

The first record of the Eremic Lycaenid *Deudorix livia* (KLUG, 1834) in Europe

(Lepidoptera, Lycaenidae)

by

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Abstract: *Deudorix livia* (KLUG, 1834) (colourpl. 2; fig. 1-4) was observed in Greece, Europe, for the first time. Its general distribution and the tendency to spread northward are discussed.

Zusammenfassung: *Deudorix livia* (KLUG, 1834) (Farbtaf. 2, Abb. 1-4) wird erstmals von Griechenland gemeldet. Die Art war bisher aus Europa noch unbekannt. Ihre Gesamtverbreitung und die Ausbreitungstendenzen nach Norden werden diskutiert.

Deudorix livia (KLUG, 1834) is generally distributed in Saharan and Sub-Saharan Africa as far south as northern Kenya in the east. It is widespread in the Arabian Peninsula, reaching the Mediterranean Coast in Egypt, Israel Lebanon and Syria (WILLIAMS, 1971; TOLMAN, 2001). According to LARSEN (1984), it is a moderate migrant like *Leptotes pirithous* (LINNAEUS, 1767), *Azanus jesous* (GUÉRIN-MENNEVILLE, 1849), and *Azanus ubaldus* (STOLL, 1782), which are known to undertake long-distance directional movements from time to time. However, migration does not appear to be an essential component of the life cycle. Accordingly, it only occurs irregularly outside its main distribution area. It is an extremely polyphagous species with its larvae boring into the fruits of such diverse plants as *Acacia*, *Phoenix*, *Punica*, *Eriobotrya*, *Olea*, and even rice grains. Therefore, it is included in lists of potential or actual pests in some countries (AL HUSSEIN, 1984; LARSEN, 1984, 1985, 1990; HALPERIN & SAUTER, 1991).

From around the turn of the century until now, this species has been common and found all year round in Egypt as its only Mediterranean country (BETHUNE-BAKER, 1893; LARSEN, 1990). From the same time, it was absent from many check lists and was described as rare in neighboring Palestine (CALBERLA, 1891; STAUDINGER, 1895; KALCHBERG, 1897; SWINTON, 1898; FAUNTAINE, 1902; REBEL, 1907; HERZOG, 1910, 1911; ANDREWS, 1917, 1920; GRAVES, 1925; HEMMING, 1927; AHARONI, 1931; AMSEL, 1933, 1935).

More recently LARSEN & NAKAMURA (1983) as well as, BENYAMINI (1983) suggested that *D. livia* (KLUG) migrates regularly to the Levant, establishing flourishing summer colonies along the Mediterranean Coast and in the Rift Valley. Adults and larvae are reliably found only during summer and autumn without evidence of these colonies persisting (KATBEH-BADER et al., 1998).

Before the late 1970s, this species was generally seen in Israel from August to October. Later on, adult *D. livia* (KLUG) started to appear as early as late winter and spring (19.II.1977 Timna, 3.III.1978 Kadesh Barnea NE Sinai, 3.3.1984 Nitzana, April 1985 Yotveta, July 1981 – Jerusalem) and were also seen much longer (10.XI.1980 Ein Gedi, November - 1985 Ma'agan Michael; early November 1988 – En Fesha). In South Sinai, it had already established permanent colonies by the 1980s (BENYAMINI, 1984, 2002).

In the last ten years, it finally became common in Israel. Even in the Israeli light trap net-work, it became the most common diurnal lepidopteran to be caught in the last years. After 2000, this trend with the adults continued (Nahal Lavan, Nitzanna – 19.II.2000; Latrun, Central Israel – early June; Bet Arie, Central Israel – July 2004; adults were collected in light traps in all the months of the year along the Dead Sea and in Jericho), and for the first time larvae were present in the Rift Valley all year round (2001 and 2003, in Jericho) and, in the Coastal Plain several months earlier than usual (early May 2005 near Latrun 350m at the Foot Hills of Jerusalem and mid-May near Palmachim in the Southern Coastal Plain).

