Rhopalocera of Turkey. 1. Records of Cupido minimus (Fuessly, 1775) and description of C. minimus albocilia n. ssp. (Lepidoptera: Lycaenidae)

by

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ABSTRACT. — The results of a faunistic investigation of the butterflies of Turkey are summarized. The presence of *Cupido minimus* in Turkey is confirmed, and a new subspecies, *C. m. albocilia*, is described from the eastern part of the Taurus mts.

Introduction

We have been collecting and studying the butterfly fauna of Turkey since 1977. At the 2nd European Congress of Lepidopterology at Karlsruhe in 1980 we learned from Mr. G. Hesselbarth (Diepholz, W. Germany) and Dr. P. S. Wagener (Bocholt, W. Germany) that relatively little was known of the fauna of the south of Turkey. These colleagues had been working for several years on Turkish Rhopalocera, and we therefore decided to assist them and to concentrate our further activities on the southern provinces. During several expeditions that we made we were accompanied by other entomologists, viz. H. A. Coene, G. Hesselbarth, J. Lucas, Mrs. Th. van Oorschot-Boskamp, and H. Wiering.

194 localities were visited during altogether 15 trips (fig. 1). Some localities were visited more than once, resulting in approximately 300 station numbers; the earliest collecting date was April 27, the latest one was September 1. Altogether we spent some 650 man-days in the field.

Several visits to museums were necessary to establish the identity and distribution of critical species. The senior author made one or more visits to the following museums: British Museum (Natural History) London (BMNH), Alexander Koenig Museum Bonn (AKM), Museum Landessammlungen für Naturkunde Karlsruhe (MLNK), and the Zoologische Staatssammlung München (ZSM). Additionally, several private collections in Germany and France were examined.

Most of the material that was collected is deposited in the Instituut voor Taxonomische Zoölogie (Zoölogisch Museum), Amsterdam (ZMA). A small part of the butterflies will be given to the Rijksmuseum van Natuurlijke Historie, Leiden (RMNH). Small reference collections are kept by the authors.

Many data have been passed on already to our German colleagues who are preparing a butterfly fauna of Turkey. In the present contribution *Cupido minimus* will be dealt with more extensively than will be done in their publication.

General results

Over 50.000 insects were collected, among which 36.000 Rhopalocera and 1.000 Heterocera. The remaining 13.000 specimens belong mainly to the orders Hymenoptera, Orthoptera, Homoptera, Hemiptera and Diptera (especially Tipulidae). We collected or observed 206 species of Rhopalocera out of 319 species known from Turkey at this moment.

For many species an extension of the distribution area could be established, and one or more provinces added to their recorded distribution. Some of the more noteworthy range extensions are mentioned below; in all cases several specimens have been collected, showing that the reported range extensions are not based on stray specimens.

Fig. 1. The localities visited one or more times during the survey. Dots indicate one or two localities, squares represent four or five localities. Also the known distributional area is shown of *Cupido m. minimus* (A) and of *C. m. albocilia* (B).

Range extensions

A remarkable range extension to the southwest could be shown for the following species: *Leptidea duponcheli* (Staudinger): Aydin, Mugla, Denizli, Burdur, Isparta, Afyon; *Hyponephele wagneri* (Herrich-Schäffer): Antalya, Adana, Nigde; *Satyrus favonius* Staudinger: Konya; *Agrodiaetus iphigenia* (Herrich-Schäffer): Mugla, Antalya, Isparta, Afyon; *Aricia isaurica* (Staudinger): Antalya, Icel; *Agriades pyrenaicus* (Boisduval): Nigde.

An extension to the west is shown for *Pseudochazara obscura* Staudinger: Mugla, Denizli, Burdur, Isparta, Afyon; *Melitaea collina* Lederer: Icel; *Eogenes alcides* (Herrich-Schäffer): Nevsehir; *Colias chlorocoma* Christoph: Nigde. *C. chlorocoma* was known from Nigde, but only after one specimen (Hesselbarth, verbal communication).

