

New data on *Longitarsus rubellus* species group with description of a new species from Western Balkans (Coleoptera: Chrysomelidae: Alticini)

Laura Farina

Abstract - A new *Longitarsus* species is described from Western Balkans: *Longitarsus carolileonardii* (Bosnia and Herzegovina: Mojmilo) following the study of five specimens housed at the Hungarian Natural History Museum, Budapest. The new species belongs to the *Longitarsus rubellus* species group including also *L. rubellus* (Foudras 1860), *L. gruevi* Leonardi & Mohr 1974, *L. refugiensis* Leonardi & Mohr 1974 and *L. ibericus* Leonardi & Mohr 1974. Altogether, these species have similar *habitus*, but can be distinguished from each other mainly by the male sexual characters. A comparative table summarizes the diagnostic characters for all the species in the group. New distributional, biological and morphological data are also given.

Key words: Alticini, biology, European fauna, Galerucinae, *Longitarsus*, new species, taxonomy.

Riassunto - Nuovi dati su *Longitarsus* del gruppo *rubellus* con descrizione di una nuova specie dei Balcani occidentali (Coleoptera: Chrysomelidae: Alticini).

Viene descritta una nuova specie dei Balcani occidentali: *Longitarsus carolileonardii* (Bosnia e Erzegovina: Mojmilo) in seguito allo studio di cinque esemplari conservati presso il Museo di Storia Naturale di Budapest. La specie appartiene al gruppo di *Longitarsus rubellus*. Oltre alla nuova specie, appartengono a questo gruppo *L. rubellus* (Foudras 1860), *L. gruevi* Leonardi & Mohr 1974, *L. refugiensis* Leonardi & Mohr 1974 e *L. ibericus* Leonardi & Mohr 1974. Esse sono molto simili per *habitus* e si distinguono principalmente per le caratteristiche sessuali del maschio. Viene proposta una tabella nella quale sono comparati i caratteri tassonomici discriminanti delle specie del gruppo del *L. rubellus*. Vengono inoltre forniti nuovi dati geonemici, biologici e morfologici.

Parole chiave: Alticini, biologia, fauna europea, Galerucinae, *Longitarsus*, nuova specie, tassonomia.

INTRODUCTION

The *Longitarsus rubellus* species group, including species occurring in European mountain areas, has been studied and discussed in depth by Leonardi & Mohr (1974).

In their paper, these authors described three new vicariant species of *L. rubellus* (Foudras 1860) (distributed in the eastern Alps, from north eastern Italy to Croatia): *L. refugiensis* Leonardi & Mohr 1974 (distributed in Piedmontese and Lombard Alps and Pre-Alps), *L. gruevi* Leonardi & Mohr 1974 (distributed in the Lepontine, Cottian and Maritime Alps and Ligurian Apennines), and *L. ibericus* Leonardi & Mohr 1974 (distributed in the mountains of north western Spain).

Five specimens (two males and three females) from the western Balkans, housed at the Hungarian Natural History Museum, represent a new species of the *L. rubellus* group and are described in this paper. New diagnostic characters for all of the five species in the group, as well as new biological information, are provided. New collecting localities add to the distribution ranges of these species (Fig. 1).

MATERIALS AND METHODS

All observations were carried out with Kiowa and Tiesselab binocular stereo-microscopes. Dissection methods followed those described in Farina (2021: 11). The aedeagi were fixed with Arabic gum, the spermathecae were placed in DMHF (Dimethyl-hydantoin formaldehyde) for a better protection. Both aedeagi and spermathecae were set on the same card of the specimen or on another label underneath. Measurements were made using a Kiowa stereo-microscope with an eyepiece micrometer. Length of elytra and pronotum were measured keeping the specimens tilted in order to have the base and the apex of the elytra (or the fore and the rear edge of pronotum) on the same plane (Farina & Leonardi, 2018: 186). The drawings were made by transferring the image viewed through an eyepiece equipped with a 20×20 reticle onto a sheet of graph paper. All photos were taken using a Nikon D810 with Zeiss Luminar lenses.

Collection localities were recorded as written on the specimen labels. Administrative regions have been arranged from west to east and from north to south; within each region, localities are grouped by depository and these are listed in alphabetical order.

For museum and collection acronyms, those proposed by Sabaj Pérez (2010: online reference, version 2.0) were employed.

Via A. Stoppani 17/A, 23880 Casatenovo (Lecco), Italia.
E-mail: laura.farina@chrysomelidae.it

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The specimens included in this study are in the following institutional and private collections:

BMNH: Natural History Museum, London (BMNH-War: A. Warchalowski collection)

HNHM: Hungarian Natural History Museum, Budapest

LFCC: Laura Farina collection, Casatenovo, Lecco, Italy

MHNB: Naturhistorisches Museum, Basel (MHNB-Heik: 1953 F. Heikertinger collection)

MSNG: Museo Civico di Storia Naturale "G. Doria", Genova (MSNG-Bin: G. Binaghi collection; MSNG-Dod: A. Dodero collection; MSNG-Man: C. Mancini collection)

MSNM: Museo di Storia Naturale di Milano (MSNM-Ber: M. Bergeal collection)

MSNT: Museo Civico di Storia Naturale, Trieste (MSNT-Dri: Drioli collection; MSNT-Mül: Müller collection; MSNT-Rav: Ravasini collection)

MSNVR: Museo Civico di Storia Naturale, Verona

NHMW: Naturhistorisches Museum, Wien

RPGC: Roberto Poggi collection, Genova, Italy

SZCM: Stefano Zoia collection, Milano, Italy.

Anatomical terms and abbreviations in the text

dl: dorsal ligula; El: elytral length; Ew: elytral width (taken together); *frons*: 'postfrons' *sensu* Heikertinger (1913: 105; Fig. 5); groove: when referred to the median lobe of aedeagus, it means the longitudinal concavity in the middle of the sternal surface; lf = lateral furrows; Tl: length of hind tibia in stretched position; (...)m: mean

value of....; n: number of specimens in the sample; pb: pre-apical bending; Pl: *pronotum* length; Pw: *pronotum* width; Ptl: male first protarsomere length; Ptw: male first protarsomere width; Sl: spermatheca length; vertex: *sensu* (Doguet 1994: 15; Fig. 5a); (!): specimens dissected for genitalia examination; /: line break within the label, the line break is not applied in the species determination labels; //: next label on the same pin.

RESULTS

Longitarsus carolileonardii n. sp. (Fig. 2)

Diagnosis

Longitarsus carolileonardii belongs to the *L. rubellus* group of species: all the species in the group (*L. carolileonardii*, *L. rubellus*, *L. gruevi*, *L. refugiensis* and *L. ibericus*) have similar habitus (see below under Taxonomic remarks) but can be easily recognized by the aedeagus structure and, for the new species, also the spermatheca shape (Tab. 1; Figs. 3-11). The type locality is Mojmiro (a park on the outskirts of the city of Sarajevo, Bosnia and Herzegovina).

Derivatio nominis - The species is named after Carlo Leonardi, a dear friend and outstanding mentor, who also provided most of the specimens on which this work is based.

Holotypus (♂): **Bosnia and Herzegovina**: Bosnia, Mojmiro / 10.VI.1929 / leg. Dr. J. Fodor // coll. Dr. R. Streda *Holotypus*, *Longitarsus carolileonardii*, det. L. Farina (HNHM).

