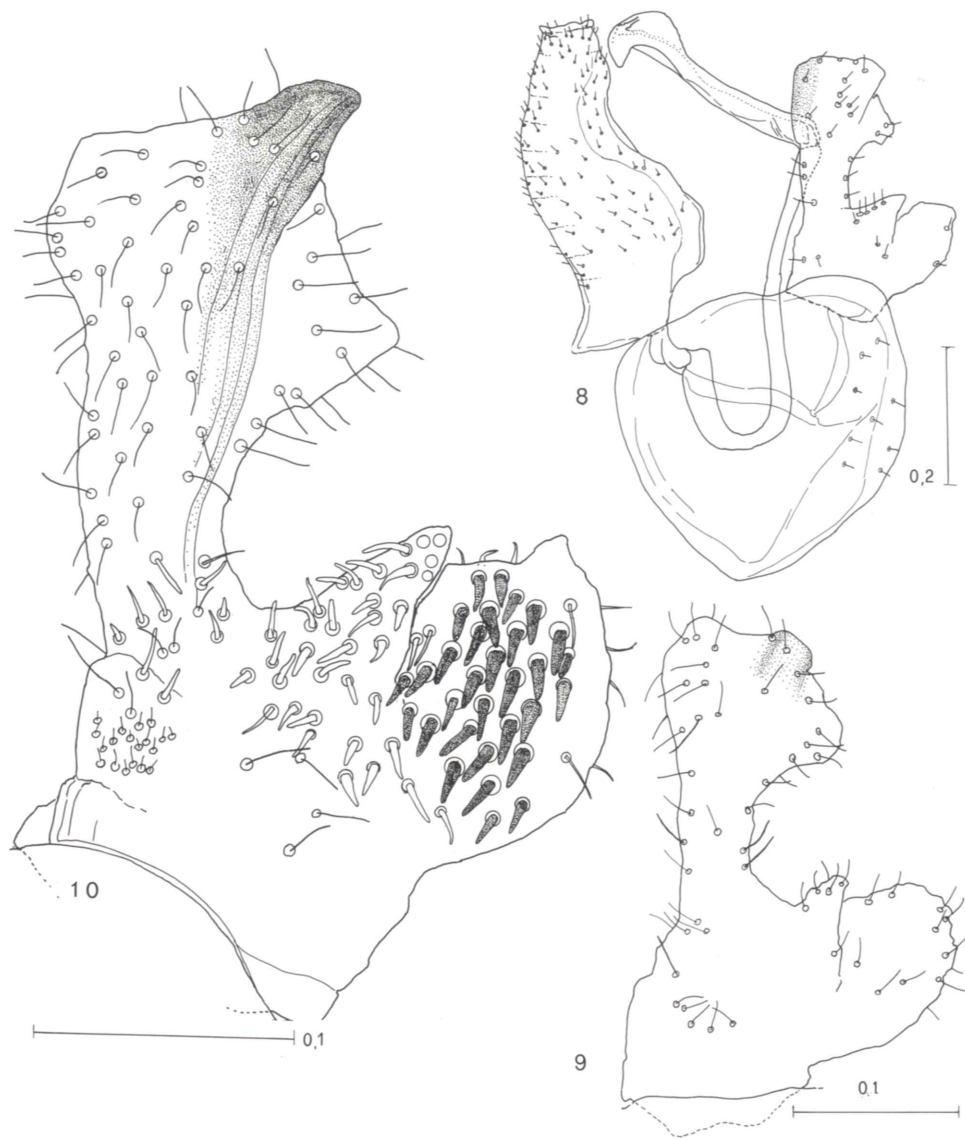
Male terminalia (fig. 8) with proctiger of normal form. Parameres (figs. 9-12) very complex, the most complicated among the Italian Psyllidae. The aspect of the parameres is very different regarding the observation angle, but we did not find a position that corresponds to the figures of HAUPT 1935 and VONDRACEK 1957. The anterior margin of the paramere is almost straight; the basal part has a great subrounded apophysis, apically directed. This apophysis is divided in two parts: one, apically, is greater and rounded and one basally, is pointed. Also in the basal anterior part of the paramere there is another apophysis. The apical third of the paramere is enlarged, approximately quadrangular, with a great vertical central rib on its internal surface, jutting out of the apex according to the visual position. Very complex is also the chaetotaxy of the parameres above all on the inner surface (fig. 10), having four types of hairs, disposed in characteristic position.