Everes alcetas (Hoffmansegg) shows an extension to the south: Isparta, Afyon, Konya.

The presence in Turkey has been shown definitely for *Euchloe belemia* (Esper), which was recorded at six localities in Hatay, *Zizeeria karsandra* (Moore), discovered at four localities in Icel, and for *Lycaeides argyrognomon* (Bergsträsser), found at one locality in Kayseri.

The following species have been freed from their aureole of scarceness: *Lysandra syriaca* Tutt (nine localities in Hatay, Adana, Nigde and Icel), *Glaucopsyche astraea* (Freyer) (12 localities in Konya, Icel, Nigde, Malatya and Sivas), and *Proterebia phegea* (Borkhausen) (three localities in Konya and Ankara).

Cupido minimus (Fuessly, 1775) in Turkey

Before our first observation of *C. minimus* in Turkey in 1979, it was still questionable whether the species belongs to the Turkish fauna. The species is known from most countries of Europe, including, and up to Central Asia. The species is not yet known from Iran (Eckweiler & Hofmann, 1980) and Afghanistan (Sakai, 1980). For Turkey Higgins (1966) mentioned that *C. minimus* could occur in the provinces of Bursa, Izmir and Konya, but he added: "I have not seen specimens and confusion with *sebrus* is possible". This confusion is only possible with the females, which are entirely brown on the upperside in both *C. minimus* and *C. osiris* Meigen (= *sebrus* auct.). The upperside of the males is also brown in *C. minimus*, but blue in *C. osiris*. The latter species is known from almost the whole of Turkey.

With regards to Turkey *C. minimus* was mentioned by Mann (1862): "Brussa [= Bursa], not scarce, together with *C. sebrus*", Lederer (1864): "Boz Dag [prov. of Izmir], scarce", and Pfeiffer (1926): "Sultan Dag and Egridir, very scarce".

C. osiris was recorded by Mann (1862) (the record of *C. sebrus* mentioned above). Staudinger (1878) supposed that a record by Lederer of *C. minimus* from Amasia was erroneous, and concerned *osiris* as well. Neither species was mentioned form Turkey by Rebel (1917), Wagner (1928), Osthelder & Pfeiffer (1931/2, 1939) and de Lattin (1950). In modern literature the occurrence of *C. minimus* in Turkey is not mentioned. Moreover, material of the species was not found in the collections of the museums visited, neither in the private collections of W. Eckweiler, E. Görgner, P. Hofmann and K. G. Schurian (all four in Frankfurt), G. Hesselbarth and S. Wagener.

We collected *C. minimus* at eleven localities, and *C. osiris* at 36 localities. At six localities, in the Sultandag and the eastern Taurus, we collected both species together.

In 1979 we found *C. minimus* in the mountains of the Sultandag at the following localities: Konya, Aksehir, 1100 m, 20.V.-2.VI.1979: 9 ♂ 7 ♀ in a wet biotope with young poplars; Konya, 10 km E of Engilli, 1200 m, 26.V.1979: 2 ♂ 1 ♀ in a cemetery with broad-leaved trees (this is probably the cemetery mentioned and photopgraphed by Wagner (1929: 7) as a particularly rich locality); Konya, Aksehir, 1500 m, 28.V.1979: 4 ♂ 1 ♀ on slopes with open oak-brushwood and a very scarce low vegetation; Afyon, 10 km E of Cay, 1100 m, 29.V.1979: 1 ♀ on a flowery slope.

Although we recognized the species in the field, and the whole area was searched thoroughly, we did not succeed in finding more specimens. From the condition of the specimens we assume that *C. minimus* was in the middle of its flight period at that time. So we assume that *C. minimus* is not common in that part of the Sultandag.

The wing span of the specimens varies from 18 to 23 mm, with an average of 21 mm. They cannot be distinguished in any respect from European material. Therefore we consider them to belong to the nominate subspecies, which was described after material from Switzerland.