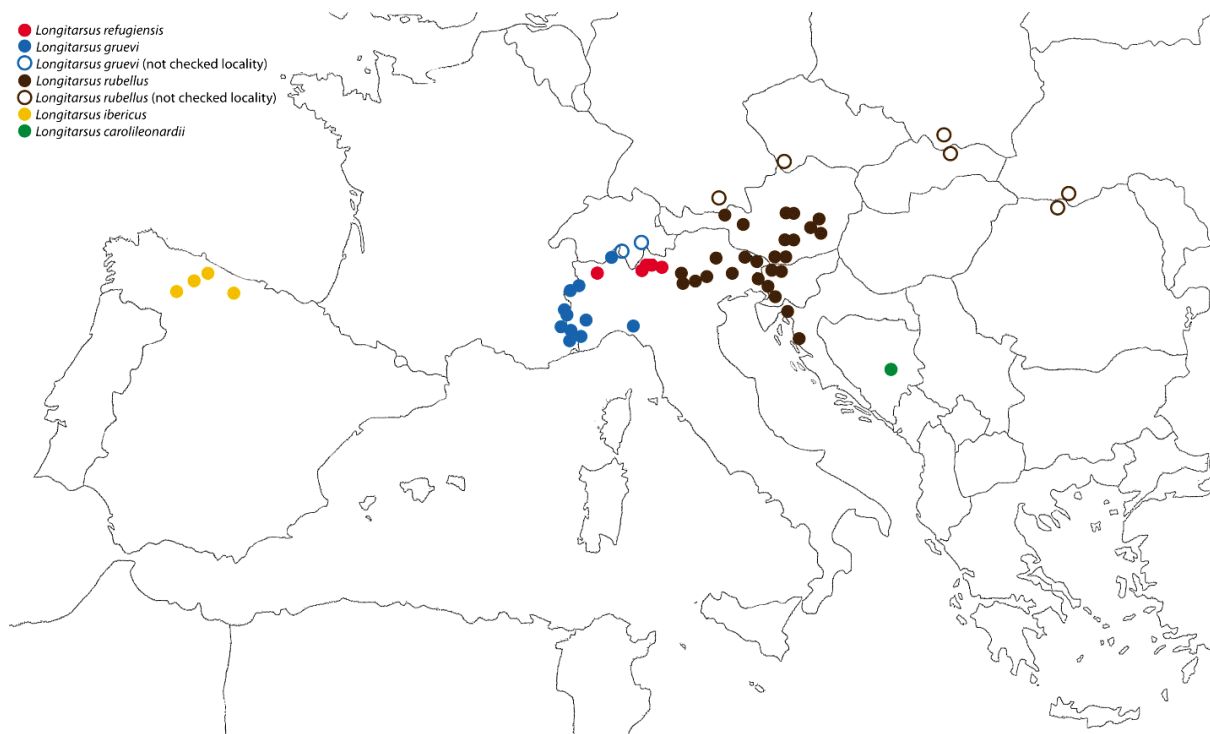


Fig. 1 - European distribution of the *L. rubellus* group of species. Some dots include more adjacent localities. The locality not checked by the author are reported in Döberl (1995: 55, 88) and in Gruev & Döberl (1997: 211; 2005: 103). / Distribuzione europea delle specie del gruppo *L. rubellus*. Alcuni punti includono più località adiacenti. Le località non controllate dall'autrice sono riportate in Döberl (1995: 55, 88) e in Gruev & Döberl (1997: 211; 2005: 103). Blank map from / cartina muta da: https://d-maps.com/carte.php?num_car=2255&lang=it



Fig. 2 - *Longitarsus carolileonardii*. Mojmiło: holotype. / *Longitarsus carolileonardii*. Mojmiło: olotipo. (Photo: / Foto: Stefano Zoia).

Paratypes (1♂ 3♀♀): **Bosnia and Herzegovina:** Bosnia, Mojmiło / 10.VI.1929 / leg. Dr. J. Fodor // *Paratypus*, *Longitarsus carolileonardii*, det. L. Farina (HNHM).

Description

The species description is based on 2 males and 3 females, supposedly belonging to the same population. For this reason, no information is available on characters' variability between different populations.

Body length: ♂♂: 1,96-2 mm; ♀♀: 2,03-2,14 mm.

Shape oval, quite wide, convex (Fig. 2). Upper and under side russet brown.

Antennae russet yellow, long about 3/4s of the body. Antennomere ratio: 16:10:10:12:14:12:13:11:12:11:15.

Legs russet yellow. Hind femora darker.

Frons and vertex entirely microgranulated, a few punctures near eyes. Antennal calli slightly prominent. Frontal furrows absent. Frontal ridge prominent. Ocular furrows complete and rather deep.

Pronotum transverse [(Pw/Pl)m= 1,53], convex, wider in basal 1/3; sides rounded, lateral calli (anterolateral corners) showing obtuse dentiform profile; surface clearly microgranulated with rather shallow punctation. Pronotum basal edge slightly darker than body. The five specimens studied are rather worn and no *setae* are detectable on both anterior and posterior angles of pronotum. However, it is possible that, as in all the other species of the group, four *setae* (one per corner) could be present in fresh specimens, an observation supported by the presence of a small pore where the *setae* might have been inserted.

Elytrae oval, wide (wider at about basal 1/3) [(El/Ew)m = 1,38], rounded on sides, separately rounded apically; surface rather irregular (in places mildly microgranulated or otherwise rough). Punctuation irregular, stronger in the basal half, distance between points on average wider than their diameter. Humeral calli absent. Basal edge and thin sutural stripe slightly darker.

Male last sternite with very slight longitudinal groove.

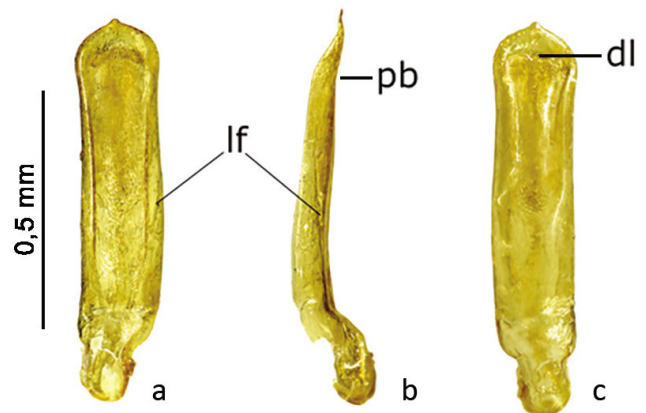
Male first protarsomere fairly long and rather widened in male [(Ptl/Ptw)m = 1,957].

Median lobe of aedeagus, in lateral view (Fig. 3b) rather straight: apically bent ventrally and sinuate, with a ventrally weak pre-apical bending, as in *L. refugiensis* (Fig. 7b; Leonardi & Mohr, 1974: 195, Figs. 2,4,6), apical tip facing ventrally. In ventral view (Fig. 3a) fairly straight (only distal 1/4 weakly tapered) and slightly broadened at apex with apical tip short and prominent; median groove moderately deep, widened, covered by slight longitudinal wrinkles and at bottom with faint oblique corrugations; lateral edge with clear furrow; dorsal ligula (Fig. 3c) apically broadened and then narrower.

Basal part of spermatheca short and sub-cylindrical (Fig. 4); ductus spermathecae forming 2-3 loops; ductus insertion in basal part placed backwards (as seen in Fig. 4); distal part of spermatheca apically rounded.

Morphological data. - ♂ (n=2): El = 1,44-1,50 mm; El(m): 1,47 mm; Ew = 1,05 mm; Ew(m): 1,05 mm; Pl = 0,47-0,49 mm; Pl(m): 0,48 mm; Pw = 0,72-0,74 mm; Pw(m): 0,73 mm; Tl = 0,63-0,65 mm; Tl(m): 0,64 mm; Ptl = 0,158-0,163 mm; Ptl(m) = 0,161 mm; Ptw = 0,082 mm; Ptw(m) = 0,082 mm; El/Ew = 1,37-1,43; El/Ew(m) = 1,40; El/Pl = 3,06; El/Pl(m) = 3,06; Pw/Pl = 1,47-1,57; Pw/Pl(m) = 1,52; Tl/El = 0,43-0,44; Tl/El(m) = 0,44; Ptl/Ptw = 1,927-1,988; Ptl/Ptw(m) = 1,957. Only the values of Trl and Trw are rounding to the nearest cent.

