

An update of the distribution of the assassin bug *Zelus renardii* (Heteroptera: Reduviidae) in Chile, with first records from the Oceanic Easter Island

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Received 19 - III - 2023 | Accepted 07 - V - 2023 | Published 30 - VI - 2023

<https://doi.org/10.25085/rsea.820210>

Actualización de la distribución de *Zelus renardii* (Heteroptera: Reduviidae) en Chile, y primeros registros en la Isla de Pascua

RESUMEN. Se actualiza la distribución de *Zelus renardii* (Kolenati) en Chile. Los nuevos registros extienden su distribución a los extremos norte y sur de país, desde la Región de Arica y Parinacota hasta la Región de Magallanes. Adicionalmente, se entregan los primeros registros en territorio oceánico chileno, de la Isla de Pascua.

PALABRAS CLAVE. Especie invasora. Faunística. Harpactorinae. Sudamérica.

ABSTRACT. The distribution of *Zelus renardii* (Kolenati) in Chile is updated. The new records extend their distribution to both north and south extremes, from Arica y Parinacota to Magallanes regions. Additionally, first records are provided for the Oceanic Easter Island.

KEYWORDS. Faunistics. Harpactorinae. Invasive species. South America.

Zelus renardii (Kolenati) (Fig. 1a, b) is a widespread invasive assassin bug species currently distributed in North and Central America (its native distribution), Hawaii, North and South Pacific Islands, Philippines, Chile, Argentina, and several European countries; mostly towards the Mediterranean and adjacent islands (Davranoglou, 2011; Petrakis & Moulet, 2011; Baena & Torres, 2012; Weirauch et al., 2012; Dioli 2013; Faúndez, 2015; van der Heyden, 2015, 2017, 2018, 2021a, b, 2022; Çerçi & Koçak, 2016; D'Hervé et al., 2018; Carpintero et al., 2019; Garrouste, 2019; Goula et al., 2019; Bella, 2020; van der Heyden & Grosso-Silva, 2020; Baena & Santos, 2021; Çelik et al., 2021; Çerçi et al., 2021; Kment & van der Heyden, 2022). For this reason, currently, it is considered one of the most highly invasive species of Heteroptera.

The first report of this species in Chile, which included records since 2001, was made by Curkovic et al. (2004). During the same year, Elgueta & Carpintero (2004) recorded *Zelus cervicalis* Stål as well. Later, Weirauch et

al. (2012) clarified that the *Z. cervicalis* record was a misidentification and the specimens actually corresponded to *Z. renardii*.

There was a long latency time of this species in the initial site of invasion, the central regions of Chile, and just recently Faúndez (2015) extended its distribution to the regions of Bío Bío in the south and Coquimbo in the north. Thus, the species averaged 35 km of expansion yearly. Here we provide new records that considerably extend the distribution of this species in the country (nearly 1200 km to the north, 1800 km to the south, and 3600 km to the west (Fig. 1c).

Material examined: CHILE. Arica y Parinacota Region: Arica 18°28'30" S, 70°19'0" W, 3-IV-2018 3♀♀1♂, J. Ibiza leg. Antofagasta Region: Antofagasta 23°38'47.04" S, 70°23'52.8" W, 16-IV-2018, 2♀♀, A. Ibiza leg.; San Pedro de Atacama 22°55'0" S, 68°12'0" W, 10-IV-2018, 1♂, A. Martinez leg. Atacama Region: Copiapó 27°21'59.4" S, 70°19'56.28" W, 29-III-2018, 4♀♀1♂, J. Saldaña leg.

