



Revista de la Sociedad Entomológica Argentina
ISSN: 0373-5680
ISSN: 1851-7471
santiago@cepave.edu.ar
Sociedad Entomológica Argentina
Argentina

Zelus renardii (Hemiptera: Reduviidae: Harpactorinae: Harpactorini): first record from Argentina

D'HERVÉ, Federico E.; OLAVE, Anabel; DAPOTO, Graciela L.

Zelus renardii (Hemiptera: Reduviidae: Harpactorinae: Harpactorini): first record from Argentina

Revista de la Sociedad Entomológica Argentina, vol. 77, no. 1, 2018

Sociedad Entomológica Argentina, Argentina

Available in: <https://www.redalyc.org/articulo.oa?id=322053849006>

Zelus renardii (Hemiptera: Reduviidae: Harpactorinae: Harpactorini): first record from Argentina

Zelus renardii (Hemiptera: Reduviidae: Harpactorinae: Harpactorini): primer registro en la Argentina

Federico E. D'HERVÉ federicodherve@gmail.com

Fundación Barrera Patagónica, Argentina

Anabel OLAVE

Universidad Nacional del Comahue, Argentina

Graciela L. DAPOTO

Universidad Nacional del Comahue, Argentina

Revista de la Sociedad Entomológica Argentina, vol. 77, no. 1, 2018

Sociedad Entomológica Argentina, Argentina

Received: 12 September 2017

Accepted: 22 February 2018

Published: 30 January 2018

Redalyc: <https://www.redalyc.org/articulo.oa?id=322053849006>

Abstract: The presence of *Zelus renardii* Kolenati in Argentina is documented for the first time. Specimens were collected in northern Patagonia, Alto Valle de Río Negro and Neuquén. The diagnostic characteristics of this species are provided and its potential for expansion to other regions of South America is discussed.

Keywords: Invasive species, New records.

Resumen: Se documenta por primera vez a *Zelus renardii* Kolenati en la Argentina a partir de especímenes colectados en el norte de la Patagonia en el Alto Valle de Río Negro y Neuquén. Se detallan las características que permiten reconocer a la especie y se señala su potencialidad de expansión hacia otras regiones de Sudamérica.

Palabras clave: Especies invasivas, Nuevos registros.

Reduviidae is a family composed of medium to large insects, with a long body and a narrow head provided with a thick, curved rostrum with about 7,000 described species in 25 subfamilies (Gil-Santana et al., 2015). Most of them are generalist predators of arthropods, although the members of the Triatominae subfamily are hematophagous species with relevance to human health as they are vectors of Chagas disease (Jurberg et al., 2015). Its diversity and adaptive capacity has allowed them to colonize diverse environments, such as forests and deserts all over the world. Coscarón (1998) based on the classification proposed by Schuh & Slater (1995) recorded 14 subfamilies, 63 genera and 189 species for Argentina. Four of these correspond to the genus *Zelus*.

Zelus includes species of both Nearctic and Neotropical distribution (Maldonado Capriles, 1990) adapted to predation (Cohen, 1993; Zhang & Weirauch, 2013), commonly known as "assassin bugs". Zhang et al. (2016) describe and illustrate 71 species indicating their geographic distribution, synonymy and taxonomic discussions.

Zelus renardii Kolenati is a species native to the western North America and Central America, standing out among the genus for its introduction and establishment in three biogeographic regions

(Weirauch et al., 2012). Its adaptability and expansive capacity have allowed it to spread to the east of its origin area and settle in remote areas of the Pacific Ocean such as the Hawaiian Islands, the Philippines, Samoa, and the Johnston Atoll due to human activity (Werner & Butler, 1957; Hart, 1986). In South America, specimens of *Z. renardii* were collected from central Chile in 2000 (Curkovic et al., 2004; Elgueta & Carpintero, 2004), expanding its distribution over the next 15 years to the regions of Coquimbo in the north and of Bío Bío in the South (Faúndez, 2015). In Europe, *Z. renardii* was found at the beginning of this decade in the Mediterranean Sea basin in Greece (Petrakis & Moulet, 2011; Davranoglou, 2011), Spain (Baena & Torres, 2012), Italy (Dioli, 2013), and Albania (van der Heyden, 2017).

The objective of this contribution is to document the presence of *Z. renardii* in Argentina, to provide its diagnostic characteristics and to identify elements that show its potential to consolidate its populations in Patagonia and to expand to other regions.

