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Colaphellus palaestinus Achard, a new leaf-beetle for Europe (Coleoptera, Chrysomelidae, Chrysomelinae)

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Colaphellus palaestinus Achard, an alien invasive species is here reported for the first time for Europe. It was found for the first time in Malta in November 2017, and the year after thousands of individuals were observed in Malta with many photographs posted in social media and local news. Global distribution of this species and information on closely related species is also provided here. *Colaphellus zarudnyi* Medvedev is probably a synonym of *C. palaestinus*.

The Chrysomelidae is a very large family of phytophagous beetles with some 40,000 described species. The majority of adults are leaf feeders, with some species specializing on a wide variety of seeds, and fewer species are associated with pollen. The feeding regime is diverse as they may feed externally on the leaf tissue or on the roots, within leaves, stems or roots often as miners, or within the seed itself. Some species are considered as agricultural pests, causing direct damage to various parts of the plant; most noticeable is the reduction of leaf area or sometimes indirect damage via the transmission of plant pathogens. However, several species have also been used successfully in biological control programmes for the control of invasive weeds (e.g. Seastedt, 2014).

The Chrysomelidae of Malta have not been revised recently. In the Coleoptera list of the Maltese Islands published by Cameron & Caruana Gatto (1907) some 60 species were reported under Chrysomelidae (and about 25 species under Bruchidae). The latter group is now considered as a subfamily within Chrysomelidae. Information is provided here on a new species record which is believed to be an accidental introduction and an already invasive species associated with Brassicaceae. The species was identified as *Colaphellus palaestinus* Achard, 1923, an originally Asian species. All specimens were identified by the second author and deposited in the private collections of both authors.

The genus *Colaphellus* Weise, 1916 together with *Colaspidema* Laporte, 1833 and *Colaphinus* Achard, 1926, constitute a homogeneous but isolated group within Chrysomelinae. Its precise systematic position has always been controversial. *Colaspidema* was originally considered to belong to Eumolpinae, and then in Galerucinae (Achard, 1926). Even when correctly assigned within Chrysomelinae, this placement was never considered as a definite one. A better systematic placement was proposed by Chapuis (1874) who described a distinct group (Colaspidémites) within Chrysomelinae. Weise (1915) placed this group in Phaedonini stating that this placement was for practical purposes only "Die nachfolgende Übersicht ist für den neuen Coleopt. Cat. aufgestellt, dient also nur praktischen Zwecken" (Weise, 1915). In the more recent catalogue of Palaearctic Coleoptera these three mentioned genera were listed in the tribe Entomoscelini (within Chrysomelinae) (Kippenberg, 2010). However, no taxonomic publication using morphological or molecular characters is available to justify such a placement.

Currently, twelve species are included in the genus *Colaphellus* distributed in central and eastern Europe, and Asia Minor, namely Syria, Romania, Armenia, Caucasus, Turkestan, Siberia (Altai), Palestine, Turkey, Algeria, Tunisia, Morocco, Tibet and in various provinces of China (Kippenberg, 2010). Of these, *Colaphellus apicalis* Ménétriés, 1849, *C. palaestinus* Achard, 1923, *C. sophiae amasiae* Matchatsche, 1954, *C. sophiae hoefti* Ménétriés, 1832 and *C. zarudnyi* Medvedev, 1973 represent a SW Asiatic chorotype extending eastwards to East Uzbekistan, Afghanistan and Kazakhstan, and westwards to Greece (Vigna Taglianti *et al*., 1999).

In the genus *Colaphinus* two East African species are currently accommodated, namely *C. discoidale* (Fairmaire, 1891) and *C. zanettii* Daccordi, 1978.

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Four species are included in the genus *Colaspidema*, namely *C. barbarum* (Fabricius, 1792) distributed in France, Iberian Peninsula, Algeria and Morocco (this species is damaging to herbal medical plants, cabbage and mustard (Balachowsky, 1963)), *C. signatipenne* Guérin-Méneville, 1844 known from Algeria and Tunisia, *C. rufifrons* (Olivier, 1807) distributed in Algeria and northern Morocco, and *C. dufouri* (Perez Arcas, 1865) currently known from Spain only. Recently, *Colaphellus sophiae sophiae* (Schaller, 1783), an Euro-siberian species was recorded as an accidental introduction in Spain (Palma de Mallorca – Balearic Islands) (Petitpierre, 2014) on *Diplotaxis tenuifolia* (L.) DC. Two years later, a second species of *Colaphellus*, *C. palaestinus* Achard, 1923 was collected in Malta (Central Mediterranean) and this occurrence must also be attributed to an accidental introduction. This South-western Asiatic species was described from Jericho (= Palestinian territories). In 2016, this species was already relatively common in Malta, but in 2017, large populations (thousands) were observed in a number of localities in Malta and such findings were reported on social media and also on the local news. These findings were always observed for the first two weeks of November of both years, and then the adults disappeared from the field. Thus *C. palaestinus* can be defined as an alien invasive species in Malta.

