



<http://dx.doi.org/10.11646/zootaxa.3755.1.3>

<http://zoobank.org/urn:lsid:zoobank.org:pub:0486D86E-EEFF-453E-BD77-395094BED088>

An illustrated key to the New World genera of *Philonthina* Kirby (Coleoptera: Staphylinidae), with morphological, taxonomical and distributional notes

MARIANA CHANI-POSSE

Current affiliation: Laboratorio de Entomología, Instituto Argentino de Investigaciones de las Zonas Áridas (IADIZA, CCT CONICET, Mendoza), Casilla de Correo 507, 5500 Mendoza, Argentina. E-mail: mchani@mendoza-conicet.gob.ar

Abstract

An illustrated key to the 29 genera of *Philonthina* currently known in the New World is provided, based on adult morphological characters. Updated information on the morphology, taxonomic history, bionomics and distribution of the *Philonthina* in the study area is also provided.

Key words: Staphylininae, *Philonthina*, New World, taxonomy, distribution

Introduction

The subtribe *Philonthina* Kirby 1837, with 65 genera and about 2500 species currently cited (Herman 2001; Newton & Thayer 2005; Newton, unpublished database catalog), is the largest subtribe within Staphylinini in both number of genera and species, and also the most speciose subtribe within Staphylininae, accounting for more than one third of the species recorded for this subfamily (ca. 7000 spp.) (Herman 2001; Newton, unpublished database catalog). According to the above-mentioned authors, 29 genera of *Philonthina* are known to occur in the New World with over 700 species recorded. The species of the megadiverse and cosmopolitan genus *Philonthus* Stephens represent almost one half of that total, with 338 species currently recorded in the New World (Newton, unpublished database catalog). The large number of *Philonthus* species to be studied (over 1300 spp. worldwide) has been a challenging factor to achieve a modern generic classification of the subtribe. Additionally, most recent revisionary studies on the genera of *Philonthina* have been based on restricted regional scales (e.g. Smetana 1995; Schillhammer 1997, 1998, 1999, 2000, 2001, 2003; Hromádka 2008a,b, 2009, 2010a,b,c; Li *et al.* 2010).

As far as the New World is concerned, Navarrete-Heredia *et al.* (2002), Newton *et al.* (2000), Smetana (1995) and Coiffait & Sáiz (1968) have been the only modern authors to provide a key to the local genera of *Philonthina*. The first three contributions are restricted to the Nearctic region (Newton *et al.* 2000; Smetana 1995) and Mexico (Navarrete-Heredia *et al.* 2002). Thus, for such cases, the only connections to the Neotropical fauna are those genera that also occur in or north of Mexico (12 out of 29 genera). Smetana (1995), who revised the genera of *Philonthina* of America north of Mexico, deserves particular mention. This author provided a comprehensive basis for a modern taxonomic study of the subtribe, including a review of both the taxonomic and natural history, cladistic analysis, and a discussion of diagnostic characters and study techniques. Coiffait & Sáiz (1968), on the other hand, included only four of the currently valid genera of *Philonthina* in their key, as they restricted their study to the Chilean fauna of Staphylinidae. Since then, there has been no attempt to develop an identification tool for the genera of *Philonthina* from the New World. Concerning South America, the lack of both local specialists and available literature, and the scarcity of reliably identified material in local collections have made it almost impossible to understand the local diversity of the subtribe.

According to Newton (unpublished database catalog), 29 genera of *Philonthina* are currently known to occur in the New World. Among these, 17 genera are known only from the Neotropical region. Among the remaining 12 genera, *Laetulonthus* Moore & Legner is restricted to the Nearctic region and Mexico, and the other 11 genera are widespread to nearly worldwide taxa (Herman 2001; Newton & Thayer 2005). Most of the Neotropical genera

