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TRIOZA SAXIFRAGAE IN TRENTINO, NEW FOR ITALY, FROM *SAXIFRAGA AIZOIDES* *(Homoptera Psylloidea)*

Abstract - CESARE CONCI & LIVIO TAMANINI - *Trioza saxifragae* in Trentino, new for Italy, from *Saxifraga aizoides (Homoptera Psylloidea).*

Trioza saxifragae Löw, 1888 is the only known Psyllid which has *Saxifragaceae* Family as host plant; the species was till now known only on four reports in Central Europe. The AA found the species in September and October, in four close collecting points in NE Italy, Trentino, on Dolomiti di Fassa, between 1980 and 2300 m, on a new host plant, *Saxifraga aizoides*. The AA give complementary morphological data on adult and IV instar nymph, observations on host plants, life history, distribution and affinities. The note has 30 drawings of details and a distribution map.

Key words: *Trioza saxifragae*, redescription, *Psylloidea.*

Riassunto - CESARE CONCI & LIVIO TAMANINI - La *Trioza saxifragae* in Trentino, nuova per l'Italia, da *Saxifraga aizoides (Homoptera Psylloidea).*

La *Trioza saxifragae* Löw, 1888, l'unico Psilloideo finora descritto che viva su *Saxifragaceae*, era nota finora solo per quattro rinvenimenti nell'Europa Centrale. Si dà notizia di quattro rinvenimenti nell'Italia nordorientale, in Trentino, sulle Dolomiti di Fassa, tra 1980 e 2300 m, in settembre-ottobre, su *Saxifraga aizoides*, pianta nutrice primaria nuova per la specie. Si riportano dati morfologici complementari sull'adulto e sulla ninfa del IV stadio, osservazioni sulle piante nutrici primarie, su biologia, geonemia ed affinità. Il lavoro è corredato da 30 figure di dettagli e da una cartina geonemica.

Parole chiave: *Trioza saxifragae*, ridescrizione, *Psylloidea.*

INTRODUCTION

The finding in Trentino (NE Italy) of some specimens of *Trioza saxifragae* Löw, 1888, enables us the study of this very rare species, limited to Central Europe, from which only four reports are known.

Trioza saxifragae was described, with a little figure of male terminalia, by LOEW (1888:36-37, and 28, fig. 3) from adults and nymphs collected near Vordernberg in

Obersteiermark (Austria), host plant *Saxifraga aizoon*. SULC (1912:1-4, pl. 21 figs. 1-10) published a long and accurate description with figures of details, drawn from examination of Löw's types, preserved in the Naturhistorisches Museum, Wien. HAUPT (1935:245, fig. 500), VONDRACEK (1957:323-325, figs. 195, 196:1-7) and KLIMASZEWSKI (1967b:295-297, fig. 100; 1968:9, tables 1,2; 1969:74-75, figs. 251-252; 1975:225-226, figs. 412-413 [in 1975 the figures of forewing of *saxifragae* and *schranki* are inverted]) reported data and figures from SULC. Also WAGNER & FRANZ (1961:175), wich studied a large material collected in NE Austrian Alps, did not find the species.

KLIMASZEWSKI (1965:198, figs. 3-5) described and figured the nymph of V instar, on three specimens collected in South Poland; the same Author (1967a: 33,40-41) reported again this finding. LAUTERER (1974:138; 1977:99) cited a finding in Czechoslovakia and BURCKHARDT (1983:73) found the species in Switzerland.

The general Catalogues (PUTON 1899:114; OSHANIN 1907:380; OSHANIN 1912:129; AULMANN 1913:54; KLIMASZEWSKI 1973:257) report a part of the cited data.

COMPLEMENTARY DESCRIPTIVE NOTES: ADULTS

The identification of *T. saxifragae* is easy: the species is characterized immediately for the black shining coloration of head and thorax and for the apically rounded forewings.

