



# First Record of *Lilioceris faldermanni* (Guérin-Méneville, 1829) (Coleoptera: Chrysomelidae: Criocerinae) in Bulgaria, Including a Record of a New Host Plant

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**Abstract:** This study presents the first records of the leaf-eating beetle *Lilioceris faldermanni* (Coleoptera: Chrysomelidae: Criocerinae) in Bulgaria. The species was found from five localities in southern Bulgaria, situated in the Western Rhodope Mts., Sakar Mts. and Southern Black Sea coast. A new host plant, *Fritillaria pontica* Wahlenb (Liliaceae), was recorded.

**Key words:** new geographical record, leaf beetles, feeding plants, *Fritillaria pontica*

## Introduction

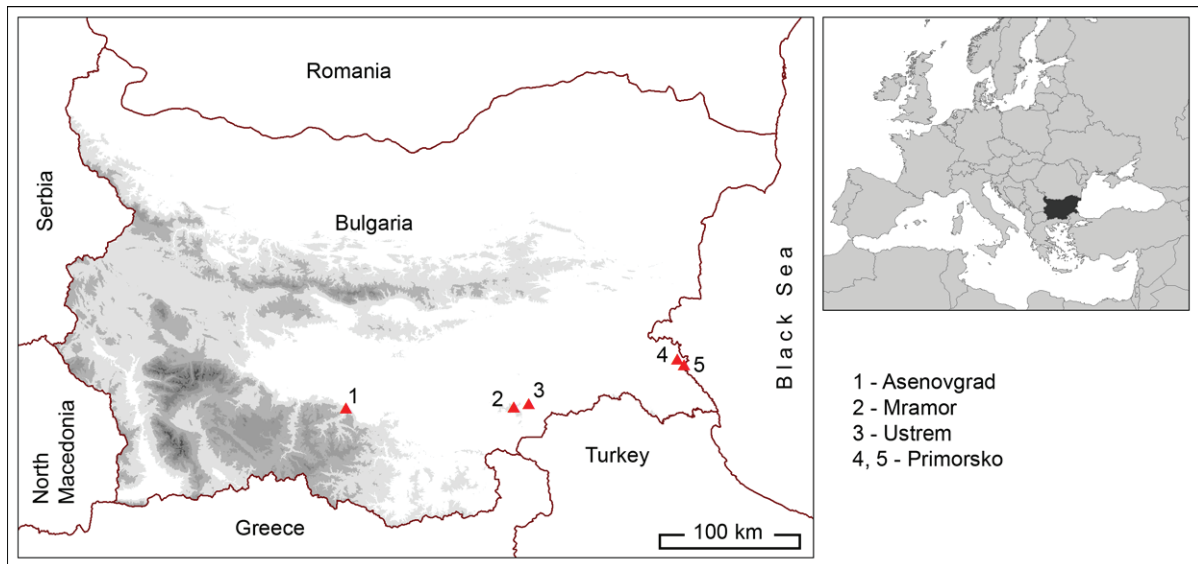
According to the catalogue of the leaf beetles of Bulgaria (GRUEV & TOMOV 1998), 541 species of the Chrysomelidae are listed in this country. The genus *Lilioceris* Reitter, 1912, with 40 Palaearctic species (LOPATIN 1977, ÖZDIKMEN & TURGUT 2008), has been reported with only two representatives in Bulgaria: *Lilioceris lili* (Scopoli, 1763) and *Lilioceris merdigera* (L., 1758) (GRUEV & TOMOV 1998, GRUEV 2005). *Lilioceris faldermanni* (Guérin-Méneville, 1829) has been known from the Balkan Peninsula (European Turkey, Greece, Romanian Dobrogea), Middle East (Anatolia, Iraq, Israel, Jordan, Syria), Caucasian countries (Armenia, Azerbaijan, Georgia, southern European Russia), Central Asia, Cyprus and North Aegean Islands (ASLAN 2000, WARCHALOWSKI 2003, AUDISIO 2005, GRUEV 2005, BOROWIEC 2006, ÖZDIKMEN & TURGUT 2008, LÖBL & SMETANA 2010, MAICAN & SERAFIM 2012). In general, *L. faldermanni* inhabits lowlands, foothills and mountain areas and is active in April–May (OKHRIMENKO & GNEZDILOV 1997, MIRZOEVA 2001), more or less attached to the forests, i.e. the

