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Beetles (Coleoptera) of Peru: A Survey of the Families. Ripiphoridae Gemminger and Harold, 1870

Jan Batelka[1] and Caroline S. Chaboo[2,3]

Diversity in Peru: 3 subfamilies, 3 genera, 5 species.

Recognition: Ripiphoridae is a world-wide distributed family, with approximately 400 species classified into 40 genera and five subfamilies (see Lawrence *et al.* (2010) for the current classification). Of these, Hemirhipidiinae are restricted to Australia and SE Asia, while Pelecotominae (=Micholaeminae), Ptilophorinae, Ripidiinae and Ripiphorinae have world-wide distribution (Lawrence *et al.*, 2010).

Pelecotominae are represented in South America by the genera, *Ancholaemus* Gerstaecker, 1855 (2 species) and the monotypic *Micholaemus* Viana, 1971. Adults of the subfamily are characterized by the fully developed elytra, long and slender tarsi, and by the uniflabellate antennae of males and females, which are usually only slightly dissimilar between sexes.

Ptilophorinae are represented by the monotypic *Elytroxystrotus* Manfrini de Brewer, 1963 and the speciose *Trigonodera* Dejean, 1834. They are of similar habitus to Pelecotominae, but tarsi are shorter and stouter, and antennal dimorphism is usually more pronounced.

Ripiphorinae are widely represented by the genera *Ripiphorus* Bosc, 1791 and *Macrosiagon* Hentz, 1830. The elytra in *Ripiphorus* are scale-like and those in *Macrosiagon* dehiscent, exposing in both cases fully developed hind-wings and abdomen. The antennae are biflabellate in males and serrate or pectinate in females.

South American Ripidiini (Ripidiinae) contains the genera *Neorrhipidius* Viana, 1958 (3 species) and *Pirhidius* Besuchet, 1957 (1 species). Their males have uniflabellate antennae, reduced mouthparts, holoptic compound eyes composed of large ommatidia and shortened leathery elytra exposing functional hind-wings. The females of these genera are unknown, but are presumably larviform and flightless (Lawrence *et al.*, 2010). The monotypic genus *Aporrhipis* Pascoe, 1887, described from Brazil and listed in Ripidiinae by Lawrence *et al.* (2010; misspelled there as '*Aporhipis*'), is no longer in Ripiphoridae, but belongs to Elateroidea, likely to the family Lycidae (Batelka and Hájek, 2009: 777).

Habitat: Ripiphoridae have complex life strategies which allow them to colonize various habitats, from deserts to rain forests, from the sea level to mountains close to 3000 m, or even man-made environments, such as town parks or suburban environment (Heitmans and Peeters, 1996; Gobbi, 2002), whenever the conditions are suitable for sufficient abundance of their host. Depending on the bionomics of particular genus, ripiphorids are also able to colonize distant volcanic and continental islands, either by their own dispersal mechanisms (Batelka, 2011a, b), or by cargo transported by ships and planes (Falin, 2001; Peck, 2006).

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Host groups vary greatly among subfamilies. Preimaginal stages of Hemirhipidiinae and Pelecotominae are parasitoids of larvae of wood-boring Coleoptera (Cerambycidae and Ptinidae: Anobiinae) (Švácha, 1994; Batelka, 2005). Larvae of Ripiphorinae are parasitoids of larvae of bees and wasps of the families Apidae, Crabronidae, Halictidae, Pompilidae, Scoliidae, Sphecidae, Tiphiidae and Vespidae (e.g., Carl and Wagner, 1982; Batelka and Hoehn, 2007; Batelka and Straka, 2011). Larvae of the tribe Ripidiini parasitize cockroaches of the families Blattellidae, Blattidae, Ectobiidae and Nauphoetidae (Riek, 1955; Besuchet, 1956). Hosts of Ptilophorinae and Eorhipidiini (Ripidiinae) are unknown.

