

## Short Communication

# New records and ecological data on the alien species *Colasposoma dauricum* and *Luperomorpha xanthodera* (Coleoptera: Chrysomelidae) in Italy

Giulia Magoga<sup>1</sup>, Matteo Montagna<sup>1,2\*</sup>

**Abstract** - New records and ecological data on the alien species *Colasposoma dauricum* and *Luperomorpha xanthodera* (Coleoptera: Chrysomelidae) are provided for Italy. *C. dauricum* was collected during the summer of 2021 in Verbania (Piedmont), close to the border between Lombardy and Switzerland, on *Rubus ulmifolius* Schott, a new host plant for the species. *L. xanthodera* was collected both in semi-natural environments and in close proximity to gardens and greenhouses. Interestingly, among the newly reported records, the presence of *L. xanthodera* in the vicinity of Lago Fimon (Veneto) in 2007, only one year after its first detection in Italy, suggests that this species may have been introduced in the Country multiple times.

**Key words:** invasive species, leaf beetles, host-plants.

**Riassunto** - Nuove segnalazioni e dati ecologici per le specie aliene *Colasposoma dauricum* e *Luperomorpha xanthodera* (Coleoptera: Chrysomelidae) in Italia.

Nel presente studio vengono fornite nuove segnalazioni per l'Italia e nuovi dati ecologici sulle specie aliene *Colasposoma dauricum* e *Luperomorpha xanthodera* (Coleoptera: Chrysomelidae). *C. dauricum* è stato raccolto durante l'estate del 2021 a Verbania (Piemonte), vicino al confine tra Lombardia e Svizzera, in alimentazione su *Rubus ulmifolius*, che risulta essere una pianta ospite non ancora nota in letteratura. *L. xanthodera* è stata raccolta sia in ambienti seminaturali che in prossimità di giardini e serre in provincia di Vicenza (Veneto) e Como (Lombardia). Tra le nuove segnalazioni di estremo interesse risulta quella del 2007 nelle vicinanze del Lago Fimon (Vicenza, Veneto), solo un anno dopo il primo rilevamento della specie

in Italia. Questo ritrovamento apre alla possibilità che questa specie sia stata introdotta più volte nel territorio italiano.

**Parole chiave:** crisomelidi, piante ospiti, specie aliene.

## INTRODUCTION

*Colasposoma dauricum* Mannerheim 1849, a species native to Eastern Asia, was first collected in Europe during the summer of 2010, and specifically in a xeric grassland in Caselette, Turin (Montagna *et al.*, 2016). In the following years, the species was detected on grassland vegetation in Avigliana and in San Giorio di Susa and Valgioie, also in the province of Turin (Montagna *et al.*, 2016). The latest published information on *C. dauricum* distribution in Italy, dating back to 2016, indicates the species presence was confined to the mid-lower part of Val di Susa (Fig. 1A; Montagna *et al.*, 2016).

*Luperomorpha xanthodera* Fairmaire 1888, a species ranging in the Oriental (Far East) and Australian regions, was found for the first time out of its natural range in 2003 in England (Johnson & Booth, 2004; Kozłowski & Legutowska, 2014). Since 2006, it has been detected also in other European countries (Doguet, 2008; Beenen & Roques, 2010; Döberl, 2010; Bodor, 2010; Geiser & Bernhard, 2011; Kozłowski & Legutowska, 2014), including Italy (Conti & Raspi, 2007; Del Bene & Conti, 2009). Actually, in Italy and France, the species was first identified as *Luperomorpha nigripennis* Duvivier 1892, but the identification was subsequently corrected by Döberl & Sprick (2009) to *L. xanthodera*. The first official record of the species in Italy was from Pistoia (Tuscany: Conti & Raspi, 2007). Only one year later, it was also collected in the Lecco province (Lombardy: Farina, 2011), as well as in other localities in Tuscany (Del Bene & Conti, 2009). Unlike *C. dauricum*, which is polyphagous and feeds on the vegetative parts of plants, *L. xanthodera* feeds on flowers of different plant families, including many of economic interest; as such, it has been commonly detected in greenhouses (Johnson & Booth, 2004; Del Bene & Conti, 2009).

<sup>1</sup> Dipartimento di Agraria dell'Università degli Studi di Napoli "Federico II", Portici, Italia.

