

Cucullia fraterna Butler, 1878 - a new species for the Balkan Peninsula (Lepidoptera: Noctuidae)

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Samenvatting. *Cucullia fraterna* Butler, 1878 - een nieuwe soort voor het Balkan-Schiereiland (Lepidoptera: Noctuidae)

Van *Cucullia fraterna* Butler, 1878, een zeldzame soort in Europa (slechts bekend van de steppen in de Oekraïne), werden 21 exemplaren op licht gevangen bij de Donau in Noordoost-Bulgarije. De vliegtijd valt tussen midden mei en begin augustus. Hier worden voor het eerst Europese exemplaren van deze soort afgebeeld. Tevens worden foto's van de mannelijke en vrouwelijke genitalia afgebeeld alsook tekeningen van de uitgestulpte vesica. Een UTM-kaart met de vindplaats in Bulgarije wordt gegeven.

Résumé. *Cucullia fraterna* Butler, 1878 - une espèce nouvelle pour le Péninsule Balkanique (Lepidoptera: Noctuidae)

Cucullia fraterna Butler, 1878 - une espèce peu connue en Europe - qui jusqu'à ce moment n'était connue que des steppes de l'Ukraine, a été constatée en 21 exemplaires près du Danube dans le nord-est de la Bulgarie. Tous les exemplaires étaient attrapés à la lampe. La période de vol s'étend de la première moitié de mai jusqu'au début août. Pour la première fois des illustrations en couleurs d'exemplaires européens sont données ici. Des photos des armatures génitales mâles et femelles ainsi que des dessins de la vesica évaginée sont figurés. L'article contient une carte UTM de distribution.

Key words: *Cucullia fraterna* - genitalia - vesica - distribution - Balkan Peninsula - Bulgaria.

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Introduction

On 13 May, 1994 in northern Bulgaria, at the "Kalimok" experimental station of the Institute of Zoology, Bulgarian Academy of Sciences, situated between Nova Tcherma v., Tutrakan region and the Danube river, two km south of Danube river (Fig. 1) two male specimens of a *Cucullia* species which was unknown to us at that time (Pl. 1, fig. 2) were collected in a light trap. A few days later, on 30 May a single female specimen of the same species (Pl. 1, fig. 1) was collected. More specimens, all males, were collected during the month of June. In July, even though we had collected almost every day, a single specimen was taken on the last day of the month. In August, the species was collected only during the first days. We continued to collect in the same place up through the middle of August, but we could not find more specimens.

This *Cucullia* species was similar to *Cucullia lactucae* ([Denis & Schiffermüller], 1775) (Pl. 1, fig. 4), which differs from it mainly by the wide dark fascia from the postdiscal area to the inner margin of the hindwings. A similar fascia, wide at the costa and narrow in anal angle is present in *Cucullia chamomillae* ([Denis & Schiffermüller], 1775) (Pl. 1, fig. 3), but the ground colour of the hindwings, the pattern of the forewing, and the dorsal crest of the abdomen, are completely different. Another difference between our species and *C. lactucae* is found in the fringes of the hindwing which are brownish in the latter and white in the "Kalimok" species. In our species, small black sagittal spots can be found subterminally between the ends of the veins; in *C. lactucae* subterminally between the veins the area has a white centre without black spots. Checking of the male genitalia showed that our specimens have genitalia completely different from *C. chamomillae*, but similar to those of *C. lactucae*. The main differences in the valvae of *C. lactucae* (Fig. 6) and our species (Fig. 2) are in the harpe and in the shape of the cucullus. The male genitalia of this species have been figured a.o. by Boursin (1942) and

Kostrowicki (1956). The male genitalia of our species correspond well to the drawings given in these papers and it was determined as *Cucullia fraterna* Butler, 1878, a species not illustrated in colour before in the literature from the Western Palaearctic.

