Zootaxa 3790 (2): 281–318
www.mapress.com/zootaxa/

Article

ISSN 1175-5326 (print edition)
ZOOTAXA
ISSN 1175-5334 (online edition)

http://dx.doi.org/10.11646/zootaxa.3790.2.3
http://zoobank.org/urn:lsid:zoobank.org:pub:2817E185-8CD2-490F-A35D-3240CB05915A

A review of the natural history of adult Cetoniinae (Coleoptera: Scarabaeidae) from Argentina and adjacent countries

OSVALDO DI IORIO

Entomología. Departamento de Biodiversidad y Biología Experimental. Facultad de Ciencias Exactas y Naturales. 4º Piso, Pabellón II, Ciudad Universitaria C1428EHA, Buenos Aires, Argentina. E-mail: megacyllene@yahoo.com.ar

Abstract

A compilation of the known natural history of adult Cetoniinae (Coleoptera: Scarabaeidae) from Argentina and adjacent countries is provided. Food items of adult Cetoniinae include pollen and/or nectar (flower visitors), sap and/or slime flux, ripened fruits on plants, green tissues and leaves, and honey. Of the 36 species of Cetoniinae from Argentina, food items are known only for 11 species (30.5%). Attraction to light and bait-traps, adult activity periods, vertebrate predators, and the occurrence in bird nests are presented and discussed. Other insects that share the same food sources and bait-traps with Cetoniinae are mentioned.

Key words: fruit chafers, food items, activity periods, predators

Introduction

Cetoniine beetles (Coleoptera: Scarabaeidae: Cetoniinae) are widely known as "fruit chafers" due to their occurrence on ripened fruits, but they are also flower visitors and sap feeders. Willemstein (1978) listed all worldwide Cetoniinae known to visit flowers, but this list comprises all kind of foods ingested by Cetoniinae. Regretably, the countries and localities of all records were not given nor were adult activities and the parts of the plants visited.

The present compilation of the known natural histories of adult cetoniine beetles is the continuation of the systematic account and the geographic distributions of the Cetoniinae from Argentina and adjacent countries (Di Iorio 2013). New data about adult food items, attraction to light and bait traps, activity periods, their occurrence in birds' nests and predators are provided.

Materials and methods

For each species treated here, literature and new records of food items are listed in the text and/or in tables. Records of specimens captured in bait-traps, light traps, bird nests, and/or in other concealed situations are also included following the previous ones. Countries, states (Brazil), departments (Bolivia, Paraguay, Uruguay) and/or provinces (Argentina) are ordered from north to south and from west to east. All localities from Argentina mentioned here were plotted in maps by Di Iorio (2013).

All identifications of the specimens examined of Cetoniinae from Argentina and adjacent countries are based on Di Iorio (2013). Suprageneric classification and family-group names of Cetoniinae follow the work of Bouchard *et al.* (2011). Authors and years of specific names of Cetoniine follow Krajčík (1998, 1999) and Di Iorio (2013). The nomenclature in other insect groups was based on Di Iorio (2005) (Coleoptera: Cerambycidae), Hayward (1973) (diurnal Lepidoptera), and Wood (1993) (Coleoptera: Platypodidae). The species of Elateridae (Coleoptera) were identified following Casari (1998, 2002). Botanical names follow Wiersema & León (1999) for cultivated and exotic plants, and Zuloaga & Morrone (1999) and Stehmann *et al.* (2009) for native and naturalized exotic plants. Bird names were updated from the Comitê Brasileiro de Registros Ornitológicos (2007).

Accepted by A.B.T. Smith: 10 Mar. 2014; published: 17 Apr. 2014

Whereas some of these dead insects were represented in the nests by fragments alone, others were nearly entire, with delicate parts (antennae, tarsi) intact, or they were entire but with signs of predation. These insects were interpreted as prey remains of *A. annumbi* (in the cases of fragments), or food items given to the nestlings but not eaten (entire insects with signs of predation) (Turienzo & Di Iorio 2008).

The raptor *Speotyto cunicularia partridgei* (Aves: Strigidae) has the greatest number of records of prey items for any bird in Argentina (Pardiñas & Cirignoli 2002), but no Cetoniinae have yet been recorded as prey except one undetermined species in Brazil (Table 12). *Marmarina tigrina* is mentioned here for the first time as a prey item (Fig. 20), and this constitutes the second record of a cetoniine as prey of a bird from Argentina after Turienzo & Di Iorio (2008), and the second Cetoniinae for this raptor bird (Table 12).

Cetoniinae in bird nests. It is known that several species of insects use bird nests as a shelter during autumn and winter (hibernating, in diapause), and others also use the nests in summer (aseasonal quiescence) (Turienzo & Di Iorio 2008, 2010, 2011). Coincidently, the adults of *G. litigiosa* in some bird nests were found in both winter (hibernating) and summer (aseasonal quiescence). No other reasons explained the presence of *G. litigiosa* in some birds nests because no larvae of Cetoniinae were found in a total of 695 birds nests in 13 bird families sampled between 2005 and 2011 (Turienzo & Di Iorio, personal observations). Ramirez Martinez (2010) also found five adults of one undetermined Gymnetini in a total of 67 nests examined of *Amazona aestiva* (Linnaeus, 1758) (Aves: Psittacidae) from Mato Grosso do Sul (Brazil), but the exact date was not given.