All the paramere is very chitinized and its examen necessitates a great clearing. Penis as in fig. 13; the apical posterior margin has some little teeth, present also in the similar species *saliceti* and *moscovita*.

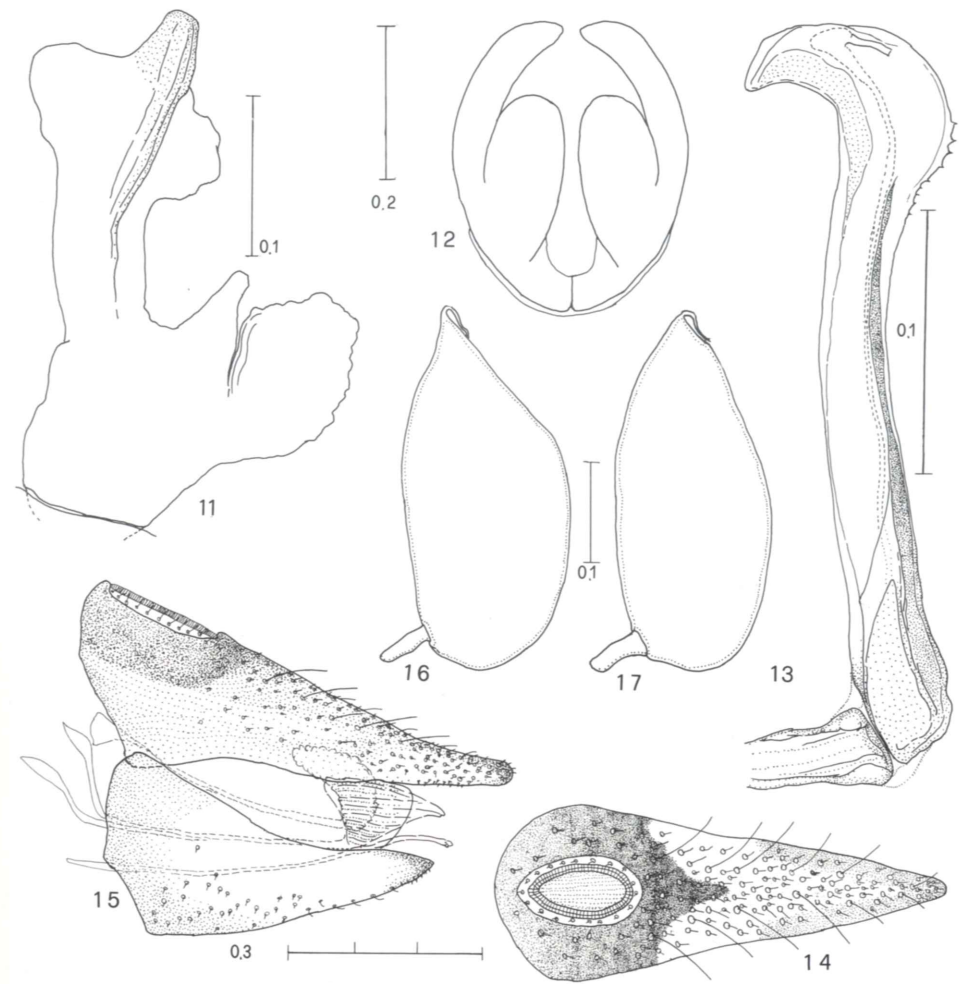
Female terminalia as in figs. 14-15. We could not find constant distinctive characters among other species of *Cacopsylla* of the willows, and the determination of *iteophila* is based *ex societate* with the males.