♀ (n=3): El = 1,47-1,61 mm; El(m): 1,55 mm; Ew = 1,07-1,17 mm; Ew(m): 1,13 mm; Pl = 0,47-0,51 mm; Pl(m): 0,50 mm; Pw = 0,73-0,79 mm; Pw(m): 0,76 mm; Tl = 0,63-0,68 mm; Tl(m): 0,65 mm; El/Ew = 1,33-1,41; El/Ew(m) = 1,37; El/Pl = 3,06-3,16; El/Pl(m) = 3,12; Pw/Pl = 1,51-1,55; Pw/Pl(m) = 1,54; Tl/El = 0,42-0,43; Tl/El(m) = 0,42.



Figs. 3 - *Longitarsus carolileonardii*. Median lobe of aedeagus: a) ventral view; b) lateral view; c) dorsal view. dl: dorsal ligula; lf: lateral furrow; pb: pre-apical bending. / Lobo mediano dell'edeago: a) visione ventrale; b) visione laterale; c) visione dorsale. dl: ligula dorsale; lf: solco laterale; pb: flessione preapicale. (Photo: / Foto: Stefano Zoia).

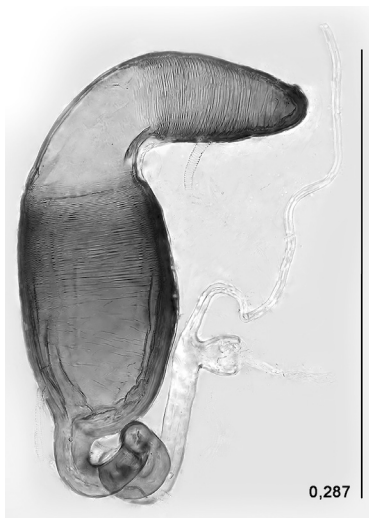


Fig. 4 - *Longitarsus carolileonardii*. Spermatheca. The number written next to the spermatheca is the relative length in mm (Sl). / Spermateca. Il numero scritto accanto alla spermateca si riferisce alla lunghezza relativa in mm (Sl). (Photo: / Foto: Stefano Zoia).

Taxonomic remarks

A morphological analysis which included all the five species of the *rubellus* group, confirms the specific characters already known (Leonardi & Mohr 1974: 191-199) and some new ones (Tab. 1).

Based on external characters alone, the five species are homogeneous and cannot always be recognized with certainty. All species have very similar *habitus*: shape oval, rather wide and convex, upper and under side russet brown. *L. refugiensis* can often be identified by the punctate frons (although a variable character). *L. gruevi* and *L. ibericus* show a deep pit in the ♂ last abdominal sternite. Furthermore, the species generally presents a different shape of the male first protarsomere, as detailed in Tab. 1. The collecting localities also can be a useful clue for determination. However, the species are perfectly identifiable on male sexual characters (Tab. 1).

REMARKS ON THE OTHER SPECIES OF THE GROUP

Longitarsus rubellus (Foudras 1860)

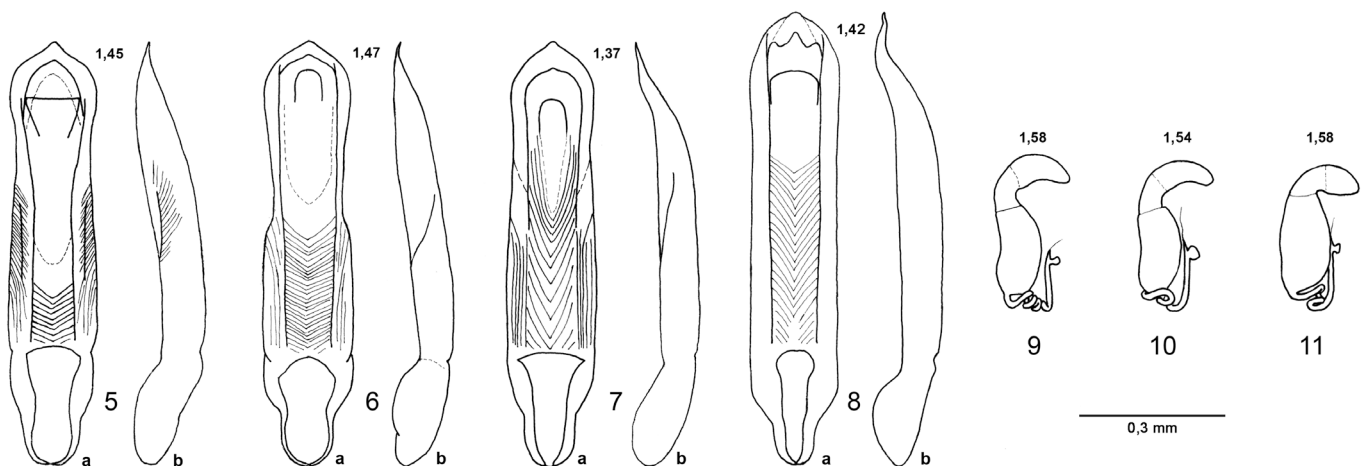
Teinodactyla rubella Foudras 1860: 238, 268. Loc. Typ.: Austria: Kärnten.

Distribution

Austria, Bosnia-Herzegovina, Croatia, Czechia, Germany (Bavaria), NE of Italy (Veneto, Trentino Alto Adige, Friuli Venezia Giulia), Poland, Rumania, Slovakia (Tatra Mts.), Slovenia (North), Ukraine (Carpathians), Carpathian Basin. (Gruev & Döberl, 1997: 211; 2005: 103).

Material studied

Italy: Veneto: **1 ex.** (1♂!) Cansiglio / Candaglia // VI.1956 / L. Magnano // *Longitarsus rubellus* (Foudras) det. A. Warchalowski (BMNH-War); **2 exx.** VR M.te Baldo / 21.V.1975 / leg. Sette // sent. Tratto Spino / Cima Pozzette / mt. 1800 (MSNM); **1 ex.** VR Lessini / 30.V.1976 / leg. Sette // Podestaria / mt. 1500 (MSNM); **1 ex.** VR M.te Baldo / 6.VI.1976 / leg. Sette // Novezza / mt. 1450 (MSNM); **1 ex.** VR M.te Baldo / 14.VI.1976 / leg. Osella // telegrafo / mt. 2000 (MSNM); **1 ex.** VR Lessini / 29.VI.1976 / leg. Sette // M.te Carega / mt. 1900 (MSNM); **1 ex.** Cansiglio (BL) / Pian Scalone / 23.VI.1980 / Bucciarelli (MSNM); **1 ex.** (1♂!) Veneto (VI) / Cima Grappa / mt. 1600 7.IV.1981 / leg. M. Pavesi (MSNM); **1 ex.** (1♀!) Asiago / 6.X.1982 (MSNM); **6 exx.** (3♂♂!) I Veneto; M.ti Lessini / NO San Giorgio 1650 / 1800 m, 1.VII.1995 / V. Assing & J. Bellin (MSNM-Ber) (Fig. 5); **8 exx.** I Veneto; 2000 m / Monte Baldo; / Monte Altissimo / 4.X.1996 V. Assing // Sammlung / Dieter Siede // *Longitarsus rubellus* Foudras M. Bergel det. 2001 (MSNM-Ber); **2 exx.** Cansiglio / VII.1921 // *rubellus* (MSNT-Rav); **2 exx.** Altissimo / Baldo VII.1923 / Ravasini // *Longitarsus rubellus* (MSNT-Rav); **2 exx.** (1♂!) Regione Veronese / Torricelle / V.1936 // *Longitarsus rubellus* det. H. Springer (MSNVR); **3 exx.** (1♂!) Verona / Tracchi / 26.VI.1939 / G.B. Cartolari (MSNVR);



