

Field records of larvae of *Dichagyris endemica* FIBIGER, SVENDSEN & NILSSON, 1999 in Cyprus (Lepidoptera: Noctuidae)

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Abstract: 34 larvae of *Dichagyris endemica* FIBIGER, SVENDSEN & NILSSON, 1999 have been found especially on *Jurinea cypria* Boiss. (Asteraceae) in rocky limestone embankments in garigues in West Cyprus in spring 2017 and 2018. The larvae and pupae are figured for the first time and some details of their ecology are revealed.

Freilandraupenfunde von *Dichagyris endemica* FIBIGER, SVENDSEN & NILSSON, 1999 auf Zypern (Lepidoptera: Noctuidae)

Zusammenfassung: Im Frühjahr 2017 und 2018 wurden in Westzypern 34 Raupen von *Dichagyris endemica* FIBIGER, SVENDSEN & NILSSON, 1999 vor allem an *Jurinea cypria* Boiss. (Asteraceae) an felsigen Böschungen (Kalk) in Garigues gefunden. Die Raupen und Puppen werden zum ersten Mal abgebildet und einige Details ihrer Ökologie beschrieben.

Introduction

Cyprus is the third largest and easternmost Mediterranean island. It is known for the relative large proportion of endemics on species and subspecies level, e.g. among plants and geometrid and noctuid moths. Many of these noctuids have been described relatively late in the 1990ies (LEWANDOWSKI & FISCHER 2004) when the state of research significantly improved on that island due to intensive usage of light traps also during late autumn and winter. Some examples are:

- *Dichagyris adelfi* FIBIGER, NILSSON & SVENDSEN, 1999
- *Perigrapha wimmeri* HACKER, 1996
- *Episema kuorion* NILSSON, SVENDSEN & FIBIGER, 1999
- *Polymixis aphrodite* FIBIGER, 1997
- *Polymixis alaschja* HACKER, 1996
- *Standfussiana lucernea makaria* SVENDSEN, FIBIGER & NILSSON, 1999
- *Standfussiana nictymera koinistra* NILSSON, SVENDSEN & FIBIGER, 1999

Because the usually severe summer drought lasts often well into November, a great proportion (greater than in temperate regions further North) of noctuid species fly in autumn and winter, have their larval development in late winter and spring and pass summer as prepupa or pupa. While the larvae of some of the species are already known by ex-ovo rearings, their ecology remains to be examined in the field in most cases.

Dichagyris endemica FIBIGER, SVENDSEN & NILSSON, 1999 is one of those endemics of which neither the larva itself nor the preimaginal ecology is known yet.

According to present knowledge the species occurs in W-Cyprus in the districts Paphos, Limassol and Nicosia. In its general appearance it is close to *Diachagyris mela-*

nura (KOLLAR, 1846) and related species (e.g. *D. melanuroides* KOZHANCHIKOV, 1930) from e.g. Greece (HACKER 1989) and Turkey. During three excursions to Cyprus in spring 2017 and 2018 I recorded the larva in various instars in the field. Details of the hostplant, ecology and larval and pupal characters are introduced.

Material and methods

Three trips to Cyprus have been conducted in April 2017 and in February and April 2018. The primary goal was to search for Lepidoptera larvae in various habitats. Between Agios Therapon and Lofou (several places, 640–780 m) in the Limassol district I came across a beautiful grazed limestone landscape with rocky to earthy embankments and garigue in between. Because such embankments with their favourable microclimate are usually interesting for many larvae I investigated some of them.

Feeding scars on the leaves of the main hostplant *Jurinea cypria* had been the first hints. The larvae have been found then by carefully examining the base of the hostplants and placing an umbrella upside down under the plants in the steep embankments. Most larvae fell into the umbrella, others could be observed in the litter or fine soil under the plants. Older larvae usually buried themselves superficially in the soil or in crevices.

Altogether I found 34 larvae of *D. endemica* (adult see in Fig. 1): on 14. iv. 2017 (12), 24. ii. 2018 (9) and 7. iv. 2018 (13).

The first two rearing attempts were not successful, possibly because of the method: cut *Taraxacum officinale* L. (Asteraceae) in plastic boxes, and in the second attempt a mixture of *Taraxacum* sp./*Centaurea montana* L. (Asteraceae). For the third attempt (April/May 2018) the larvae have been kept on potted *Centaurea montana*, now often named *Cyanus montanus* (L.) HILL., in sandy earth in a small terrarium on a partial sunny window. This plant has a similar leaf quality as the original hostplant (see below). The larvae developed very well without larger losses and 10 pupae and subsequently moths have been obtained.

Results and discussion

Larva

In all instars (after hibernation) the larva is of similar colour as the limestone ground of its habitat.