habitats of its feeding plants – wild lilies (*Lilium* spp.). In urban areas, it also feeds on ornamental varieties of lilies (OKHRIMENKO & GNEZDILOV 1997). The species is found on *Lilium candidum* L. in Israel (BERTI & RAPILLY 1976), on leaves of the herb-paris (*Paris* spp.) in southwestern Russia (OKHRIMENKO & GNEZDILOV 1997) and on *Fritillaria persica* L. in Cyprus (KONSTANTINOU 2015). It is also reported as a pest insignificantly damaging garlic and onion (MEDVEDEV 1974).

The aim of the present study is to report the first records of *Lilioceris faldermanni* in Bulgaria and data of a new host plant for this species.

## Materials and Methods

Specimens of *Lilioceris faldermanni* were collected by hand picking or observed and photographed *in situ*. The identification at the species level is according to OKHRIMENKO & GNEZDILOV (1997). The main identification and taxonomic features are the chaetotaxy of the labrum and metasternum, shape of the pronotum and the colouration of the head, legs, sixth sternite, epipleural and sternal sclerites. The collected



**Fig. 1.** Distribution of *Liliocerus faldermanni* (Guérin-Ménéville, 1829) in Bulgaria.

specimens were deposited in the Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, Sofia). The geographical coordinates (as decimal degrees) were taken on the field with GPS receiver. The abbreviations used in the text are as follows: ♂ – male, ♀ – female, coll. – collector, ex. – exemplar, obs. – observer, S – southern, vill. – village.

## Results

*Liliocerus faldermanni* was found at five sites in the Western Rhodope Mts., Sakar Mts. and Southern Black Sea coast (Fig. 1). A total of seven specimens were observed and photographed and other four specimens were collected: three ♂♂ and one ♀ laying eggs. All specimens were staying, copulating or laying eggs on *Fritillaria pontica* Wahlen, which gives us grounds to recognise this plant as a new food- and host-plant.

### FAMILY CHRYSOMELIDAE LATREILLE, 1802

#### Genus *Liliocerus* Reitter, 1912

#### *Liliocerus faldermanni* (Guérin-Ménéville, 1829)

Synonyms: *L. cornuta* Faldermann, 1837; *L. semirufa* Marseul, 1868; *L. notaticollis* Pic, 1934.

