



Description of the immature stages of nine species of *Veturius* (Coleoptera: Passalidae)

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Abstract

The third instar of *Veturius aspina* Kuwert, *V. assimilis* (Weber), *V. simillimus* Kuwert, *V. sinuatocollis* Kuwert, *V. sinuatus* (Eschscholtz), *V. crassus* (Smith), *V. impressus* Hincks (as well as pupal stage), *V. negroensis* Boucher, and the first instar of *V. oberthuri* (Hincks) (Coleoptera: Passalidae) are described for the first time based on specimens from Argentina, Brazil, and Colombia. The most distinctive characters for these species are the presence and distribution of primary setae and the position, number, and size of the teeth of the metathoracic legs. An evident difference in the number of micro-conical projections on the maxillary stipes and measurements of the pars stridens (mesocoxae) suggests that these characters are useful for species identification. We present an identification key to the species of known larval *Veturius* (13), representing the 17.6% of total species recognized into genus. Light micrographs and scanning electronic micrographs are included for detailed characters.

Key words: Argentina, Brazil, Colombia, bess beetle, larva, pupa

Introduction

The Passalidae (Coleoptera) are saproxylic insects with subsocial behavior and a life cycle occurring in decaying logs. The family group may be formed by a pair of adult founders, first generation adults, eggs, larvae of different instars, and pupae (Reyes-Castillo & Halffter 1983), which facilitates the association of the larvae with the species when are found in the field.

In general, bess beetle larva have an elongate body that is cream-white color, curved posteriorly; a prognathous head, antennae with two antennomeres; and maxillary palpi and mandibles with three apical teeth. The metathoracic legs (pectrum) are single segmented with darker, sclerotized apical teeth that, together with the pars stridens on the mesocoxae, form the stridulatory apparatus. That last character is the main feature for identification of Passalidae larvae (Baker 1971; Reyes-Castillo & Jarman 1980; Schuster & Reyes-Castillo 1981; Costa & Fonseca 1986). The pupae are exarate aedepticous, cream-white, with head visible; elliptical abdominal stigmata and margins of abdominal tergites sinuous (Reyes-Castillo 2004).

The genus *Veturius* Kaup has widespread geographic distribution from Los Tuxtlas, Mexico to Bolivia, Misiones Province and northern of Corrientes Province, Argentina, southern Paraguay, southern Brazil and the Guyana massif, including Gorgona Island (Colombia) and Trinidad and Tobago. The genus is found on an altitudinal gradient from 0 to almost 3800 m (Boucher 2006).

Although the genus has been well studied (see Boucher 2006), the immature stages are poorly known with only six larvae described of the 74 species recognized. Schuster & Reyes-Castillo (1981) described the larvae of *V. cirratus* Bates, *V. platyrhinus* (Hope & Westwood), and *Publius* species. Costa & Fonseca (1986), described the larvae of *V. transversus* (Dalman), *V. platyrhinus*, and *V. cephalotes* (LePeletier & Serville). Schuster (1992) described the first and second instars of the *Publius* species described in Schuster & Reyes-Castillo (1981). Costa *et al.* (1988) redescribed the larva of *V. transversus*. However, taking into account the geographical distribution and

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References cited

- Baker, W.V. (1971) The larvae and pupae of three species of *Pentalobus*. *American Midland Naturalist*, 85, 253–260.
<http://dx.doi.org/10.2307/2423934>
- Boucher, S. (2006) Évolution et phylogénie des Coléoptères Passalidae (Scarabaeoidea). Les taxons du groupe famille. La tribu néotropical des Proculini et son complexe *Veturius*. *Annales de la Société Entomologique de France*, 41, 239–604.
<http://dx.doi.org/10.1080/00379271.2005.10697444>.
- Costa, C. & Fonseca, C. (1986) Larvae of Neotropical Coleoptera. VIII. Passalidae, Passalinae. *Revista Brasileira de Entomologia*, 30, 57–78.
- Costa, C., Vanin, S.A. & Casari-Chen, S.A. (1988) *Larvas de Coleoptera do Brasil*. Museu de Zoologia. Universidade de São Paulo, São Paulo, Brazil, 282 pp. + 165 plates.
- Jiménez-Ferbans, L., Reyes-Castillo, P., Schuster, J.C. & Salazar-Niño, K. (2013) A checklist and key for the identification of bess beetles (Coleoptera: Passalidae) of Argentina. *Zootaxa*, 3701 (2), 192–206.
<http://dx.doi.org/10.11646/zootaxa.3701.2.4>
- Kaup, J.J. (1871) Monographie der Passaliden. *Berliner Entomologische Zeitschrift*, 15, 1–125.
<http://dx.doi.org/10.1002/mmnd.18710150306>
- Reyes-Castillo, P. (2004) *La tribu Passalini (Coleoptera: Passalidae, Passalinae) en México*. PhD Thesis, Universidad Autónoma Metropolitana, Mexico City, Mexico, 170 pp.
- Reyes-Castillo, P. & Halffter, G. (1983) La structure sociale chez les Passalidae. *Bulletin de la Societ Entomologique de France*, 88, 619–635.
- Reyes-Castillo, P. & Jarman, M. (1980) Some notes on larval stridulation in neotropical Passalidae (Coleoptera: Lamellicornia). *The Coleopterists Bulletin*, 34, 263–270.
- Schuster, J.C. (1992) Passalidae: state of larval taxonomy with description of new world species. *Florida Entomologist*, 75, 357–369.
<http://dx.doi.org/10.2307/3495857>
- Schuster, J.C. & Reyes-Castillo, P. (1981) New world genera of Passalidae (Coleoptera): a revision of larvae. *Anales de la Escuela Nacional de Ciencias Biológicas*, 25, 79–116.