

Redescription of the genus *Tipulodes* BOISDUVAL, 1832 (Lepidoptera: Arctiidae).

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Abstract. The Neotropical genus *Tipulodes* BOISD. is redefined. The redescription of *T. rubriceps* DOGN. as well as new data on distribution of the genus are given.

Key words: Lepidoptera, Arctiidae, *Tipulodes*, taxonomy, Neotropical.

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I. INTRODUCTION

Tipulodes is a small genus established by BOISDUVAL (1832) for two species, viz., *T. neglecta* BOISD. and *T. ima* BOISD. distributed in the tropical part of South America. In 1878 BURMEISTER removed the first one from the genus which was regarded monotypical till 1912 when DOGNIN described the *rubriceps* basing on one male from Colombia. Since that time it was the only known specimen of this species while the second species seemed to be rather common (HAMBLETON & FORBES 1935, HOFFMANN 1936). The rarity of *T. rubriceps* confirmed two revisions of the genus prepared by RABELLO and PEREIRA MACHADO & REI DO REGO BARROS in 1955 and 1969, respectively. Both these papers deal with morphology of *T. ima* in detail while *rubriceps* is not redescribed on account of lack of the material.

A b b r e v i a t i o n s for collection in which the material is deposited are as follows:

AMNH – American Museum of Natural History, New York;

BMNH – British Museum of Natural History, London;

DEC – Department of Entomology, California Academy of Sciences, San Francisco;

ISEZ – Instytut Systematyki i Ewolucji Zwierząt, PAN, Kraków;

MIZ – Museum and Institute of Zoology, Warszawa;

MNHU – Museum für Naturkunde der Humboldt-Universität, Berlin;

NMG – Muséum d'Histoire Naturelle, Geneva;

NRS – Naturhistoriska Riksmuseet, Stockholm;

PM – Muséum National d'Histoire Naturelle, Paris;

RML – Rijksmuseum van Natuurlijke Historie, Leiden;

UH – Zoological Museum, University of Helsinki, Helsinki;

UMIC – University of Minnesota Insect Collection, Minnesota;

USNM – United States National Museum of Natural History, Washington DC;

ZMUC – Zoological Museum, University of Copenhagen, Copenhagen;

ZSM – Zoologische Staatssammlung, Munich;

A c k n o w l e d g e m e n t s. I greatly acknowledge the assistance of those institutions in lending the materials for study. I am grateful to Professor Józef Razowski for his critical comments and valuable advice in course of preparing the manuscript.

II. TAXONOMY

Genus *Tipulodes* BOISDUVAL

Tipulodes BOISDUVAL, 1832, Voyage de Decouvertes de l'Astrolabe. Faune Entomologique de l'océan Pacifique. I. Lepidoptera. Paris: 195

Type species: *[Tipulodes] ima* BOISDUVAL, by subsequent designation by KIRBY, 1892: 113.

D e s c r i p t i o n. Wingspan 21–25 mm. Small Arctiids with relatively narrow wings. Ground colour brownish black with characteristic wings patterns. Forewing with elongate rusty-red blotch from the base almost to the apex, hindwing with rusty-red stripe along the costal edge; underside of wings similarly coloured. Males with coremata forming membranous tubes, much longer than abdomen when everted, covered with hairs along the whole length.

Male genitalia. Uncus large, elongate, somewhat curved ventrally, socius long, strongly sclerotized, provided with small spines terminally; valvae asymmetric; right valva longer than left one, with small process in the middle; vinculum large, U-shaped; aedeagus moderately long, with two groups of small cornuti in vesica; juxta longer than wide.

Female genitalia. Ductus bursae moderately long, narrow, partly sclerotized, bent left, then right; corpus bursae almost globular, two signa of which one forms a narrow, elongate, patch of tiny spines; second one is large, rounded, built of stouter spines; posterior apophyses longer than anterior apophyses.

External sexual differences inappreciable, restricted to the shape of antennae bipectinate in male while serrate in female.

D i s t r i b u t i o n (Fig. 1). The genus is widespread in Neotropics from Columbia to Rio Grande do Sul, Brazil. Collecting data suggest that the species are allopatrically distributed. *T. ima* inhabits eastern part of the continent however one specimen was taken in Colombia. *T. rubriceps* is restricted to the Andes from Colombia through Ecuador and Peru to Bolivia. The only exceptions are two specimens from Brazil.