E-mail: giulia.magoga@unina.it

<sup>2</sup> Centro Interuniversitario "Center for Studies on Bioinspired Agro-Environmental Technology (BAT Center)", Università degli Studi di Napoli "Federico II", 80055 Portici, Italia.

\* Corresponding author: matteo.montagna@unina.it

© 2023 Giulia Magoga, Matteo Montagna

Received for publication: 4 June 2023

Accepted for publication: 5 October 2023

Online publication: 19 October 2023

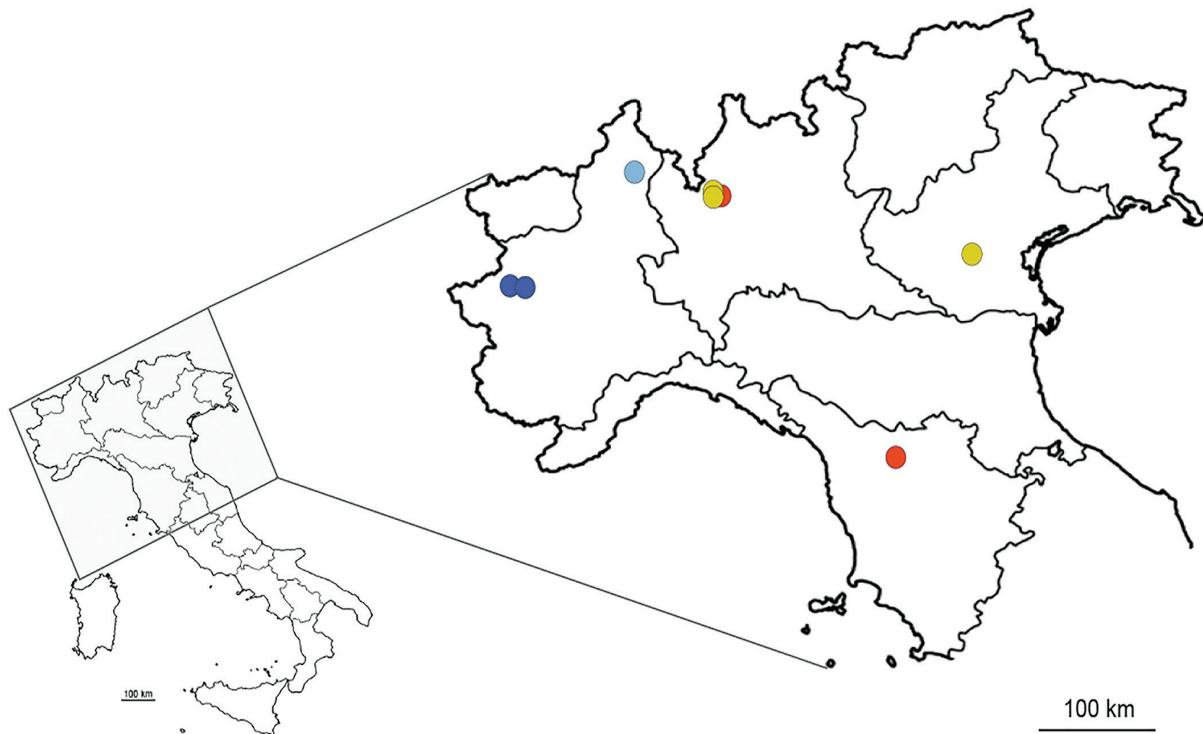


Fig. 1 - Records of *Colasposoma dauricum* in Italy: localities from Montagna *et al.* (2016) in dark blue, and the new record in light blue. Records of *Luperomorpha xanthodera* in Italy: in red, the localities from Del Bene & Conti (2009) and Farina (2011), and in yellow the new records. / Segnalazioni di *Colasposoma dauricum* in Italia: in blu scuro, le località da Montagna *et al.* (2016) e, in azzurro, il nuovo dato. Segnalazioni di *Luperomorpha xanthodera* in Italia: in rosso, le località da Del Bene & Conti (2009) e Farina (2011) e, in giallo, i nuovi dati.

## MATERIALS AND METHODS

All specimens were collected on their host plants. One specimen of *L. xanthodera* was also subjected to molecular identification, following the DNA extraction and target gene region amplification procedures adopted by Coral Şahin *et al.* (2018) and the bioinformatics procedure for taxonomic assignment reported by Magoga *et al.* (2022). The obtained sequence was deposited in the Barcode Of Life Data System BOLD (ID: MEDLB966-23). Specimens are deposited in the Matteo Montagna's private collection (Magreglio, Como, Italy: MMPC), and in Davide Sassi's private collection (Castelmarte, Como, Italy: DSPC).