The description of SULC, 1912 corresponds satisfactory to our material. We report some other notices concerning details which SULC did not consider, and we give also new figures.

Terminology and symbols follow HODKINSON & WHITE, 1979.

Morphology. Both sexes are similar in morphology and coloration, and differ in terminalia.

Head as in fig. 1. Vertex with a depression on each half, each one with two little hollows. Genal cones inclined downwards from the plane of vertex. Antennae (fig. 2) short and thin, with rhinaria on articles IV, VI, VIII and IX.

Pronotum wider than the vertex; mesopraescutum wider than the pronotum and narrower than the mesoscutum. Forewing (fig. 3) rounded apically, with superior and lower margins subparallel, subhyaline, with strong veins. The greatest lenght of the forewing corresponds to the conjunction of M_{1+2} vein with the marginal vein. Microsculpture on the upper surface punctiform, distributed on the whole wing; near the veins the microsculpture is thinner and there are some corners without spinules. The microsculpture on the lower surface is present only in basal cells; the radular spinules are in the cells m_2, m_1, and cu_1. Hind wing (fig. 4) relatively very large, hyaline. Meracanthus (fig. 5) thin, conical. Metatibia with wrinkled base (fig. 6); distal part of metatibia with 3 + 1 black, thick saltatorial spines (fig. 7) and in the inner side with 14-15 strong, yellow hairs (fig. 8).

Male genito-anal complex (fig. 9) with wide and stout proctiger. Parameres (figs. 10-14) with a well-sclerotized terminal apophysis, bent anteriorly and diagonally toward the inner side; the external surface of the paramere has few hairs, while the internal surface has many and long hairs. The form of the distal apophysis is well evident observing

the parameres completely open, in dorsal view (fig. 14). The parameres posteriorly (figs. 12-13) look rather different from SULC's fig. 6. Spermal pump (fig. 15) with ringed conical proximal part. Penis as in figs. 16-17.

Female genito-anal complex (figs. 18-19) shorter than high in lateral view. Anal opening (fig. 20) a little before the middle of the proctiger, surrounded with about rectangular and circular glands. Distal part of proctiger laterally with a sclerotized plate. Hairs of the distal part of the proctiger long. Ovipositor (fig. 21) with a short point and two little teeth; valvulae (fig. 22) with a larger point and 4 little teeth.

Coloration corresponds enough to the SULC' description. Blanck shining colour of head and thorax is characteristic. Antennal segments III-VIII (above all III-IV), basal part of metatibia and mesosternum are yellow. The forewings of our specimens have not spots; veins are yellowish, proximally darker at the beginning of wintering on conifers. SULC writes that the distal half of the anal vein is dark brown-black («tiefschwarzbraun»).

Measurements of our specimens, in mm:

total length (body + wings in resting position): males 2.5-2.6; females 2.5-2.8;
head width: males 0.51-0.56; females 0.51-0.55;
vertex length: males 0.22; females 0.19-0.21;
vertex width: males 0.27-0.28; females 0.27-0.28;
genal cones length: males 0.09-0.10; females 0.09-0.10;
antennal length: males 0.71-0.81; females 0.67-0.78;
forewings length: males 2.12-2.14; females 2.07-2.43;
forewing width: males 0.78-0.95; females 0.90-0.98;
cu_1 length: males 0.39-0.43; females 0.35-0.43;
cu_1 height: males 0.24-0.27; females 0.24-0.27.

Ratios

total length/head width: males 4.60-4.63; females 5.00-5.05;
genal cones length/wertex length: males 0.41-0.45; females 0.47;
antennal length/head width: males 1.29-1.44; females 1.31-1.41;
forewing length/forewing width: males 2.25-2.71; females 2.30-2.47;
forewing length/head width: males 3.82-3.85; females 4.05-4.41;
cu_1 length/cu_1 height: males 1.59-1.62; females 1.45-1.59.