In the last two instars the larva (Figs. 3–10) shows a creamy-white base colour with many darker grey or



Fig. 1: Adult (ex-larva rearing, larva in early April 2018, moth on 28. v. 2018). **Fig. 2:** Small and very small larva (23. ii. 2018). **Fig. 3:** Half-grown larva (17. iv. 2017). **Figs. 4–10:** Fully-grown larvae (Figs. 4–5 and 8–10: 16. iv. 2017, Figs. 6–7: 8. iv. 2018). **Fig. 11:** Cocoon, taken out of the soil in the terrarium (ex larva rearing, v. 2018). **Figs. 12–13:** Pupa, cocoon removed (ex larva rearing, 20. v. 2018), eyes already darkened. — All photos on both plates by the author, *Dichagyris endemica* from Cyprus (western part) between Agios Therapon and Lofou.

grey-brown dots of various size and irregular shape. These dots are more concentrated and darker grey in the dorsal and subdorsal lines, a bit less concentrated in the subdorsal field and much less below the spiracles, giving the impression of lighter bands. The spiracles are black. Each abdominal segment bears 12 large dark pinacula with a long bristle (on each side 2 in the subdorsal field, 2 right and above the spiraculum, 1 below the spiraculum and 1 at the base of the abdominal feet, typical pattern). On the thoracal segments this pattern is a bit deviant.

The head capsule is light brown with darker brown dots (reticulate pattern).

The hooks on the creamy white abdominal feet are brownish.

The most conspicuous difference in younger instars (younger than penultimate, Fig. 2) is the dorsal line. In younger larvae this line consists of a broader white stripe with greyish confinement on each side (Fig. 2). In older ones this pattern is more obliterated and more irregular (white line less clearly visible and dark elements moved closer together).

Pupa

The pupa (Figs. 12–13) is pale yellow with slightly darker spiracula. With the development of the imago the eyes become dark (Fig. 12).



Figs. 14–17: Larval habitat with *Jurinea cypria* and partially (e.g. Fig. 15) *Zosima absinthiifolia* in steep embankments. Feeding scars conspicuous in Fig. 14 (17. iv. 2017; Fig. 16 from 7. iv. 2018).

The proboscis sheath overtops the wing sheaths distinctly and has a free distal part.

As well larvae and pupae of *D. endemica* (and supposedly of the whole group of *D. melanura*, see FIBIGER 1990, FIBIGER et al. 2010) differ significantly from the “*Yigoga* NYE, 1975” species-group, e.g. *D. signifera* ([DENIS & SCHIFFERMÜLLER], 1775). The former *Yigoga* is nowadays usually considered synonymic with *Dichagyris* LEDERER, 1857. But the *Yigoga*-group shows significantly different larvae (e.g. BECK 2000) with reduced pinacula and different colouration and different pupae (red-brown colour, no overtopping nor free terminal proboscis sheath). The cremaster is also totally different: several more or less equal hooks with large distances in *D. endemica* versus two narrow standing main hooks in *Yigoga*. In my opinion the differences are valuable taxonomic characters and should be used for a revision of *Dichagyris*.

Host plants and larval habitat

32 out of the 34 larvae have been observed under or near *Jurinea cypria* plants with more or less heavy feeding scars. Only two larvae have been found under or near *Zosima absinthiifolia* (VENT.) (Apiaceae) which also showed feeding scars.

Larval habitat (Figs. 14–17) were in all cases usually steep limestone embankments of between ca. 1 and 4 m in height.

The hostplant usually grew singly or in low numbers, but the perennial plants were most often quite large with many (approximately 3–12) stems (which would flower mainly between late May and September) and large lanceolate leaves which show dense arachnoid hairs on the lower side and short hairs on the upper side.

Other characters include a woody rootstock and a height up to 70 cm. The desiccated inflorescences partly persist well into the next year, also the dead leaves or parts of them at the base of the plant.

Large plants hosted up to 5 larvae and the feeding scars had been accordingly large.

Jurinea cypria sometimes grew also on flat roadsides in the area. But under these conditions no larvae have been observed. It is a plant of both calcareous and igneous ground between about 400 and 1700 m, preferably on open soil or rock. It is only found in W-Cyprus and a small area in Turkey opposite of Cyprus.

Zosima absinthiifolia (Fig. 15, right of *Jurinea*) is also a perennial of dry open habitats like rocky embankments

between 100 and 950 m (HAND et al. 2011). The two larvae accepted this plant in subsequent rearing.

These observations – together with the unproblematic acceptance of *Centaurea montana* (with similar leaf quality as *Jurinea*) in rearing conditions – may be interpreted as follows: the species is in principal polyphagous as it is known from its so far examined congeners. Because *Taraxacum* (but perhaps only in combination with plastic boxes during rearing) caused total loss and because *Centaurea montana* was clearly preferred when offered in a mixture, there is supposedly already a certain adaptation to the densely-haired main hostplant.