Material examined

#1674 Río Negro, Chelforó, 20/III/2017, 1 ♀, preying adult of *Rhytidodus decimusquartus* (Schrank) on *Salix* sp., F. D'Hervé leg.; #1675, Río Negro, Cervantes, 01/IV/2017, 1 ♂, herbaceous vegetation on a farm, entomological net, F. D'Hervé leg.; #1680, Río Negro, Villa Regina, 20/IV/2017, 1 ♂ 1 ♀, in a house, urban area, F. D'Hervé leg.; #1686, Río Negro, Villa Regina, 05/V/2017, 1 ♀, in housing, rural area, F. D'Hervé leg.; #1687, 1 ♂, idem previous; #1688, Río Negro, Chichinales, 20/VI/2017, 1 ♀, rural area, under apple tree bark, F. D'Hervé leg.

The material was collected in rural and urban areas at the end of summer and in autumn; a period indicated by Werner & Butler (1957) as the most abundant in its origin area and deposited in the collection of Laboratorio de Control Biológico, Funbapa, Villa Regina.

The identification was made based on the descriptions and the characteristics of the male genitalia indicated by Hart (1986) and Zhang et al. (2016).

Diagnosis of adult forms (Fig. 1)

Slender, about 10.5 -14.2 mm in length. Females larger, with wings extending beyond abdomen. Head cylindrical, without spines, rostrum and ventral surface green-yellowish, dorsal surface dark-brown with yellowish central line. Long yellowish antennae with four segments. Ocelli and eyes reddish. Anterior pronotal lobe reticulate, yellowish with darker stripes, posterior lobe uniformly olivaceous, sometimes darker with pale posterior margin and humeral angle projected. Mesonotum reduced as triangular scutellum, reddish-brown, with whitish angulate apex. Corium dark reddish with paler venation, second pair wings

membranes smoked, overlapping each other darkening posterior dorsal area.

Legs, slender, greenish with darker tibiae and tarsi. Anterior tibiae covered posteriorly by glandular erect setae secreting sticky substance.

Abdomen without lateral expansion, reddish on dorsal surface and greenish laterally and ventrally, males with last ventral segment slender and hooked median process apically that allows to distinguish from other species.

One of the specimens collected shows dark dorsal color almost black.



Fig. 1.

Female individual of *Zelus renardii*.

The adults and nymphal stages of *Z. renardii* are general feeders. Among their prey there are species harmful to agriculture such as *Macrosiphum rosae* L., *Myzus persicae* (Sulzer), and *Brachycaudus tragopogonis* Kaltenbach (Hemiptera: Aphididae) (Potin Téllez, 2008), *Heteropsylla cubana* Crawford (Hemiptera: Psyllidae) (Nakahara & Fynasaki, 1986), *Perkinsiella saccharicida* Kirkaldy (Hemiptera: Delphacidae) (Ali, 1978), and larvae of *Heliothis virescens* (F.) (Lepidoptera: Noctuidae) (Ables, 1978; Cohen & Tang, 1997). There are also beneficial species among their prey, therefore disrupting the biological control of these species. Among the latter: *Eriopis connexa* Germar, *Adalia bipunctata* L., *Hippodamia variegata* (Goeze), and *Cryptolaemus montrouzieri* Mulsant (Coleoptera: Coccinellidae) (Potin Téllez, 2008), *Aphytis aonidiae* (Marcet), and *A. vandenboschi* De Bach & Rosen (Hymenoptera: Aphelinidae) (Heimpel et al., 1997), and *Chrysoperla carnea* Stephen (Neuroptera: Chrysopidae) (Cisneros & Rosenheim, 1997).

In the Alto Valle de Río Negro and Neuquén, *Z. renardii* was observed preying on adults of *Rhytidodus decimusquartus* (Schrank) (Hemiptera:

Cicadellidae), a very abundant leafhopper species native to the northern hemisphere, currently present in Mendoza, Neuquén, Río Negro and Chubut provinces in Argentina (Olave et al., 2011; Ortego et al., 2011; Paradell & Dellapé, 2015) and in Región Metropolitana in Chile (Campodonico, 2015).

Although the origin and the way of intrusion of *Z. renardii* in Argentina is unknown, it is possible that specimens have entered through commercial transport or tourists through land routes from central Chile where it is commonly present in native vegetation, crops and houses where occasionally it stings people (Faúndez, 2015).