It now appears that this eremic tropical species established permanent colonies in suitable oases in the Rift Valley over several years and might be on its way to do so in the Mediterranean. Nevertheless, these local resident populations are re-enforced annually by migrating specimens to Israel from the south. This phenomenon is also known from other migrating Lepidoptera in the Levant (RIVNAY & YATHOM 1967; LARSEN, 1976).

Ongoing breeding experiments showed that some larvae that pupated under natural conditions in the Coastal Plain during mid to late December, 2004, diapaused for about two to three months, hatching with rising temperatures. In similar breeding experiments done some decades ago, no diapausing pupae were observed. The adults either hatched after a short time or the pupae died. This can be seen as a further step towards adaptation outside the tropics.

In Lebanon, the species was always a rare migrant (ELLISON & WILTSHIRE, 1939; LARSEN, 1974; LARSEN, 1976; PAULUS & ROSE, 1971), only becoming more common recently during summer, while there is still no evidence of a resident population. This could very well be a sign that the species is establishing itself as a common summer resident with regular colonies like in Israel 20 years ago.

Though there is an evident trend of *D. livia* (KLUG) spreading northwards. To our best knowledge, this species has not been observed in Turkey or Greece until now (HESSELBARTH, et al., 1995). Only a single ♀ was collected on Cyprus (DENNIS et al., 2000) without evidence of local breeding.

Last year, three rather worn ♂♂ and one ♀ of this species were collected in mid-September, 2004, about 10km north-east of Marathon. The collecting site was close to the coast about 100m above sea level on the edge of a neglected olive grove near some pomegranate trees. Several of the pomegranates contained single final instar larvae.

Though *D. livia* (KLUG) was observed breeding in southern Greece, it is rather doubtful that this species can withstand the present rather cold winters in this area. As a tropical

eremic species it is not able to withstand low temperatures as a pupa (LARSEN, 1980). It is also not clear if this was a single event or if this species will be found more often in the north-eastern Mediterranean in the near future, especially Turkey. Nevertheless, the available data suggest that *D. livia* (KLUG) is expanding its distribution area towards the north.

As already suggested for other butterfly species (DENNIS, 1993), the recent climatic change might be the cause.

The four specimens collected by G. MÜLLER are stored in EMEM (Entomologisches Museum EITSCHBERGER, Marktleuthen), Germany.

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Literature

- AIARONI, J. (1912): Lepidopteren (collected by PAULUS) in: BLANCKENHORN, M., Naturwissenschaftliche Studien am Toten Meer und im Jordan Tal. - Berlin.
- AL HUSSEIN, A. (1984): Insects of field crops. - The Univ. of Al Basra, Al Basrah, Iraq.
- AMSEL, H. G. (1933): Die Lepidopteren Palaestinas. - Zoogeographica 2: 1-146, Berlin.
- AMSEL, H. G. (1935a): Neue palaestinensische Lepidopteren. - Mitt. Zool. Mus. Berlin 20: 271-319, Berlin.
- ANDREWS, H. W. (1917): Some entomological notes from Egypt and Palestine. - Ent. Rec. 29: 223-226, London.
- ANDREWS, H. W. (1920): Further notes from Palestine. - Ent. Rec. 32: 130-140, London.
- BENYAMINI, D. (2002): A field guide to the butterflies of Israel. - Keter Publishing House Ltd., Jerusalem, Israel.
- BENYAMINI, D. (1983): Distribution list of the butterflies of Israel west of the Jordan River. - Is. J. Ent. 17: 23-36, Jerusalem.
- BENYAMINI, D. (1984): The butterflies of the Sinai Peninsula. - Nota Lepid. 7: 309-321, Karlsruhe.
- BETHOUNE-BAKER, F. L. S. (1893): III. Notes on some Lepidoptera received from the neighbourhoud of Alexandria. - Bull. Soc. Ent. Egypt 15: 28-43, Cairo.
- CALBERLA, H. (1891): Verzeichnis der von Dr. ALPHONS STUEBEL in Palaestina und Syrien gesammelten Lepidopteren, darunter drei neue Arten. - Dt. Ent. Z. Iris 4: 34-52, Dresden.
- DENNIS, R. L. H. (1993): Butterflies and climate change. - Manchester Univ. Press, Manchester.
- DENNIS, R. L. H., SHREEVE, T. G., OLIVIER, A. & J. G. COUTSIS (2000): Contemporary geography dominates butterfly diversity gradients within the Aegean archipelago (Lepidoptera: Papilionoidea, Hesperioidea). - J. Biogeography 27: 1365-1383, Blackwells, London.
- ELLISON, R. E. & E. P. WILTSHIRE (1939): The Lepidoptera of the Lebanon with notes on their season and distribution. - Trans. R. Ent. Soc. London 88: 1-56, London.
- FOUNTAIN, M. (1902): A few notes on some of the butterflies of Syria and Palestine. - Entomologist 35: 60-63, 97-101, London.
- GRAVES, P. P. (1925): The Rophalocera and Grypocera of Palestine and Transjordan. - Trans. Ent. Soc. London. 17-125, London.
- HALPERIN, J. & W. SAUTER (1991): An annotated list with new records of Lepidoptera associated