## RESULTS AND DISCUSSION

*Colasposoma dauricum* collected materials. Original labels: "IT-Verbania, dint. Loc. Cavandone / sentiero verso Pallanza 45°56'29.93" N 8°31'35.45" E ~430 m a.s.l. / VII.2021 M. Montagna, G. Magoga & D. Fontaneto leg. / *Colasposoma dauricum* M. Montagna det. 2021"; 10 exx (MMPC).

During the summer 2021, 10 individuals of *Colasposoma dauricum* were collected close to Cavandone, on the coast of Lago Maggiore (Verbania; Fig. 2A-C). The individuals, both males and females, were observed feeding on leaves of *Rubus ulmifolius* Schott (Rosaceae). During the summer 2022, the same area was inspected but

no trace of *C. dauricum* was detected, likely due to the exceptional drought registered in the period. The presence of *C. dauricum* in Cavandone (Verbania), twelve years after its detection in Caselette (Turin), provides evidence for the establishment of the species in Italy and its eastwards range expansion. Although its presence seems currently confined to a restricted geographical area (Piedmont), the proximity of the new collecting locality to Lombardy and Switzerland, in association with the geomorphology of the area, makes the expansion of the species into these territories plausible. Moreover, the finding of *C. dauricum* feeding on *R. ulmifolius* expands its known range of host plants, previously including only Poaceae, Convolvulaceae, Asclepiadaceae and Apocynaceae (Ahn & Lim, 1991; Jolivet & Hawkeswood, 1995; Moseyko *et al.*, 2018).

*Luperomorpha xanthodera* collected material. Original labels: "Colli Berici (VI) / dint. L. d. Fimon / 5-VII-07 Monzini S / *Luperomorpha xanthodera* D. Sassi det. 2021"; 1 ex. "Lombardia CO / dint. Erba, L. Alserio / 45°47'35.3" N 9°13'34.6" E / 18.vii.2009 D. Sassi lg. / *Luperomorpha xanthodera* D. Sassi det. 2022"; 1 ex. "IT-Como, Orsenigo, dint. garden, 22.X.2022 M. Montagna leg. / *Luperomorpha xanthodera* M. Montagna det. 2022"; 1 exx (MMPC). IT-Como, Erba / dint. consorzio agrario / 7.XI.2022 M. Montagna leg. / *Luperomorpha xanthodera* M. Montagna det. 2022; 2 exx (MMPC), one used to extract the DNA.



The individuals of *L. xanthodera* reported in this study were collected in a range of habitats, including semi-natural environments, such as those in the surroundings of Lago di Fimon (Veneto) and Lago di Alserio (Lombardy) as well as in gardens (Fig. 2D-F). The individuals collected in Lombardy provide further confirmation of the presence of the species in the region more than ten years after its initial discovery (Farina, 2011). Moreover, the

new records provide evidence for the presence of the species in semi-natural environments, expanding its range beyond gardens and greenhouses and their vicinity. It is worth noting that also the specimens reported in Farina (2011) were collected close to gardens and greenhouses (*L. Farina personal communication*). The finding of *L. xanthodera* in Veneto in 2007, one year after its detection in Tuscany, is particularly noteworthy as it confirms