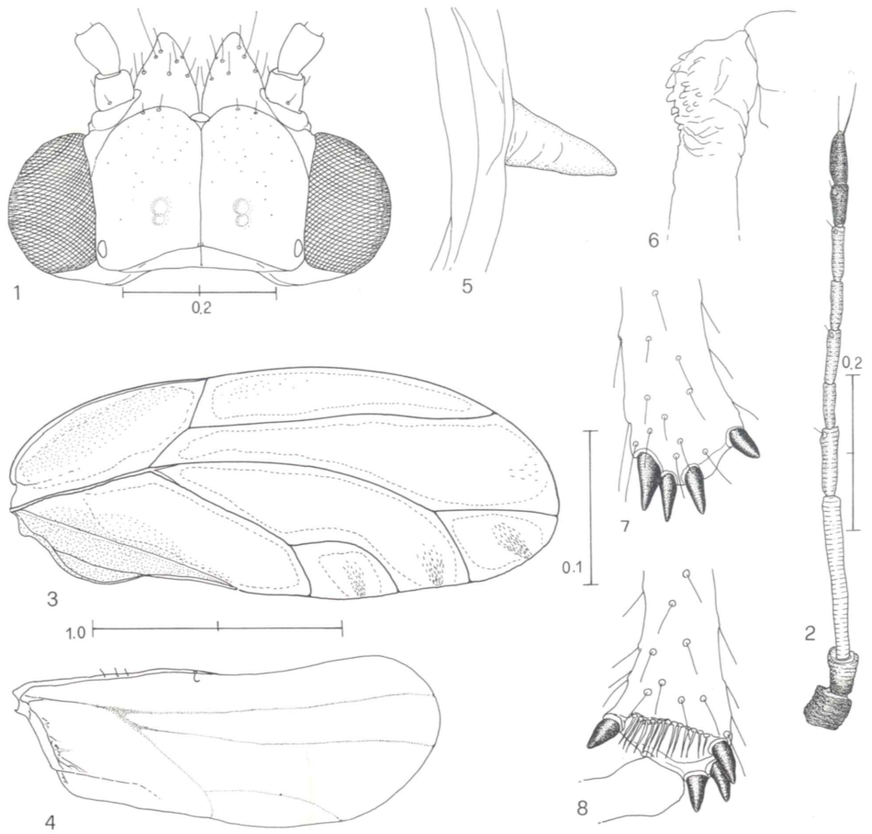
Our specimens correspond in the details with SULC's measurements. Instead, total length and forewing dimensions are greater in our specimens that in Sulc's measurements. The specimens of Slovakia, send us with kindness by Dr. P. Lauterer, are littler.

COMPLEMENTARY DESCRIPTIVE NOTES: PREIMAGINAL STAGES

Egg. Never described. Our females not have eggs.