Acknowledgments

This work was greatly improved with the generous help of several persons: Esteban Abadie, Leonardo Aguado, Alejandro Borquez, Carlos Calderón, Joaquín Carreras, Lucas Damer, Aldo Fortino, Juan Pablo Torretta, Carlor Ufor, Pablo Wagner, and Gastón Zubarán for the access to their respective collections; Alejandro Borquez, Joaquín Carreras, Lucas Damer, Marcela Kosikarisky, Juan Pablo Torretta, and Pablo Wagner for the accession of specimens; Nicolás Lois and María Sol Rodríguez for the predated specimens of *M. tigrina*; Alejandro Perez Bisbal (Reserva Ecológica de Vicente López) for permission to collect; Rocío González and Lucas Damer (Reserva Ecológica de Vicente López) for their help in monitoring *Salix* trees; Alejandro Borquez, Rocío González, Lucas Damer, Nicodemos Rosa (Pitanguí, Minas Gerais, Brazil), and Alejandro Segarra (University of Puerto Rico) for use of their respective photographs; Alejandro Borquez, Carlos Calderon, Joaquín Carreras, Andrea Cocucci, Lucas Damer, María Luisa Ríos de Saluso, Pablo Wagner, for their personal observations; Fernando Penco for the correct identification of *Opsiphanes invirae* (= *O. quiteria meridionalis*, not Staudinger: Di Iorio 2003). This work was also greatly improved by comments and corrections of anonymous reviewers who are fully acknowledged, as well as the editor, Andrew Smith.

References cited

Amela García, M.T. & Hoc, P.S. (1998) Aspectos de la biología floral y el sistema reproductivo de *Passiflora mooreana* (Passifloraceae). *Darwiniana*, 35, 9–27.

Berg, G.H. (without date) *Insectos que atacan el cafeto*. Organismo Internacional Regional de Sanidad Agropecuaria. Manual entomológico para Inspectores de Cuarentena Vegetal, Tercera Parte, Mexico, 85 pp.

Bernhardt, P. (2000) Convergent evolution and adaptative radiation of beetle-pollinated angiosperms. *Plant Systematics and Evolution*, 222, 293–320.

Bertels, A. (1962) Insetos-hóspedes de Solanáceas. *Iheringia*, *Serie Zoologia*, 25, 1–11.

Biezanko, C.M., Bertholdi, R.E., & Baucke, O. (1949) Relação dos principais insetos prejudiciais observados nos arredores de Pelotas nas plantas cultivadas e selvagens. *Agros*, 2, 156–213.

Blanchard, E.E. (1939) Los animales enemigos de la fruticultura argentina y los medios de combatirlos. *Ministerio de Agricultura, Dirección de Propaganda y Publicaciones, Publicación Miscelánea*, 58, 1–192.

Boldt, P.E. & Robbins, T.O. (1994) Phytophagous insect faunas of *Baccharis salicina*, *B. pteronioides*, and *B. bigelovii* (Asteraceae) in the southwetern United States and northern Mexico. *Environmental Entomology*, 23, 47–57.

Bondar, G. (1950) Notas entomologicas da Bahia. XXII. *Revista Entomologica*, 21, 449–480.

Boos, J. & Ratcliffe, B.C. (1985) A new subspecies of *Inca clathrata* from Trinidad, West Indies, and range extensions for *Inca clathrata*. *The Coleopterists Bulletin*, 39, 381–389.

Bosq, J.M. (1926) *Euphoria lurida* (F.) (Cetonini). Ministerio de Agricultura, Dirección General de Agricultura y Defensa