Figs. 5-11 – 5-8) Aedeagus: median lobe: a) ventral view; b) lateral view. / Edeago: lobo mediano: a) vista ventrale; b) vista laterale. 5) *L. rubellus*. 6) *L. gruevi*. 7) *L. refugiensis*. 8) *L. ibericus*. Localities: / Località: 5) Monti Lessini; 6) Piana di Vigizzo; 7) Valcanale; 8) Cancas (Paratype). 9-11) Spermatheca. / Spermateca. 9) *L. rubellus*. 10) *L. gruevi*. 11) *L. refugiensis*. Localities / località: 9) Tarvisio; 10) Briga Alta; 11) Valleve. The relative elytral lengths are shown to the top of each drawing. / Le relative lunghezze elitrali sono indicate nella parte superiore di ogni disegno.

Tab. 1 - Taxonomically discriminant characters of *L. carolileonardii*, *L. rubellus*, *L. gruevi*, *L. refugiensis*, *L. ibericus*. / Caratteri tassonomici discriminanti di *L. carolileonardii*, *L. rubellus*, *L. gruevi*, *L. refugiensis*, *L. ibericus*.

Character	<i>Longitarsus carolileonardii</i> n.sp.	<i>Longitarsus rubellus</i> (Foudras 1860)	<i>Longitarsus gruevi</i> Leonardi & Mohr 1974	<i>Longitarsus refugiensis</i> Leonardi & Mohr 1974	<i>Longitarsus ibericus</i> Leonardi & Mohr 1974
<i>Postfrons</i> (<i>sensu</i> Heikertinger, 1913: 105, Fig. 5); <i>frons</i> (<i>sensu</i> Doguet, 1994: 15, Fig. 5a)	Impunctate.	Impunctate. Only in a very few specimens traces of almost obsolete punctation.	Impunctate or (in a very few specimens) traces of almost obsolete punctation.	Very often clearly punctate (about 70% of the specimens studied).	Impunctate.
Male first protarsomere	Rather long and widened [(n=2) Ptl= 0,158-0,163 mm; (Ptl)m= 0,161 mm; Ptw=0,082 mm; (Ptw)m=0,082 mm; Ptl/Ptw= 1,927-1,988; (Ptl/Ptw)m=1,957] (Fig. 2).	Rather long and clearly widened [(n=5) Ptl= 0,158-0,165 mm; (Ptl)m= 0,163 mm; Ptw=0,082-0,105 mm; (Ptw)m=0,097 mm; Ptl/Ptw= 1,562-2; (Ptl/Ptw)m=1,695] (Leonardi & Mohr 1974: 197, Fig. 28).	Long and slightly widened [(n=5) Ptl= 0,176-0,195 mm; (Ptl)m= 0,186 mm; Ptw=0,064-0,076 mm; (Ptw)m=0,071 mm; Ptl/Ptw= 2,316-2,922; (Ptl/Ptw)m=2,647] (Leonardi & Mohr 1974: 197, Fig. 29).	Rather long and widened (length and width fairly variable) [(n=5) Ptl= 0,150-0,195 mm; (Ptl)m= 0,165 mm; Ptw=0,060-0,100 mm; (Ptw)m=0,076 mm; Ptl/Ptw= 1,530-2,750; (Ptl/Ptw)m=2,235] (Leonardi & Mohr 1974: 197, Figs. 25-27).	Short and slightly widened [(n=3) Ptl= 0,117-0,120 mm; (Ptl)m= 0,118 mm; Ptw=0,053-0,059 mm; (Ptw)m=0,057 mm; Ptl/Ptw= 1,983-2,264; (Ptl/Ptw)m=2,077] (Leonardi & Mohr, 1974: 197, Fig. 30).
Male last abdominal sternite	With a very slight longitudinal groove.	With a clear longitudinal groove.	With a clear longitudinal groove and apically with deep, oval pit.	With a clear longitudinal groove.	With a very slight longitudinal groove but apically with deep, oval pit.
Median lobe of aedeagus	In lateral view rather straight, with a weak pre-apical bending. Bent ventrally and sinuate at apex, apical tip slightly facing ventrally; in ventral view quite straight (only distal 1/4 weakly tapered) and slightly broadened at apex with apical tip short and prominent. Median groove moderately deep, widened, covered by slight longitudinal wrinkles and at bottom with imperceptible oblique corrugations. Lateral edge with clear furrow. Dorsal <i>ligula</i> apically broadened and then narrower. (Fig. 3)	In lateral view almost straight, widened, sometimes distal 1/3 weakly curved, covered in half distal length by transverse wrinkles. Slightly bent ventrally at apex, apical tip facing dorsally; in ventral view distal 1/4 tapered and rather expanded at apex with apical tip rather short and prominent. Ventral groove moderately deep, widened, with transverse wrinkles at bottom. Lateral edge covered by longitudinal or transverse wrinkles for most of length. Dorsal <i>ligula</i> apically broadened and then narrower. (Fig. 5; Leonardi & Mohr, 1974: 197, Figs. 13-16)	In lateral view straight, apical tip facing dorsally; in ventral view straight in basal part, about distal 1/3 tapered and expanded at apex with apical tip rather short and prominent. Median groove moderately deep, with oblique wrinkles at bottom. Lateral edge with clear furrow and slight longitudinal wrinkles in basal half. Dorsal <i>ligula</i> narrow. (Fig. 6; Leonardi & Mohr, 1974: 195, Figs. 7-12)	In lateral view straight, with pre-apical bending (in some specimens weak), bent ventrally at apex, apical tip generally facing dorsally; in ventral view distal 1/4 tapered and expanded at apex with apical tip rather short and prominent. Median groove shallow, covered for most of its length by transverse wrinkles, that continue in lateral edge (sometimes as longitudinal wrinkles). Dorsal <i>ligula</i> narrow. (Fig. 7; Leonardi & Mohr, 1974: 195, Figs. 1-6)	In lateral view rather straight with apex bent ventrally, sinuate, apical tip facing ventrally; in ventral view straight (in some specimens slightly broadened at apex), apical tip rather short and lightly prominent. Ventral groove moderately deep, widened, covered for most of its length by slight transverse wrinkles. Dorsal <i>ligula</i> widened. (Fig. 8; Leonardi & Mohr, 1974: 197, Figs. 17-18)
Spermatheca	Basal part short and sub-cylindrical. Distal part rounded at apex. (Fig. 4)	Basal part more or less kidney-shaped or sub-cylindrical. Distal part sometimes folded apically. (Fig. 9; Leonardi, 1972: 21, Fig. 42)	Basal part more or less kidney-shaped, in some specimens sub-cylindrical. Distal part sometimes folded apically. (Fig. 10; Leonardi & Mohr, 1974: 197, Fig. 23)	Basal part more or less kidney-shaped or sub-cylindrical. Distal part sometimes folded apically. (Fig. 11; Leonardi & Mohr, 1974: 197, Fig. 24)	Basal part more or less kidney-shaped or sub-cylindrical. Distal part narrow and folded apically. (Leonardi & Mohr, 1974: 197, Fig. 22)