This is supported by the strong link of the larvae with the plant: under most plants growing under favourable conditions larvae have been detected. But at any spots where the plants missed the larva could not be found. Moreover, the two larvae under *Zosima* may have moved in these cases from *Jurinea* plants growing in less than 1 m distance.

But these results and the derived assumptions have to be proved at other sites in the whole of the range of the moth (and in all altitudes). The moth has also been found near Polis (Paphos district) in approximately 100 m. This is much lower than *Jurinea* has been reported yet.

I tend to the opinion that *Jurinea* is the most important hostplant in its range, but that there are also other hostplants. However, the type of habitat should be quite similar: rocky slopes, embankments and possibly very open garigue. It is also unclear so far whether *D. endemica* is restricted to limestone or whether it also occurs on igneous ground as it is the case with *Jurinea*.

Life cycle

The young larva is quite certainly the hibernation stage as it is the case with the known congeners. I recorded partly very young larvae in late February 2018 when *Jurinea* just had produced young, small shoots. In early April 2018 and mid-April 2017 half-grown to fully-grown larvae have been recorded. Thus larval time should last until late April or early May in altitudes around 700 m, above 1000 m presumably well into May. In lower altitudes near the coast larvae may be mature already in early April.

While young larvae usually rest between dead leaves on the base of the hostplant during daytime, older ones often bury themselves superficially into the soil under the plant or in its vicinity. Two larvae have been found under stones.

Judging from the feeding scars in the field and confirmed by rearing observations on *C. montana* the larvae climb the leaves and shoots even to the most distant tips for feeding at night.

The mature larva creates a dense cocoon in the soil, in rearing most often near the main root of the plant. The prepupal time is a bit prolonged and seems to last 1–3 weeks. Pupal time is 3–4 weeks (under rearing conditions). The flight time of the single generation usually starts in late May (e.g. LEPIFORUM 2018, observation by M. HARDMAN) in lower elevations and may extend to August in the higher ones. In medium altitudes the main flight time is supposedly between 10. VI. and 5. VII. in average years.

The medium for oviposition is not known yet. I suppose that the flowering shoots of *Jurinea* may play a role. At summer time soil-near oviposition would involve the risk of overheating. Another possibility are dead leaves near the base of the plant (at shadowy places, but not too close to the ground).

Whether the larva hatches in summer or not before autumn also remains unclear so far. *Jurinea* would offer larval food also during summer. Anyway the species does not have a strategy with aestivating prepupae or pupae which is shown by so many species of semiarid regions (see Introduction).

References

- BECK, H. (2000): Die Larven der europäischen Noctuidae – Revision der Systematik der Noctuidae (Lepidoptera, Noctuidae). – *Herbipoliana* 5, Vol. 3 (photos of 900 species), Markt-leuthen (Verlag Dr. U. Eitschberger), 336 pp.
- FIBIGER, M. (1990): Noctuidae Europaeae. Volume 1, Noctuidae I. – Sorø (Entomological Press), 280 pp.
- , NILSSON, D., & SVENDSON, P. (1999): Contribution to the Noctuidae fauna of Cyprus, with descriptions of four new species, six new subspecies, and reports of 55 species not previously found on Cyprus (Lepidoptera, Noctuidae). – *Esperiana*, Schwanfeld, 7: 639–667, pls. XXIV–XXV.
- , RONKAY, L., YELA, J. L., & ZILLI, A. (2010): Noctuidae Europaeae. Volume 12, Rivulinae, Boletobiinae, Hypenodinae, Araeopterioninae, Eubleminae, Herminiinae, Hypeninae, Phytometrinae, Euteliinae and Micronoctuidae. Including Supplement to volumes 1–11. – Sorø (Entomological Press), 451 pp.
- HACKER, H. (1989): Die Noctuidae Griechenlands. Mit einer Übersicht über die Fauna des Balkanraumes (Lepidoptera, Noctuidae). – *Herbipoliana*, Markt-leuthen, 2: 589 pp.
- HAND, R., HADJIKYRIAKOU, G. N., & CHRISTODOULOU, C. S. [eds.] (2011, continuously updated): Flora of Cyprus – a dynamic checklist. – URL: www.flora-of-cyprus.eu, last accessed 13. XI. 2018.
- LEPIFORUM (2018): Bestimmung von Schmetterlingen (Lepidoptera) und ihren Präimaginalstadien. *Dichagyris endemica*. – URL: www.lepiforum.de/lepiwiki.pl?Dichagyris_Endemica, last accessed 13. XI. 2018.
- LEWANDOWSKI, S., & FISCHER, H. (2004): Check-Liste der Noctuidae von Zypern (Lepidoptera, Noctuidae). – *Atalanta*, Markt-leuthen, 35 (1/2): 119–126.

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