Coloration. General coloration yellow-brown-reddish. Genal cones clear. Antennae light colored, with the segments VIII-X brown. Pattern of the thorax brown, darker than the base colour. Forewings transparent or very pale yellowish; pterostigma and anal zone pale yellow. In our specimens (more than 300, all very mature, after wintering) there are not the brown spots on the forewing reported by the literature. We observe that the vein Cu_{1b} is sometimes only a little darker than the other veins and has only sometimes a very weak pale yellow halo; also at the apex of the clavus there is sometimes a yellowish zone. Also Burckhardt (*in litteris* 10.VIII.89) wrote us that in his material from Valais, Grison and Aargau, most of which teneral, there is not a distinct dark pattern around vein Cu_{1b} and at the apex of clavus; in some mature specimens there may be a faint hint to a darker coloration.

On the contrary, already LOEW 1876: 197 wrote: «Spitze des Clavus meist bräunlich, dicht vor derselben ein kleiner, schwärzlicher Nebelfleck, welcher jedoch oft ganz fehlt». That is: apex of clavus usually brownish; just before it, a little, blackish nebulous spot, that often, however, lacks completely. SULC (1910: 19), VONDRACEK (1957: 205, 219, fig. 115; 1959: 12) and KLIMASZEWSKI (1963: 377 n. 24.25, 396, fig. 108; and other works) reported in the keys and in the figures two showy brown spots at the apex of clavus (as in *C. nigrita*) and on the vein



Figs. 8-10: *Cacopsylla iteophila*, male from Trentino, Ton, La Rocchetta. - Fig. 8: terminalia. - Fig. 9: left paramere, outer surface. - Fig. 10: right paramere, inner surface.



Figs. 11-17: *Cacopsylla iteophila*, specimens from Trentino, Ton, La Rocchetta. - Fig. 11: right paramere, inner surface, according to another visual angle, schematically. - Fig. 12: parameres, posterior view, schematically. - Fig. 13: penis. - Fig. 14: female terminalia, dorsal view. - Fig. 15: female terminalia, lateral view. - Figs. 16-17: eggs.

Cu_{1b}. Therefore the keys of the literature do not permit the determination of specimens similar to ours.

The newly hatched specimens (which we did not see) would be green (LOEW 1876: 197).

Measurements, in mm:

total length: males 2.4-3.1; females 2.9-3.3;
head width: males 0.74-0.78; females 0.78-0.82;
genal cones length: males 0.22-0.25; females 0.20-0.26;
vertex length: males 0.25-0.26; females 0.27-0.29;
vertex width: males 0.45-0.46; females 0.44-0.46;
antennal length: males 0.94-1.10; females 1.00-1.08;
forewing length: males 2.46-2.58; females 2.45-2.77;
forewing width: males 0.91-1.05; females 0.93-1.07;
parameres length: 0.29-0.32;
last segment of penis length: 0.24-0.26.

Ratios:

total length/head width: males 3.55-4.02; females 3.88-4.42;
antennal length/head width: males 1.16-1.37; females 1.32-1.42;
forewing length/forewing width: males 2.41-2.63; females 2.47-2.61;
forewing length/head width: males 3.14-3.26; females 3.23-3.51.

PREIMAGINAL STAGES

Eggs (figs. 16-17) were obtained from females collected on the 16.IV.85, that had in the abdomen eggs of different development. They have the usual form of other species of *Cacopsylla* of the willows. The short stalk has a lateral position and the apex of the egg has a short micropyle, sometimes weakly visible. The eggs are 0.34-0.38 mm long and 0.14-0.16 mm wide. We observed few eggs clearly longer, up to 0.50 mm.

Nymphs unknown.

HOST PLANT AND LIFE HISTORY

The literature regarding the host plants reports only the data by LOEW 1876 (nymphs and adults on *Salix incana*) and by SCHAEFER 1949 (11 adults on *Salix fragilis*) and some reports on *Salix* sp. We found adults of *C. iteophila* at La Rocchetta and Riva del Garda on *Salix elaeagnos*, at Montagna and Mount Penegal on *Salix* sp.; on other localities we found few specimens on conifers.

Salix elaeagnos Scopoli (once *S. incana* Schrank) is a species widespread in the whole Central and South Europe (and also in Asia Minor) and it is reported as host plant for other species of *Cacopsylla*.