Agrícola, Buenos Aires, Argentina, 1 pp.
Bosq, J.M. (1942) Segunda lista de coleópteros de la República Argentina dañinos a la agricultura. *Ingeniería Agronómica*, Buenos Aires, 4 (18), 17–26; 4 (19), 49–63; 4 (20), 93–111; 4 (21), 153–176; 4 (22), 188–199.
Bosq, J.M. (1943) *Segunda lista de coleópteros de la República Argentina dañinos a la agricultura.* Ministerio de Agricultura de la Nación, Dirección de Sanidad Vegetal, División de Zoología Agrícola. Buenos Aires, Argentina, 80 pp. [republication of Bosq 1942]
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, S.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
Briceño Vergara, A. & Ramírez, W. (2000) Diagnóstico de insectos Coleoptera asociados a las plantaciones de plátano en el sur del Lago de Maracaibo – Venezuela. *Revista Forestal Venezolana*, 44, 93–99.
Bruch, C. (1919) Metamórfosis de *Cotinis semiopaca* Moser (Col. Lamel.). *Physis*, 4, 393–399.
Bruch, C. (1929) Neue myrmecophile Histeriden und Verzeichnis der aus Argentinien bekannten Ameisengäste. *Zoologischer Anzeiger*, Wasmann Festband, 1929, 421–437.
Burmeister, H.C.K. (1861) *Reise durch die La Plata-Staaten, mit besonderer Rücksicht auf die physische Beschaffenheit und der Culturzustand der Argentinischen Republik. Ausgepührt in den Jahren 1857, 1858, 1858, und 1860*. H.W. Schmidt, Halle, Germany. *Vol. I*. vi + 503 pp., *Vol. II*. iv + 538 pp.
Burmeister, H.C.K. (1866) Coleópteros lamelicornios melitófilos de las provincias argentinas. *Revista Farmacéutica*, 4, 573–577.
Burmeister, H.C.K. (1943) *Viaje por los estados del Plata con referencia especial a la constitución física y al estado de cultura de la República Argentina en los años 1857, 1858, 1859 y 1860*. Unión Germánica en la Argentina (Editores). Imprenta Mercur, Buenos Aires. *Vol. I*. xiv + 521 pp., *Vol. II*. ix + 567 pp. [Spanish edition of Burmeister 1861]
Cabrera, A. & Fabris, H.A. (1965) Cactaceae. *In*: Instituto Nacional de Tecnología Agropecuaria (Ed.), *Flora de la provincia de Buenos Aires*. *Parte IV. 2. Oxalidáceas a Umbellíferas*. Colección Cientifica del I.N.T.A. Instituto Nacional de Tecnología Agropecuaria, Buenos Aires, pp. 262–269.
Campos R.F. (1921) Estudios sobre la fauna entomológica del Ecuador. 3º Coleópteros. *Revista del Colegio Nacional "Vicente Rocafuerte"*, 6, 24–100.
Casanova, P. & Korytkowski C. (1968) Catálogo del Museo de Entomología de la Universidad Agraria del Norte – Lambayeque. *Universidad Agraria del Norte, Facultad de Agronomía, Departamento de Entomología, Catálogo del Museo*, 1, 1–73.
Casari, S.A. (1998) Revision of *Hemirhipus* Latreille, 1825 (Coleoptera, Elateridae). *Revista Brasileira de Entomología*, 41, 317–334.
http://dx.doi.org/10.1590/s0085-56262004000400006
Casari, S.A. (2002) Review of the genus *Chalcolepidius* Eschscholtz, 1829 (Coleoptera, Elateridae, Agrypninae). *Revista Brasileira de Entomología*, 46, 263–428.
hhttp://dx.doi.org/10.1590/s0085-56262002000300007
Comitê Brasileiro de Registros Ornitológicos (2007) *Lista das aves do Brasil*. 6ª edição (16 de Agosto de 2007). Comitê Brasileiro de Registros Ornitológicos, Sociedade Brasileira de Ornitología. Available from: http://www.cbro.org.br (accessed April 2008)
Cordo, H.A. & DeLoach, C.J. (1987) *Insects that attack Mesquite (Prosopis spp.) in Argentina and Paraguay. Their possible use for biological control in the United States*. United States Department of Agriculture, Agricultural Research Service, ARS-62, South American Biological Control Laboratory, Hurlingham, Buenos Aires, Argentina, 36 pp.
Cordo, H.A. & DeLoach, C.J. (1995) Natural enemies of the rangeland weed (*Aloysia gratissima*: Verbenaceae) in South America: potential for biological control in the United States. *Biological Control*, 5, 218–230.
Costa Lima, A.M. da (1936) *Terceiro catalogo dos insectos que vivem nas plantas do Brasil.* Ministerio da Agricultura, Departamento Nacional da Producção Vegetal, Escola Nacional de Agronomia, Directoria de Estadistica da Producção, Secção de Publicidade, Rio de Janeiro, Brazil, 460 pp.
Costa Lima, A.M. da (1953) Insetos do Brasil. 8° Tomo Coleópteros, 2ª Parte. Escola Nacional de Agronomia, Série Didática, 10, 1–323.
Cunha, U. da S., Grützmacher, A.D., Martins, J.F. da S., Stefanello Junior, G.J. & Jardim, E. de O. (2007) Ocorrência de *Euphoria lurida* (Fabricius) (Coleoptera: Scarabaeidae) em milho cultivado em várzea no Rio Grande do Sul. *Neotropical Entomology*, 36, 976–979.
http://dx.doi.org/10.1590/S1519-566X2007000600023
Denier, P.C.L. (1939) Lista de los artrópodos daninos o útiles a los algodonales argentinos. *Physis*, 17, 553–567.
De Santis, L. (1992) Entomología. *Evolución de las Ciencias en la República Argentina*, 8, 1–323.
Di Iorio, O.R. (2003) Feeding habits of adult Cerambycidae (Coleoptera) and other insects from Argentina. *Giornale italiano di Entomologia*, 10, 175–204.
Di Iorio, O.R. (2004a) Cetoniinae. *In*: Cordo, H.A., Logarzo, G.A., Braun, K. & Di Iorio, O.R. (Eds.), *Catálogo de Insectos fitófagos de la República Argentina y sus plantas asociadas*. Sociedad Entomológica Argentina & South American Biological Control Laboratory (USDA/ARS), Buenos Aires, Argentina. pp. 183–184.
Di Iorio, O.R. (2004b) Rutelinae. *In*: Cordo, H.A., Logarzo, G.A., Braun, K. & Di Iorio, O.R. (Eds.), *Catálogo de Insectos fitófagos de la República Argentina y sus plantas asociadas*. Sociedad Entomológica Argentina & South American Biological Control Laboratory (USDA/ARS). Buenos Aires, Argentina, pp. 194–196.