Imagoes of Ripiphoridae are usually rarely collected because of their short life span and behavioral adaptations connected with the endoparasitic way of life of their larvae. They, however, can be reared from their hosts, sometimes in rich numbers (Riek, 1955; Besuchet, 1956; Carl and Wagner, 1982; Švácha, 1994; Batelka, 2005; Batelka and Hoehn, 2007), or they can be collected near the wood infested by larvae of their host, or in various sites with hymenopterans or cockroaches (e.g., Linsley *et al.*, 1952; Riek, 1955; Batelka and Straka, 2011).

Collecting methods vary greatly depending on the bionomics of each subfamily and respective genera. Pelecotominae and Hemirhipidiinae can be reared from wood infested by their host larvae (Švácha, 1994; Batelka, 2005). Imagines of *Ripiphorus* and *Macrosiagon* (Ripiphorinae) can be collected on specific plants visited by their hymenopteran hosts (Batelka, 2011a, b), and those of *Macrosiagon* can be also reared from trap-nests (Batelka and Hoehn, 2007). An effective method for collecting the minute first-instar larvae of Ripiphorinae in the field is proposed by Batelka (2011b). Ripidiinae can be reared from their hosts (Riek, 1955; Besuchet, 1956) and their males are attracted to artificial light (Herger, 1991). Imagines of various species of all subfamilies can be collected by malaise traps or FITs and by common collecting methods.

Notes: The only available list of Peruvian Ripiphoridae is the much outdated Blackwelder's checklist of beetles of the Central and South America (Blackwelder, 1944). He mistakenly proposed authorship of *Pelecotomoides* (unjustified emendation of *Pelecotoides* Laporte, 1840) to Fischer von Waldheim instead to Gemminger and Harold, 1870, and simultaneously, he recorded several congeneric species under the senior synonym *Trigonodera* Dejean, 1834 (for generic synonymy see Batelka (2008)); no reasons were provided.

Subsequently, only Pic (1954) added a single Peruvian species, *Pelecotomoides apicicornis* Pic, 1954 (type locality: Peru, Jauja Dept., Satipo) to Blackwelder's ripiphorid checklist. Here, we propose a new generic combination for this species, *Pelecotomoides apicicornis* Pic, to *Trigonodera apicicornis* (Pic, 1954) **comb. nov.**

Of the five known Peruvian species, all three *Trigonodera* species (two of Gerstaecker (1855) and one of Pic (1954)), and *Macrosiagon vittatum* (Erichson, 1847), were described from Peru. For the revised types of *M. vittatum*, see Falin (2004). A revision of the Peruvian *Trigonodera* types in comparison with other South American species is needed to clarify their validity. The holotype of *T. apicicornis* is missing from the list of types stored in the Hamburg collection (Weidner, 1976, 1979); it is possible that it was destroyed together with many other types by the fire of 1943 (Weidner, 1976). The genus *Trigonodera* was recently transferred by Lawrence *et al.* (2010) from Pelecotominae to Ptilophorinae.

For the tentative validity of *Macrosiagon multinotatum* Pic, 1906 see Batelka (2011a). Auko *et al.* (2014) recently published a host association of this species from Brazil (subsequent unpublished identification of the beetle by J. Batelka) with the eumenine wasp, *Pachodynerus nasidens* (Latreille, 1812); its host association with Eumeninae is in accordance with its proposed relationship to *Macrosiagon ferrugineum* species-group established by Batelka (2011a).

Macrosiagon vittatum is reported by Rozen (1997) from nests of the bee *Exomalopsis bruesi* Cockerell, 1914 (Hymenoptera: Apidae) from Peru, Lima Dept., Ricardo Palma (8 km east of Chosica). Additional specimens of this species were recorded from Apurímac, Huanaco, and Loreto Depts. by Falin (2004). We also report *Macrosiagon multinotatum* from Peru for the first time, based on a museum specimen.