Salix fragilis L. is widespread in almost all Europe and also in Asia and North Africa.

The literature regarding the life history reports: the finding of larvae in May and of adults from mid-June (LOEW 1876); the findings of adults from April to June (SCHAEFER 1949) and in July (WAGNER & FRANZ 1961; LAUTERER 1963). Findings on conifers are reported only by SCHAEFER 1949: three specimens in May on *Pinus* sp.

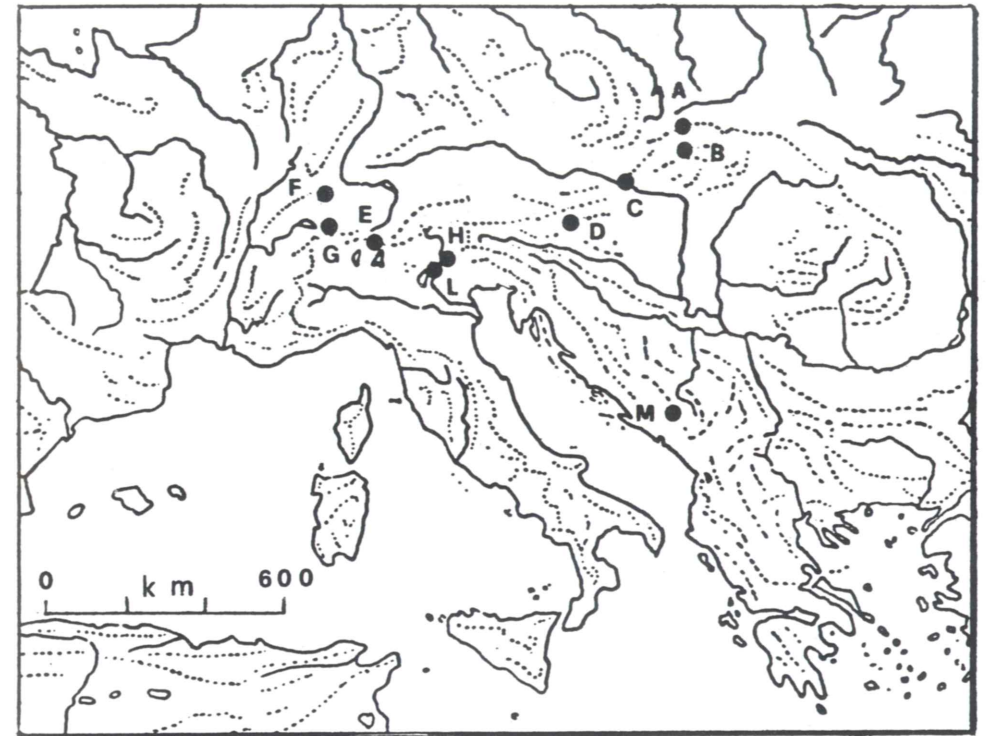


Fig. 18: *Cacopsylla iteophila*, general distribution. The letter refer to the localities reported in the paragraph «Distribution». - A) Poland, Tatry; B) Czechoslovakia, Slovakia; C) Austria, Niederösterreich (*type locality*); D) Austria, Steiermark; E) Switzerland, Graubünden; F) Switzerland, Aargau; G) Switzerland, Valais (Wallis); H) Italy, Alto Adige; L) Italy, Trentino; M) Yugoslavia, South Serbia and Montenegro.

In the localities of our findings, *C. iteophila* goes on the host plant very early (already at the end of March), when the willows begin the budding before blooming; after few weeks the adults die. The specimens found by us on conifers were collected in December, February and April. We did not find newly hatched adults.

On the whole, probably *C. iteophila* has in Italy a single generation per year and overwinters as adult on conifers, as already reported by LOEW 1888.

DISTRIBUTION (fig. 18)

(ms = males; f = females; the letter after the single localities refers to fig. 18).

? *South Poland*. Tatry, Kopieniec (A), 1 female, 19.VIII.1921 (KLIMASZEWSKI 1963: 397 and subsequent works).