Di Iorio, O.R. (2005) *A field guide of the longhorned beetles (Coleoptera: Cerambycidae) from Argentina.* E.I. Abadie & P.S. Wagner (Coordinators). Digital Tech, Buenos Aires, Argentina, xiv + 98 pp., 74 plates.

Di Iorio, O.R. (2013) A review of the Cetoniine (Coleoptera: Scarabaeidae) from Argentina and adjacent countries: systematics and geographic distributions. *Zootaxa*, 3668 (1), 1–87.
http://dx.doi.org/10.11646/zootaxa.3668.1.1

Fonseca, J.P. da (1934) Relação das principais pragas observadas nos anos de 1931, 1932 e 1933, nas plantas de maior cultivo no Estado de S. Paulo. *Arquivos do Instituto Biológico*, 5, 263–289.

Gallego, F.L. (1967) Lista preliminar de insectos de importancia económica y secundarios, que afectan los principales cultivos, animales domésticos y al hombre, en Colombia. *Revista de la Facultad Nacional de Agronomía*, Medellín, 26, 32–66.

Gara, R.I. & Onore, G. (1989) *Entomología forestal.* Proyecto DINAF–AID, Quito, Ecuador, 267 pp.

García, A.H. (1987) Ocorrência de escarabaeídos indicando a presença de larva de *Macropophora accentifer* (Olivier, 1795) em plantas cítricas. *Anais da Escola de Agronomía e Veterinaria*, 17, 37–42.

García, A.H. (1994) Ocorrência e danos de *Compsocerus violaceus* (White, 1853) (Coleoptera, Cerambycidae) em pomar de citros. *Anais da Escola de Agronomía e Veterinaria*, 24, 157–162.

García, A.H. & Gomes da Cunha, M. (1994) Comportamento da população de *Compsocerus violaceus* (White, 1853) (Coleoptera, Cerambycidae) em relação a fauuna de cerambicídeos coletados em pomares de citros. *Anais da Escola de Agronomía e Veterinaria*, 24, 163–172.

García, A.H. & Nakano, O. (1984) Avaliação da atractividade de melaço de cana e proteína de milho na captura de coleobrocas em citros. *Laranja*, 5, 289–297.

García, A.H., Gomes da Cunha, M., & Veloso, V.R.S. (1993a) Fluctuação populacional de *Euphoria lurida* (Fabricius, 1775) (Coleoptera – Scarabaeidae) em pomar cítrico. *Anais da Escola de Agronomía e Veterinaria*, 21, 199–204.

García, A.H., Veloso, V.R.S. & Gomes da Cunha, M. (1993b) Variedades de citros mais suscetíveis ao ataque de *Macropophora accentifer* (Olivier, 1795) (Coleoptera, Cerambycidae). *Anais da Escola de Agronomía e Veterinaria*, 23, 187–197.

Garcia, F.R.M. & Corseuil, E. (1998–1999) Flutuação populacional de cerambicídeos e escarabeídeos (Coleoptera) em pomares de pessegueiro no município de Porto Alegre, Rio Grande do Sul. *Revista da Facultade de Zootecnia, Veterinaria e Agronomía, Uruguaiana*, 5–6, 61–70.
http://dx.doi.org/10.1590/s0101-81751998000100013

Gómez de Silva, H., Pérez-Villafaña, M. & Santos-Moreno, J.A. (1997) Diet of the Spectacle Owl *Pulsatrix perspicillata* during the rainy season in northern Oaxaca, Mexico. *Journal of Raptor Research*, 31, 385–387.

Hammons, D.L., Kurtural, S.K., Newman, M.C. & Potter, D.A. (2009) Invasive Japanese beetles facilitate aggregation and injury by a native scarab pest of ripening fruits. *Proceedings of the National Academy of Sciences of the United States of America*, 106, 3686–3691.
http://dx.doi.org/10.1073/pnas.0811097106

Hayward, K.J. (1935–1936) Six months collecting along the Alto Paraná, Argentina. *The Proceedings of the South London Entomological and Natural History Society*, 1935–1936, 55–83.

Hayward, K.J. (1938) *Informe Anual de la Sección Entomológica*. Estación Experimental de Concordia, Entre Ríos, Argentina, 86 pp.

Hayward, K.J. (1941) Insectos de importancia económica en la región de Concordia (Entre Ríos). *Revista de la Sociedad Entomológica Argentina*, 11, 68–109.