Colaphellus palaestinus Achard, 1923 (Figures 1 & 2)

Specimens examined: MALTA, Mellieħa, 10.xi.2017, 7 exs., on *Brassica oleracea* var. *botrytis* L., leg. Mifsud; Wied Babu, 20.xi.2017, 1 ex., on *Diplotaxis* sp., leg. Mifsud; Attard, 7.xi.2019, 67 exs., leg. Mifsud (thousands of individuals observed – *personal observation* O. Aquilina); Għadira, 10.xi.2019, hundreds of individuals on *Diplotaxis* sp., leg. Mifsud; Marsaskala, 13.xi.2018, hundreds of individuals on the roof of a private residence, leg. Mifsud. **PALESTINE**, Jericho, 9.vii.1935, 2 exs., leg. Wittmer. **SYRIA**, 60 Km E of Damas to Palmyra, 6.iv.2010, 1 ex., leg. Skoupy; Palmyra, 2.v.2009, 2 exs., leg. Daccordi; Mayuf dint. Oasi di Palmyra, 34°33.196N; 38°17.150 E, v.2003, 3 exs., leg. Serral; Gatar dint. Oasi di Palmyra, 5.iii.2003, 1 ex., leg. Serral. **JORDAN**, 50 Km NE Aqaba wadi Rum, 4-5.iv.1994, 29°, 36-41N; 35° 20-25 E, 1 ex., leg. Becvar; Pella, -60 m u.s.l. 30.iv.2009, 15 exs., leg. Daccordi; Yamuk river near Umm Qays, 14.iv.2000, 3 exs., leg. Zappi. **ISRAEL**, Golan, Susita, 15.iv.1982, 4 exs., leg. Besuchet; Gilgal, 16.ii.1979, 1 ex., leg. Furth; Judean Desert, Mazoq Hahé Tequm, Nat. Res., Wadii Mashadi, 1.iv.95, 2 exs; -50m u.s.l.; N Negev, Har Kharif Junction, 30°29'N; 34°33'E; 2.iv.2014, 3 exs., leg. Giusto; Dimona Central Negev, ii.1998, 4 exs., leg. Sama; Be'er Sheva area road 40-Nakhal Shekhar, 28.iii.1995, 2 exs., leg. Colonnelli.

Global distribution: Apart from the above mentioned territories, *C. palaestinus* is known to occur also in Egypt (Sinai, Mitla). The species is known from altitudes of -60 m u.s.l. up to more +900 m a.s.l.. *C. palaestinus* is closely related to *C. apicalis* Ménétriés, 1849, whose distribution is more towards the East (Uzbekistan and Afghanistan). *C. palaestinus* and *C. apicalis* can be distinguished by the puncturation and the shape of the aedeagus. In *C. apicalis* the integument is dull, and head and thoracic puncturation is more distinct. Thoracic and elytral puncturation in *C. palaestinus* is almost twice as large and more dense than that found in *C. apicalis*. The apical part of the aedeagus is distinctly pointed and narrower in *C. apicalis* compared to *C. palaestinus*.

FIGURE 1. *Colaphellus palaestinus* on *Brassica oleracea* var. *botrytis* L.