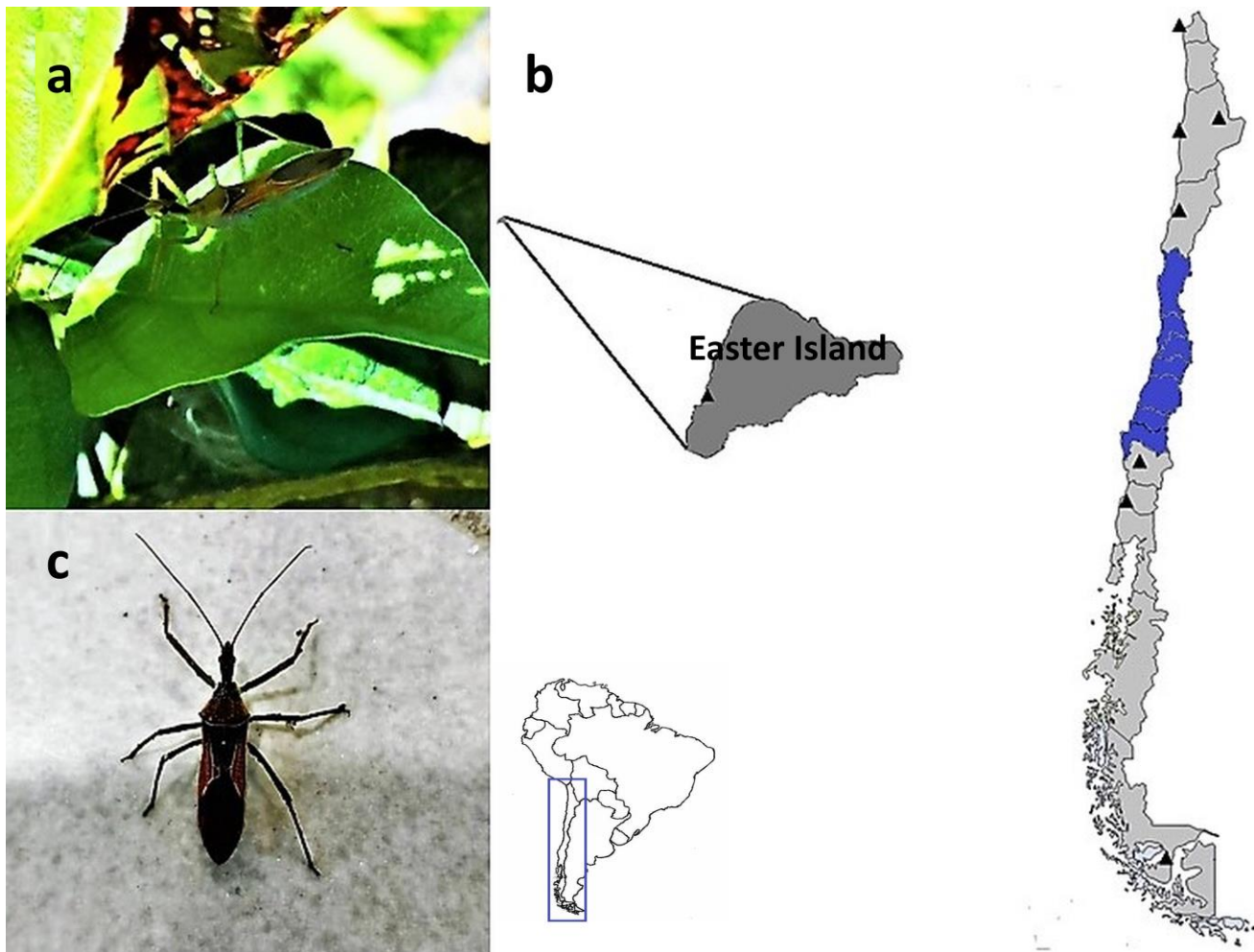


Fig. 1. *Zelus renardii* (Kolenati, 1856). a. Live specimen from Easter Island (photo Chao Chi). b. Live specimen from Punta Arenas (photo Carlos Santana). c. Distribution of *Z. renardii* in Chile. References = blue area: previously known distribution, black triangles: new records.