References

- Bernhauer, M. (1906) Neue Staphyliniden aus Südamerika. 3. Stück. *Verhandlungen der k. k. zoologisch-Botanischen Gesellschaft in Wien*, 56, 322–339.
- Bernhauer, M. (1908) Beitrag zur Staphylinidenfauna von Südamerika. *Archiv für Naturgeschichte* 74, 283–372.
- Bernhauer, M. (1912) Zur Staphylinidenfauna von Südamerika (10. Beitrag). *Verhandlungen der k. k. zoologisch-Botanischen Gesellschaft in Wien*, 62, 26–48.
- Bierig, A. (1937) Nuevos Staphylinini neotropicales. *Memorias de la Sociedad Cubana de Historia Natural "Felipe Poey"*, 11 (3), 191–205.
- Blackwelder, R.E. (1936) Morphology of the coleopterous family Staphylinidae. *Smithsonian Miscellaneous Collection*, 94 (13), 1–102.
- Blackwelder, R.E. (1943) Monograph of the West Indian beetles of the family Staphylinidae. *United States National Museum Bulletin*, 182, i–viii, 1–658.
<http://dx.doi.org/10.5479/si.03629236.182.i>
- Blackwelder, R.E. (1952) The generic names of the beetle family Staphylinidae, with an essay on genotypy. *United States National Museum Bulletin*, 200, i–iv, 1–483.
- Boller, F. (1983) Zur Larvalmorphologie der Gattung *Philonthus* Curtis (Coleoptera: Staphylinidae). *Spixiana*, 6, 113–131.
- Borgmeier, T. (1931) Sobre alguns coleopteros ecitophilos do Brasil (Staphylinidae). *Revista de Entomologia*, 1 (3), 355–367.
- Bouchard, P., Bousquet, Y., Davies, A.E., Alonso-Zarazaga, M.A., Lawrence, J.F., Lyal, C.H.C., Newton, A.F., Reid, C.A.M., Schmitt, M., Ślipiński, A. & Smith, A.B.T. (2011) Family-group names in Coleoptera (Insecta). *ZooKeys*, 88, 1–972.
<http://dx.doi.org/10.3897/zookeys.88.807>
- Brunke, A., Newton, A., Klimaszewski, J., Majka, C. & Marshall, S. (2011) Staphylinidae of Eastern Canada and Adjacent United States. Key to Subfamilies; Staphylininae: Tribes and Subtribes, and Species of Staphylinina. Canadian Journal of Arthropod Identification No. 12. Available from: http://www.biology.ualberta.ca/bsc/ejournal/bnkmm_12/index.html (accessed 20 January 2011)
- Byrne, M. (1993) The immature stages of *Philonthus sanamus* Tottenham (Coleoptera: Staphylinidae). *African Entomology*, 1 (2), 229–234.
- Cabrera Walsh, G. & Chani-Posse, M. (2003) Abundance and seasonal Distribution of predatory coprophilous Argentine rove beetles (Coleoptera: Staphylinidae), and their effects on dung breeding flies. *Coleopterists Bulletin*, 57 (1), 43–50.
- Chani-Posse, M. (2006a) Larval morphology and chaetotaxy of *Philonthus* Stephens (Coleoptera: Staphylinidae) based on descriptions of eight species from Argentina. *Annales Zoologici*, 56 (1), 7–28.
- Chani-Posse, M. (2006b) Systematic revision and cladistic analysis of the Neotropical genus *Chroaptomus* Sharp (Coleoptera: Staphylinidae), with descriptions of two new species. *Insect Systematics & Evolution*, 37, 361–383.
<http://dx.doi.org/10.1163/187631206788831452>
- Chani-Posse, M. (2010) Revision of the southern South American species of *Philonthus* Stephens (Coleoptera: Staphylinidae). *Zootaxa*, 2595, 1–70.
- Chani-Posse, M. (2011) Taxonomy of the genus *Gabrius* (Coleoptera: Staphylinidae) in southern South America. *Revista de la Sociedad Entomológica Argentina*, 70 (1–2), 1–15.
- Chani Posse, M. & Couturier, G. (2012) *Delgadobius amazonensis*—a new genus and species of the subtribe Philonthina from Amazonia (Coleoptera: Staphylinidae: Staphylininae). *Zootaxa*, 3568, 81–88.
- Chani Posse, M. (2013) Towards a natural classification of the subtribe Philonthina (Coleoptera: Staphylinidae: Staphylinini): a phylogenetic analysis of the Neotropical genera. *Systematic Entomology*, 38, 390–406.
<http://dx.doi.org/10.1111/syen.12003>
- Chani Posse, M. & Asenjo, A. (2013) Systematics and phylogeny of the Andean genera *Leptopeltus* Bernhauer and *Leptopeltoides* gen. nov. (Coleoptera: Staphylinidae), with biogeographical notes. *Zoologischer Anzeiger*, 252 (4), 440–456.
<http://dx.doi.org/10.1016/j.jcz.2013.02.001>
- Chani Posse de Maus, M. (2008) Systematic revision and cladistic analysis of the South American genus *Endeius* Coiffait & Sáiz (Coleoptera: Staphylinidae). *Insect Systematics & Evolution*, 39, 381–406.
<http://dx.doi.org/10.1163/187631208788784255>
- Chani Posse de Maus, M. (2009) Revision of some types of *Philonthus* Stephens and *Gabrius* Stephens from southern South America (Coleoptera: Staphylinidae), with nomenclatural notes. *Zootaxa*, 2034, 31–42.
- Chatzimanolis, S., Cohen, I.M., Schomann, A.S. & Solodovnikov, A. (2010) Molecular phylogeny of the mega-diverse rove beetle tribe Staphylinini (Insecta, Coleoptera, Staphylinidae). *Zoologica Scripta*, 39, 436–449.
<http://dx.doi.org/10.1111/j.1463-6409.2010.00438.x>
- Coiffait, H. & Sáiz, F. (1968) Les Staphylinidae (sensu lato) du Chili. In: Delamare Deboutteville, C. & Rapoport, E. (Eds.), *Biologie de l'Amérique Australe. Études sur la faune du sol*, 4. Centre National de la Recherche Scientifique, Paris, pp. 339–468.
- Downie, N.M. & Arnett, R.H. Jr. (1996) *The beetles of Northeastern North America*. Volume 1. Sandhall Crane Press, Gainesville, 880 pp.
- Fauvel A. (1874) Faune Gallo-Rhénane. *Bulletin de la Société Linnéenne de Normandie*, 8, 167–340.
- Fincher, G.T & Summerlin, J.W. (1994) Predation on the horn fly by three exotic species of *Philonthus*. *Journal of Agricultural*