Tipulodes ima BOISDUVAL

Tipulodes ima BOISDUVAL, 1832: 196, pl. 3, fig. 7; RABELLO, 1955: 471–475; PEREIRA MACHADO F., 1969: 2–7.

M a t e r i a l e x a m i n e d: holotype female labelled – “rio gr; Ex Musaeo D-ris Boisduval; Ima B. B. Grunb.; Ex Oberthür Coll., Brit. Mus. 1927–3.” (BMNH) (G. sl. Nr P13)

Other material (96): 50 males, 46 females (labelled as follows).

ARGENTINA: Misiones 24/3 1909, [...], Modt. 20/10 1909 af [...], Coll. C. S. LARSEN, Faaborg (ZMUC – ♀)

BRAZIL: Santa Catarina, Rio Vermelho, 968 m, 7.III.1973., A. & J. RAZOWSKI (ISEZ – ♂); Santa Catarina, Rio Vermelho, 968 m, 20.II.1973., A. & J. RAZOWSKI (ISEZ – ♂); Petropolis, G. Slide 89620 (USNM – ♀); 295, Bresil m., Ch. Blachier (NMG – ♂); 585, Bresil m., Ch. Blachier (NMG – ♂); Coll. Staudinger, Rio Grande do Sul, 1890, Mabilde (MNHU – ♂); Rio Grande do Sul,

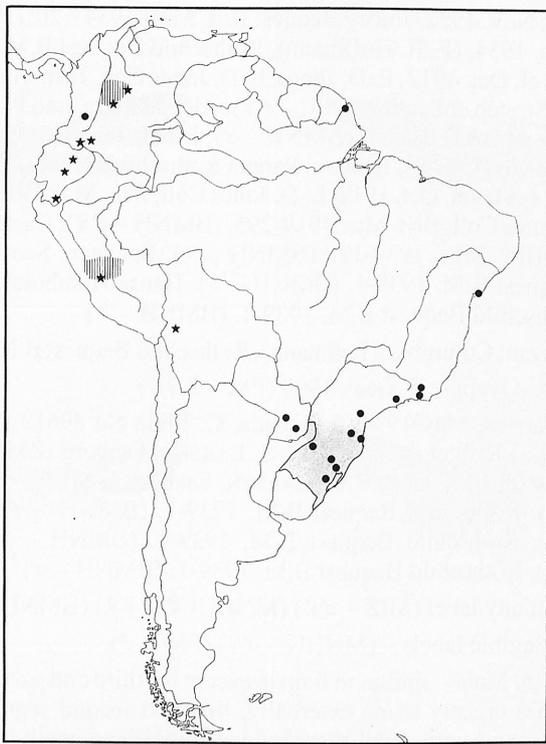


Fig. 1. Distribution of *Tipulodes* in South America: ● *T. ima* BOISDUVAL, ★ *T. rubriceps* DOGNIN (not all localities are included).