The Chaboo inventory has collected a single specimen of Ripidiinae, **a new subfamily record** for Peru. The locality is: Peru: Cusco Dept., Villa Carmen Fld. Stn., cafeteria, ~1.7 km west, research transect, 12.89221°S, 71.41946°W, 560 m, 24–26.V.2011, coll. DJ Bennett & E. Razuri, Flight intercept trap, PER11-FIT-012. This specimen represents a new species in a new genus and is likely a parasite of cockroaches, like other ripidiines (Z. Falin, in prep.).

Checklist:

Ptilophorinae

Trigonodera apicicornis (Pic, 1954), **comb. nov.**
Trigonodera bistriata Gerstaecker, 1855
Trigonodera nubila Gerstaecker, 1855

Ripiphorinae: Macrosiagonini

Macrosiagon multinotatum Pic, 1906, **new record** Peru: Tacna Dept., Boca del Río, Tacna env., 20.XII.2006, coll. J. Straka, 1 ex. (in col. J. Batelka).
Macrosiagon vittatum (Erichson, 1847)

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Literature Cited

Auko, T. H., B. M. Trad, and R. Silvestre. 2014. Five new associations of parasitoids in potter wasps (Vespidae, Eumeninae). Revista Brasileira de Entomologia 58(4):376–378.

Batelka, J. 2005. New synonym of the genus *Clinops* (Coleoptera: Ripiphoridae) with bionomical and distributional notes on *C. spectabilis*. Folia Heyrovskyana, Serie A 13:27–34.

Batelka, J. 2008. Family Ripiphoridae Gemminger and Harold, 1870. *In* Löbl I., and A. Smetana (eds.). Catalogue of Palaearctic Coleoptera, Vol. 5. Tenebrionoidea, pp. 29, 73–78. Apollo Books, Stenstrup. 670 pp.

Batelka, J. 2011a. Contribution to the synonymies, distributions, and bionomics of the Old World species of *Macrosiagon* (Coleoptera: Ripiphoridae). Acta Entomologica Musei Nationalis Pragae 51:587–626.

Batelka, J. 2011b. Primary larvae of some Ripiphorinae: their phoresy and dispersal (Coleoptera: Ripiphoridae). *In* Fikáček M., J. Skuhrovec, and P. Šípek (eds.), Abstracts of the Immature Beetles Meeting 2011, September 29–30, Prague, Czech Republic. Acta Entomologica Musei Nationalis Pragae 51:733–735.

Batelka, J., and J. Hájek. 2009. A taxonomic review of the genus *Eorhipidius* (Coleoptera: Ripiphoridae: Ripidiinae), with descriptions of three new species from Asia. Acta Entomologica Musei Nationalis Pragae 49:769–782.

Batelka, J., and P. Hoehn. 2007. Report on the host-associations of the genus *Macrosiagon* (Coleoptera: Ripiphoridae) in Sulawesi (Indonesia). Acta Entomologica Musei Nationalis Pragae 47:143–152.

Batelka, J., and J. Straka. 2011. *Ripiphorus caboverdianus* sp. nov.—the first ripiphorid record from the Macaronesian volcanic islands (Coleoptera: Ripiphoridae: Ripiphorinae). Zootaxa 2792: 51–62.

Besuchet, C. 1956. Biologie, morphologie et systématique des *Rhipidius*. Mitteilungen der Schweizerischen Entomologischen Gesellschaft 29:73–144.

Blackwelder, R. E. 1944. Checklist of the coleopterous insects of Mexico, Central America, The West Indies, and South America. Part 3. Smithsonian Institution, U.S. National Museum Bulletin 185:343–550.

Carl, K. P., and A. Wagner. 1982. Investigations on *Sphecophaga vesparum* Curtis (Ichneumonidae) and *Metoecus paradoxus* L. (Rhipiphoridae) for the biological control of *Vespula germanica* F. (Vespidae) in New Zealand. Silwood Park, Commonwealth Institute of Biological control, Working Report, UK. 15 pp.