Entomology, 11, 45–48.

- Frank, J.H. & Ahn, K.-J. (2011) Coastal Staphylinidae (Coleoptera): a worldwide checklist, biogeography and natural history. *Zookeys*, 107, 1–98.
<http://dx.doi.org/10.3897/zookeys.107.1651>
- Frank, J.H. & Barrera, R. (2010) Natural history of *Belonuchus* Nordmann spp. and allies (Coleoptera: Staphylinidae) in *Heliconia* L. (Zingiberales: Heliconiaceae) flower bracts. *Insecta Mundi*, 110, 1–12.
- Ganglbauer, L. (1895) *Die Käfer von Mitteleuropa. Die Käfer der österreichisch-ungarischen Monarchie, Deutschlands, der Schweiz, sowie des französischen und italienischen Alpengebietes. 2. Familienreihe Staphylinoidea. Theil I. Staphylinidae, Pselaphidae*. Carl Gerold's Sohn, Wien, 881 pp.
- Guimarães, J.A. & Mendes, J. (1998) Succession and abundance of Staphylinidae in cattle dung in Uberlândia, Brazil. *Memórias do Instituto Oswaldo Cruz*, 93, 127–131.
<http://dx.doi.org/10.1590/s0074-02761998000100024>
- Herman, L.H. (2001) Catalog of the Staphylinidae (Insecta: Coleoptera). 1758 to the end of the second millennium. Part V. *Bulletin of the American Museum of Natural History*, 265, 2441–3020.
- Holme, F. (1837) Notice of the coleopterous insects observed in the Scilly Islands in July and August, 1836. *The Transactions of the Entomological Society of London*, 2 (1), 58–64.
- Hromádka, L. (2008a) Revision of Afrotropical species of the *Philonthus abyssinus* species group (Coleoptera: Staphylinidae: Philonthina). *Acta Entomologica Musei Nationalis Pragae*, 48, 37–50.
- Hromádka, L. (2008b) Revision of Afrotropical species of the *Philonthus peripateticus* species group (Coleoptera: Staphylinidae: Philonthina). *Acta Entomologica Musei Nationalis Pragae*, 48, 51–65.
- Hromádka, L. (2009) Revision of the Afrotropical species of the *Philonthus caffer* species group (Coleoptera: Staphylinidae: Philonthina). *Acta Entomologica Musei Nationalis Pragae*, 49, 161–190.
- Hromádka, L. (2010a) A revision of the Afrotropical species of the *Philonthus arrowianus* species group (Coleoptera: Staphylinidae: Philonthina). *Acta Entomologica Musei Nationalis Pragae*, 50, 131–144.
- Hromádka, L. (2010b) Revision of Afrotropical species of the *Philonthus aemulus* species group (Coleoptera: Staphylinidae: Philonthina). *Acta Societatis Zoologicae Bohemicae*, 73 (1–2), 27–51.
- Hromádka, L. (2010c) Revision of the Afrotropical species of the *Philonthus marginipennis* species group (Coleoptera: Staphylinidae: Philonthina). *Acta Societatis Zoologicae Bohemicae*, 73 (1–2), 53–64.
- Hu, G.Y. & Frank, J.H. (1995) Structural comparison of the chorion surface of five *Philonthus* species (Coleoptera: Staphylinidae). *Proceedings of the Entomological Society of Washington*, 97 (3), 582–589.