- with forest and ornamental trees and shrubs in Israel. - Is. J. Ent. **25-26**: 105-147, Jerusalem.
- HEMMING, A. F. (1927): Notes on two collections of butterflies made in Palestine and Transjordan in October-December 1926. Entomologist 60: 246-250, London.
- HERZOG, J. (1910): Mein Schmetterlingsfang in Aegypten und Syrien. Jahresb. Ent. Ver. **21**: 85, 91, Wien.
- HERZOG, J. (1911): Mein Schmetterlingsfang in Aegypten und Syrien. - Jahresb. Ent. Ver. Wien **22**: 1-17, Wien.
- HELSELBARTH, G., VAN OORSCHOT, H. & S. WAGENER (1995): Die Schmetterlinge der Türkei. Vols. I-III. - Verlag Wagener, Bocholt.
- KALCHBERG, A. (1897). Ueber die Lepidopteren Fauna von Haifa in Syrien. - Dt. Ent. Z. Iris **10**: 161-190, Dresden.
- KATBEH-BADER, A., AMR, Z., S. & ISMA'EL, S. (1998): The butterflies of Jordan. - J. Res. Lepid. **37**: 11-26, Beverly Hills, California.
- LARSEN, T. B. (1974): The butterflies of Lebanon. - National Council of Scientific Research, Beirut.
- LARSEN, T. B. (1976): The importance of migration to the butterfly faunas of Lebanon, east Jordan and Egypt (Lepidoptera, Rhopalocera). - Notul. Ent. **56**: 73-83, Helsingfors.
- LARSEN, T. B. (1984): The butterflies of Saudi Arabia and its neighbors. - Stacey International Publisher, London.
- LARSEN, T. B. (1985): Biogeographical aspects of Middle Eastern and Arabian butterflies. - Proc. Sympos. Fauna and Zoogeography of the Middle East: 179-199, Darmstadt.
- LARSEN, T. B. (1990): The butterflies of Egypt. - Apollo Books, Svendborg.
- LARSEN, T. B. & K. LARSEN (1980): Butterflies of Oman. - Bartholomew, Edinburgh.
- LARSEN, T. B. & I. NAKAMURA (1983): The butterflies of east Jordan. - Ent. Gaz. **34**: 135-208, Faringdon.
- PAULUS, H. F. & K. ROSE (1971): Zur Lycaeniden-fauna des Libanon. - Ent. Z. **81**: 1-21, Stuttgart.
- REBEL, H. (1907): Lepidopteren aus der Sinaihalbinsel und Aegypten, Palaestina und Syrien. - Verh. D. Naturwiss. Ver. Karlsruhe **21**: 129 – 139, Karlsruhe.
- RIVNAY, E. & S. YATHOM (1967): Phenology of Sphingidae in Israel. - Z. Angew. Entomol. **59**: 372-384, Berlin.
- STAUDINGER, O. (1895): Neue Palaearktische Lepidopteren. - Dt. Ent. Z. Iris **8**: 288-299, Dresden.
- SWINTON, A. H. (1898): Butterflies seen in and around Jerusalem. - Ent. Month. Mag.: 181-184, London.
- TOLMAN, T. (2001): Butterflies of Europe. - Princeton, NJ: Princeton University Press.
- WILLIAMS, J. G. A (1971): Field Guide to the Butterflies of Africa. - Boston, Houghton Mifflin.