Petropolis, V.1900, Ostmann v. d. Leye S.G. (MNHU – ♀); Rio Grande, Coll. Weymer (MNHU – ♀); 44990, Santas, H.Schmiedeberg V, 962 (MNHU – ♀); Coll. Weymer, Espirito-Santo, ex coll. Fruhstorfer (MNHU – ♀); Coll. Staudinger, St. Cath. [...], 106 (MNHU – ♂♀); 7263, Bahia [...] [...] (MNHU – ♀); Coll. Staudinger, Theresopolis, Süd Brasilien [...] (MNHU – ♂); Coll. Staudinger, Leop., Michs. (MNHU – ♀); Coll. Staudinger, N. Freiburg [...], Coll. Sommer, 962 (MNHU – ♀); Mssn. G., Bres., 962 (MNHU – ♀); Theresopolis, leg. Kessel (MIZ – ♀); S. Leopoldo, 1920-1932, coll. L. & J. de Joannis (PM – 2♂♂); Bresil (PM – ♂); Bresil, 1854, Pechetto (PM – 2♀♀); Rio Janeiro (PM – ♂♀); environs [...] Rio de Janeiro, 1920-1932, coll. L. & J. de Joannis (PM – ♀); Bahia, P. Serre, 1913 (PM – ♀); Curityba, 1812, P. Lombard (PM – ♀); Sta. Catharina, coll. Wernicke (ZSM – ♂); R. Gr. d. Sul, Staudinger, Bang Haas, Blasewitz, 125 (UH – ♂); Nova Teutonia, 27 11'B 52 23'L, 2.12.1937., Fritz Plaumann (UH – ♂ G. sl. Nr P43, ♀); Nova Teutonia, 27 11'B 52 23'L, [...]3.1938., Fritz Plaumann (UH – ♀); Santa Catharina, April, Bruno Pohl (UMIC – ♂); Santa Catharina, May, Bruno Pohl (UMIC – ♂); Hamburgo Velho, Rio grande d. Sul, C. Ertl (ZSM – ♂); Prof. Krieg III Exped., St. Catharina Hansa Humboldt, leg. Kiefer, Apr. 32 (ZSM – ♂); Sta. Catharina, coll. Wernicke (ZSM – ♀); Timbo-Blumenau, St. Catharina, ex larva (PM – 2♂♂, 2♀♀); Rio Grande Do Sol: Guarani, 7.I.54, C. Bieóanko (AMNH – ♂); Suntos, 1/3/1919, S.A. (AMNH – ♀); Rio Grande Do Sol: Pelotas, 28.III.54, C. Bieóanko (AMNH – ♀); The Sperry Collection, 26.3.87., Neuvo Teutonia, Plaumann, Coll. (AMNH – ♀); Nova Treuto, 1920-1932, coll. L. & J. de Joannis (PM – ♂, 2♀♀); Sept Brasilien, Modt. 6/6 1911 af [...] [...] [...], Coll. C. S. LARSEN, Faaborg (ZMUC – ♂); Brazilia, Mus. Westerm. (ZMUC – ♀); Jaragua do Sul, 31/7 30, St. Catharina, Modt. 29/12 1930 af F. Hoffmann, St. Catharina, Coll. C. S. LARSEN, Faaborg (ZMUC – ♂♀); Hard. d.

Dres[...], Porto Real, Prov. Rio de Janeiro, [...] 1890 (RML – ♂♀); Brasilia (RML – ♀); 59. 23., Iguassu, Parana, Brazil, Nov. 1922, Joicey Bequest Brit. Mus. 1934-120. (BMNH – ♂); Jaragua do Sul, Sta. Catharina, Feb. 1934, (F. H. Hoffmann), Rothschild Bequest B.M. 1939-1. (BMNH – ♂); Guarujá, Santos, sea level, Oct. 1912, E. D. Jones, E. D. Jones Coll. Brit. Mus. 1919-295. (BMNH – ♂♀); Esp. Santo; R. H. Stretch collection (DEC – ♂♀); Alto de Serra, Sao Paulo, February 1927, (R. Spitz), Rothschild Bequest B.M. 1939-1. (BMNH – ♂); Rio de Janeiro, Organ Mts. near Tijuca, S. R. Wagner 1902-287 (BMNH – ♂♀); Iguassu, Parana Rothschild Bequest B.M. 1939-1. (BMNH – 2♂♂); Guarujá, Santos, sea level, Oct. 1912, E. D. Jones Coll, Brit. Mus. 1919-295. (BMNH – 2♂♂); Castro, Parana, E. D. Jones Coll, Brit. Mus. 1919-295. (BMNH – ♂♀); Castro, Parana, E. D. Jones., 3.872, Joicey Bequest Brit. Mus. 1934-120 (BMNH – ♀); Itanhaen, Sao Paulo, April 1928., (R. Spitz), Rothschild Bequest B.M. 1939-1. (BMNH – ♀); Hansa Humboldt, Sta Catharina, August 1932, (A. Maller), Rothschild Bequest B.M. 1939-1. (BMNH – ♀)

COLOMBIA: Popayan; Columbia; (Lehmann), Rothschild Bequest B.M. 1939-1. (BMNH – ♂)

FRENCH GUIANA: Oyapok, F. Geay 1900 (PM – 2 ♀♀)

