

Notas / Notes

Loxa deducta Walker, 1867 (Heteroptera: Pentatomidae) in Chile: distribution, history of invasion and identification

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ABSTRACT

The presence of the introduced stink bug *Loxa deducta* Walker, 1867 in Chile is analyzed. New records are provided for the Valparaíso, O'Higgins and Maule regions, extending its distribution southwards and northwards. Identification tips are provided to differentiate it from other Chilean pentatomids, as well as *Loxa* Amyot & Serville, 1843 species in the neighbor countries.

Key words: Hemiptera; invasive species; faunistics; Chile.

RESUMEN

Loxa deducta Walker, 1867 (Heteroptera: Pentatomidae) en Chile: distribución, historia de invasión e identificación

Se analiza la presencia del pentatómido *Loxa deducta* Walker, 1867 en Chile. Se proporcionan nuevos registros para las regiones de Valparaíso, O'Higgins y Maule; extendiendo su distribución tanto al norte como al sur. Se proveen herramientas de identificación para diferenciarle de otros pentatómidos chilenos y otras especies de *Loxa* Amyot & Serville, 1843 presentes en el área.

Palabras clave: Hemiptera; especies invasoras; faunística; Chile.

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Loxa Amyot & Serville, 1843 is a new world genus of Pentatomidae currently classified within the Pentatominae and the recently erected tribe Chlorocorini (Rider *et al.*, 2018).

Loxa deducta Walker, 1867 is a Neotropical pentatomid species widely distributed in Central and South America (Eger, 1978). *Loxa deducta* is considered an economically important species as it attacks soybean and citric crops (Schaefer

& Panizzi, 2000). This species has been found in Chile since 2005 (Mondaca *et al.*, 2008); being the only South American country in which *L. deducta* is considered introduced (Faúndez & Carvajal, 2011). Although this species has entered in the country long time ago, there is no further information about its presence in the country, establishment and updated distribution. In addition, no identification notes are available to tell apart *L. deducta* from

some Chilean species. The purpose of this work is to analyze the current situation of *L. deducta* in Chile, as well as provide identification tools to tell it apart from Chilean and close related species around the country.

The distribution and expansion of this species in Chile was surveyed continuously by the authors since it was reported in the country. Surveys included collecting, prospection and records coming from identifications made for public institutions, private companies and citizen science through the facebook site "Insectos de Chile – oficial" (https://www.facebook.com/groups/777914522238618/?ref=br_rs). In addition, national and international collections were revised in searching of specimens, as well as records in the literature. For systematics we follow Rider *et al.* (2018) and morphology and identification to Eger (1978).

Material examined is deposited in the collection of Instituto de la Patagonia, Universidad de Magallanes.

MATERIAL EXAMINED. Valparaíso Region, La Calera, 11-IX-2017, 1 ♀, I. Ortega leg.; La Calera, 12-XII-2017, 1 V nymph, J. Fernández leg.; Algarrobo, 12-I-2018, 2 ♂♂, 3 ♀♀, 5 III nymphs, A. González leg.; Chicolco, 12-III-2017, 1 ♀, A. Leiva leg.; Chicolco, V-2017, 1 V nymph, M. A. Sáez leg. – O'Higgins Region, Rengo, 12-II-2018, 1 ♂, 3 ♀♀, A. Arriagada leg.; Maule Region, Vilches Alto, 2 ♂♂, 2 ♀♀, II-2018, R. Pérez de Arce leg.

IDENTIFICATION. Through the years, *L. deducta* (Figs. 1, 9, 10) has been confused mainly with three, species the Asopine bug *Brontocoris nigrolimbatus* (Spinola, 1852) (Figs. 2, 5) and the Pentatomines *Thyanta rubicunda* Rider, 1991 and *Thyanta perditor* (Fabricius, 1794) (Figs. 3, 6). From *B. nigrolimbatus* it can be easily differentiated by the shape of the head, which is truncate in *B. nigrolimbatus* whereas it is subtriangular in *L. deducta*. Additionally the projections of the humeral angles of the pronotum are more developed in *L. deducta*, as well as the serrate anterolateral margins (Figs. 4, 5). From both *T. rubicunda* and *T. perditor* by the shape of paraclypei, with rounded apex in *Thyanta* species and pointed apex in *L. deducta*. Also by the shape of pronotum, with humeral angle projections and anterolateral margins dentations tiny in *Thyanta*, whereas those are strong in *L. deducta* (Figs. 4, 6).

Although *L. deducta* is the only species of *Loxa* present in Chile there are several species in Peru, Argentina and Bolivia. Few times we have observed isolated specimens of *L. virescens* Amyot & Serville, 1843, coming in goods from Argentina. Therefore, it is important to remark how to separate *L. deducta* from geographically close species that may enter occasionally to the country. From the Peruvian species *L. peruviansis* Eger, 1978, it can be easily differentiated by the more produced humeral angle projections (Figs. 4–8). From *L. melanita* Eger, 1978 and *L. parapallida* Eger, 1978 it can be differentiated by the less developed eyes (Figs. 4–7),



Figs. 1–3.— Habitus. 1. *Loxa deducta* Walker, 1867. 2. *Brontocoris nigrolimbatus* (Spinola, 1852). 3. *Thyanta perditor* (Fabricius, 1794).