Hayward, K.J. (1942) Primera lista de insectos tucumanos perjudiciales. *Estación Experimental Agrícola de Tucumán, Publicación Miscelánea*, 1, 1–110.

Hayward, K.J. (1944) Primera lista de insectos tucumanos perjudiciales. Primer suplemento. *Estación Experimental Agrícola de Tucumán, Publicación Miscelánea*, 4, 1–32.

Hayward, K.J. (1960) Insectos tucumanos perjudiciales. *Revista Industrial y Agrícola de Tucumán*, 42, 3–144.

Hayward, K.J. (1973) Catálogo de los ropalóceros argentinos. *Opera Lilloana*, 23, 1–318.

Hedström, I. (1986) Pollen carriers of *Cocos nucifera* L. (Palmae) in Costa Rica and Ecuador (Neotropical region). *Revista de Biología Tropical*, 34, 297–301.

Hedström, I. & Elmqvist, T. (1984) *Prepona* butterflies (Nymphalidae) and *Hoplopyga* beetles (Scarabaeidae) on the same food source during the Neotropical dry season – a case of commensalism? *Revista de Biología Tropical*, 32, 313–316.

Holm, E. & Stobbia, P. (1995) Fruit chafers of southern Africa (Scarabaeidae: Cetoniinae). Appendix I. *Giornale italiano di Entomologia*, 7, 289–300.

Howden, H.F. (1968) A review of the Trichiinae of North and Central America (Coleoptera: Scarabaeidae). *Memoirs of the Entomological Society of Canada*, 54, 1–77.

Jameson, M.L. & Swoboda, K.A. (2005) Synopsis of scarab beetle tribe Valgini (Coleoptera: Scarabaeidae: Cetoniinae) in the New World. *Annals of the Entomological Society of America*, 98, 658–672.

Kistner, D.H. (1982) The social insects' bestiary. *In*: Hermann, H.R. (Ed.), *Social Insects*. *Vol. 2*. Academic Press, New York, New York, United States of America, 244 pp.

Kono, M. & Tobe, H. (2007) Is *Cycas revoluta* (Cycadaceae) wind- or insect-pollinated? *American Journal of Botany*, 94, 847–855.
http://dx.doi.org/10.3732/ajb.94.5.847

Krajčík, M. (1998) Cetoniidae of the World. Catalogue – Part 1. Published by the author, Most, Czech Republic, 96 pp.