PARAGUAY: Villarrica, May 1934, F. Schade, G. Slide No 89619 (USNM – ♂); Villarrica, Modt. 20/1 1926 af Ri[...] Krüger, [...], Coll. C. S. LARSEN, Faaborg (ZMUC – ♂); Abai, 4-1926, [...], Modt. 2/10 1926 af P. J[...] Coll. C. S. LARSEN, Faaborg (ZMUC – ♂); Villarrica, Paraguay, Sept. 1923, (F. Shade), Rothschild Bequest B.M. 1939-1. (BMNH – ♂♀); Sapucay, Paraguay, 14.XI.03., (W. Foster), Rothschild Bequest B.M. 1939-1. (BMNH – ♂); Sapucay, Paraguay, Sept. 1904., (W. Foster), Rothschild Bequest B.M. 1939-1. (BMNH – ♂)

8 specimens without any label (MIZ – ♂♀) (MNHU- ♂, 2♀♀) (BMNH – 2 ♂♂) (DEC – ♂)

3 specimens with illegible labels – (MNHU – ♂♀) (PM – ♂).

D e s c r i p t i o n. Male – similar to female except for third and partly second segment of labial palpi marked with a creamy stripe externally, first and second segment from inner surface creamy too; some specimens with small rusty-red patches behind ocelli (in females if present restricted to a few scales), a few rusty-red scales on scapus and below it, near the eye.

Female (Figs 2-4) – based on holotype from NHBM in a very bad condition.

Head. Brownish black, labial palpi concolourous, a few rusty-red scales near scapus and distal part of eye.

Thorax. Brownish black, patagia with scarce rusty-red scales; tegulae rusty-red; mesonotum with majority of grey, shiny scales; legs brownish black.

Forewing. Brownish black; rusty-red, elongate blotch extending from the base of wing almost to apex, anterior edge of blotch from below subcosta and posterior one from dorso-basal part of wing; blotch extend subtly on the end; cilia brownish black; underside wing similarly coloured as upperside.

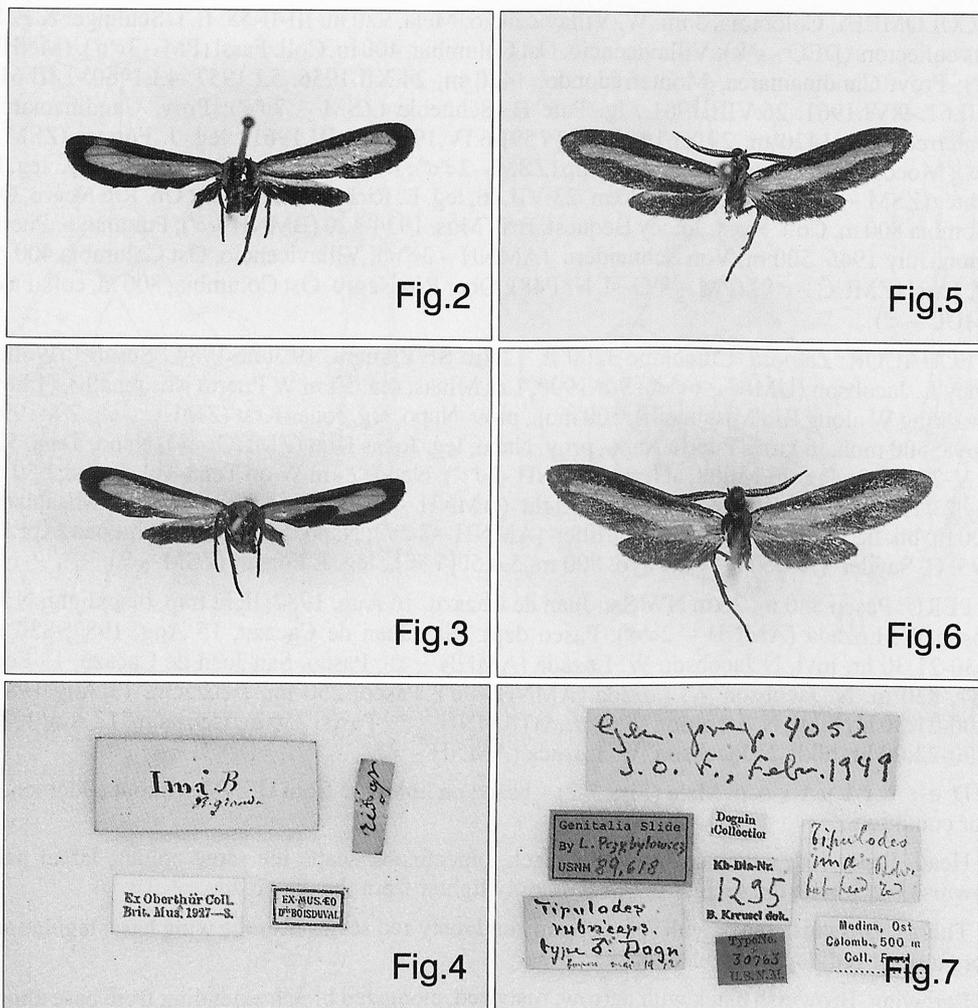
Hindwing. Brownish black; rusty-red stripe along costal edge from base not reaching the apex, mixed creamy distally; underside similarly coloured.