- Hu, G.Y. & Frank, J.H. (1997) Predation on the horn fly (Diptera: Muscidae) by five species of *Philonthus* (Coleoptera: Staphylinidae). *Environmental Entomology*, 26, 1240–1246.
- James, G., Moore, I. & Legner, E.F. (1971) The larval and pupal stages of four species of *Cafius* (Coleoptera: Staphylinidae) with notes on their biology and ecology. *Transactions of the San Diego Society of Natural History*, 16, 279–289.
- Jeon, M.-J. & Ahn, K.-J. (2005) First larval descriptions for *Cafius* Curtis (Coleoptera: Staphylinidae: Staphylininae) in Korea. *Journal of the Kansas Entomological Society*, 78 (3), 261–271.
<http://dx.doi.org/10.2317/0410.21.1>
- Jeon, M.-J. & Ahn, K.-J. (2007) Descriptions of late instars of three littoral *Cafius* species (Coleoptera: Staphylinidae) by association of life stage with DNA sequences. *Florida Entomologist*, 90 (3), 465–474.
- Jiménez-Sánchez, E., Navarrete-Heredia, J.L. & Padilla-Ramirez, J.R. (2000) Estafilinidos (Coleoptera: Staphylinidae) necrófilos de la Sierra de Nanchititla, Estado de Mexico, Mexico. *Folia Entomologica Mexicana*, 108, 53–78.
- Kasule, F.K. (1970) The larvae of Paederinae and Staphylininae (Coleoptera: Staphylinidae) with keys to the known British genera. *Transactions of the Royal Entomological Society of London*, 122 (2), 49–80.
<http://dx.doi.org/10.1111/j.1365-2311.1970.tb00527.x>
- Koller, W.W., Gomes, A., Rodrigues, S.R. & Mendes, J. (2002) Staphylinidae (Coleoptera) Associated to Cattle Dung in Campo Grande, MS, Brazil. *Neotropical Entomology* [online], 31 (4), 641–645.
<http://dx.doi.org/10.1590/s1519-566x2002000400019>
- Kranebitter, P. & Schatz, I. (2002) The larval instars of *Philonthus aerosus* Kiesenwetter (subgenus *Kenonthus* Coiffait) from the central Alps (Tyrol, Austria) with a comparison of the known species of the genus (Coleoptera, Staphylinidae). *Entomologische Blätter*, 98, 61–64.
- Li, L. & Zhou, H.Z. (2010) Revision of the Chinese species of the genus *Belonuchus* Nordmann (Coleoptera: Staphylinidae: Philonthina). *Journal of Natural History*, 44, 2149–2177.
<http://dx.doi.org/10.1080/00222933.2010.483069>
- Li, L. & Zhou, H.Z. (2011) Revision and phylogenetic assessment of the rove beetle genus *Pseudohesperus* Hayashi, with broad reference to the subtribe Philonthina (Coleoptera: Staphylinidae: Staphylinini). *Zoological Journal of the Linnean Society*, 163, 679–722.
<http://dx.doi.org/10.1111/j.1096-3642.2011.00731.x>
- Li, L., Zhou, H.Z. & Schillhammer, H. (2010) Taxonomy of the genus *Hesperus* Fauvel (Coleoptera: Staphylinidae: Philonthina) from China. *Annales de la Société Entomologique de France (N.S.)*, 46, 519–536.
<http://dx.doi.org/10.1080/00379271.2010.10697688>
- Moore, I. (1975) The larva of *Cafius sulcicollis* LeConte (Coleoptera: Staphylinidae). *Pan-Pacific Entomology*, 51 (2), 140–