Valparaíso Region: Easter Island (Rapa Nui), Hanga Roa 27°8'0" S, 109°25'0" W, 10-V-2017, 3♀♀2♂ 2 V nymphs, A. Diez leg.; Araucanía Region: Temuco 38°44'23.64" S, 72°35'24.36" W, XI-2017, 2♀♀, IV nymph, J. Reyes leg.; Los Ríos Region: Cherquenco 38°41'8.16" S, 72°0'13.68" W, XII-2017, 3♀♀1♂, R. Pérez de Arce leg.; Magallanes Region: Punta Arenas 53°9'45.72" S, 70°54'29.16" W, 9-VII-2021, 1♀, C. Santana leg.; Punta Arenas, 8-VIII-2022, 1♀, C. Vargas leg. (All material is deposited in the Collection of the Instituto de la Patagonia, Punta Arenas, Chile).

In addition to the examined material, several records have been uploaded to the citizen science platform iNaturalist, which are summarized in the Project Heteroptera of Chile (Faúndez, 2023), these records confirm the expansions in Arica y Parinacota, Araucanía and Los Ríos regions and Easter Island. The context of the Magallanes records differs from the rest in that the only two interceptions were in an importation shopping center (Zona Austral) (Fig. 1b), which may correspond either to isolated arrivals, or they may be the first sightings

in early stages of colonization. In the case *Z. renardii* is established in Magallanes it may become by far its southernmost known population. Therefore, the situation in Magallanes needs further follow up and prospection within the next upcoming years. As this species seems to be established in the far north (Arica y Parinacota), it is necessary to check out in both Peru and Bolivia as they may become the next countries to be affected by this bug. In the case of Easter Island, although this species was recorded in several north and south Pacific Islands, the records on Easter Island are the first in Chilean Oceanic territory. The first records from 2017 showed that reproduction was occurring, and a recent citizen science record (Shi, 2023; Fig. 1b) seems to confirm that the species is well established on the island.

ACKNOWLEDGMENTS

We thank Chao Chi for kindly providing us with a photo of the figure 1a, and Carlos Santana for the photo of the figure 1b, and his constant help to obtaining samples. EIF is funded by the project ANID Folio SA77210055.