Czechoslovakia. North Slovakia, Vazek (B) (LAUTERER 1963: 148).

Austria. Niederösterreich, Weidlingbachthale bei Wien (*Locus typicus*) (C) (LOEW 1876: 199). Steiermark, Eiseherz (D) (WAGNER & FRANZ 1961: 166).

Switzerland. Graubünden, Engadin (E). Aargau, Brugg (F) (BURCKHARDT 1983: 63). Valais, Saint-Maurice, Martigny and Sierre (G) (SCHAEFER 1949a: 34).

Italy. Alto Adige-Süd Tirol, Province Bolzano-Bozen (H), Comune Montagna-Montan, 500 m, 7.IV.83, 2 ms, 3 f, on *Salix* sp. - Trentino, Province Trento (L), Comune Mezzolombardo, 270 m, 16.IV.85, 1 male, 2 f, on *Pinus sylvestris*; Comune Ton, locality La Rocchetta, 270 m, 16.IV.85, 50 ms, 50 f, on *Salix elaeagnos*; idem, 23.IV.87, 1 male, 3 f, on *Salix elaeagnos*; idem, 9.IV.88, 7 ms, 9 f, on *Salix elaeagnos*; idem, 28.III.89, 80 ms, 80 f, on *Salix elaeagnos*; Commune Ton, 400 m, 16.IV.85, 1 male, on *Pinus sylvestris*; Commune Ruffré, Mounth Penegal, 1600 m, 28.III.89, 3 ms, on *Salix* sp.: Commune Terragnolo, locality Potrich, 1000 m, 28.XII.82, 1 male, on conifers; idem, 4.II.83, 2 ms, 1 f, on conifers; Commune Pomarolo, 300 m, 26.XII.83, 2 ms, 1 f, on *Pinus nigra*; Commune Villa Lagarina, locality Pederzano, 550 m, 17.II.83, 2 ms, on *Pinus sylvestris*; Comune Nago, Passo S. Giovanni, 300 m, 26.II.83, 1 male, on *Pinus nigra*; Comune Riva del Garda, locality Ponale, 70 m, 6 and 9.IV.82, 20 ms, 20 f, on *Salix elaeagnos*. On the whole, in Italy *C. iteophila* was collected by us in two Provinces, in 10 nearby localities, with 15 findings, between 70 and 1000 m but also at 1600 m, in more than 300 adults on *Salix elaeagnos* and *Salix* sp. in March and April; few specimens on conifers in February, April and December.

Yugoslavia. South Serbia, Pec, and Montenegro (M) (LAUTERER 1982: 139).

The reports from Finland (REUTER 1880, 1881, 1882, 1883) are erroneous; also the report from Spain (CHICOTE 1880) is probably erroneous. The finding in Polen would need confirmation.

AFFINITIES

SCHAEFER (1949: 33-34) established an «*iteophila*-Gruppe» for most species of *Psylla* of willows of Switzerland (*saliceti*, *klapaleki*, *propinqua*, *elegantula*, *pulchra*, *nigrita* and *ceruttii*).

For Poland KLIMASZEWSKI (1963: 388) called «*saliceti*» the same group, for *saliceti*, *moscovita*, *klapaleki*, *elegantula*, *iteophila*, *parvipennis*, *flori*, *nigrita* and *pulchra*.

LOGINOVA (1967) ascribed to «*iteophila*» group, among the 34 palaeartic species of willows examined, the species: *initialis*, *praevia*, *propinqua*, *subpropinqua*, *moscovita*, *mirapyga*, *saliceti* and *iteophila*.

Among the European species, *C. iteophila* has great likeness with *moscovita* and above all with *saliceti*, from which is clearly distinguishable for the structure of the parameres. The differences with *C. propinqua* are greater.

ACKNOWLEDGEMENTS

We thank Dr. D. Burckhardt (Genève) and Prof. F. Ossiannilsson (Uppsala) for notices, Dr. P. Lauterer (Brno) for the sending of specimens and Dr. C. Violani (Milano) for the cooperation in the English translation.

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