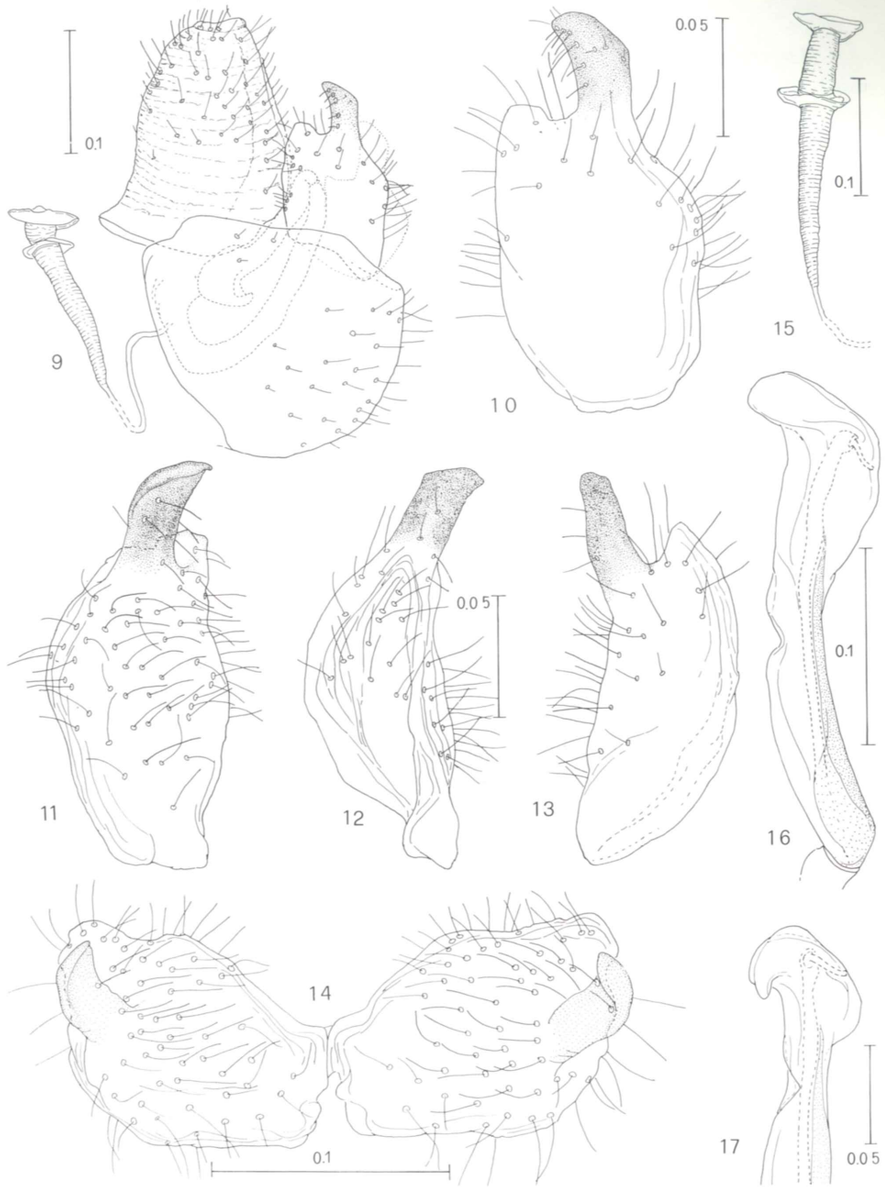
Nymphs. KLIMASZEWSKI (1965:198, figs. 3-5) decribed the fifth instar nymph. We collected three nymphs, with the adults. The nymphs are probably fourth instar nymphs.

Our terminology and symbols follow WHITE & HODKINSON, 1983.



Trioza saxifragae, adult, specimens from Trentino. - Fig. 1: head, male. - Fig. 2: antenna, male. - Fig. 3: forewing, female; the lines with short tracts indicate the limits of dense upper surface microsculpture; the zones with points indicate the lower surface microsculpture. - Fig. 4: hind wing, female. - Fig. 5: meracanthus, male. - Fig. 6: base of metatibia, male. - Figs. 7-8: apex of metatibia, male.

Morphology. Body (fig. 23) of regular oval form, of typic triozine aspect. Antennae (fig. 24) with four segments, which correspond to segments I, II, III-IV and V-X of the adult, but which show traces of the definitive segmentation. Four rhinaria: the fourth is visible with difficulty. Arolium (fig. 25) triangular, but so diaphanous that its precise shape needs confirmation. Abdomen without evident sclerified plates. Anal opening (fig. 26) surrounded by two glandular rings, the inner of which is slenderer; the two rings are constituted from a regular series of subrectangular glands.



Trioza saxifragae, adult, specimens from Trentino. - Fig. 9: male genito-anal complex. - Fig. 10: left paramere, outer. - Fig. 11: left paramere, inner. - Fig. 12: left paramere, posteriorly. - Fig. 13: right paramere, posteriorly and diagonally. - Fig. 14: parameres connected, in upper view, showing the inner surfaces. - Fig. 15: spermal pump. - Fig. 16: penis, in Faure. - Fig. 17: penis of an another specimens, a little press in the preparation.