REFERENCES

- 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.
- Baena, M., & Santos, S. (2021) *Zelus renardii* Kolenati, 1857, primera cita en las Islas Canarias (Hemiptera, Reduviidae). *Revista Gaditana de Entomología*, **12**, 131-135.
- Bella, S. (2020) The Nearctic bug *Zelus renardii* (Kolenati) (Hemiptera, Reduviidae) in northern Italy and Sicily. *Redia*, **103**, 87-88.
- Carpintero, D.L., Farina, J.L., & De Biase, S. (2019) Report for Buenos Aires Province of three species of Heteroptera (Hemiptera) introduced in Argentina. *Historia Natural, Tercera Serie*, **9(1)**, 63-70.
- Çelik, H., Dioli, P., & Bolu, H. (2021) First record in Southeastern Anatolia of *Zelus (Diplodacus) renardii* (Kolenati, 1856) (Hemiptera, Reduviidae) and his new prey *Allantus* (s.str.) *viennensis* (Schrank, 1781) (Hymenoptera, Tenthredinidae, Allantinae). *Journal of the Heteroptera of Turkey*, **3(1)**, 31-39.
- Çerçi, B., & Koçak, Ö. (2016) Contribution to the knowledge of Heteroptera (Hemiptera) fauna of Turkey. *Journal of Insect Biodiversity*, **4(15)**, 1-18.
- Çerçi, B., Karataş, A., & Karataş, A. (2021) Insecta non gratae: New distribution records of eight alien bug (Hemiptera) species in Turkey with contributions of citizen science. *Zootaxa*, **5057(1)**, 1-28.
- 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). *Entomology Magazine*, **147**, 157-162.
- D'Hervé, F.E., Olave, A., & Dapoto, G.L. (2018) *Zelus renardii* (Hemiptera, Reduviidae, Harpactorinae, Harpactorini): first record from Argentina. *Revista de la Sociedad Entomológica Argentina*, **77(1)**, 32-35.
- Dioli, P. (2013) *Zelus renardii* (Kolenati, 1856) (Insecta, Heteroptera, Reduviidae). *Quaderno di Studi e Notizie di Storia Naturale della Romagna*, **38(133)**, 232-233.
- Elgueta, M., & Carpintero, D.L. (2004) *Zelus cervicalis* Stål (Hemiptera, Reduviidae, Harpactorinae), aporte neártico a la entomofauna introducida de Chile. *Gayana*, **68(1)**, 133-136.
- Faúndez, E.I. (2015) The assassin bug *Zelus renardii* (Kolenati, 1856) (Heteroptera, Reduviidae) in Chile: comments after 15 years of its arrival in the country. *Boletín de la Sociedad Entomológica Aragonesa*, **57**, 421-423.
- Faúndez, E.I. (2023) Heteroptera of Chile, iNaturalist project. <https://www.inaturalist.org/projects/chinches-de-chile-heteroptera-of-chile> (Accessed 14 March 2023)
- Garrouste, R. (2019) *Zelus renardii* (Kolenati, 1856): une réduve nouvelle pour la France (Hemiptera, Reduviidae, Harpactorinae). *Bulletin de la Société Entomologique de France*, **124(3)**, 335-336.
- Goula, M., Lizana, F., & Miralles-Núñez, A. (2019) New records of the Nearctic leafhopper assassin bug, *Zelus renardii* Kolenati, 1857 in the Iberian Peninsula (Hemiptera, Heteroptera, Reduviidae). *Butlletí de la Institució Catalana d'Història Natural*, **83**, 219-222.
- Kment, P., & van der Heyden, T. (2022) *Zelus renardii* (Hemiptera, Heteroptera, Reduviidae): First records from Croatia, Montenegro, and an accidental introduction to the Czech Republic. *Heteroptera Poloniae – Acta faunistica*, **6**, 7-14.
- Petrakis, P.V., & Moulet, P. (2011) First record of the Nearctic *Zelus renardii* (Heteroptera, Reduviidae, Harpactorinae) in Europe. *Entomologia Hellenica*, **20**, 75-81.
- Shi, C. (2023) Leafhopper assassin bug, *Zelus renardii*. iNaturalist observation. <https://www.inaturalist.org/observations/151033501> (Accessed 14 March 2023)
- van der Heyden, T. (2015) Ein aktueller Nachweis von *Zelus renardii* (Kolenati, 1856) auf Kreta/ Griechenland (Hemiptera, Heteroptera, Reduviidae, Harpactorinae). *BV news Publicaciones Científicas*, **4(52)**, 55-59.
- van der Heyden, T. (2017) First records of *Zelus renardii* (Kolenati, 1856) (Hemiptera, Heteroptera, Reduviidae, Harpactorinae) for Albania. *Arquivos Entomológicos*, **18**, 49-50.
- van der Heyden, T. (2018) First record of *Zelus renardii* Kolenati (Heteroptera, Reduviidae, Harpactorinae) in Israel. *Revista Chilena de Entomología*, **44(4)**, 463-465.
- van der Heyden, T. (2021a) Erstfund von *Zelus renardii* Kolenati, 1856 in Deutschland (Heteroptera, Reduviidae). *Heteropteron*, **61**, 31-32.
- van der Heyden, T. (2021b) On the recent Northern European dispersion of *Zelus renardii* Kolenati (Hemiptera, Heteroptera, Reduviidae) via human activity. *Israel Journal of Entomology*, **51**, 43-46.
- van der Heyden, T. (2022) Confirmation of the presence of *Zelus renardii* Kolenati, 1857 (Hemiptera, Reduviidae) on the Canary Islands (Spain). *Arquivos Entomológicos*, **25**, 51.

van der Heyden, T., & Grosso-Silva, J.M. (2020) First record of *Zelus renardii* Kolenati, 1856 in Portugal (Heteroptera, Reduviidae, Harpactorinae). *Arquivos Entomológicos*, **22**, 347-349.

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.