

HYLES EUPHORBIAE HIMYARENSIS FROM YEMEN (LEPIDOPTERA: SPHINGIDAE)

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ABSTRACT.— The taxon *Hyles euphorbiae himyarensis* Meerman, and its place within the *Hyles euphorbiae*-complex (Lepidoptera: Sphingidae), is discussed. Larval characters are important to recognize relationships between related taxa.

KEY WORDS: Africa, Arabian Peninsula, Canary Is., Cape Verde Is., Ethiopian, Euphorbiaceae, immature stages, larva, larval morphology, Palearctic, Saudi Arabia, Senegal, Switzerland, Tunisia.

Hyles euphorbiae (Linnaeus) is a mainly Palearctic sphingid. The species shows a great variability and is a nightmare to the classical taxonomist. Possibly "*H. euphorbiae*" is best regarded a superspecies. Within this "*H. euphorbiae*-complex" are several groups, each consisting of one or more subspecies. Some authors assign species rank to some of these groups (e.g. Pittaway, 1983). A (sub)tropical representative of this complex is the *tithymali*-group. This group with three recognized taxa occupies the Canary and Cape Verde Islands (*H. e. tithymali* (Boisduval)), North Africa as far south as Senegal (*H. e. deserticola* (Bartel)), and South-West Arabia (*H. e. himyarensis* Meerman). The Arabian population is interesting because of its isolation from other members of the *tithymali*-group and because of its apparent contact with a representative of a "typical" *euphorbiae* group. According to Pittaway (in Wiltshire, 1982, 1986), a *H. euphorbiae* population occurs in the Asir Mountains of Saudi Arabia. Pictures of both caterpillar and adult specimens clearly belonging to the "*euphorbiae*" group are presented in Wiltshire (1986). These pictured specimens, however, differ markedly from Yemeni specimens. Pittaway (in Wiltshire, 1990) later expresses the opinion that there is a cline in adult habitus and larval pattern between Asir forms and the Yemen population, all being one species of hybrid origin.

Unfortunately no documentation or museum specimens of intermediates between the Asir and the Yemen forms are available. Even "pure" forms are scarce in museum collections. In the collection of the British Museum (Natural History) there was one specimen collected at Ma'abar and another collected at Ghaiman near Sana'a (both Yemen). There is also a specimen from Sana'a in the University Museum, in Hamburg (Germany), and apparently there are several Yemeni specimens in Japanese collections. Of course it is very possible that intermediates between the Asir and Yemen forms exist. But in my opinion these would be the result of hybridization between two different taxa. Some taxa within the *H. euphorbiae*-complex, however, possess mechanisms that would hinder hybridization with other taxa belonging to the complex (Meerman and Smid, 1988).

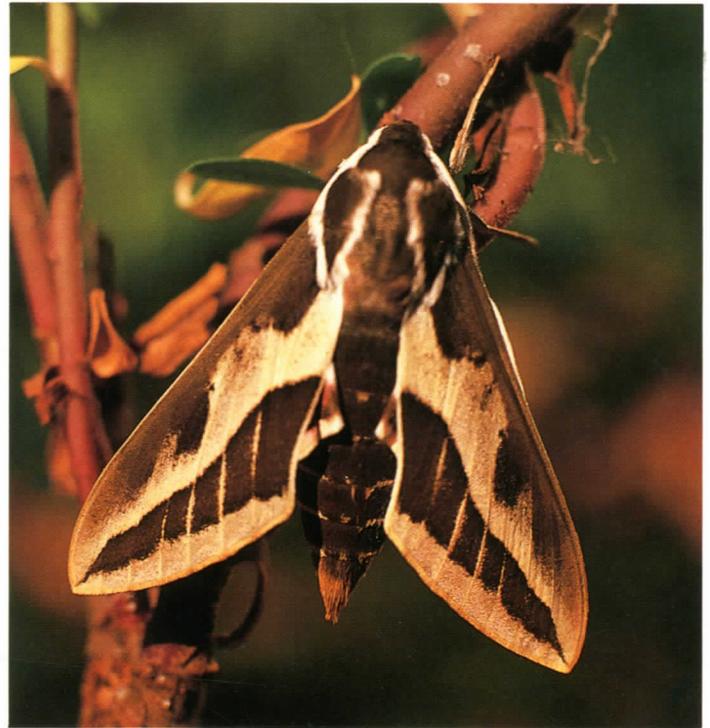


Fig. 1. Adult *Hyles euphorbiae himyarensis*, bred from a larva collected at Dhamar. (JCM)

Breeding experiments involving both Asir and Yemen animals are needed to solve this problem.