5 exx. (1♂!) Cansiglio / Candaglia // VI.1956 / L. Magnano (MSNVR); **2 exx.** Rifugio Scalorbi / VI.1966 // M. Lessini / (Verona) (MSNVR); **1 ex.** Bocca di Navene / 3.VII.1966 // M. Baldo (MSNVR); **2 exx.** (1♂! 1♀!) Veneto (Asiago) / M.te Zebio / 29.VI.1951 Focarile // ex. coll. / M. Barajon [Milano 1903-Varzi (PV) 1985] (SZCM); **1 ex.** (1♂!) Veneto Verona / Monti Lessini m. 1500 / dintorni San Giorgio / 31.V.1980 Rosa (SZCM); **1 ex.** (1♂!) Veneto (Verona) / M. Baldo: C. Telegrafo / m. 2000 19.IX.1993 / G. Gardini leg. (SZCM); **1 ex.** (1♂!) Veneto (Verona) / Monte Baldo, m. 2000 ca. / Sud Coàl Santo, 16.V.1998 / S. Zoia & F. Polese leg. (SZCM);

Trentino Alto Adige: **3 exx.** (1♂!) Vallarsa (TN) / Pas. di Campogrosso / 10.X.2012 L. Diotti // *Longitarsus rubellus* det. C. Leonardi (MSNM); **1 ex.** (1♂!) Monte Pari / Trento Strupi // *Longitarsus rubellus* (det. Springer) (MSNT-Mül); **1 ex.** M.te Pari / Pinker 16.VI.1903 // *Longitarsus rubellus* Foud. // Heikertinger det. (MSNVR); **1 ex.** M.te Pari / Pinker 25.VI.1903 (MSNVR);

Friuli Venezia Giulia: **2 exx.** (1♂! 1♀!) Friuli Venezia Giulia (UD) / Alpi Carniche, Sauris / 2.VIII.2022 L. Farina leg. (LFCC); **1 ex.** Friuli Venezia Giulia (UD) / Alpi Carniche, dint. Malga Pramsoio / 4.VIII.2022 L. Farina leg. // su *Senecio ovatus* (LFCC); **5 exx.** (2♂♂! 1♀!) Friuli Venezia Giulia (UD) / Alpi Giulie, Sella Nevea / strada per Altopiano del Montasio / 46°24'14" N 13°27'01" E 9.VIII.2022 / L. Farina leg. // su *Senecio ovatus* (LFCC); **1 ex.** Alpi Giulie: Jôf / Fuart 1400-1900 m / VII.1985 Focarile (MSNM); **1 ex.** Friuli (UD) / M. Matajur, vetta / 46°12.6N, 13°31.6E / 1560 m, 2.VII.2014 Liberti (MSNM); **2 exx.** Matajur / Vetta / Müller IX.1945 // *Longitarsus rubellus* det. Müller (MSNT-Mül); **3 exx.** Matajur / Vetta / Müller IX.1945 // *Longitarsus rubellus* (det. Springer) (MSNT-Mül); **29 exx.** (14♂♂! 2♀♀!) (Tarvisio-Udine) / pend. N M.te Mangart / m. 920-1400 m / 26.V.1986 S. Zoia leg. (SZCM) (Fig. 9); **1 ex.** Pordenone / 3 km S Piancavallo / m. 1400 28-29.VI.1994 / S. Zoia leg. (SZCM);

Austria: Niederösterreich: **1 ex.** Nied. Österr. / Alpen / Reitter // coll. Killias // Sammlung / Dr. J.B. Jörgen / Masans-Chur / 1957 (MHNb); **1 ex.** Wechsel / Austr. Inf. // *Longitarsus rubellus* det. C. Leonardi (MSNG-Dod);



Fig. 12 - Friuli Venezia Giulia (UD), Sella Nevea, August 2022: *L. rubellus* habitat. / Friuli Venezia Giulia (UD), Sella Nevea, agosto 2022: habitat di *L. rubellus*. (Photo: / Foto: Laura Farina).

Steiermark: **1 ex.** Haller Mauern / Styr. bor., lg. H. Franz (MHNb-Heik); **5 exx.** (2♂♂!) Obir, Kara- / wanken Breit (MHNb-Heik); **22 exx.** (1♂!) Au. Steiermk / Hochschwabgebiet / M. Bergeal leg. // Oisching Alm / Ignaz Hütte / 1500 m 3.VII.1993 // *Longitarsus rubellus* Foud. M. Bergeal det. 1994 (MSNM-Ber); **1 ex.** (1♂!) Arzberg, st., 600 / Bezirk Weiz / Raabkl, Gösner // 22.V.1995 / leg. E. Holzer (MSNM-Ber); **1 ex.** *L. brunneus* // Dr. Penecke / Umgeb. Graz st. // *Longitarsus brunneus* (MSNT-Mül);

Kärnten: **1 ex.** (1♂!) Carinthia / Obir / F. Smolik // *Longitarsus rubellus* Fd. det. Heikertinger 1923 (BMNH); **1 ex.** Koralpe, Cr. / Kelemen // Carinthia // *Longitarsus rubellus* Fd. det. Heikertinger 1923 (BMNH); **1 ex.** Austria Kärnten / Umg. Ferlach / 30.V.1985 / leg. M. Döberl // Schaida- / sattel +1000 m // *Longitarsus rubellus* det. Döberl 1985 (BMNH); **1 ex.** Obir 7.VII.1918 / Carinthia // *Longitarsus rubellus* (Foudras) det. A. Warchalowski (BMNH-War); **1 ex.** (1♂!) Jovanberg, Cr. / 20-27.VI.1950 / leg. F. Schubert // *Longitarsus rubellus* (Foudras) det. A. Warchalowski (BMNH-War); **1 ex.** (1♀!) Jovanberg Cr. / 20-27.VI.1950 / leg. F. Schubert (BMNH-War); **3 exx.** Plöckenpass / Carth. Breit (MHNb-Heik); **1 ex.** Zeyritzkaupl, Eisen / erzer Alp. leg. Franz (MHNb-Heik); **1 ex.** (1♂!) Steiner Alpen / Grintouc // ex. Orig. Samlg. / J. Breit Wien (MHNb-Heik); **1 ex.** (1♂!) Kärnten Koralpe / 14-15.VII.1973 / leg. H. Meybohm (MSNM-Ber); **1 ex.** (1♂!) Austria Kärnten / Umg. Ferlach / 10.VIII.1983 / leg. M. Döberl // Bärenthal / 1500 m // *Longitarsus rubellus* det. Döberl 1983 (MSNM-Ber); **1 ex.** Austria Kärnten / Umg. Ferlach / 10.VIII.1983 / leg. M. Döberl // Bärenthal / 1500 m // *Longitarsus rubellus* det. Döberl 1984 (MSNM-Ber); **3 exx.** Austria Kärnten / Karawank., Hoch- / Obir 30.V.1985 / leg. M. Döberl // *Longitarsus rubellus* det. Döberl 1985 (MSNM-Ber); **1 ex.** (1♂!) Austria Kärnten / Umg. Ferlach / 30.V.1985 / leg. M. Döberl // Schaida- / sattel, +1000 m // *Longitarsus rubellus* det. Döberl 1985 (MSNM-Ber); **1 ex.** Austria Kärnten / Karawank., Hoch- / obir 1.VI.1985 / leg. M. Döberl // *Longitarsus rubellus* det. Döberl 1985 (MSNM-Ber); **1 ex.** (1♂!) Austria Kärnten / Karaw., Eisenkappel / Hochobir / 17.VII.1989 Siede (MSNM-Ber); **5 exx.** Trichalpe / Ravasini (MSNT-Rav); **1 ex.** Singerberg Kntn / 26.VI.1956 Nand? // *Longitarsus rubellus* Foud. Hölzel det. (MSNVR);