Abdomen. Brownish black; dorsally narrow, grey line from base not reaching the end of abdomen; grey scales at distal edge of some first sternits.

Male genitalia (Figs 8,9). Uncus large, elongate, flattened dorso-ventrally, somewhat curved ventrally; socius long, narrow, as long as uncus, tapering distally, with some tiny spines near apex; tegumen triangular; valvae elongate, narrow, asymmetric; right valva distinctly longer than left one with conspicuous process behind middle; left valva flattened towards the end; vinculum U-shaped, approximately as large as tegumen; aedeagus moderately, narrow with two groups of small cornuti in vesica; juxta longer than wide.

Female genitalia (Fig. 12). Ductus bursae relatively short with indistinct, sclerotized fold in middle; posterior apophyses one-third longer than anterior apophyses.

D i s t r i b u t i o n: *Tipulodes ima* is widespread along the east part of the continent but it does not penetrate the Amazon and Paraguay Lowlands being restricted to higher, dryer areas.



Figs 2-7. 2-4 – *Tipulodes ima* BOISDUVAL, holotype female; 2 – upperside, 3 – underside, 4 – labels. 5-7. *Tipulodes rubriceps* DOGNIN, holotype male; 5 – upperside, 6 – underside, 7 – labels

R e m a r k s: Externally easily distinguished from *T. rubriceps* by brownish black head and patagia (only sporadically with innumerable rusty-red scales) and broaden apical part of forewing blotch; in the male genitalia the differences are in the shape of socii and in females mainly in distinctly shorter ductus bursae.

Tipulodes rubriceps DOGNIN

Tipulodes rubriceps DOGNIN, 1912: 7.

M a t e r i a l e x a m i n e d: holotype male labelled – “Medina, Ost Colomb. 500 m, Coll. Fassl, type No 30763”, G. Slide No 89.618 (USNM);

Other material (54): 48 males, 6 females (labelled as follows):

BOLIVIA: La Paz, Yungas, 3.04.81. vic. Coroico, 1500 m, leg. Rol. Gerstmeier (ZSM – ♂)

BRAZIL: env. de Belem, Sao Antonio, 27-IX-1975, Moyen, XINGU, ission M. Boulard, P. Jauffret et P. Pompanon (PM – ♂); Matogrosso, C. Lindman, Heliotropum, 4/3 94 (NRS – ♂)

COLOMBIA: Colombia, 3 mi. W. Villavicencio, Meta, 920 m. III-II-55; E. I. Schlinger & E. S. Ross collectors (DEC – ♂♀); Villavicencio, Ost Columbia, 400 m, Coll. Fassl (PM – 3♂♂), (MNHU – ♂); Prov. Cundinamarca, Monterredondo, 1420 m, 24.XII.1956.-5.I.1957.-4.I.1960.-1.III.61.-5.III.61.-9.VI.1961.-26.VIII.1961., lg. Pate B. Schneble (ZSM – 7♂♂); Prov. Cundinamarca, Monterredondo, 1420 m, 29.XI.1956.-6.I.[♀59]-6.IV.1961.-11.IV.1961., leg. J. Förster (ZSM – 4♂♂); Mocoa, Terr. Caqueta, Werner Hopp (ZSM – 2♂♂); Riv. Yaqueta, 200 m, 29.VIII.49., leg. L. Richter (ZSM – ♂); Cano[...] [...], 420 m, 23.VII.46, leg. L. Richter (ZSM – ♂); Ob. Rio Negro, Ost Colombia 800 m, Coll. Fassl, Joicey Bequest. Brit. Mus. 1934-120 (BMNH – ♂); Putumayo: Puerto Limon, July 1946, 500 m, Von Schneidern (AMNH – 3♂♂); Villavicencio, Ost Columbia 400 m, coll. Fassl (ZMUC – ♂♀) (PM – ♀ G. sl. Nr P48); Ober Rio Negro, Ost Columbia, 800 m, coll. Fassl (ZMUC – ♂)