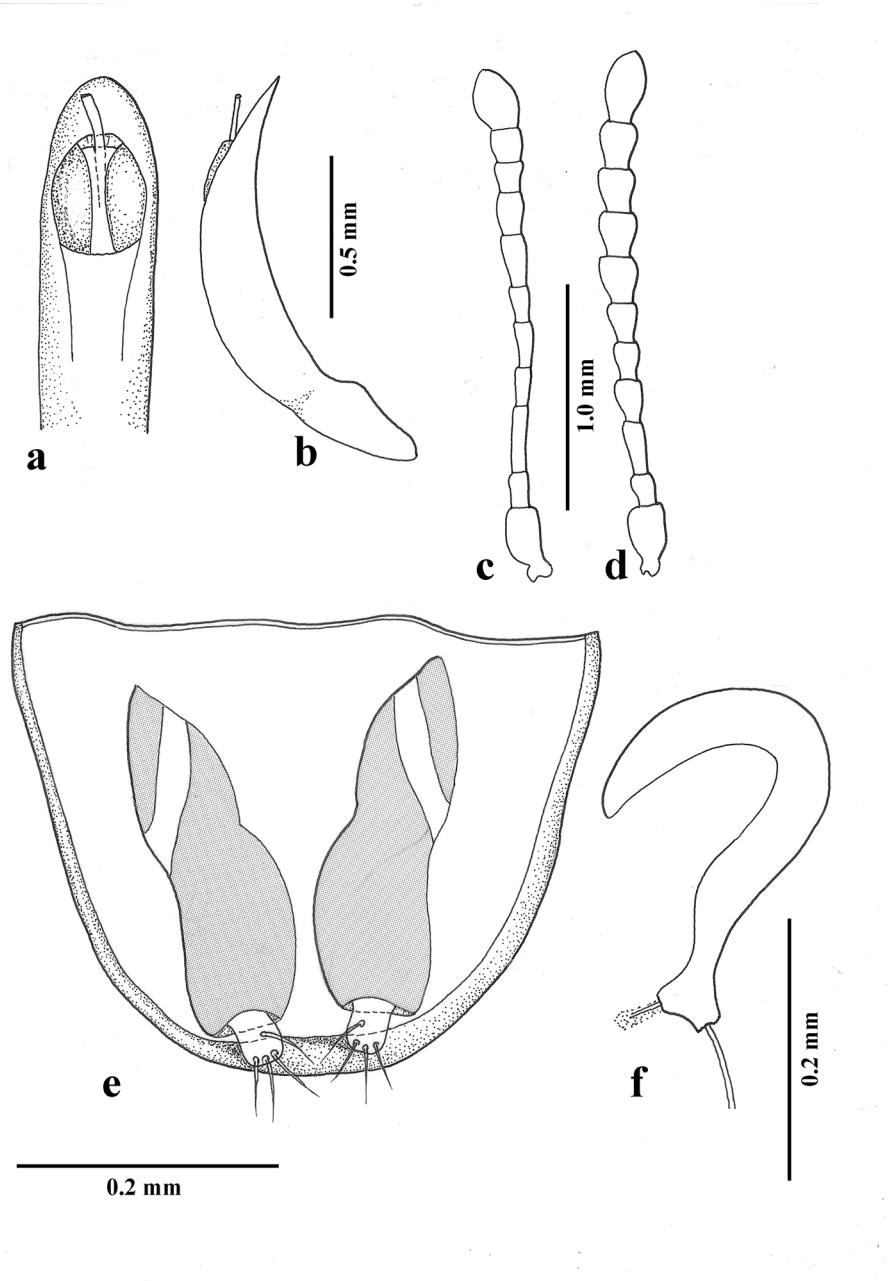

FIGURE 2. *Colaphellus palaestinus*, **a**, Aedeagus (dorsal); **b**, aedeagus (lateral); **c**, male antenna; **d**, female antenna; **e**, vaginal palpi; **f**, spermatheca.

Colaphellus zarudnyi Medvedev, 1973 was recorded from Iran and Iraq. This species was described based on one specimen (sex unknown) from Iran (without precise location) only. In our opinion, from its description it is clear that this taxon is identical to *C. palaestinus*. In fact, we studied two specimens from Iran which were identified as *C. zarudnii* by I. Lopatin and which are in fact attributed to *C. palaestinus* [**specimens examined: IRAN**, without precise locality, 2 exs. det. Lopatin as *Colaphellus zarudnii* 1984; Persia, Schouster, v.1899, leg. Escalera; **IRAN**, west, Disfonl (?), iv.1960; **IRAQ**, Mosul, Bagdad; **IRAQ**, iv.1936; **IRAQ**, west, 21.iii.1978; IRAQ, western desert, Bīr-ar-Rāh, 70 Km N of Ar-Rutbah, 21.iii.1978, leg. Macek]. However, the Holotype of *C. zarudnyi* has to be studied to eventually synonymize the two taxa.

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