- Moore, I. & Legner, E.F. (1973) *Laetulonthus*, a new genus for *Philonthus laetulus* Say (Coleoptera: Staphylinidae). *Journal of the New York Entomological Society*, 80, 212–215.
- Morrone, J.J. (2006) Biogeographic areas and transition zones of Latin America and the Caribbean islands based on panbiogeographic and cladistic analyses of the entomofauna. *Annual Review of Entomology*, 51, 467–494.
<http://dx.doi.org/10.1146/annurev.ento.50.071803.130447>
- Morrone, J.J. (2009) *Evolutionary Biogeography: An Integrative Approach with Case Studies*. Columbia University Press, New York, 304 pp.
- Mulsant, E., & Rey, C. (1876) Tribu des brévipennes. [Staphyliniens]. *Annales de la Société d'Agriculture Histoire Naturelle et Arts utiles de Lyon*, (4), 8, 145–856.
- Navarrete-Heredia, J.L., Newton, A.F., Thayer, M.K., Ashe, J.S. & Chandler, D.S. (2002) *Guía ilustrada para los géneros de Staphylinidae (Coleoptera) de México. Illustrated guide to the genera of Staphylinidae (Coleoptera) of México*. Universidad de Guadalajara y Conabio, México, 401 pp.
- Newton, A.F., Thayer, M.K., Ashe, J.S. & Chandler, D.S. (2000) Staphylinidae Latreille, 1802. In: Arnett, R.H. & Thomas, M.C. (Eds.), *American Beetles*. Vol.1. *Archostemata, Myxophaga, Adepaga, Polyphaga: Staphyliniformia*. CRC Press, Boca Raton, pp. 272–418.
- Newton, A.F. & Thayer, M.K. (2005) *Catalog of higher taxa of Staphyliniformia and genera and subgenera of Staphylinodea* [online]. Field Museum of Natural History, Chicago. Available from: http://www.fieldmuseum.org/peet_staph/db_1a.html (accessed 3 May 2013)
- Nordmann, A. (1837) *Symbolae ad monographiam staphylinorum. Ex Academiae Caesareae Scientiarum*, 4, 1–167.
- Orth, R.E. & Moore, I. (1980) A revision of the species of *Cafius* Curtis from the west coast of North America with notes of the east coast species (Coleoptera: Staphylinidae). *Transactions of the San Diego Society of Natural History*, 19, 181–211.
- Paulian, R. (1941) Les premiers états des Staphylinodea (Col.). Étude de morphologie comparée. *Memoires du Museum Nationale d'Histoire Naturelle*, (N. S.) 15, 1–361.
- Pietrykowska-Tudruj, E. & Staniec, B. (2006) Description of the egg and larva of *Philonthus punctus* (Gravenhorst, 1802) (Coleoptera, Staphylinidae, Staphylininae). *Deutsche Entomologische Zeitschrift*, 53 (2), 179–192.
<http://dx.doi.org/10.1002/mmnd.200600015>
- Pietrykowska-Tudruj, E. & Staniec, B. (2007) The pupae of *Gabrius splendidulus* (Gravenhorst, 1802) and *Neobisnius villosulus* (Stephens, 1833) (Coleoptera: Staphylinidae). *Genus*, Wrocław, 18 (3), 351–358.
- Pietrykowska-Tudruj, E. & Staniec, B. (2010) The pupae of *Philonthus politus* (Linne, 1758), *Gabrius astutus* (Erichson, 1840) and *Quedius cinctus* (Paykull, 1790) (Coleoptera: Staphylinidae). *Genus*, 21 (1), 31–42.
- Pototskaya, V.A. (1966) Les larves de la tribu Philonthini (Coleoptera: Staphylinidae). *Revue d'Ecologie et de Biologie du Sol*, 3, 141–162.