Hart (1986) indicates that climate and the presence of mountainous areas are limiting for the dispersion of *Z. renardii* in its native area. Similarly, the Andes have served as a barrier to hinder the dispersal of this species since its introduction in Chile at the beginning of this century. However, its adaptability and its synanthropic characteristics enabled it to overcome this obstacle.

The presence of disturbed and modified areas by agriculture indicated by Hart (1986) and by Weirauch et al. (2012) as suitable for this species, might favor its expansion to the north and east of South America from sites colonized in the north of Patagonia or from bio-climatically similar regions that have trans-cordilleran communication channels such as Cuyo.

Acknowledgements

We thank the Dirección Nacional de Protección Vegetal and Centro Regional Patagonia Norte of SENASA for supporting the activities of the biological control laboratory of Funbapa.

Literature cited

- Ables, J.R. (1978) Feeding Behavior of an Assassin Bug, *Zelus renardii*. *Annals of the Entomological Society of America*, **71**: 476-478.
- Ali, A.S.A. (1978) Predator-Prey relationship of *Zelus renardii* (Kolenati) and *Bucculatrix thurberiella* (Busck). Thesis. University of Arizona.
- Baena, M., & Torres, J.L. (2012) Nuevos datos sobre heterópteros exóticos en España y Francia: *Tempyra biguttula* Stål, 1874, *Belonochilus numenius* (Say, 1832) y *Zelus renardii* (Kolenati, 1856) (Heteroptera: Rhyparochromidae, Orsillidae, Reduviidae). *Boletín de la Asociación Española de Entomología*, **36**(3-4): 351-360.
- Campodonico, J.F. (2015) On the presence of *Rhytidodus decimusquartus* (Schrank, 1776) (Hemiptera: Cicadellidae: Idiocerinae) in Chile. *Archivos Entomológicos*, **14**: 261-263.
- Cisneros, J.J., & Rosenheim, J.A. (1997) Ontogenic change of prey preference in the generalist predator *Zelus renardii* and its influence on predator-predator interactions. *Ecological Entomology*, **22**: 399-407.

- Cohen, A.C. (1993) Organization of digestion and preliminary characterization of salivary trypsin-like enzymes in a predaceous heteropteran, *Zelus renardii*. *Journal of Insect Physiology*, **39**: 823-829.
- Cohen, A.C., & Tang, R. (1997) Relative Prey Weight Influences Handling Time and Biomass Extraction in *Sinea confusa* and *Zelus renardii* (Heteroptera: Reduviidae). *Environmental Entomology*, **26**: 559-565.
- Coscarón, M.C. (1998) Reduviidae. *Biodiversidad de artrópodos argentinos: Una perspectiva biotaxonomica* (ed. Morrone, J.J., & Coscarón, S.), pp. 155-162. Ediciones Sur, La Plata, Argentina.
- Curkovic, T.J., Araya, E., Baena, M., & Guerrero, M.A. (2004) Presencia de *Zelus renardii* Kolenati (Heteroptera: Reduviidae) en Chile. *Boletín de la Sociedad Entomológica Aragonesa*, **34**: 163-165.
- Davranoglou, L.R. (2011) *Zelus renardii* (Kolenati, 1856), a New World reduviid discovered in Europe (Hemiptera: Reduviidae: Harpactorinae). *Entomologist's Monthly Magazine*, **147**: 157-162.
- Dioli, P. (2013) *Zelus renardii* (Kolenati, 1857) new to Italy (Hemiptera: Heteroptera Reduviidae). *Quaderno di Studi e Notizie di Storia Naturale della Romagna Segnalazioni faunistiche*, **38**: 232-233.
- Elgueta, M., & Carpintero, D.L. (2004) *Zelus cervicalis* Stål (Hemiptera: Reduviidae: Harpactorinae), aporte neártico a la entomofauna introducida en Chile. *Gayana*, **68**(1): 98-101.
- Faúndez, E.I. (2015) La chinche asesina *Zelus renardii* (Kolenati, 1856) (Heteroptera: Reduviidae) en Chile: Comentarios después de 15 años de su llegada al país. *Boletín de la Sociedad Entomológica Aragonesa*, **57**: 421-423.
- Gil-Santana, H.R., Forero, D., & Weirauch, C. (2015) Assassin Bugs (Reduviidae Excluding Triatominae). *True Bugs (Heteroptera) of the Neotropics. Entomology in Focus, vol 2.* (ed. Panizzi, A., & Grazia, J.), pp. 307-351. Springer, Dordrecht.
- Hart, E.R. (1986) Genus *Zelus* Fabricius in the United-States, Canada, and Northern Mexico (Hemiptera: Reduviidae). *Annals of the Entomological Society of America*, **79**: 535-548.
- Heimpel, G.E., Rosenheim, J.A., & Mangel, M. (1997) Predation on adult *Aphytis* parasitoids in the field. *Oecologia*, **110**(3): 346-352.
- Jurberg, J., Galvão, C., Weirauch, C., & Moreira, F.F.F. (2015) Hematophagous Bugs (Reduviidae, Triatominae). *True Bugs (Heteroptera) of the Neotropics. Entomology in Focus, vol 2.* (ed. Panizzi, A., & Grazia, J.), pp. 353-393. Springer, Dordrecht.
- Maldonado Capriles, J. (1990) *Systematic Catalogue of the Reduviidae of the World (Insecta: Heteroptera)*. Caribbean Journal of Science, Special edition. University of Puerto Rico.
- Nakahara, L.M., & Funasaki, G.Y. (1986) Natural enemies of the *Leucaena* psyllid, *Heteropsylla cubana* Crawford (Homoptera: Psyllidae). *Leucaena Research Reports*, **7**: 9-12.
- Olave, A., Dapoto, G.L., Bondoni, M., & Ortego, J. (2011) Primer Registro para la Patagonia Argentina de *Rhytidodus decimusquartus* (Schränk, 1776) (HEMIPTERA: Cicadellidae: Idiocerinae) Observaciones Bioecológicas. *En: Actas del III Congreso Internacional de Salicáceas en Argentina*, 2011, Neuquén.