Slovenia: **1 ex.** (1♂!) Cerna Prst / Carn. Winkler // *Longitarsus rubellus* Fd. det. Heikertinger 1923 (BMNH); **1 ex.** Carniolia / Babno Polje / 20.V.1921 // *Longitarsus rubellus* (Foudras) det. A. Warchalowski (BMNH-War); **1 ex.** Gorica // Eppelsh. (MHNb-Heik); **1 ex.** Goerz-Grad. / Ternovan. Wald / VII.1908 Krekich // *rubellus* det. Heikertinger (MHNb-Heik); **1 ex.** (1♂!) Slowenien, Nova / Gorica, Trnovski / Gozd, umg Lokve // 27.VI.1998 / Erwin Holzer (MSNM-Ber); **1 ex.** Slovenia 1750 m / Triglavski Narodni / Park / 26.VI.1999 V. Assing // V. Mangart / 1700 m / N-slope // Sammlung / Dieter Siede // *Longitarsus rubellus* Foudras M. Bergeal 2001 (MSNM-Ber); **2 exx.** (1♂! 1♀!) Slovenia, Jul. Alpen / Trenta N. Pogačnikov d. / E13°48' N46°36' 1800 m / Fritzlar leg. 11.VI.2003 // *Longitarsus rubellus* (Foudras) Fritzlar det. 2003 (MSNM-Ber); **1 ex.** (1♀!) Monte Maggiore / Jstr., Winkler // *rubellus* (MHNb-Heik); **1 ex.** (1♂!) Werdancha / Karawanken // ex. Orig. Samlg. / J. Breit Wien (MHNb);

1 ex. Predmeja / Tarn. VI.1936 (MSNT-Dri); **1 ex.** Selva di Piro / Joveliski? / 16.V.1937 (MSNT-Dri); **1 ex.** Tarnova / 23.VI.1941 (MSNT-Dri); **4 exx.** (1♂!) Wochein / Dr. Peneck (MSNT-Mül); **1 ex.** Tarnova / 9.VII.1907 // *L. rubellus* det. Springer (MSNT-Mül); **1 ex.** M. Nevoso / VII.1920 (MSNT-Mül); **1 ex.** M. Re (Nanos) / Müller V.1923 // *Longitarsus brunneus* (MSNT-Mül); **2 exx.** Selva di Tarnova / 5.IX.1919 // *Longitarsus rubellus* (MSNT-Rav); **1 ex.** Monte Nevoso / VII.1920 (MSNT-Rav); **1 ex.** (1♂!) Cerna Prst / Pinker VI.1902 (MSNVR); **1 ex.** Cerna Prst / Pinker VI.1902 // *Longitarsus rubellus* Foud. Heikertinger det. (MSNVR);

Croatia: **1 ex.** (1♀!) Croat. // Kaufmann (MHNH-Heik); **5 exx.** (1♂! 1♀!) Cro. Bernh. / Fuzine 97 // ex. Orig. Samlg. / J. Breit Wien (MHNH-Heik); **2 exx.** (1♀!) *gravidulus* Kuts. / Croatia / Apfelbeck // c Epplsh. / Steind. d. (NHMW); **4 exx.** (1♂!) *gravidula* / Allard vdt. / Dalmat. Kahr // c. Epplsh. / Steind. d. (NHMW); **2 exx.** (1♂!) *gravidula* / Croatia / Kahr // c Epplsh. / Steind. d. (NHMW).

? Poland: **1 ex.** (1♂!) Polonia (Carp. Or.) / mons Tarnica / 1100 m 19.VIII.1958 / leg. A. Warchalowski // prap. micr. n° 786 (BMNH-War) (a dissected ♂, unfortunately missing *aedeagus*).

Dissected specimens: 52 ♂♂; 12 ♀♀.

The author also studied some of the specimens from the localities listed by Leonardi and Mohr (1974: 201-202), housed at MSNM and MSNG.

Notes

Reports from central Italy and from some localities in northern Italy (Biondi, 2005; 2021; Biondi, *in verbis*), should be considered doubtful because of the distance from the known range of the species. The possibility of errors in determination could be significant as evidenced by the specimen of *Longitarsus luridus* (Scopoli 1763) (MSNVR) collected near Rome (Rom, Umg. / Italia // *Longitarsus rubellus*) and studied by the author; the report from “Valle del Chisone, Piemonte (TO), Burlini, 1939” probably refers to *L. gruevi*, though the specimen was not found in the collections studied; the report from “Cunardo, Lombardia (VA)” probably refers to *L. luridus* as reported in Leonardi, 1972 (Fig. 40). Besides, errors may have occurred in the interpretation of the localities reported in bibliography.

In Müller (1949-1953: 538) *L. rubellus* is reported also from Bosnia and Herzegovina. The author studied flea beetles of the Müller collection housed at MSNT, but no specimens of *L. rubellus* from Bosnia and Herzegovina were found, so it may be impossible to double check which species Müller actually referred to in his work.

All the studied specimens were collected from May to October. During the field studies carried out in August 2022, the author observed many specimens on *Senecio ovatus* (G. Gaertn., B. Mey et Scherb.) Willd. (= *S. fuchsii* C.C. Gmel.), in both fir and beech forests (Fig. 12).

Longitarsus gruevi Leonardi & Mohr 1974

Longitarsus gruevi Leonardi & Mohr 1974: 191-195, 197, 199-201. Loc. typ.: Italy: East Liguria (Mt. Penna).

Distribution

France (Maritime and Cottian Alps), Italy [Ligurian Apennines; Cottian Alps], Switzerland (Alps: Tessin, Splügenpass) (Döberl 1995: 55, 88; Gruev & Döberl, 1997: 174; 2005: 86).

Material studied

France: Alpes Maritimes: **1 ex.** (1♂!) St. Dalmas le Selva / (AM) 30.VI.1946 / P. Bonadona (MSNM-Ber); **2 exx.** (1♂!) l'Authion / AM 12.VI.1950 / P. Bonadona // *Longitarsus gruevi* Leonardi & Mohr M. Bergeal det. 2002 (MSNM-Ber); **4 exx.** F-06 l'Authion / 12.VI.1950 / P. Bonadona leg. // *Longitarsus gruevi* Leonardi & Mohr M. Bergeal det. 2002 (MSNM-Ber); **1 ex.** Esteng / AM 19.VII.1950 / P. Bonadona (MSNM-Ber); **4 exx.** (1♂!) Alpes Maritimes / Forêt de / Turini 1500 m. / 8.VI.1972 G. Tempère // *Longitarsus gruevi* Leonardi et Mohr S. Doguet det. 87 (MSNM-Ber);

Savoie: **1 ex.** France (73): Savoie / Col du Petit Mont Cenis / 45°12.9N, 6°53.2E / 2250 m, 19.VII.2013, Liberti (MSNM);