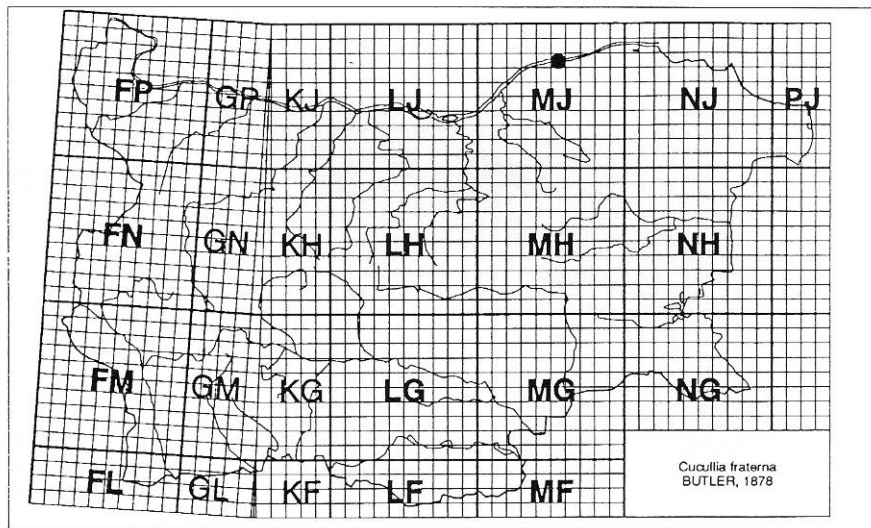


Fig. 1: Map of Bulgaria with locality of *Cucullia fraterna* Butler, 1878.

Material examined

During almost all of the year 1994 we collected Lepidoptera at the "Kalimok" station and thousands of moth specimens were collected on a Hg lamp during this time. Among this material we found 21 *Cucullia fraterna* specimens. They were collected from May to August as follows:

13.V.1994, 2♂ - Gen. preps 4./05.VIII.1994, Beshkov; 1./10.VIII.1994, Beshkov, genitalia and everted vesica; 30.V.1994, 1♀ on 125 W Hg lamp, Gen. prep. 1./20.IX.1994, Beshkov; 01-02.VI.1994, 1♂ on 125 W Hg lamp, Gen. prep. 1./19.VIII.1994, Beshkov; 03.VI.1994, 2♂; 04.VI.1994, 2♂; 17.VI.1994, 4♂ - Gen. prep. 2./19.VIII.1994, Beshkov, genital and everted vesica; 18.VI.1994, 1♂; 19.VI.1994, 1♂; 24.VI.1994, 1♂; 25.VI.1994, 3♂; 31.VII.1994, 1♂; 02.VIII.1994, 1♂; 03.VIII.1994, 1♂.

During that period (May - August) we were light-trapping on following days: May, 2-17; 19; 25-30; June, 3-6; 17-30; July, 3-4; 8; 18-21; 28-31; August, 1-6; 9-13.

Male genitalia (Figs 2-4): Uncus beak-shaped, moderately long and wide, tegumen high and wide. Vinculum V-shaped, strong, with a slight incision. Fultura inferior a rounded plate. Valvae wide, elongate with well developed, elongate and pointed apically, saddle-like cucullus with right anal angle. Harpe extremely short. Clavus very small. Aedeagus (Figs 3a, b) long and strong, slightly curved with two distal laminae, one big semidorsal and another semiventral. Vesica (Figs 4a, b) with three diverticula, one of

them short with a large cornutus, a second turning backward with one large cornutus and dentiform crest, and a third which is sac-like, large and pointed.

Female genitalia (Fig. 5): Ovipositor short, posterior apophyses moderately long. Ostium bursae with wide V-shaped ligula. Ductus bursae short and wide, heavily sclerotized ventrally. Bursa copulatrix large, round, apex pointed.

Distribution

In Europe: *Cucullia fraterna* is mentioned for the first time from Europe in Kostrowicki (1956): Northwest Ukraine, Podolije. Later, in Hartig & Heinicke (1973) this species was not mentioned for Europe. Klutchko (1991) repeated the previous report from Podolije without referring to the source of information and reported the species as new for the Ukraine from several places: Provalskaja Step steppe, Svepdlovski region; Barishevka, Kiev region; Gritzevo; Ivanovka by Gutı, Harkovsk region; Elissavetgrad; Leninskoe, region Rostov-na-Don. Fibiger & Hacker (1990) included *Cucullia fraterna* in the European list of Noctuidae following the reports from Ukraine (Fibiger, pers. comm.). We think *Cucullia fraterna* will probably be found in Romania; the "Kalimok" experimental station is only two km from the border with Romania, along the Danube river.

Outside Europe: *Cucullia fraterna* is known from Japan and East China (Warren 1910: 106); West Siberia: Barnaul and Altai - Krasnostekovo and Tchinetı; Primorije and Amurland (Bubnova 1980: 72). Our material does not correspond well with the colour illustration in Warren (1910: 28a). So far as we know, *Cucullia fraterna* has been figured in colour by Sugi (1982) as well (Fibiger, pers. comm.). The name *Cucullia fraterna* Butler, 1878 has been mentioned in the following publications which we have not consulted: Boursin (1960-65); Draudt (1933-38); Esaki (1984) (Manz computer information).