- Pototskaya, V.A. (1967) *Opredelitel' lichinok korotkonadkrylykh zhukov evropeiskoi chasti SSSR*. Moskva, Academiya Nauk SSSR, Izdatel'stvo Nauka, 120 pp.
- Schillhammer, H. (1997) Taxonomic revision of the Oriental species of *Gabrius* Stephens. *Monographs on Coleoptera*, 1, 1–139.
- Schillhammer, H. (1998) Revision of the East Palaearctic and Oriental species of *Philonthus* Stephens-Part 1. The *cyanipennis* group. *Koleopterologische Rundschau*, 68, 101–118.
- Schillhammer, H. (1999) Revision of the East Palaearctic and Oriental species of *Philonthus* Stephens-Part 2. The *spinipes* and *cinctulus* groups. *Koleopterologische Rundschau*, 69, 55–65.
- Schillhammer, H. (2000) Revision of the East Palaearctic and Oriental species of *Philonthus* Stephens-Part 3. The *politus* complex. *Koleopterologische Rundschau*, 70, 113–176.
- Schillhammer, H. (2001) Revision of the East Palaearctic and Oriental species of *Philonthus* Stephens-Part 4. The *amplitarsis* group and an additional species of the *cinctulus* group. *Koleopterologische Rundschau*, 71, 59–65.
- Schillhammer, H. (2003) Revision of the East Palaearctic and Oriental species of *Philonthus* Stephens-Part 5. The *rotundicollis* and *sanguinolentus* species groups. *Koleopterologische Rundschau*, 73, 85–136.
- Schmidt, D.A. (1994) Notes of the biology and a description of the egg, third instar larva and pupa of *Neobisnius sobrinus* (Coleoptera: Staphylinidae). *Transactions of the Nebraska Academy of Sciences*, 21, 55–61.
- Seevers, C.H. (1965) The systematics, evolution and zoogeography of staphylinid beetles associated with army ants (Coleoptera, Staphylinidae). *Fieldiana, Zoology*, 47 (2), 139–351.
- Silvestri, F. (1945) Descrizione e biologia del coleottero stafilinide *Belomuchus formosus* Grav. Introdotto in Italia per la lotta contro ditteri tripanei. *Bolletino del Laboratorio Reale di Entomologia Agraria*, Portici 5, 312–326.
- Sharp, D.S. (1884) Staphylinidae. In: *Biologia Centrali-Americana. Insecta. Coleoptera*, 1 (2), 313–392.
- Sharp, D.S. (1885) Staphylinidae. *Biologia Centrali-Americana. Insecta. Coleoptera*, 1 (2), 393–536.
- Smetana, A. (1995) Rove beetles of the subtribe Philonthina of America north of Mexico (Coleoptera: Staphylinidae): Classification, phylogeny and taxonomic revision. *Memoirs on Entomology, International*, 3, 1–946.
<http://dx.doi.org/10.2307/3495761>
- Smetana, A. & Davies, A. (2000) Reclassification of the north temperate taxa associated with *Staphylinus* sensu lato, including comments on relevant subtribes of Staphylinini (Coleoptera: Staphylinidae). *American Museum Novitates*, 3287, 1–88.
- Staniec, B. & Kitowski, I. (2004) A description of the pupae of *Philonthus umbriatilis* (Gravenhorst, 1802), *Ph. lepidus* (Gravenhorst, 1802) and *Bisnius* (= *Philonthus* sensu lato) *nitidulus* (Gravenhorst, 1802) (Coleoptera: Staphylinidae).