Krajčík, M. (1999) Cetoniidae of the World. Catalogue – Part 2. Published by the author, Most, Czech Republic, 72 pp.
Krikken, J. (1984) A new key to the suprageneric taxa in the beetle family Cetoniidae, with annotated lists of the known genera. *Zoologische Verhandelingen*, 210, 1–75.
Küchmeister, H., Silverbauer-Gottsberger, I. & Gottsberger, G. (1997) Flowering, pollination, nectar standing crop, and nectaries of *Euterpe precatoria* (Arecaceae), an Amazonian rain forest palm. *Plants systematics and Evolution*, 206, 71–97.
Le Pelley, R.H. (1973) *Las Plagas del Café.* Editorial Labor, Madrid, Spain, 693 pp.
Linsley, E.G. & Cazier, M.A. (1963) Attraction of insects to exudates of *Verbesina encelioides* and *Iva ambrosiaefolia*. *Bulletin of the Southern California Academy of Sciences*, 62, 109–129.
Lopes, L.A., Blochtein, B. & Ott, A.P. (2007) Diversidade de insetos antófilos em áreas com reflorestamento de eucalipto, Município de Triunfo, Rio Grande do Sul, Brasil. *Iheringia*, *Série Zoologia*, 97, 181–193.
http://dx.doi.org/10.1590/S0073-47212007000200008
Luederwaldt, H. (1911) Quatro lamellicorneos termitophilos. *Revista del Museo Paulista*, 8, 405–413.
Maldonado Bruzzone, R. (1927) Notas lepidopterológicas. I. Estaciones del *Morpho catenarius* (Perty) en la costa bonaerense del Río de la Plata. *Revista de la Sociedad Entomológica Argentina*, 3, 15–16.
Marín, G., Jiménez, B., Peña-Chocarro, M. & Knapp, S. (1998) *Plantas comunes de Mbaracayú. Una guía de las plantas de la Reserva Natural del Bosque Mbaracayú, Paraguay.* The Natural History Museum, London, United Kingdom, 172 pp.
Marler, T.E. & Muniappan, R. (2006) Pests of *Cycas micronesica* leaf, stem, and male reproductive tissues with notes on current threat status. *Micronesica*, 39, 1–9.
Medina, J.A. & Kondo, T. (2012) Listado taxonómico de organismos que afectan la pitaya amarilla, *Selenicereus megalanthus* (K. Schum. ex Vaupel) Moran (Cactaceae) en Colombia. *Revista Corpoica - Ciencia y Tecnología Agropecuaria*, 13, 41–46.
Medina, R. & Guzmán de Tomé, M. (2006) Características del género *Euphoria* Burmeister, 1842 (Coleoptera: Scarabaeidae) y daño que producen en plantaciones de maíz, *In*: *Reunión Argentina de Ciencias Naturales & IX Jornadas de Ciencias Naturales del Litoral*. Universidad Nacional del Litoral, Paraná, Argentina, pp. 62.
Monné, M.A. (1970) *Fauna de los coleópteros del Uruguay.* Facultad de Agronomía, Montevideo, Uruguay, 216 pp.
Morán Lemir, A.H. (1985) Entomofauna relacionada con *Flaveria bidentis* (L.) O.K. (Compositae) en las provincias de Tucumán y Santiago del Estero (República Argentina). *Cirpón, Revista de Investigación*, 3, 39–51.
Morón, M.A. & Arce, R. (2002) Descriptions of the immature stages of five Mexican species of Gymnetini (Coleoptera: Scarabaeidae: Cetoniinae). *Proceedings of the Entomological Society of Washington*, 104, 1036–1054.
Nath, P. & Singh, J. (1994) Impact of weather factors on light-trap catches of scarabaeid beetles (Col., Scarabaeidae). *Giornale italiano di Entomologia*, 7, 137–141.
Navarrete-Heredia, J.L. (2001) Beetles associated with *Atta* and *Acromyrmex* ants (Hymenoptera: Formicidae: Attini). *Transactions of the American Entomological Society*, 127, 381–429.
Neita, J.C., Orozco, J. & Ratcliffe, B. (2006) Escarabajos (Scarabaeidae: Pleurosticti) de la selva baja del bosque pluvial tropical «BP-T», Chocó, Colombia. *Acta Zoológica Mexicana*, Nueva Serie, 22, 1–32.
Orozco, J. (2012) Monographic revision of the American genus *Euphoria* Burmeister, 1842 (Coleoptera: Scarabaeidae: Cetoniinae). *The Coleopterists Society, Monograph*, 11, 1–182.
Ovruski, S. (2004a) Tephritidae: Dacinae. *In*: H Cordo, H.A., Logarzo, G.A., Braun, K. & Di Iorio, O.R. (Eds.), *Catálogo de Insectos fitófagos de la República Argentina y sus plantas asociadas*. Sociedad Entomológica Argentina & South American Biological Control Laboratory (USDA/ARS). Buenos Aires, Argentina, pp. 222–225.
Ovruski, S. (2004b) Tephritidae: Trypetinae. *In*: Cordo, H.A., Logarzo, G.A., Braun, K. & Di Iorio, O.R. (Eds.), *Catálogo de Insectos fitófagos de la República Argentina y sus plantas asociadas*. Sociedad Entomológica Argentina & South American Biological Control Laboratory (USDA/ARS). Buenos Aires, Argentina, pp. 231–234.
Pardiñas, U.F.J. & Cirignoli, S. (2002) Bibliografía comentada sobre los análisis de egagrópilas de aves rapaces en Argentina. *Ornitología Neotropical*, 13, 31–59.
Perty, M. (1830) *Delectus animalium articulatorum quae in itinere per Brasiliam annis MDCCCXVII–MDCCCXX jussu et auspiciis Maximiliani Josephi I. Bavariae regis augustissimi peracto collegerunt Dr. J.B. de Spix et Dr. C.F. Ph. de Martius*. Münich, Germany, 216 pp.
http://dx.doi.org/10.5962/bhl.title.9366
Posada Ochoa, L. (1989) Lista de insectos dañinos y otras plagas en Colombia. *Ministerio de Agricultura, Instituto Colombiano Agropecuario, División de Disciplinas Agrícolas, Sección de Entomología , Boletín Técnico*, 43, 1–662.
Puker, A., Lopes-Andrade, C., Rosa, C.S. & Grossi, P.C. (2012) New records of termite hosts for two species of *Hoplopyga*, with notes on the life cycle of *Hoplopyga brasiliensis* (Coleoptera: Scarabaeidae: Cetoniinae). *Annals of the Entomological Society of America*, 105, 872–878.
Ramirez Martinez, V. (2010) *Artrópodes associados a ninhos de psitacídeos, com ênfase em Amazona aestiva, no Pantanal de Miranda, Mato Grosso do Sul, Brasil.* Monografia Bacharel em Ciências Biológicas. Ministerio da Edução, Serviço Público Federal, Fundação Universidade Federal de Mato Grosso do Sul. Centro de Ciências Biológicas e da Saúde, Departamento de Biologia, Campo Grande, Mato Grosso do Sul, Brazil, 33 pp.
Revelo, M.A. (1968) *Catálogo de insectos en cultivos de importancia económica en Colombia*. Asociación Latinoamericana de Entomología. Bogotá, Colombia, 156 pp.