In 1985 I visited the highlands of (at that moment North-) Yemen and on 7 Jul I found some *H. euphorbiae* caterpillars on *Euphorbia peplus* (Euphorbiaceae) near Dawran. This find was followed by another batch near the village of Dhufar on 18 Jul. The predominantly black caterpillars at first glance resembled caterpillars belonging to the "*euphorbiae*"-group (compare with Fig. 2). The very fine white spots and the single row of circular ocelli, however suggested relationship with the "*tithymali*"-group. Representatives of the "*euphorbiae*"-group typically have the



Fig. 2. Fifth instar caterpillar of *Hyles euphorbiae himyarensis* on *Euphorbia peplus*, Dhamar, 27 Sep 1988. (JCM)

Fig. 3. Typical habitat of *Hyles euphorbiae himyarensis*: terraced fields with abundant growth of *Euphorbia peplus* (notice several defoliated foodplants), Dhamar, 28 Sep 1988. (JCM)

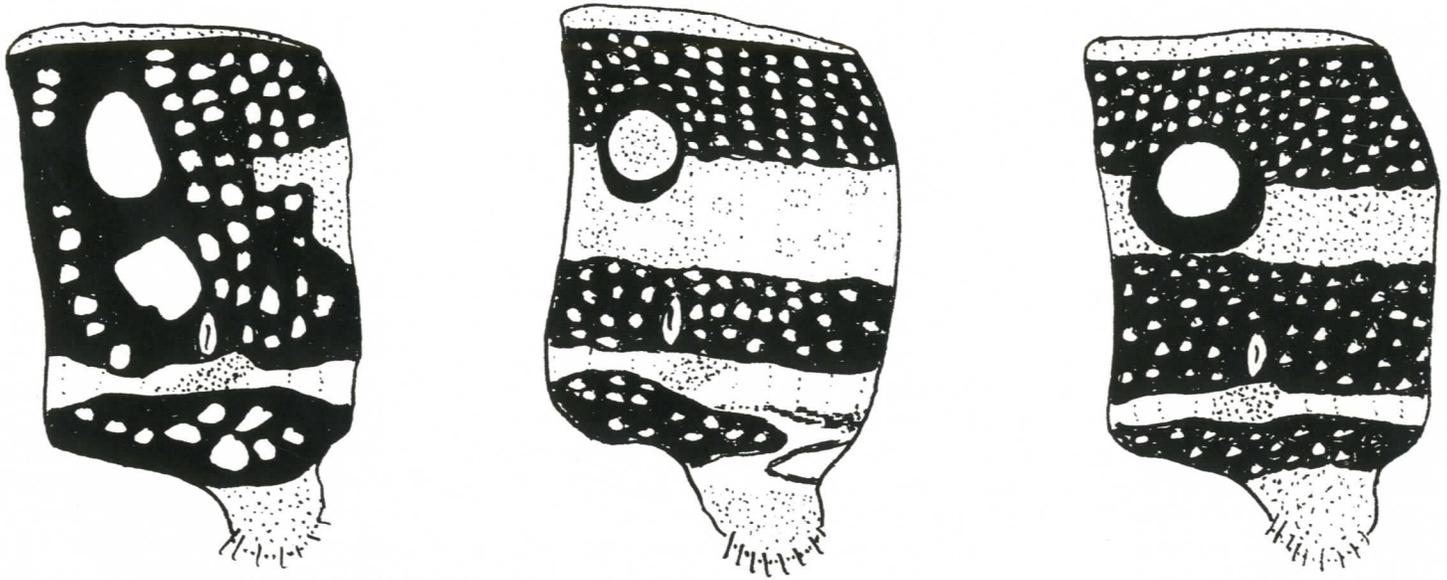


Fig. 4. Left lateral view of the 4th abdominal segment of three *Hyles euphorbiae* caterpillars: a) *H. e. euphorbiae*, ex Zermat, Switzerland ("*euphorbiae*"-group); b) *H. e. deserticola*, ex Douz, Tunisia ("*tithymali*"-group); c) *H. e. himyarensis*, ex Dawran, Yemen. Notice differences in size and quantity of small white spots and number and shape of lateral ocelli. (JCM)

body sprinkled with considerably less and much coarser white. They also have a double row of lateral ocelli of which the top row is vertically oval in shape (Fig. 4). The ground color of the caterpillar is black instead of the for "*tithymali*"-group more usual greenish-yellow, this is possibly an adaptation to a life at high altitude (approx. 2000m) with a strong UV radiation. The caterpillars spend the day fully exposed in the sun and their black skin might protect the internal organs from UV damage. The adults resulting from these caterpillars confirmed the relationship with the "*tithymali*"-group. The tegulae being bordered white, the costal margin of the upper fore wings with a dark shade and the veins running through the dark subterminal fascia on the upper fore wings white (compare with Fig. 1). Therefore, I described the new subspecies as belonging to the "*tithymali*"-group (Meerman, 1988). Between 25 Sep and 3 Oct 1988 I was able to collect several hundreds of *H. e. himyarensis* caterpillars near Ma'abar and Dhamar. Most caterpillars were again found on *E. peplus* but a few were collected from *E. cyparissioides*. These caterpillars laid the foundation for a large breeding colony that made the study of the full life cycle of this taxon possible (see Harbich, 1991).

The *H. euphorbiae*-complex makes very interesting study material. It shows a species that is possibly in the process of splitting up into several distinct new species. This and the fact that the species is easy to rear makes it a subject with high potential for geneticists. For taxonomist the species could be a tool to adapt and test the, often very rigid, rules of taxonomy. It is important also to take larval characters in consideration when doing taxonomic work on the *H. euphorbiae*-complex. A German researcher working with sphingids is publishing a series of papers under the title: "Der *Hyles euphorbiae*-Komplex — ein taxonomisches Problem?" (The *Hyles euphorbiae*-complex — a taxonomic

problem?) (Harbich, 1991). Amateur lepidopterists and lepidoptera breeders can do a lot to help solve this "problem".

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