Ecology

Compositae are mentioned in Kostrowicki (1956: 36) as the larval host-plant. According to Bubnova (1980: 72) the caterpillars are polyphagous, feeding on *Sonchus arvensis*, *Sonchus oleraceus*, *Arctium*, *Taraxacum*, *Tanacetum*, *Onobrychis* and *Beta*. We have no data on the larval host-plants of *Cucullia fraterna* in Bulgaria, nor on the appearance and biology of the caterpillar. According to Kostrowicki (1956), *Cucullia fraterna* inhabits steppes and forest-steppes. The Bulgarian locality of *C. fraterna* - the "Kalimok" experimental station, is situated in an area which was a swamp in the past. Now this land is farm area. The near surroundings are areas crossed by canals with aquatic vegetation - *Phragmites communis*, *Typha latifolia*, *Schoenoplectis* spp., *Juncus* spp., *Cyperaceae* spp. etc. Near the station there is a small forest of *Robinia*, *Fraxinus* and *Acer*. There are also single trees of *Populus* and *Prunus*. Two kilometres north of the station, along the beach of Danube river, there is a large area covered by *Populus* and *Salix*. A few kilometres around "Kalimok" an area with steppe vegetation can be found. The grass vegetation is mesoxerothermal with a prevalence of *Poa bulbosa*, *Lolium perenne*, *Cynodon dactylon*, partly also *Dichantium ischaemum* and rarely *Chrysopogon gryllus* (Bondev 1991). Other grass communities in the region are mesophytous ones - *Festuceta pratensis*, *Poaeta sylvicolae*, *Alopecureta pratensis*, *Lolieta perennis*, *Agrostideta stoloniferae*, etc., replacing forests of *Ulmus*, *Acer campestre*, *Quercus robur* and *Q. pedunculiflorae*, etc. (Bondev 1991).

The flight period mentioned in the literature is from the end of May in the Altai (Bubnova 1980), to the end of August in the Ukraine (Klutchko 1991). Our earliest specimen was captured on 13.V.1994, the last on 03.VIII.1994. The species flies all of June, although during July we found only one specimen on the last day of the month. The only female specimen was found at the end of May. All specimens were collected on Hg lamp. With the data we have we can not make any conclusions about the number of generations. Probably *Cucullia fraterna* has one protracted generation in Bulgaria extending from the beginning of May to the beginning of August. However, the possibility of two generations a year should not be excluded. Synchronously and syntopically with *Cucullia fraterna*, the following interesting species were observed, some of them in large numbers: *Gnopharmia stevenaria* (Boisduval, 1840); *Ectropis crepuscularia* ([Denis & Schiffermüller], 1775); *Dolbina elegans* A. Bang-Haas, 1912; *Proserpinus proserpina* (Pallas, 1772); *Drymonia querna* ([Denis & Schiffermüller], 1775); *Calyptra thalictri* (Borkhausen, 1790); *Aedia leucomelas* (Linnaeus, 1758); *Phyllophila oblitterata* (Rambur, 1833); *Deltote bankiana* (Fabricius, 1775); *Pseudeustrotia candidula* ([Denis & Schiffermüller], 1775); *Eublemma purpurina* ([Denis & Schiffermüller], 1775); *Cucullia chamomillae* ([Denis & Schiffermüller], 1775); *Amphipyra livida* ([Denis & Schiffermüller], 1775); *Periphanes delphinii* (Linnaeus, 1758); *Aegle kaekeritziana* (Hübner, [1799]); *Eucarta virgo* (Treitschke, 1835); *Chortodes fluxa* (Hübner, [1809]); *Discestra stigmosa* (Christoph, 1887); *Lacanobia blenna* (Hübner, [1824]); *Hecatera cappa* (Hübner, [1809]); *Leucania obsoleta* (Hübner, [1803]); *Mythimna pudorina* ([Denis & Schiffermüller], 1775).

Conservation status

It seems that in the Western Palaearctic, *Cucullia fraterna* is a very local species. Bulgaria is the end of its known range to the south-west and the southern point of its occurrence in Europe. The number of the specimens we have collected, all of them using the method of light-trapping which is relatively unsuitable for *Cucullia*, suggests that in the region near "Kalimok" there is a moderately abundant population. Unfortunately, we haven't got many data concerning Lepidoptera of this part of Bulgaria, the Danube Plain, which is one of its less-explored areas. It is not impossible that *Cucullia fraterna* will be found in other places in this part of Bulgaria, and in Romania as well.

Figs 2-5: *Cucullia fraterna* Butler, 1878 - N. Bulgaria, 2 km south of Danube river, Nova Tcherná v., "Kalimok" experimental station, Tutrakan region, D. Vassilev leg.:

Fig. 2. 01-02.VI.1994, Gen. prep. 1./19.VIII.1994, Beshkov, male genitalia.

Fig. 3a. same data as fig. 2, aedeagus.