Falin, Z. H. 2001. Notes on occurrence of *Ripidius pectinicornis* Thunberg (Coleoptera: Rhipiphoridae [sic]) in the continental United States and Hawaii. The Coleopterists Bulletin 55:194–197.

Falin, Z. H. 2004. Revision of three new world *Macrosiagon* Hentz species (Coleoptera: Ripiphoridae: Ripiphorinae) with a discussion of phylogenetic relationships within the Macrosiagonini. The Coleopterists Bulletin 58:1–19.

Gerstaecker, A. 1855. Rhipiphoridum Coleopterorum familiae dispositio systematica. Frederici Nicolai, Berolini, 36 pp, 1 pl.

Gobbi, G. 2002. Breve nota sui ripiforidi Romani (Coleoptera, Rhipiphoridae). Bolletino dell'Associazione Romana di Entomologia 57:43–44.

Heitmans, W. R. B., and T. M. J. Peeters. 1996. *Metoecus paradoxus* in The Netherlands (Coleoptera Rhipiphoridae). Entomologische Berichten (Amsterdam) 56:109–117.

Herger, P. 1991. Zur verbreitung von *Rhipidius quadriceps* AB. im Tessin (Coleoptera, Rhipiphoridae). Entomologische Berichte Luzern 26:133–134.

Lawrence, J. F., Z. H. Falin, and A. Ślipiński. 2010. Ripiphoridae Gemminger and Harold, 1870 (Gerstaecker, 1855). *In* Leschen, R. A. B., R. G. Beutel, and J. F. Lawrence (Volume eds.). Coleoptera, beetles. Volume 2: Morphology and systematics (Elateroidea, Bostrichiformia, Cucujiformia partim), pp. 538–548. Walter de Gruyter, New York.

Linsley, E. G., J. W. MacSwain, and R. F. Smith. 1952. The life history and development of *Rhipiphorus smithi* with notes on their phylogenetic significance. University of California Publications in Entomology 9:291–314.

Peck, S. B. 2006. The Beetles of the Galápagos Islands, Ecuador: Evolution, ecology and diversity (Insecta: Coleoptera). National Research Council of Canada Research Press, Ottawa, xiii + 313 pp.

Pic, M. 1954. Oedemeridae, Pedilidae, Hylophilidae, Anthicidae, Rhipiphoridae (Col.). *In* Titschack, E. (ed.). Beiträge zur Fauna Perus. Nach der Ausbeute der Hamburger Südperu-Expedition 1936, anderer Sammlungen, wie auch auf Grund von Literaturangaben. Wissenschaftliche Bearbeitungen. Band IV, pp. 179–182. Veb Gustav Fischer Verlag, Jena, 386 pp.

Riek, E. F. 1955. The Australian rhipidiine parasites of cockroaches (Coleoptera: Rhipiphoridae). Australian Journal of Zoology 3:71–94 + pls 1–4.

Rozen, J. G. Jr. 1997. New taxa of brachynomadine bees (Apidae: Nomadinae). American Museum Novitates 3200:26 pp.

Švácha, P. 1994. Bionomics, behaviour and immature stages of *Pelecotoma fennica* (Paykull) (Coleoptera: Rhipiphoridae). Journal of Natural History 28:585–618.

Weidner, H. 1976. Die entomologischen sammlungen des Zoologischen Instituts und des Zoologischen Museums der Universität Hamburg. IX. Teil. Insecta VI. 31. Ordnung: Coleoptera. Mitteilungen aus dem Hamburgischen Zoologischen Museum und Institut 73:87–264.

Weidner, H. 1979. Die entomologischen sammlungen des Zoologischen Instituts und des Zoologischen Museums der Universität Hamburg. Nachtrag zum IX. Teil. Insecta VI (erschienen in dieser zeitschrift band 73, s. 87–264). 31. Ordnung: Coleoptera. Mitteilungen aus dem Hamburgischen Zoologischen Museum und Institut 76:395–468.