Marginal chaetotaxy (figs. 27-30) of truncate ringed sectasetae, for the greater part much short in comparison to their breadth. Their numer is the following, for each half of the body, in our three specimens: head 32, 30, 37; forewing 60, 64, 61; hind wing 13, 17, 16; abdomen 62, 59, 61. Upper and lower surface of the body with short and thin hairs.

Coloration of our specimens green, without darker plates.

Measurements of our three specimens: antennal length (AL) 0.16, 0.15, 0.15; outer circumanal ring breadth (ARB) 0.17, 0.16, 0.18; body breadth (BB) 0.83, 0.76, 0.75; body length (BL) 1.25, 1.20, 1.22; abdominal breadth 0.58, 0.58, 0.60; abdominal length 0.50, 0.49, 0.49; forewing-pad length (WL) 0.53, 0.51, 0.54. Ratios: antennal length/forewing-pad length (AWL) 0.30, 0.29, 0.28; body breadth/body length (BBBL) 0.66, 0.63, 0.61; abdominal breadth/abdominal length 1.16, 1.19, 1.23.

Host plant and life history

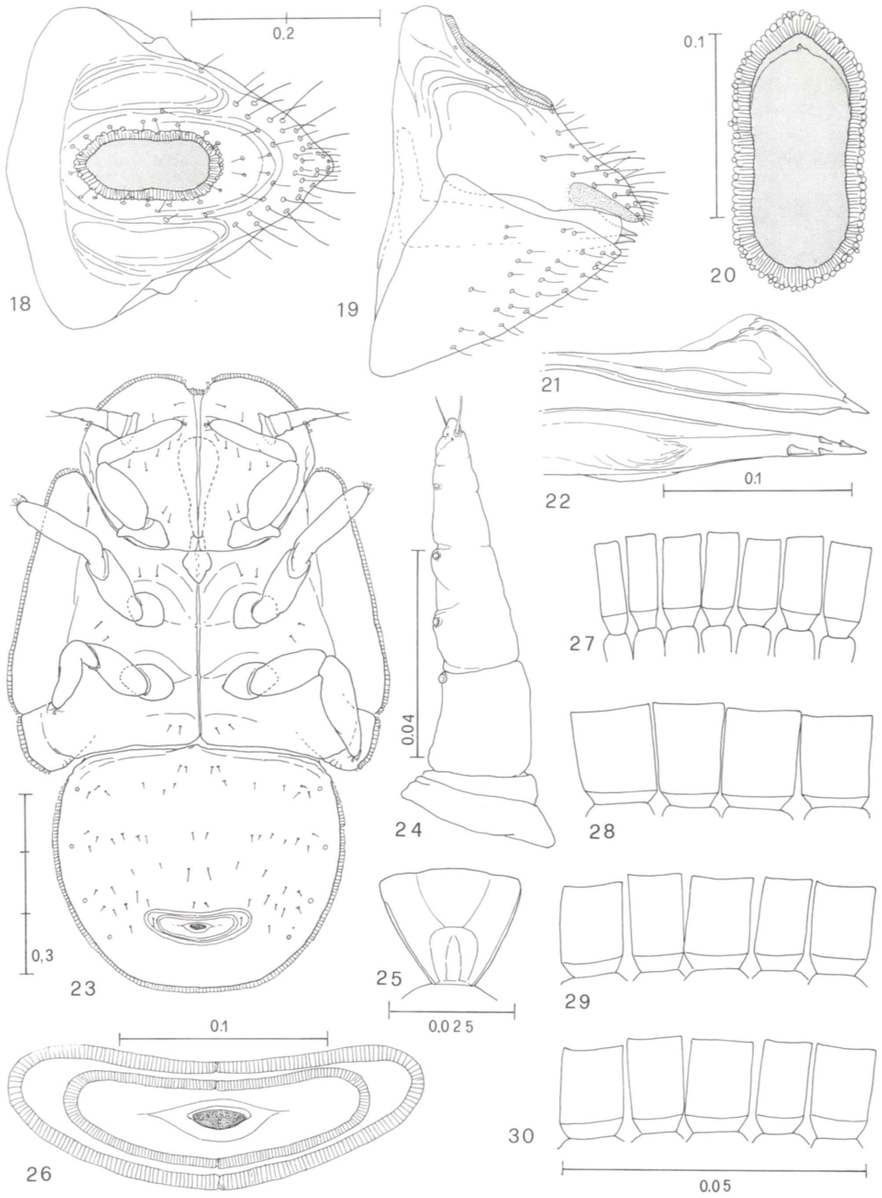
Loew, 1888:37 wrote that the nymphs of this species rest in the rosette of the basal leaves of the *Saxifraga aizoon* Jacq. The adults hatch in July and August. Imago overwinter and oviposit at the end of May or at the beginning of June on the leaves of their host plant.