ECUADOR: Zamora, Chinchipe 3200 ft, 12 km SE Zamora, 19 June 1984., Susan J. Weller, Nancy L. Jacobson (UMIC – 6♂♂); 9/8-1990, Las Minas, (ca. 5 km W Puerto Misahualli), (1 hour of walking W along Rio Misahualli), 500 moh, prov. Napo, leg. Jonas Krat (ZMUC – ♂); 7/8-1990, Apuya, 500 moh., 6 km. s Puerto Napo, prov. Napo, leg. Jonas Krat (ZMUC – ♀); Napo, Tena, 520 m., V-23-1993., leg. JS Millet, at light (AMNH -2♂♂); Napo, 2 km W on Tena-Tulag road, 550 m, May 23 1993 leg. JS Miller & E. Tapia, at light (AMNH – 2♂♂); Napo, Tena near Rio Misahualli, 2100 m, blk lt., Nov. 1. 1988., leg. JS Miller (AMNH – 2♂♂); Napo, 5 km N of Archidona, April 6, 1995, C. Sayder (AMNH – ♂); Tuyo, 800 m, 5.4.50[♀56], leg. J. Förster (ZSM – ♀)

PERU: Pasco 840 m, 2 km NW San Juan de Cacazu, 16 Aug. 1987, light trap, blacklight, N Jacobson W. Lozada (AMNH – 2♂♂); Pasco dept., San Juan de Cacazu, 15 Aug. 1987, 830 m, 19:30-21:30 hr, mvl, N Jacobson W. Lozada (AMNH – ♂); Pasco, San Juan de Cacazu, 13 Sept. 1987, 830 m. N. Jacobson W. Lozada (AMNH – ♂); Pasco, 250 m., Iscozacin, 13 Aug 1987., 20:00-21:30 hr, blklt, N. Jacobson W. Lozada (AMNH – ♂); Pasco 250 m, Iscozacin, 12 Aug 1987, 18:30-22:00 hr, blklt, N Jacobson, W. Lozada (AMNH – ♀)

Description. Male (Figs 5-7) – based on holotype from USNM without abdomen, in poor condition.

Head. Rusty-red; antennae brownish black, bipectinate, scape the same colour; labial palpi brownish black with the second segment slightly lighter from the upper side.

Thorax. Brownish black with some creamy and rusty-red scales near the wing base; tegulae and patagia rusty-red; legs brownish black.

Forewing. Brownish black with narrow, rusty-red, elongated blotch extending from base almost to the apex, gently narrow to the end; its anterior edge from below the subcosta and the posterior one from the dorso-basal part of the wing; cilia brownish black; underside similar to upperside except that the blotch at the base is more orange, end of blotch almost creamy.

Hindwing. Brownish black; from base along costal edge rusty-red streak not reaching apex; outer part of the blotch with creamy scales; underside similar.

Variation. Head. Brownish black patch on the occiput and behind eye.

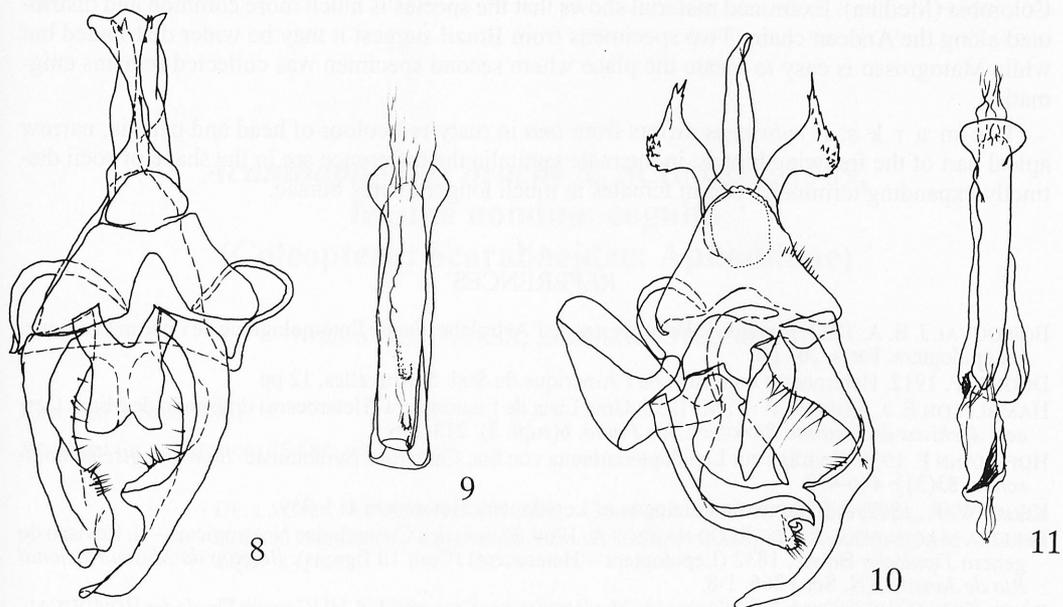
Thorax. Coxa with grey, shiny scales on hind edge.