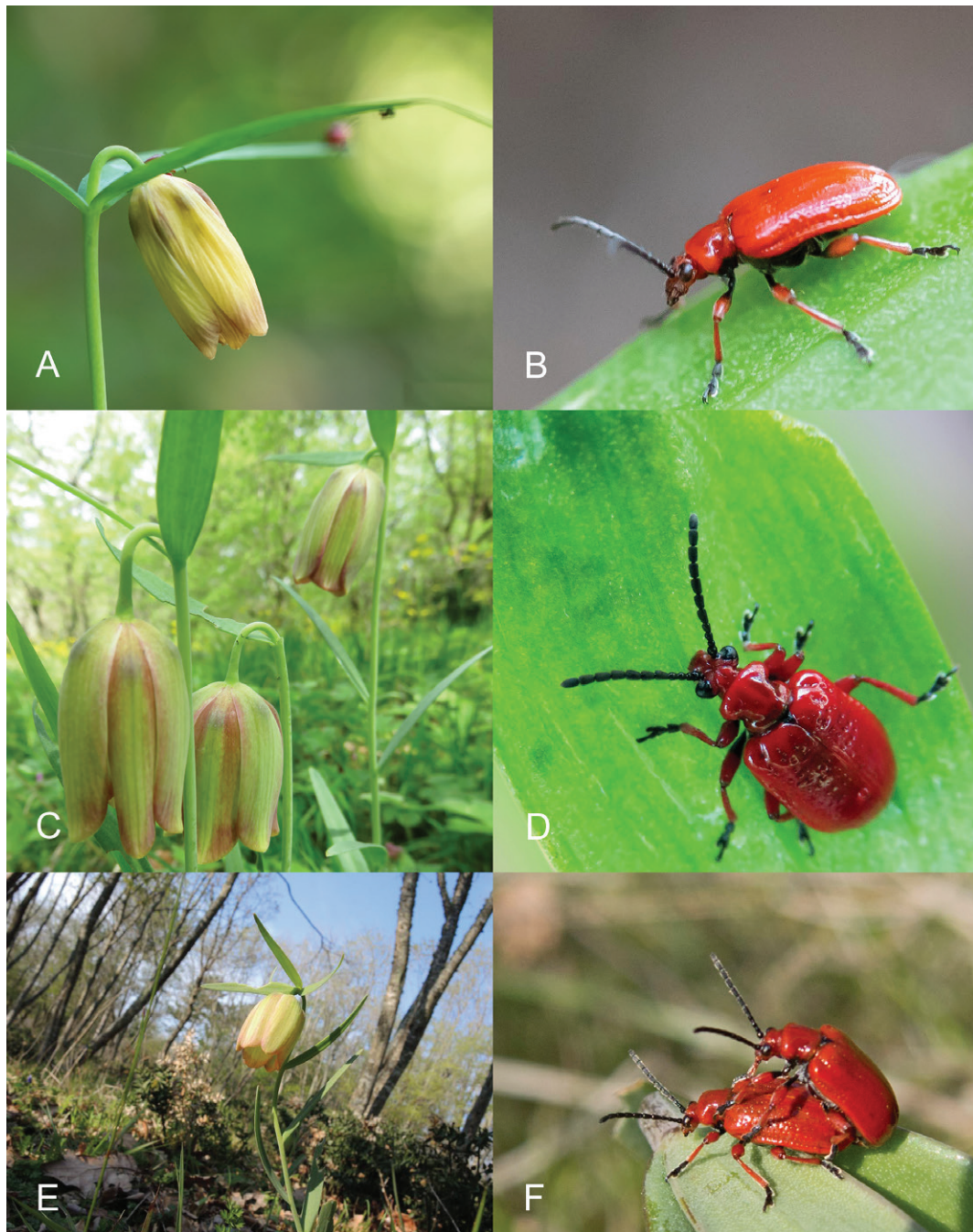
Material examined: 1♂ (Fig. 2: B), Western Rhodope Mts., Asenovgrad Fortress (Fig. 1: 1), N 41.9879°, E 24.8762°, 293 m a.s.l., 30.04.2019, coll. J. Nakev; 1♂ (Fig. 2: D), Sakar Mts., Mramor Vill. (Fig. 1: 2), N 42.0113°, E 26.3053°, 720 m a.s.l., 21.04.2019, coll. & obs. M. Naumova; 1♂ and 1♀, Sakar Mts., Ustrem Vill. (Fig. 1: 3), N 42.0345°, E 26.4288°, 142 m a.s.l., 28.04.2019, coll. K. Bakardzhiev.

Other observations: 1♀, Western Rhodope Mts., Asenovgrad Fortress (Fig. 1: 1), N 41.9879°, E 24.8762°, 293 m a.s.l., 26.04.2019, obs. & photo J. Nakev; 1♂ and 1♀, Sakar Mts., Mramor Vill. (Fig. 1: 2), N 42.0113°, E 26.3053°, 720 m a.s.l., 12.04.2019, obs. & photo M. Naumova; 1♂ and 1♀ (Fig. 2: F), S Black Sea coast, Primorsko (Fig. 1: 4), N 42.3029°, E 27.7476°, 95 m a.s.l., 21.04.2019, obs. & photo E. Khokhlova; 1 ex., S Black Sea coast, Primorsko (Fig. 1: 5), N 42.2929°, E 27.7639°, 55 m a.s.l., 15.04.2019, obs. & photo E. Khokhlova.