Nymphs described by Klimaszewski, 1965 were collected the 14.IX.1964 on *Saxifraga aizoon*. Lauterer, 1974 did not precise date and host plant of his collecting. Burckhardt *(in litteris*, 1986) wrote us kindly that his record (1983:73) regarding *Saxifraga aizoon* is derived only from literature.

Conci and Rapisarda collected the 2.IX.85 six adults and three IV instar nymphs on *Saxifraga aizoides*, that is therefore a new host plant for the species, and one female on *Larix decidua*. Conci and Tamanini collected the 20.IX.85 one male and the 3.X.86 two adults on *Picea excelsa*. Nymphs were collected by us on the leaves of the stem of *S. aizoides*, a species without basal rosette of leaves. The nymphs were collected by us at the end of Summer, as those reported by Klimaszewski, the same period when other mature nymphs of *Trioza*, as *T. senecionis*, were collected.

It is confirmed that *T. saxifragae* overwinters as adult on conifers. It is not certain whether the annual generations are one or two, but is more probable only one.

T. saxifragae was the sole Psyllid that lived on the *Saxifragaceae* family. The two species on which *T. saxifragae* was found, *Saxifraga aizoon* Jacq. (now *S. paniculata* Miller) and *S. aizoides* L. (= *autumnalis* L.), are widely distributed in Europe, Asia and N. America, on the mountains and at the North. Therefore it is possible that more careful researches on the orophil holarctic psyllid fauna find *T. saxifragae* or other related species far away from the little Centroeuropean areal till now known. It is strange that the numerous researches by Gegechkori on Caucasus did not found these *Trioza*.



Trioza saxifragae, adult, specimens from Trentino. - Fig. 18: female genito-anal complex, dorsal. - Fig. 19: idem, lateral. - Fig. 20: circumanal ring of glands. - Fig. 21: ovipositor. - Fig. 22: valvula.

Trioza saxifragae, IV instar nymph, specimens from Trentino. - Fig. 23: whole nymph, ventral view. Fig. 24: antenna. - Fig. 25: arolium. - Fig. 26: circumanal pore field. - Fig. 27: head margin sectasetae. - Fig. 28: forewing-pad margin sectasetae. - Fig. 29: hindwing-pad margin sectasetae. - Fig. 30: abdomen margin sectasetae.

DISTRIBUTION (fig. 31)

S w i t z e r l a n d, Graubünden, Unter Engadin, Ftan, leg. Burckhardt; number of specimens, altitude and date not precised (BURCKHARD, 1983).

A u s t r i a, Obersteiermark, Vordernberg (type locality), leg. F. Löw, adults and nymphs; number of specimens, altitude and date not precised (LOEW, 1888).

C z e c h o s l o v a k i a, Slovakia, Tatra Park, M. Bujaci, leg. P. Lauterer and A. Hoffer; number of specimens, altitude and date not precised (LAUTERER, 1974).