Richter, H. (1913) Ein Ausflug nach den Wasserfallen des Iguassu (Argentinien). *Deutsche Entomologische Zeitschrift*, 1913, 170–175.
Rinaldi, A.J.M., Pailhe, L.A. & Popolizio, E. (1967) *Euphoria lurida* Fabr., un enemigo de la abeja. *Facultad de Agronomía y Zootecnia*, Tucumán, *Publicación Miscelánea*, 22, 1–11.
Ríos de Saluso, M.L.A., Muñoz, J. de D., Martinelli, A.H. & Galussi, A.A. (1989) Insectos fitófagos presentes en la flora de la Estación Experimental Agropecuaria Paraná y sus alrededores. *Instituto Nacional de Tecnología Agropecuaria, Estación Experimental Agropecuaria Paraná, Serie Relevamiento de Recursos Naturales,* 6, 1–32.
Ritcher, P.O. (1958) Biology of Scarabaeidae. *Annual Review of Entomology*, 3, 311–334.
Rogers, C.E. (1988) Insects from native and cultivated sunflowers (*Helianthus*) in southern latitudes of the United States. *Journal of Agricultural Entomology*, 5, 267–287.
Ronqui, D.C. & Lopes, J. (2006) Composição e diversidade de Scarabaeoidea (Coleoptera) atraídos por armadilha de luz em área rural no norte do Paraná, Brasil. *Iheringia, Série Zoologia*, 96, 103–108.
http://dx.doi.org/10.1590/s0073-47212006000100018
Rosillo, M.A. (1944) Enumeración de insectos vinculados a la economía de Entre Ríos (Primera Parte Coleoptera). *Memorias del Museo de Entre Ríos, Zoología*, 22, 1–82.
Rosillo, M.A., Rivera Flores, S. & Coll, O. del R. de (1978) Comprobaciones experimentales con insectos en la diseminación de la bacteria *Xanthomonas citri* (Hasse) Dowson. *In*: *III Jornadas Fitosanitarias Argentinas. San Miguel de Tucumán, 6–7 y 8 de Diciembre de 1978. Vol. 1*. Universidad Nacional de Tucumán, Facultad de Agronomía y Zootecnia, Mesa de Zoología Agrícola, pp. 363–405.
Ruffinelli, A. & Carbonell, C.S. (1954) *Segunda lista de insectos y otros artrópodos de importancia económica en el Uruguay.* Universidad de la República, Facultad de Agronomía, Cátedra de Entomología. Montevideo, Uruguay, 52 pp. [re-publication of 1953. *Revista de la Asociación de Ingenieros Agrónomos*, 94, 33–82.]
Schubart, O., Aguirre, A.C., & Sick, H. (1965) Contribuição para o conhecimento da alimentação das aves brasileiras. *Arquivos de Zoología*, 12, 95–249.
Schulz, W.A. (1901) Biologische, zoogeographische und synonymische Notizen aus der Kaferfauna des unteren Amazonenstrons. *Berliner Entomologische Zeitschrift*, 46, 321–338.
Silberbauer-Gottsberger, I. (1973) Blütten- und Früchtbiologie von *Butia leiospatha* (Arecaceae). *Österreich Botanische Zeitschrift*, 121, 171–185.
Silva, A.G. de A. e, Gonçalves, C.R., Galvão, D.M., Gonçalves, A.J.L., Gomes, J., Silva, M. do N. & De Simoni, L. (1968) *Quarto catálogo dos insetos que vivem nas plantas do Brasil. Seus parasitos è predadores.* Tomo 1º, Parte II. Insetos, hospedeiros e inimigos naturais. Ministerio da Agricultura, Departamento de Defesa e Inpeção Agropecuária, Serviço de Defesa Sanitária Vegetal, Laboratorio Central de Patologia Vegetal, Rio de Janeiro, Brazil, 622 pp.
Silva, W.R. & Sazima, M. (1995) Hawmoth pollination in *Cereus peruvianus*, a columnar cactus from southeastern Brazil. *Flora*, 190, 339–343.
Silva-Porto, F. & Cerqueira, R. (1990) Seasonal variation in the diet of the burrowing owl *Athene cunicularia* in a restinga of Rio de Janeiro State. *Ciência é Cultura* (*Revista da Sociedade Brasileira para o Progresso da Ciência*), 42, 1182–1186.
Singer, R.B. & Cocucci, A.A. (1997) Pollination of *Pteroglossaspis ruwensoriensis* (Rendle) Rolfe (Orchidaceae) by beetles in Argentina. *Botanica Acta*, 110, 338–342.
Stehmann, J.R., Campostrini Forzza, R., Salino, A., Sobral, M., Pinheiro da Costa, D. & Yoshino Kamino, L.H. (2009) *Plantas da Floresta Atlântica*. Jardim Botânico do Rio de Janeiro, Instituto de Pesquisa. Rio de Janeiro, Brazil, 516 pp.
Szumkowski, W. & Yépez, F.F. (1963) Insecta y Arachnida relacionados con *Gossypium* en Venezuela. *Revista del Centro de Investigaciones Agronómicas*, 13, 83–88.
Thomas, M.C. (1998) A flower beetle, *Euphoria sepulcralis* (Fabricius), in Florida (Coleoptera: Scarabaeidae). *Florida Department of Agriculture & Costumer Services, Division of Plant Industry, Entomology Circular*, 386, 1–2.
Torretta, J.P., Navarro, F. & Medan, D. (2009) Visitantes florales nocturnos del girasol (*Helianthus annuus*, Asterales: Asteraceae) en la Argentina. *Revista de la Sociedad Entomológica Argentina*, 68, 339–350.
Torretta, J.P., Medan, D., Roig Alsina, A. & Montaldo, N.H. (2010) Visitantes florales diurnos del girasol (*Helianthus annuus*, Asterales: Asteraceae) en la Argentina. *Revista de la Sociedad Entomológica Argentina*, 69, 17–32.
Touroult, J. & Dalens, P.H. (2010) Cétoines de Guyane: variations saisonnières et interannuelles (Coleoptera: Scarabaeoidea: Cetoniinae). *In*: Touroult, J. (Ed.), Contribution à l'étude des coléoptères de Guyane I. *Le Coléoptériste*, Supplement, 1, 81–88.
Tremoleras, J. (1910) Coleopterologische Skizze von Uruguay. *Entomologische Blätter*, 6, 22–28, 39–41.
Turienzo, P. & Di Iorio, O. (2008) Insects found in birds' nests from Argentina. *Anumbius annumbi* (Vieillot, 1817) (Aves: Furnariidae). *Zootaxa*, 1871, 1–55.
Turienzo, P. & Di Iorio, O. (2010) Insects found in birds' nests from Argentina. *Furnarius rufus* (Gmelin, 1788) (Aves: Furnariidae) and their inquiline birds, the true hosts of *Acanthocrios furnarii* (Cordero & Vogelsang, 1928) (Hemiptera: Cimicidae). *Zootaxa*, 2700, 1–112.
Turienzo, P. & Di Iorio, O. (2011) Insects found in birds' nests from Argentina. *Myiopsitta monachus* (Boddaert, 1873) (Aves: Psittacidae), exclusive host of *Psitticimex uritui* (Lent & Abalos, 1946) (Hemiptera: Cimicidae). *Zootaxa*, 3053, 1–58.
Viana, M.J. (1975) Revisión de Petalochilinae argentinos (Coleoptera, Curculionidae). *Revista del Museo de Ciencias Naturales "Bernardino Rivadavia"*, *Serie Entomología*, 5, 1–51.