Genus, Wrocław, 15 (1), 47–58.

- Staniec, B. & Pietrykowska-Tudruj, E. (2005) The pupae of *Gyrophypnus fracticornis* (Müller, 1776) and *Philonthus tenuicornis* Mulsant & Rey, 1853 (Coleoptera: Staphylinidae: Staphylininae). *Genus*, 16 (3), 331–339.
- Staniec, B. & Pietrykowska-Tudruj, E. (2007) Developmental stages of *Philonthus rubripennis* Stephens, 1832 (Coleoptera, Staphylinidae, Staphylininae) with comments of its biology. *Deutsche Entomologische Zeitschrift*, 54 (1), 95–113.
<http://dx.doi.org/10.1002/mmnd.200700010>
- Staniec, B. & Pietrykowska-Tudruj, E. (2008a) Morphology of developmental stages and notes on biology of *Philonthus nigrata* (Gravenhorst, 1806) (Coleoptera, Staphylinidae) – a stenotopic species inhabiting of *Sphagnum* peatbogs. *Deutsche Entomologische Zeitschrift*, 55 (1), 167–183.
<http://dx.doi.org/10.1002/mmnd.200800015>
- Staniec, B. & Pietrykowska-Tudruj, E. (2008b) Morphology of developmental stages of *Philonthus fumarius* (Gravenhorst, 1806) (Coleoptera, Staphylinidae) with notes on biology. *Acta Zoologica Academiae Scientiarum Hungaricae*, 54 (3), 213–234.
- Staniec, B. & Pietrykowska-Tudruj, E. (2010) The first description of the mature larva of *Bisnius nitidulus* (Gravenhorst, 1802) (Coleoptera: Staphylinidae). *Genus*, Wrocław, 21 (2), 205–217.
- Stephens, J.F. (1829) *The Nomenclature of British Insects; Being a Compendious List of Such Species as are Contained in the Systematic Catalogue of British Insects, and Forming a Guide to their Classification*. Baldwin & Cradock, London, 68 pp.
- Topp, W. (1978) Bestimmungstabelle für die Larvae der Staphylinidae (Coleoptera). In: Klausnitzer, B. (Ed.), *Ordnung Coleoptera (Larven)*. W. Junk, The Hague, pp. 304–334, 85 figs.
- Tottenham, C.E. (1955) Studies in the genus *Philonthus* Stephens (Coleoptera: Staphylinidae). Parts II, III, and IV. *Transactions of the Royal Entomological Society of London*, 106, 3, 153–195.
<http://dx.doi.org/10.1111/j.1365-2311.1955.tb00783.x>
- Wasmann, E. (1894) *Kritisches Verzeichniss der Myrmekophilen und Termitophilen Arthropoden. Mit Angabe der Lebensweise und mit Beschreibung neuer Arten*. Felix L., Dames, Berlin, xiii + 231 pp.
- Wasmann, E. (1923) Zum mimikrytopus der dorylophilen Aleocharinen. *Tijdschrift voor Entomologie*, 66, LVII–LXX.