Italy: Piemonte: **1 ex.** Val Pesio / Ganglbauer 1909 // *rubellus* (MHNH-Heik); **5 exx.** (2♀♀!) Val Pesio / VIII.1907 / R. Gestro // *Longitarsus gruevi* Leonardi & Mohr det. L. Farina 2021 (MSNG); **9 exx.** Val Pesio / VIII.1907 / A. Doderò (MSNG-Bin); **10 exx.** Certosa di Pesio / Alpi Maritt. / VII-VIII.1912 / A. Doderò (MSNG-Bin); **14 exx.** (7♂♂! 1♀!) Piemonte / Piana di Vigizzo m. 1800 / VII.1970 / leg. C. Leonardi (MSNM)* (Fig. 6); **1 ex.** (1♂!) Cert. di Pesio / (CN) VII.1977 / Sciaky (MSNM); **1 ex.** Piemonte VII.1979 / M. Viso (vers. Est) / m. 2000-2400 Focarile (MSNM); **1 ex.** (1♂!) Ribordone / (TO) VII.1985 / Sciaky (MSNM); **1 ex.** (1♂!) V. d'Ala Balme / (TO) Colle Arnas / m. 2400 23.VII.2005 / R. Monguzzi leg. // *Longitarsus gruevi* Leonardi & Mohr det. C. Leonardi (MSNM); **15 exx.** (3♂♂! 1♀!) Italie, Piemonte (CN) / Valle Pesio, Piano Gorre / 1044 m. leg. F. Angelini // *Longitarsus gruevi* Leonardi & Mohr M. Bergeal det. 2002 (MSNM-Ber); **1 ex.** Val Maira (Acceglio, CN) / Vallone Traversiera: Grangia / Giacomarda 18.IX.2005 / m 2050 R. Poggi (RPGC); **2 exx.** Alpi Liguri (CN) / M.te Mondolè, S-W / m 1850 20.VIII.2006 / *alnetum* R. Poggi (RPGC); **1 ex.** (1♂!) Alpi Liguri (Upega) / Passo di Flamalgial / (CN) 8.VII.2007 / m 2200 R. Poggi (RPGC); **1 ex.** Alpi Liguri, Colle di / Tenda (CN), m 1900 / vaglio sotto *Alnus* / 24.VI.2008 R. Poggi (RPGC); **1 ex.** Alpi Liguri (CN) / Monte Grosso, m 1900 / (a N del M.te Antoroto) / 19.VII.2009 R. Poggi (RPGC); **1 ex.** Alpi Cozie, Alta Val / Maira (CN), Colle / d'Esischie m 2370 / 2.VIII.2019 R. Poggi (RPGC); **1 ex.** (1♀!) Piemonte V. Vigizzo / Pioda di Crana / 5.VII.1948 A. Focarile // ex. coll. / M. Barajon (Milano 1903-Varzi (PV) 1985) (SZCM); **1 ex.** Piemonte (Cuneo) / dint. Crissolo / 17.V.1981 / R. Sciaky e S. Zoia (SZCM); **3 exx.** (1♀!) Limone Piemonte (Cuneo) / pendio N Colle del Carbone / m. 1200-1900; 6-7.VII.1981 / A. e L. Briganti (SZCM); **7 exx.** (4♂♂!) Alpi Liguri (Cuneo) / alta Val Pesio / m. 1100-1600 / 28.V.1986 S. Zoia leg. (SZCM); **1 ex.** (1♂!) Piemonte (Cuneo) / Sambuco: Valle d. / Madonna m 1760 / 15.VIII.1991 S. Zoia (SZCM); **2 exx.** (1♀!) Piemonte (Briga Alta- / Cuneo) sud Passo delle / Saline 1800 m / 2.VII.2009 C. Giusto leg. (SZCM) (Fig. 10); **1 ex.** (1♂!) Piemonte (Cuneo) Sampeyere / pend. E

Cima di Crosa 2250 m / 18.VII.2009, G. Gardini leg. / (c/o nevaio sub pietre) (SZCM);

Liguria: **1 ex.** Monte Penna / A. Dodero // ex. Orig. Samlg. / J. Breit Wien (MHNb); **7 exx.** I-IM m 1550 / Colla San Bernardo / Margh. Garlenda / 2.VIII.2003 Liberti (MSNM); **2 exx.** Alpi Marittime / M. Mondolè / m. 2000-2300 // VII.1950 / S. Ruffo I. (MSNVR); **1 ex.** Alpi Liguri (IM) / Colle Garezzo / al vaglio 5.VIII.2007 / m 1800 R. Poggi (RPGC); **1 ex.** (1♀!) Confine I-F (Pigna, Imperia) / pend. Monte Toraggio / m. 1650-1850, 24.VI.1998 / S. Zoia e F. Polese leg. (SZCM).

***new locality which extends the range of this species in the S-W of Lepontine Alps.**

Dissected specimens: 23 ♂♂; 8 ♀♀.

The author also studied some specimens from the localities listed by Leonardi & Mohr (1974: 200-201), housed at MSNM and MSNG.

Notes

The specimens studied were collected from May to September. Leonardi (*in verbis*) collected the species on *Senecio ovatus* and carried out successful feeding tests on this plant [5 exx. (4♂♂!) Monte Penna / 23.VII. 1975 / leg. C. Leonardi (MSNM)].

Longitarsus ibericus Leonardi & Mohr 1974

Longitarsus ibericus Leonardi & Mohr 1974: 191-192, 194, 197-198, 201. Loc. typ.: Spain: Asturia (Cancas).

Distribution

Spain (Asturia, León) (Gruev & Döberl, 1997: 176; 2005: 88).

Material studied

Spain: **1 ex.** (1♀!) E (NW) Reinosa / Tres Mares Cornon / 2000-2150 m / 4.VI.1991 Wunderle // coll. / Dieter Siede / Bonn // *Longitarsus ibericus* det. Döberl 1993 (MSNM-Ber)*.

***new locality which extends the range of this species.**

Dissected specimens: 1 ♀.

The author also studied some specimens from the localities listed by Leonardi & Mohr (1974: 201), housed at MSNM.

Longitarsus refugiensis Leonardi & Mohr 1974

Longitarsus refugiensis Leonardi & Mohr 1974: 191-193, 195, 197, 199-200. Loc. typ.: Bratto in Val Seriana (Alps of Lombardy, Italy) (in Gruev & Döberl, 1997: 211 the type locality is erroneously reported as Piedmont).

Distribution

Italy [North: Orobic Alps and Pennine Alps (Piemonte: Oropa)] (Gruev & Döberl, 1997: 211; 2005: 102).

Material studied

Italy: Piemonte: **1 ex.** Alp Finestre / Val Chiobbia / F. Capra VII.1925 // *Longitarsus rubellus* (MSNG-Man); **2 exx** (1♂!) Sant.° Oropa / Biellese (Piem.) / Mucrone VI.1925 / A. Dodero // *Longitarsus rubellus* Foud.

(MSNG-Bin.); **1 ex.** (1♂!) Oropa (BI) lago / Mucrone m. 1900 / 9.VIII.2005 Monguzzi // *Longitarsus refugiensis* Leon. & Mohr / det. C. Leonardi (MSNM); **1 ex.** (1♂!) Montesinaro / Alp. Finestre / 13.VII.1936 // Val Chiobbia / Piem. Biella / F. Capra leg. // *Longitarsus rubellus* (MSNT-Mül);