S o u t h P o l a n d, Pienin, M. Pieniny (M. Trzy Korony), leg. Szelegiewiez, 14.IX.1964, 3 nymphs of V instar (KLIMASZEWSKI, 1965).

I t a l y, Trentino, Province Trento, Dolomiti di Fassa, Commune Vigo di Fassa, Rifugio Paolina, m 2250, leg. Conci and Rapisarda 2.IX.1985, 3 males, 3 females and 3 nymphs of IV instar, on *Saxifraga aizoides*; idem, Rifugio Roda di Vael, m 2300, leg. Conci and Rapisarda 2.IX.85, 1 female on *Larix decidua*; idem, Ciampedie, m 1980, 3.X.86, 1 male and 1 female on *Picea excelsa*; idem, Commune Pozza di Fassa, Ciampedie, Pra Martini, m 2100, leg. Conci and Tamanini 20.IX.85, 1 male on *Picea excelsa*.

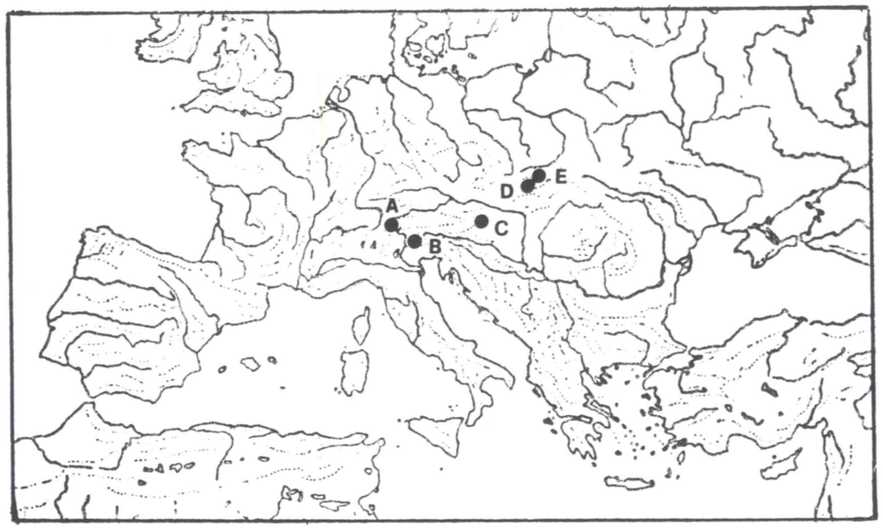


Fig. 31: *Trioza saxifragae*, distribution. - A) Switzerland, Graubünden; B) Italy, Trentino, Dolomiti di Fassa; C) Austria, Steiermark (type locality); D) Czechoslovakia, Slovakia, Tatra Park; E) S Poland, Pieniny.

The cited Italian material is fixed as Plesiotypes.

On the whole, *T. saxifragae* was collected by us only in one Region of NE Italy, in 4 very near localities, with 4 findings, between 1980 and 2300 m, in September and October, only in 5 males and 5 females adult and 3 nymphs, on *Saxifraga aizoides, Picea excelsa* and *Larix decidua*.

Our findings enlarge the South and probably also the vertical distribution of the species. Now, *T. saxifragae* is known in an area of about 900 x 300 km, on the Alps and the Carpathians.

AFFINITIES

Trioza saxifragae has a sufficiently isolated position in the genus. KLIMASZEWSKI, 1967b does not ascribe it to any group; in 1968 and 1975 ascribes it to «*dispar* group», with species that live on *Compositae*, and with *T. schranki*.

Forewing apically rounded and structure of the terminalia justify the affinities of *T. saxifragae* with the «*dispar* group», but the parameres have a enough peculiar structure; also the host plants are peculiar. Nymphal characters are of scarce help; it is necessary to examine further the structure of the arolium.

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