



New occurrences of the alien invasive species *Harmonia axyridis* (Pallas, 1773) in Southern Italy (Coleoptera: Coccinellidae)

Mattia MENCHETTI^{1,a}, Emiliano MORI², Filippo CECCOLINI³,
Emanuele PAGGETTI³, Lucia PIZZOCARO³ & Fabio CIANFERONI^{3,4}

¹ Dipartimento di Biologia, Università degli Studi di Firenze,
via Madonna del Piano 6, I-50019 Sesto Fiorentino (Florence), Italy;

² Dipartimento di Scienze della Vita, Università di Siena, via P.A. Mattioli 4, I-53100 Siena, Italy;

³ Museo di Storia Naturale dell'Università degli Studi di Firenze,
sezione di Zoologia "La Specola", via Romana 17, I-50125 Florence, Italy;

⁴ CNR-IBAF Consiglio Nazionale delle Ricerche, Istituto di Biologia Agroambientale e Forestale,
via Salaria km 29,300, I-00015 Monterotondo Scalo (Rome), Italy.

E-mail: ^a mattiamen@gmail.com

Abstract. We report the first records for Molise, Campania, Basilicata, Calabria, and Sicily which complete the outline on the distribution of the alien species *Harmonia axyridis* in Italy.

Riassunto. Nuove segnalazioni della specie aliena invasiva *Harmonia axyridis* (Pallas, 1773) in Italia Meridionale (Coleoptera: Coccinellidae). Si riportano le prime osservazioni per Molise, Campania, Basilicata, Calabria e Sicilia, che completano il quadro della distribuzione della specie aliena *Harmonia axyridis* in Italia.

Key words. Alien species, first records, distribution.

Impacts exerted by alien species are depicted as a major threat to biodiversity, second only to habitat loss and fragmentation (GENOVESI & MONACO, 2013; SIMBERLOFF *et al.*, 2013). Native to Eastern Asia (ORLOVA-BIENKOWSKAJA *et al.*, 2015) and often introduced as a biocontrol agent outside its original range, the harlequin ladybird *Harmonia axyridis* (Pallas, 1773) is listed among the 100 of the worst invasive alien species in Europe (ROY & ROY, 2008) because of the severe impacts it exerts on native biodiversity (ROY & WAJNBERG, 2008).

It has been intentionally introduced in Italy in 1995 and 1999 (BURGIO *et al.*, 2008) but, in spite of the fairly good knowledge on its biology and impacts, data on the precise occurrence of *H. axyridis* in Italy are still scanty, and records from several regions are still lacking (MENCHETTI *et al.*, 2015; OLIVIERI, 2015). Thus, in this paper we report its occurrence for the regions where the presence of this species was not known yet: Molise, Campania, Basilicata, Calabria and Sicily.

The coordinates are in decimal degrees (datum WGS84). Data with uncertainty ≤ 20 m were acquired with a GPS receiver and the accuracy is that of the instrument; for the other data the uncertainty (in metres) was estimated *a posteriori* and indicated according to the point-radius method (WIECZOREK *et al.*, 2004). The colour forms were identified according to BROWN *et al.* (2008).

Abbreviations: ab. = about; a.s.l. = above sea level; CFC = Collection Filippo Ceccolini (Rassina, Arezzo); CSL = Collection Santi Longo (Catania); c.f. = colour form; ex/exx = specimen/s; FEI = forumentomologiitaliani.net; MZUF = Museo di Storia Naturale dell'Università degli Studi di Firenze; u.c. = unknown collector; un = uncertainty.