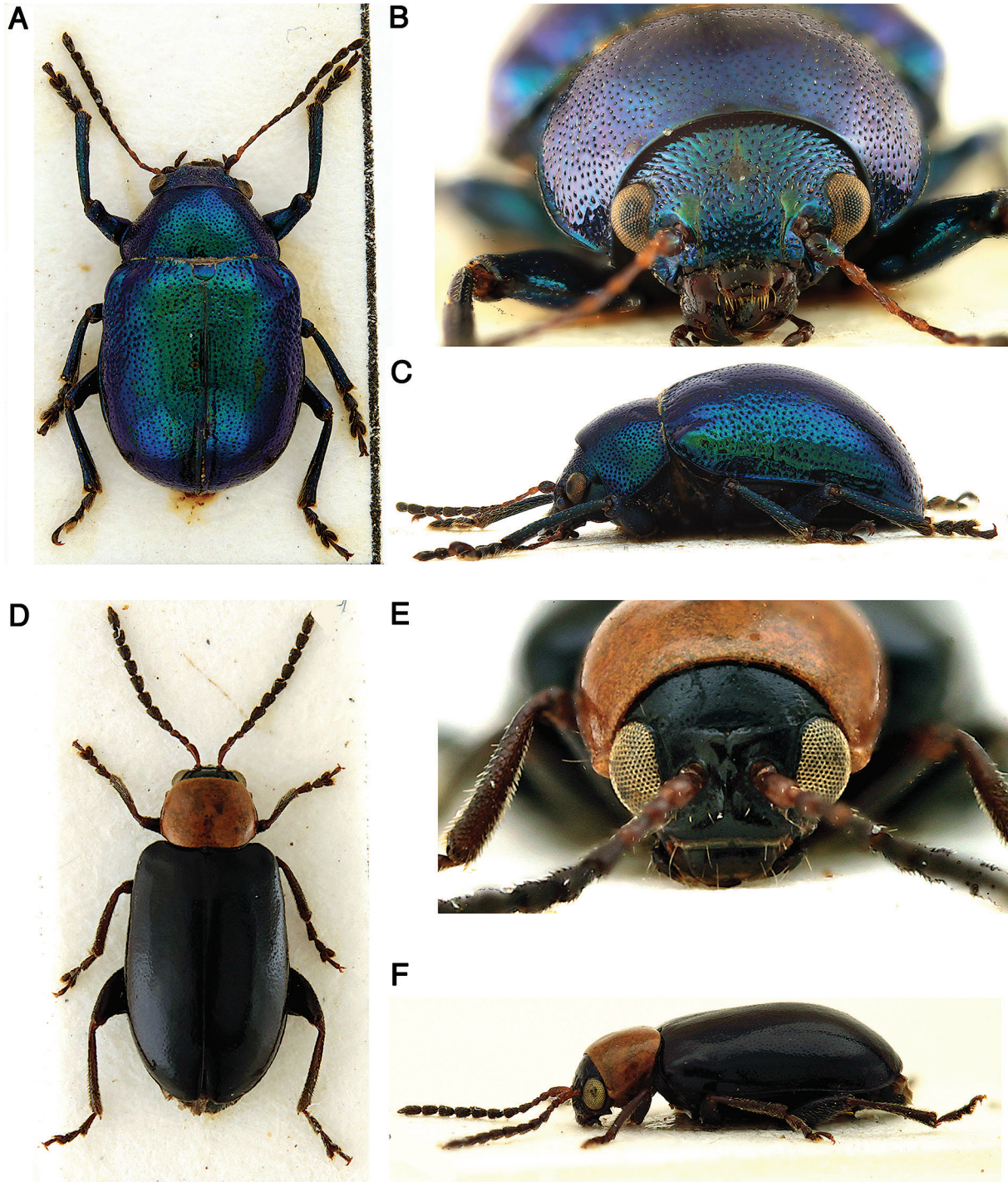


Fig. 2 - Images of the species considered in this study. / Immagini delle specie considerate in questo studio. A-C) *Colasposoma dauricum*; A) dorsal view / vista dorsale. B) frontal view / vista frontale. C) lateral view / vista laterale. D-F) *Luperomorpha xanthodera*; D) dorsal view / vista dorsale. E) frontal view / vista frontale. F) lateral view / vista laterale.

the rapid spread of this species in different Italian regions. This rapid distribution could possibly be attributed to commercial activities or may support the hypothesis of multiple introductions of the species in Italy.

## CONCLUSIONS

The new records of *C. dauricum* and *L. xanthodera* here reported, highlight the need for further studies focused on increasing the knowledge on the distribution and ecology of these alien species in Italy.

## Acknowledgements

The authors acknowledge Davide Sassi and Laura Farina for the information provided. And once again Davide Sassi who provided the high-quality images of the species considered in this study shown in figure 2.