- Ortego, J., Kuntz, G., Lozada, P., & Castaño Gañan, A.R. (2011) Primer registro en Sudamérica de *Rhytidodus decimusquartus* (Schränk, 1776) (Hemiptera: Cicadellidae: Idiocerinae), una “chicharrita” que afecta a los álamos. En: Actas del III Congreso Internacional de Salicáceas en Argentina, 2011, Neuquén.
- Paradell, S.L., & Dellapé, G. (2015) Redescription of *Rhytidodus decimusquartus* (Hemiptera: Cicadellidae: Idiocerinae) and new distributional records from Argentina. *Revista de la Sociedad Entomológica Argentina*, 74(1-2): 61-66.
- Petrakis, P.V., & Moulet, P. (2011) First record of the Nearctic *Zelus renardii* (Heteroptera, Reduviidae, Harpactorinae) in Europe. *Entomologia Hellenica*, 20: 75-81.
- Potin Téllez, C.A. (2008) *Tabla de vida del depredador Zelus renardii (Kolenati) (Hemiptera: Heteroptera: Reduviidae) en laboratorio*. Tesis, Escuela de Agronomía Universidad de Chile, Santiago de Chile.
- Schuh, R.T., & Slater, J.A. (1995) *True bugs of the world (Hemiptera: Heteroptera) Classification and natural history*. Cornell University.
- Van Der Heyden, T. (2017) First records of *Zelus renardii* (Kolenati, 1856) (Hemiptera: Heteroptera: Reduviidae: Harpactorinae) for Albania. *Archivos Entomológicos*, 18: 49-50.
- Weirauch, C., Alvarez, C., & Zhang, G. (2012) *Zelus renardii* and *Z. tetracanthus* (Hemiptera: Reduviidae): Biological Attributes and the Potential for Dispersal in Two Assassin Bug Species. *Florida Entomologist*, 95(3): 641-649.
- Werner, F.G., & Butler, G.D. (1957) *The reduviids and nabids associated with Arizona crops*. Arizona Agricultural Experiment Station, University of Arizona, Tucson. Technical bulletin, 133.
- Zhang, G., & Weirauch, C. (2013) Sticky predators: a comparative study of sticky glands in harpactorine assassin bugs (Insecta: Hemiptera: Reduviidae). *Acta Zoologica*, 94: 1-10.
- Zhang, G., Hart, E.R., & Weirauch, C. (2016) A taxonomic monograph of the assassin bug genus *Zelus* Fabricius (Hemiptera: Reduviidae): 71 species based on 10,000 specimens. *Biodiversity Data Journal*, 4: e8150.