Material examined. Molise: Bagnoli del Trigno (Isernia), Fonte Putto, ab. 600 m a.s.l., 41.7003° N 14.4654° E (un = 500 m), 9.V.2015, 1 ex (c.f. *succinea*), photo by Franco Rossi (FEI); surroundings of Petacciato (Campobasso), 83 m a.s.l., 42.00734° N 14.81788° E (un = 10 m), 31.VII.2014, F. Ceccolini, F. Cianferoni, E. Paggetti & L. Pizzocaro leg., 3 exx (c.f. *succinea*), CFC. **Campania:** Benevento, ab. 150 m a.s.l., 41.1297° N 14.7826° E (un = 2000 m), 17.VIII.2013, 1 ex (c.f. *spectabilis*), photo by Arianna Formato (FEI). **Basilicata:** Scanzano Jonico (Matera), ab. 20 m a.s.l., 40.2623° N 16.7057° E (un = 100 m), 10.VIII.2014, F. Lorenzetti leg., 1 ex (c.f. *succinea*), MZUF. **Calabria:** Porto di Gioia Tauro (Reggio Calabria), 8 m a.s.l., 38.46493° N 15.91727° E (un = 25 m), 16.II.2016, C. Gerace leg., 1 ex (c.f. *succinea*), MZUF. **Sicily:** Catania, località Bicocca, 23 m a.s.l., 37.4574° N 15.0272° E (un = 100 m), X.2013, u.c., 1 ex (c.f. *succinea*), CSL; Augusta (Siracusa), 147 m a.s.l., 37.2966° N 15.0906° E (un = 100 m), 24.IV.2014, u.c., 1 ex (c.f. *succinea*), CSL; Carletini (Siracusa), 92 m a.s.l., 37.2855° N 15.0466° E (un = 100 m), 22.IV.2014, u.c., 1 ex (c.f. *succinea*), CSL; surroundings of Lentini (Siracusa), 37 m a.s.l., 37.2787° N 14.9572° E (un = 100 m), 9.IV.2014, Giuffrida leg., 1 ex (c.f. *succinea*), CSL; Lentini (Siracusa), Buccheri, 537 m a.s.l., 37.3210° N 14.8601° E (un = 100 m), 25.IX.2015, S. Longo leg., 1 ex (c.f. *succinea*), CSL.

This note updates the knowledge on the distribution of this invasive alien species in Southern Italy (Fig. 1). Because of the high environmental suitability for this species in Italy (BAZZOCCHI *et al.*, 2004; BIDERINGER *et al.*, 2012) we may expect that it would also be present in other locations with respect to those listed in this work. Thus, further investigations are necessary for Southern Italy, where records of *H. axyridis* are still few or indeed the species has not been recorded yet.

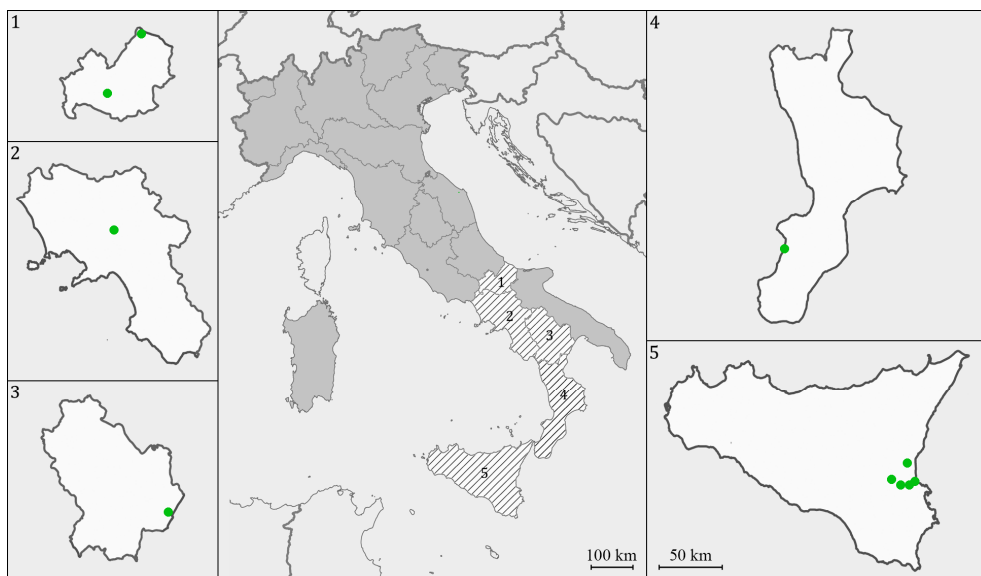


Fig. 1. Map of the known regions of occurrence of *Harmonia axyridis* in Italy, according to MENCHETTI *et al.* (2015) (grey colour) and location of the new records in Molise (1), Campania (2), Basilicata (3), Calabria (4) and Sicily (5) (stripped pattern); new records are highlighted on the regional maps on the side insets.

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