Lombardia: **1 ex.** Lombardia (BG) / Val Brembana Passo / S. Simone 21.IX.2005 / Legit L. Diotti (LFCC); **2 exx.** (1♂!) Prealpi Orobic (BG) / Roncobello / sentiero Mezzeno-Lago Branchino / 45°57'04"N 09°47'42"E / 1600-1700 m 22.V.2022 / leg. Farina (LFCC); **1 ex.** (1♀!) Prealpi Orobic (BG) / Monte Alben / Piani della Mussa / ca. 1300 m 12.VI.2022 / L. Farina leg. (LFCC); **2 exx.** (1♂! 1♀!) Prealpi Orobic (BG) / Presolana Rifugio Olmo / ca.1800 m 7.VII.2022 / L. Farina leg. (LFCC); **3 exx.** (1♀!) Prealpi Orobic / Val Tartano (SO) / Passo Tartano 2072 m / 46°03'41,43"N 9°43'35,54"E / 24.VII.2022 leg. Farina (LFCC); **1 ex.** (1♂!) Prealpi Orobic / Val Tartano (SO) / Tartano 1300 m / 24.VII.2022 leg. Farina (LFCC); **2 exx.** (1♂! 1♀!) Monte Alben / Alpes Bergamasc. / It., lg. Winkler (MHNb); **2 exx.** (2♀♀!) Piz Arera / c. 1500 m. Juli / coll. Nissl // Bergamasker / Alpen // *Longitarsus rubellus* det. Heikertinger (MHNb-Heik); **3 exx.** (1♀!) Lombardia / Val di Scalve / Schilpario / 17.VII.1932 G. Binaghi (MSNG-Bin); **1 ex.** Lombardia (SO) / Passo San Marco / 46°03.4N 09°38.0E / 1950 m, 30.VI.2011 Liberti (MSNM); **1 ex.** M.te Grigna / piano Resinelli / mt. 1500 CO / 21.VI.1986 V. Monzini (MSNM); **2 exx.** (1♂!) Lombardia LC / B. Biandino 17.VII.2012 / leg. G. Goggi (MSNM); **2 exx.** Monte Alben / Alpes Bergamasc. / It, lg. Winkler (MSNM); **2 exx.** Prealpi Orobic / Presolana (Rif. Albani) m 1700- / 2000 Focarile (MSNM); **3 exx.** P.so San Simone / (BG) M. Cavallo / lg. Monzini S. // *Longitarsus refugiensis* Leon. & Mohr det. C. Leonardi 2009 (MSNM); **1 ex.** (1♂!) Valcanale / M. Arera (BG) / VII.1978 Sciaky (MSNM) (Fig. 7); **5 exx.** (5♂♂!) Lombardia Bergamo / Val di Scalve / passo Campelli m. 1900 / 3.VIII.1979 Rosa (MSNM); **1 ex.** (1♂!) Concarena / (BG) m 2000 / 4.VIII.1979 / R. Monguzzi (MSNM); **1 ex.** (1♂!) Passo San Simone / (BG) m. 1900 / 27.VI.1981 Rosa (MSNM); **13 exx.** (6♂♂!) Lombardia / Valleve / 9.VII.1981 / leg. C. Leonardi (MSNM) (Fig. 11); **9 exx.** (6♂♂!) Lombardia / Passo S. Simone / 9.VII.1981 / leg. C. Leonardi (MSNM); **3 exx.** Lombardia / Colle San Simone / (BG) m. 1700-2000 / 6.VII.2005 I. Angelini // *Longitarsus refugiensis* Leon. & Mohr det. C. Leonardi (MSNM); **2 exx.** Lombardia Oltre il / Colle (BG) 11.V.2006 / N M. Alben 1400 m / *Fagus*, leg. Angelini // *Longitarsus refugiensis* Leon. & Mohr det. C. Leonardi (MSNM); **2 exx.** Valcanale (BG) / Pizzo Arera 7.X.2012 / leg. L. Diotti // *Longitarsus refugiensis* Leon. & Mohr det. C. Leonardi (MSNM); **3 exx.** (2♂♂!) I Lombardei; 2000 m / Alpi Orobic Oltre il / Colle; P.zo Arera / 19-21. VIII.1994 Assing // Sammlung / Dieter Siede // *Longitarsus refugiensis* det. Döberl 1996 (MSNM-Ber); **3 exx.** (1♂!) Alpi Orobic, Foppolo / Passo S. Simone / (BG) 13.VII.2003 / m 2000 R. Poggi // al vaglio sotto / *Rhododendron / hirsutum* (RPGC); **3 exx.** (1♂!) Alpi Orobic, Pizzo della / Presolana, vers N (BG) / dint. Rif. Albani m 1900 / 24.VIII.2003 R. Poggi // al vaglio, sotto / *Rhododendron / hirsutum* (RPGC); **1 ex.** (1♀!) Lomb. (Erve) /

M. Resegone / Focarile 15.V.1949 // ex. coll. / M. Barajon [Milano 1903-Varzi (PV) 1985] (SZCM); **23 exx.** (9♂♂! 1♀!) Lombardia / Val Brembana / Bocch. di San Simone / 8.VI.1996 R. Sciaky leg. (SZCM).

Dissected specimens: 41 ♂♂; 10 ♀♀.

The author also studied some specimens from the localities listed by Leonardi & Mohr (1974: 200), housed at MSNM and MSNG.

Notes

In Biondi, 2005 (data on CD-Rom) the locality “Colle delle Finestre, 1700 m, Piemonte (BI), 1927 (MSNG)” refers most likely to “Alpe Finestre”. In all probability, this is a misinterpretation of the species distribution, given the similarity of the locality names. This is confirmed by two specimens of *L. refugiensis* from “Alp Finestre” collected by F. Capra: a ♀ (with punctuated frons) housed at MSNG-Man (the label in Fig. 13) and a ♂ (dissected) housed at MSNT-Mül.

“Colle delle Finestre” is a locality in province of Torino, in the Cottian Alps (typical range of *L. gruevi*); on the other hand, “Alpe Finestre” located in the Biella province, Pennine Alps (typical range of *L. refugiensis*).

The identity of the specimen housed at MSNG-Dod from “Ceresole Reale” (Ceresole Reale / Piemonte VI-II.1900 / A. Dodero // Levanna / nel / 6.VIII.1901 // *Longitarsus refugiensis*?? det. C. Leonardi) is doubtful. It's a ♀ with not punctuated frons (probably *L. gruevi*?). New investigations should be carried out in the same locality to find more specimens in order to clarify the local situation.

Leonardi and Mohr suggested (1974: 193) that the specimens from northern Vosges, reported as *L. rubellus* by Scherdlin (1913: 536) and Sainte-Claire Deville (1937: 367), should belong to a form of *L. refugiensis*. Doguet & Tempère (1975: 222) looked for these specimens at the Museum of Paris but did not find them. Doguet (1994: 219-220), suggested that the Vosges specimens belong to *L. gruevi* or *L. refugiensis*. However, the author of the present study did not find any specimens of *L. refugiensis* from France, Switzerland and Germany. Thus, it seems very likely that the specimens from Vosges are *L. gruevi*.



Fig. 13 - Label of *L. refugiensis* from “Alp Finestre” housed at MSNG-Man. / Etichetta di *L. refugiensis* da “Alp Finestre” conservata al MSNG-Man. (Photo: / Foto: Roberto Poggi).



Fig. 14 - Lombardia (BG), Prealpi Orobic, Presolana, July 2022: *L. refugiensis* habitat. / Lombardia (BG), Prealpi Orobic, Presolana, luglio 2022: habitat di *L. refugiensis*. (Photo: / Foto: Laura Farina).

Adults of *L. rubellus* are usually collected from May to September. Among the materials studied, females were observed with mature eggs both at the end of May-June and at the end of July. An oviposition may take place at the beginning of June and one at the end of July-beginning of August suggesting two generations per year. Some mature larvae were found in May [e.g. Erve, Monte Resegone, 15.V.1949 (1 ex.); Lake Branchino, Pizzo Arera, 22.V.2022 (2 exx.)] and some immature larvae in May-July and in September [Passo del Maniva, 4.V.1966 (2 exx.); Valleve, 9.VII.1981 (2 exx.); Foppolo, Passo di San Simone, 8.VI.1996 (13 exx.); Colle di San Simone, 6.VII.2005 (3 exx.); Passo di San Simone, 21.IX.2005 (1 ex.); Oltre il Colle, Monte Alben, 11.V.2006 (2 exx.); Val Tartano, 24.VII.2022 (1 ex.)]. This suggests that both imago and larva hibernate.

Leonardi (*in verbis*) collected this species on *Senecio ovatus* (Asteraceae). During the field studies, in May-September 2022, in the Lombard Alps and Pre-Alps the author collected few specimens on the edge of beech forests near a group of *Senecio ovatus*. Several specimens were also collected in alpine meadows (Fig. 14), mainly in places rich in Ranunculaceae species. In the author's opinion, more than one species of Ranunculaceae (in addition to asteraceous *S. ovatus*) could be the host plants of *L. refugiensis* [as Doguet also suggested for *L. gruevi* (1994: 220)]; more in-depth investigations should be carried out.

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