Colour plate 2

Fig. 1-4: *Deudorix livia* (KLUG, 1834), all ex larva found inside the fruits of *Acacia farnesiana*

Fig. 1: ♂ upperside, Israel, Palmachim, 20.XI.1976.

Fig. 2: ♂ underside, Jericho, 12.XI.1976.

Fig. 3, 4: ♀ upper- & underside, Hula Lake, 30.X.1976. All leg. et coll. D. BENJAMINI.

Farbtafel 2/ Colour plate 2

MÜLLER, G. C., KRAVCHENKO, V. D., PHILLIPS, A., SHWARZ-TZACHOR, R. & D. BENYAMINI: The first record of the Eremic Lycaenid *Deudorix livia* (KLUG, 1834) in Europe (Lepidoptera, Lycaenidae) - Atalanta (Juli 2005) **36** (1/2): 109-112, Würzburg.

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Fig. 1: ♂ upperside, Israel, Palmachim, 20.XI.1976.

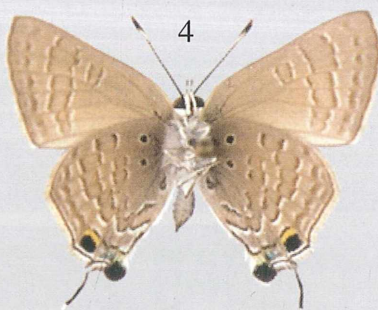
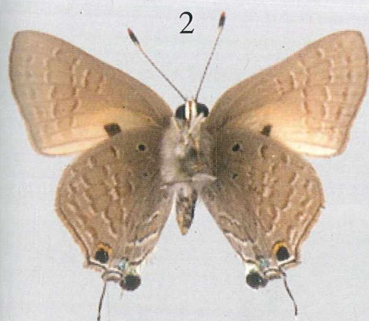
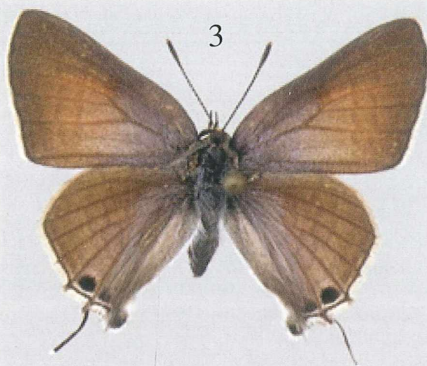
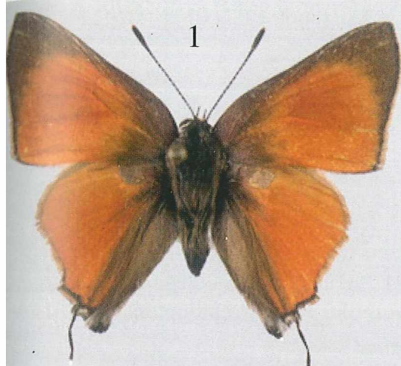
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ZDENEK FRIC, MARTINA KLIMOVA, VLADIMIR HULA & MARTIN KONVICKA: Catterpillars of *Argynnis aglaja* (LINNAEUS, 1758) feeding on *Bistorta major* (Lepidoptera, Nymphalidae) - Atalanta (Juli 2005) **36** (1/2): 119-121, Würzburg.

Fig. 1: Caterpillar of the Dark Green Fritillary, *Argynnis aglaja* (L.), feeding on *Bistorta major* (Bochov environs, Czech Republic, 10.VI.2004).

Farbtafel 2/ Colour plate 2



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