## Discussion

In the past, *L. faldermanni* has been considered an endemic species occurring in all Caucasian countries (WINKLER 1924–1932) and reaching to the northern Iran and western Turkmenistan but not in neighbouring Turkey (OKHRIMENKO & GNEZDILOV 1997). In fact, it has been reported from various Turkish regions (ESCHERICH 1897, WARCHALOWSKI 1976, ASLAN 2000, ÖZDIKMEN & TURGUT 2008). The chorotype of *L. faldermanni* has been considered Eastern Mediterranean or South-western Asiatic (ÖZDIKMEN 2011) but in last few decades the species has shown a trend of spreading within Europe (as also seen from the present study). *Liliocerus faldermanni* has been considered as a relatively rare species (OKHRIMENKO & GNEZDILOV 1997, MIRZOEVA 2001)

Our observations on the phenology of *L. faldermanni* are similar to those known from the literature. In Krasnodar Region (Southern Russia), *L. faldermanni* appears after wintering in the end of March and April in warm and sunny days. In



**Fig. 2.** Host plants *Fritillaria pontica* (A, C, E) and specimens of *Liliocerus faldermanni* (B, D, F) from the Western Rhodope Mts. (A, B), photo: J. Nakev ©; Sakar Mts. (C, D), photo: M. Naumova ©; Primorsko (E, F), photo: E. Khokhlova ©.

the middle of April, mating imagoes appear and in the end of April–May the females lay eggs on the bottom side of the lily leaves. In the end of May–June, the larvae move into the soil for the remaining part of the year (OKHRIMENKO & GN-EZDILOV 1997).

Most species of the leaf beetles are oligophagous, adapted to feeding on plants of a certain family (MEDVEDEV & ROGINSKAYA 1988, BIENKOWSKI 2010). The association with a specific food plant af-

fects the distribution, time of flight, oviposition and other aspects of the leaf-beetle biology (BIENKOWSKI 2010). We have found this species in open deciduous forests, at altitudes between 55 and 720 m a.s.l., attached to the habitats of *Fritillaria pontica* Wahl-enb (Liliaceae). All collected specimens and all observations in the course of the present study are strictly on *Fritillaria pontica* and a female has been observed laying eggs (on a leaf bottom) confirming that the plant is a host.

It seems that the feeding plants of the species are limited to the families Amaryllidaceae (*Allium* sp. L.), Melanthiaceae (*Paris* sp.), and Liliaceae, mostly to species of the genus *Lilium* L. (*L. candidum*, *L. monodelphum* and decorative varieties of lilies). Only in Cyprus and Bulgaria, *L. faldermanni* has been found on *Fritillaria* spp. (KONSTANTINOVA 2015; present study).

The newly recorded host plant *Fritillaria pontica* is herbaceous perennial plant of the family Liliaceae flowering in April–May. It is a Balkan subendemic, distributed in Bulgaria (Black Sea Coast, Strandzha Mts., Eastern Bulgaria, Central and Eastern Stara Planina Mts., Sredna Gora Mts., Thracian Lowland, Rhodope Mts., Struma River valley, Slavyanka Mts.), Republic of North Macedonia, Northern Greece, Thasos Island, European part of Turkey and Asia Minor (YANEV 1964). It is a protected species enlisted in Annex 3 of Bulgarian Biodiversity Act. The known main threats for this plant species are the loss of habitats (deciduous forests) and picking flowers for decorative purposes. However, the potential possibility *L. faldermanni* to become a real threat for this plant species should not be underestimated.

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