Viana, M.J. & Williner, G.J. (1981) Evaluación de la fauna entomológica y aracnológica de las provincias centrales y cuyanas. *Acta Científica, Serie Entomología*, 15, 1–82.
Vieira, M.F. & Fonseca, R.S. (2011) A casual cantharophily: the meeting between *Astylus variegatus* (Coleoptera: Melyridae) and *Oxypetalum banksii* (Apocynaceae: Asclepiadoideae). *Journal of Pollination Ecology*, 5, 86–89.
Vieira, M.F. & Shepherd, G.J. (1999) Pollinators of *Oxypetalum* (Asclepiadaceae) in southeastern Brazil. *Revista Brasileira de Biologia*, 59, 693–704.
http://dx.doi.org/10.1590/S0034-71081999000400018
Viana, M.J. & Williner, G.J. (1973) Evaluación de la fauna entomológica y aracnológica de las provincias centrales y cuyanas (Segunda comunicación). *Acta Scientifica*, Serie Entomología, 7, 1–30
Villegas García, C. (2005) Reconocimiento fitosanitario en cinco variedades cultivadas de macadamia (*Macadamia integrifolia* Maiden et Betche) en la zona cafetera colombiana. *Manejo Integrado de Plagas y Agroecología*, 74, 69–76.
Ward, C.R., O'Brien, C.W., O'Brien, L.B., Foster, D.E., & Huddleston, E.W. (1977) Annotated checklist of New World insects associated with *Prosopis* (Mesquite). *United States Department of Agriculture, Agricultural Research Service, Technical Bulletin*, 1557, 1–115.
Wiemer, A.P., Sérsic, A.N., Marino, S., Simoẽs, A.O. & Cocucci, A.A. (2012) Functional morphology and wasp pollination of two South American asclepiads (Asclepiadoideae–Apocynaceae). *Annals of Botany*, 109, 77–93.
Wiersema, J.H. & León, B. (1999) *World economic plants. A standard reference.* CRC Press. Boca Raton, Florida, United States of America, 749 pp.
Willemstein, S.C. (1978) *Lists of flowers visited by Cetoniidae (Coleoptera) and Central European Cerambycinae and Lepturinae (Col. Cerambycidae) based on historical and pollen analytical research.* Rijsherbarium, Leiden, The Netherlands, 189 pp.
Wood, S.L. (1993) Revision of the genera of Platypodidae (Coleoptera). *Great Basin Naturalist*, 53, 259–281.
Zuloaga, F.O & Morrone, O. (1999) Catálogo de las plantas vasculares de la República Argentina. *I & II*. *In*: V.C. Hollowell (Ed.), *Monographs in Systematic Botany*, 74, Acanthaceae-Euphorbiaceae (Dicotyledoneae): xxii + pp. 1–621; Fabaceae-Zygophyllaceae (Dicotyledoneae): xxii + pp. 623–1269.