## REFERENCES

- Ahn S. B. & Lim S. E., 1991 – Leaf feeding species on soybean and sweet potato. In: Crop Insect Pests in Cheju Island. *Research Reports of the Rural Development Administration*, 33: 46-50.
- Beenen R. & Roques A., 2010 – Leaf and seed beetles (Coleoptera, Chrysomelidae). Chapter 8.3. *BioRisk*, 4 (1): 267-292. <<https://doi.org/10.3897/biorisk.4.52>>
- Bodor J., 2010 – Az ázsiai földibolha (*Luperomorpha xanthodera* Fairmaire) megjelenése Magyarországon. [The first occurrence a flea beetle (*Luperomorpha xanthodera* Fairmaire. In Hungary]. *Növényvédelem*, 47 (3): 115-116.
- Conti B. & Raspi A., 2007 – Prima segnalazione in Italia di *Luperomorpha nigripennis* Duvivier (Coleoptera: Chrysomelidae). *Informatore Fitopatologico*, 57 (8-7): 51-52.
- Coral Şahin D., Magoga G., Özdikmen H. & Montagna M., 2018 – DNA Barcoding as useful tool to identify crop pest flea beetles of Turkey. *Journal of Applied Entomology*, 143 (1-2): 105-117. <<https://doi.org/10.1111/jen.12566>>
- Del Bene G. & Conti B., 2009 – Notes on the biology and ethology of *Luperomorpha xanthodera*, a flea beetle recently introduced into Europe. *Bullettin of Insectology*, 62 (1): 61-68.
- Döberl M., 2010 – Subfamily Alticinae Newman. In: Catalogue of Palaearctic Coleoptera. Volume 6. Chrysomeloidea. Löbl I. & Smetana A. (eds.). *Apollo Books*, Stenstrup, 6: 491-563.
- Döberl M. & Sprick P., 2009 – *Luperomorpha* Weise, 1887 in Western Europe (Coleoptera, Chrysomelidae, Alticinae). *Entomologische Blätter*, 105: 51-56.
- Doguet S., 2008 – Présence en France de *Luperomorpha nigripennis* Duvivier, 1892 (Col. Chrysomelidae, Alticinae). *Le Coléoptériste*, 11 (1): 62-63.
- Farina L., 2011 – Coleoptera (Carabidae, Chrysomelidae) e Lepidoptera (Hesperioidea, Papilionoidea) della Valle della Nava (Provincia di Lecco, Lombardia, Italy). *Fragmenta entomologica*, 43 (2): 187-213. <<https://doi.org/10.13133/2284-4880/46>>
- Geiser E. & Bernhard M., 2011 – Der Flohkäfer *Luperomorpha xanthodera* (Fairmaire, 1888) (Alticinae, Chrysomelidae) Erstnachweis für Österreich in einem Salzburger Garten. *Newsletter der Salzburger Entomologischen Arbeitsgemeinschaft*, 3-4: 1-3.
- Johnson C. & Booth R. G., 2004 – *Luperomorpha xanthodera* (Fairmaire): a new British flea beetle (Chrysomelidae) on Garden Centre Roses. *The Coleopterist*, 13 (4): 81-86.
- Jolivet P. & Hawkeswood T. J., 1995 – Host-plants of Chrysomelidae of the World. An essay about the relationships between the Leaf Beetles and their food-plants. *Backhuys Publishers*, Leiden.
- Kozłowski M. W. & Legutowska H., 2014 – The invasive flea beetle *Luperomorpha xanthodera* (Coleoptera: Chrysomelidae: Alticinae), potentially noxious to ornamental plants - first record in Poland. *Journal of Plant Protection Research*, 54 (1): 106-107. <<https://doi.org/10.2478/jppr-2014-0017>>
- Magoga G., Brunetti M., Kajtoch L., Spada A. & Montagna M., 2022 – Biotic and abiotic factors affecting the microbiota of Chrysomelidae inhabiting wetland vegetation. *Hydrobiologia*, 850: 3797-3812. <<https://doi.org/10.1007/s10750-022-05082-6>>
- Montagna M., Zoia S., Leonardi C., Di Taddeo V., Caldara R. & Sassi D., 2016 – *Colasposoma dauricum* Mannerheim, 1849 an Asian species adventive to Piedmont, Italy (Coleoptera: Chrysomelidae: Eumolpinae). *Zootaxa*, 4097 (1): 127-129. <<https://doi.org/10.11646/zootaxa.4097.1.8>>
- Moseyko A. G., Guskova E. V., Kolov S. V. & Orlova-Benkovskaya Ya. M., 2018 – New Data on the Distribution of *Colasposoma dauricum* (Mannerheim, 1849) (Coleoptera, Chrysomelidae) in Russia and Kazakhstan. *Entomological Review*, 98: 324-328. <<https://doi.org/10.1134/S0013873818030090>>