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Figs. 4–10.— Head and pronotum. 4. *Loxa deducta* Walker, 1867. 5. *Brontocoris nigrolimbatus* (Spinola, 1852). 6. *Thyanta perditor* (Fabricius, 1794). 7. *Loxa melanita* Eger, 1978. 8. *Loxa peruviansis* Eger, 1978. Male pygophore of *Loxa deducta*: 9. Dorsal view. 10. Frontal view.

Figs. 4–10.— Cabeza y pronoto. 4. *Loxa deducta* Walker, 1867. 5. *Brontocoris nigrolimbatus* (Spinola, 1852). 6. *Thyanta perditor* (Fabricius, 1794). 7. *Loxa melanita* Eger, 1978. 8. *Loxa peruviansis* Eger, 1978. Pigóforo del macho de *Loxa deducta*. 9. Vista dorsal. 10. Vista frontal.

the divergent first gonocoxae of females and the U shaped median invagination of male pygophore (Figs. 11, 14). From *L. virescens* and *L. viridis* (Palisot de Beauvois, 1811), present in Argentina there are several overlaps within the variability of general body features of the three species. Thus genitalia examination is essential to get a correct identification. *Loxa deducta* can be recognized by the very divergent first gonocoxae of female (Figs. 14–16), and by the deepest U-shaped invagination of the pygophore in ventral view. Additionally the lateroventral margins of the pygophore are pointed in

L. deducta and more truncated in *L. virescens* and *L. viridis* (Figs. 11–13).

DISTRIBUTION AND BIONOMICS. Mondaca *et al.* (2008) reported this species from a few localities in Santiago (Metropolitan Region). Later, Faúndez & Carvajal (2011) did not include any additional new data on this species. By our field observations, it seems that this species was in an adaptation period from 2005 to 2010, where the collection or sightings were just sporadic. However, after that period the



Figs. 11–16.— Male pygophore, ventral view. 11. *Loxa deducta* Walker, 1867. 12. *Loxa virescens* Amyot & Serville, 1843. 13. *Loxa viridis* (Palisot de Beauvois, 1811). Female terminalia, ventral view. 14. *Loxa deducta*. 15. *Loxa virescens*. 16. *Loxa viridis*.

Figs. 11–16.— Pigóforo del macho en vista ventral. 11. *Loxa deducta* Walker, 1867. 12. *Loxa virescens* Amyot & Serville, 1843. 13. *Loxa viridis* (Palisot de Beauvois, 1811). Terminalia femenina en vista ventral 14. *Loxa deducta*. 15. *Loxa virescens*. 16. *Loxa viridis*.

sightings and collections become more frequent in urban areas of Metropolitan Region, even founding them ovipositing at homes. The oviposition in homes (mostly in the walls and curtains) has been detected frequently especially since 2013. These egg batches included from 12–25 eggs. Up to 2016 it has been found in the following localities within the Metropolitan Region: Santiago Centro, Buin, Conchalí, Ñuñoa, Maipú, Recoleta, Providencia, El Bosque, Quilicura, San Joaquín, Chicureo, Pedro Aguirre Cerda, La Pintana, Pudahuel, San Miguel. Besides of these urban or periurban environments, in 2017 it has been found in Cajón del Maipo, and Cuesta Zapata. Finally in the last years, we found the first specimens of this species outside the Metropolitan Region, extending its distribution to the Valparaíso Region in the North and to the Maule Region in the south (Fig. 17).

Loxa deducta has become well adapted to the country and one of the most common species in the Metropolitan Region. However instead of being an agricultural pest, Chile it seems to show more synanthropic or hemisynanthropic habits. After more than 10 years it just recently started to spread across the country; reaching the regions of Valparaíso, O'Higgins and Maule. These expansions also coincides with the arrival to Chile (more specifically Metropolitan Region) of the invasive stink bug species *Halyomorpha halys* (Stål, 1855) (Faúndez & Rider, 2017), and *Bagrada hilaris* (Burmeister, 1835) (Faúndez *et al.*, 2016, 2017; Faúndez, 2018). Therefore *L. deducta* is



Fig. 17.— Distribution of *Loxa deducta* Walker, 1867 in Chile.

Fig. 17.— Distribución de *Loxa deducta* Walker, 1867 en Chile.

now competing with the above mentioned species for the resources. This situation may have triggered the movement of *L. deducta* in search of additional food sources.

The presence of this species in homes does not represent a real problem, it usually does not aggregate and there is no record of adventitious bites, or occupational allergies. Thus the overall impact of this species in Chile can be considered low to moderate. It is necessary to take a close look at the recent expansions of this species in Chile, as it may become acting as a pest in other regions with different climate variables and crops availability.

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