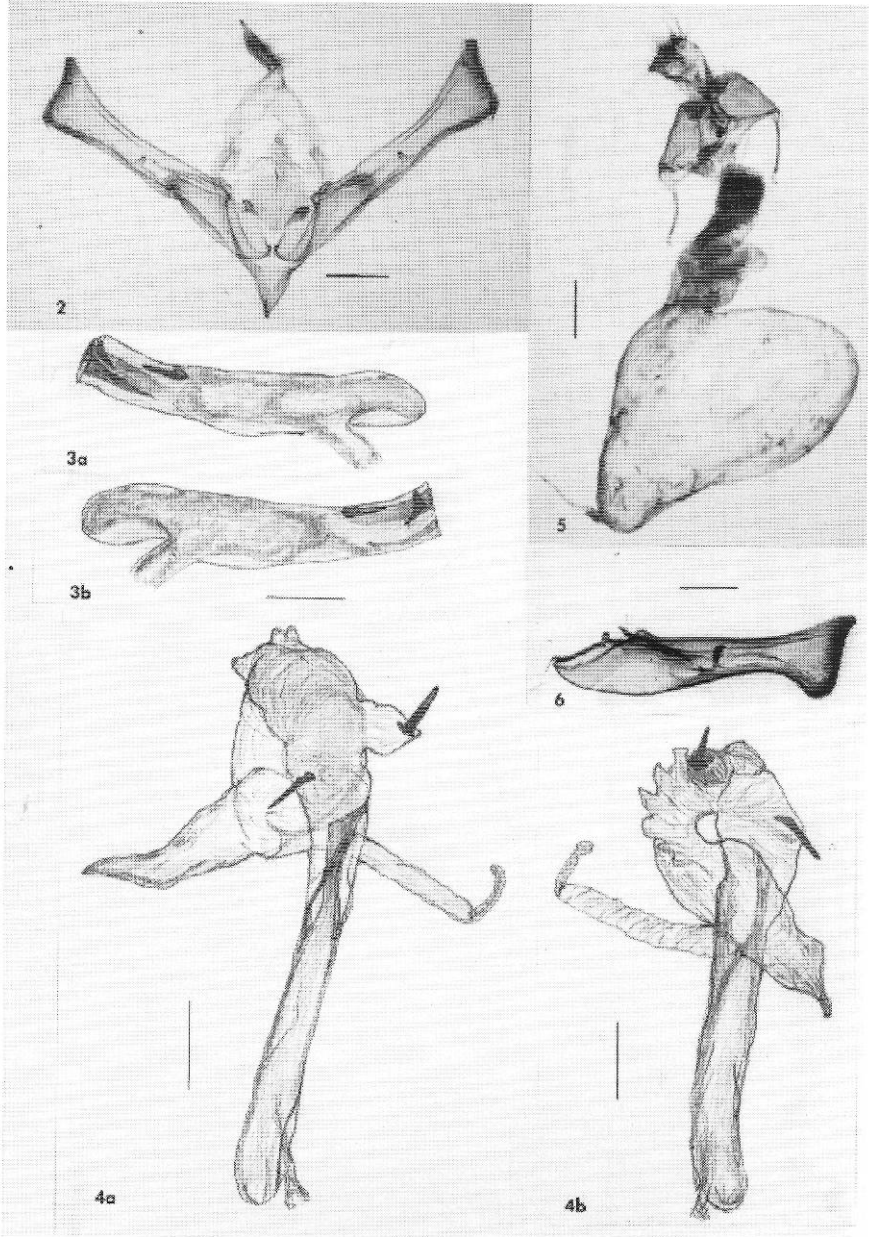
Fig. 3b. same data as fig. 2, aedeagus, reverse.

Fig. 4a. 17.VI.1994, Gen. prep. 2./19.VIII.1994, Beshkov, aedeagus with everted vesica.

Fig. 4b. same data as fig. 4a., reverse.

Fig. 5. 30.V.1994, Gen. prep. 1./20.IX.1994, Beshkov, female genitalia.

Fig. 6. *Cucullia lactucae* ([Denis & Schiffermüller], 1775) - Bulgaria, Troyanska Stara Planina Mt., Dermenkaya chalet, 1530 m., 24.VI.1989, Beshkov leg., Gen. prep. 1./11.I.1990, right valva.



We have no information about the caterpillars and their food-plant. Because the biggest part of the area around the "Kalimok" station is farm area, the food plant could be some kind of weed. This makes *Cucullia fraterna* an endangered species because of human activities like the use of pesticides, mowing the grass and setting fire to stubble etc. In order to avoid the extinction of this species, future research on its biology and protection of its habitat is urgently needed.

Acknowledgments

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Note

The manuscript was submitted before the publication of Ronkay, G. & Ronkay, L., 1994. *Noctuidae Europaeae Vol. 6 Cuculliinae I*. Entomological Press, Sorø, 282 p.