Abdomen. Brownish black with narrow, grey line extending dorsally from base but not reaching the end of abdomen; grey scales on hind margin of some first sternits.

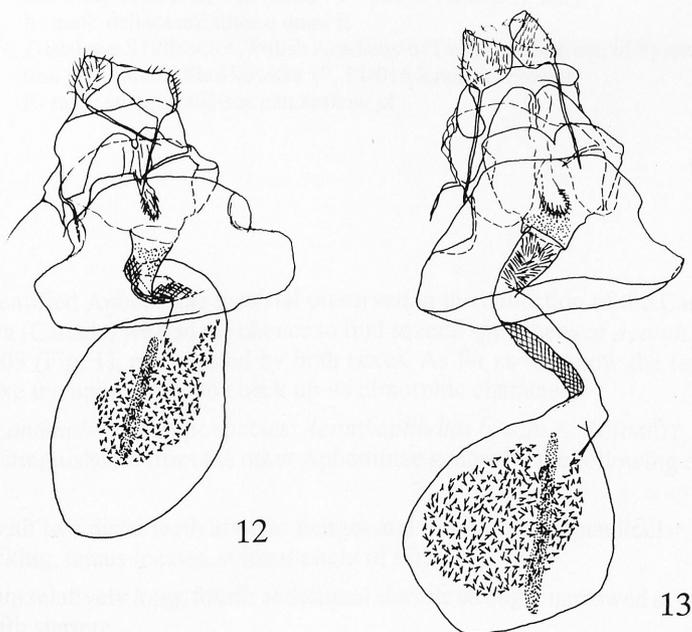
Female. Similar to the male except of the shape of antennae.

Male genitalia (Figs 10-11). Similar to those of *T. ima* but socii shorter not reaching the end of uncus, distinctly broadening in apical parts, inner surface of this broadening armed with group of spines, some of spines present also on the tip of socii; valvae more asymmetric than in *T. ima*; right valva distinctly longer and slenderer than left valva in one-third distinctly bent inwardly.

Female genitalia (Fig. 13). Ductus bursae long, narrow, partly sclerotized in middle part, below ostium covered with dense, tiny spines; posterior apophyses twice as long as anterior apophyses.



Figs 8-11. 8-9 – Male genitalia of *Tipulodes ima* BOISDUVAL, Brazil: Nova Teutonia, UH, G. sl. Nr P43, 9 – aedeagus. Figs 10-11. Male genitalia of *Tipulodes rubriceps* DOGNIN, holotype; 11 – aedeagus.



Figs 12-13. Female genitalia of *Tipulodes* BOISDUVAL: 12 – *T. ima*, holotype; 13 – *T. rubriceps*, Columbia: Villavicencio, PM, G. sl. Nr P48.

Distribution. To date *Tipulodes rubriceps* was known only from holotype collected in East Colombia (Medina). Examined material shows that the species is much more common and distributed along the Andean chain. Two specimens from Brazil suggest it may be wider distributed but while Matogrosso is easy to locate the place where second specimen was collected remains enigmatic.

Remarks. *T. rubriceps* differs from *ima* in rusty-red colour of head and patagia, narrow apical part of the forewing blotch; in the male genitalia the difference are in the shape of socii distinctly expanding terminally and in females in much longer ductus bursae.

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