One male of *C. minimus* from Kizilcahaman, 40 km NW of Ankara, 13.VI.1981, leg. Strauss and Hofman, that became part of our collection in 1982, appears to be silimar to the series from the Sultandag.

In 1980 (16-26.VII) and 1981 (31.VII.-3.VIII) we visited the same localities. It was rather late for *minimus*, and no specimens were found.

Cupido minimus albocilia n. ssp.

In 1982 and 1983 we found *C. minimus* also in the eastern part of the Taurus, in particular in the neighbourhood of Pozanti (prov. of Adana) and in the Aladag east of Camardi (prov. of Nigde). The overall appearance of these specimens deviates from the nominate subspecies (including the material from the Sultandag) in such a way that we decided to describe them as a new subspecies. The description was made after comparison with 550 specimens of the nominate form of *C. minimus* from 14 countries in the ZMA and RMNH collections. It must be remarked that of all 142 specimens of *albocilia* only one specimen (from the province of Adana) is a female.

Description

Male. — Wing span 20-29 mm, average 24.6 mm. Upperside brownish black, 30% of the specimens faintly coloured with pale blue scales scattered over the forewing; underside light grey or beige with a complete pattern of distinct black spots within rings of white scales and a distinct dark submarginal spot in cell 2 of the hindwing. Ciliae of both forewing and hindwing purely white on both sides.

Female. — Wing span 28 mm, upperside brownish black with some pale blue scales at inner edge of the hindwing; underside as in male but no dark spot in cell 2. Ciliae as in male.

The subspecies *albocilia* differs from the nominate subspecies by its larger size, darker colour, and pure white ciliae. The ciliae are light grey or beige in the typical subspecies. No useful

difference could be found in the male genitalia; they are only a bit larger as can be expected from the larger size of the animals.

The new subspecies shows some variation. One specimen does not have the ciliae pure white, but light beige. In one specimen the pale blue scales are arranged in a continuous field on the forewing and along the inner edge of the hindwing. In less than 10% of the specimens the black spots on the underside are slightly reduced in size and number.

C. minimus albocilia is recorded now from the eastern part of the Taurus, but since the subspecies is not very critical with respect to the choice of its biotope, we expect that it will be found more westwards and particularly eastwards in a larger area.

It is striking that, despite much efforts, we only managed to secure one female. But also in the nominate subspecies females are comparatively rare in collections: only 25% of the *C. m. minimus* in ZMA and 29% of the specimens in RMNH are females. This is the more significant because both sexes are brown and no selection on colour can be made during collecting, as often happens with Lycaenidae species with blue males. We are convinced that more research is required about the behaviour of the females of this family.

Holotype. — "TURKIYE Nigde / H. v. Oorschot / & H. v.d. Brink / Aladag 18 km SE / of Camardi St. 43 / 1600-1800 m / 1-2.VII.1982", ♂. (The abbreviation "St." refers to the station number.)

Allotype. — Turkiye, Adana, 5 km W of Pozanti, 1000-1400 m, 26.VI.1982, leg. H. van Oorschot and H. van den Brink st. 36, ♀.

Paratypes. — Province of Nigde: St. 42, 10 km S of Camardi, 1300 m, 30.VI.1982, 23 ♂; St. 43, Aladag, 15 km SE of Camardi, 1600-1800 m, 1-2.VII.1982, 75 ♂; St. 44, 18 km SE of Camardi, 1800-2100 m, 1-2.VII.1982: 36 ♂; St. 45, Aladag, Avci-Veli, 18 km SE of Camardi, 2500-2900 m, 1-2.VII.1982: 1 ♂; St. 46, 40 km N of Camardi, 1500 m, 3.VII.1982: 1 ♂; St. 137, Aladag, 19 km SE of Camardi, 1800-2100 m, 7-11.VIII.1983: 4 ♂. Province of Adana: St. 36, 5 km W of Pozanti, 1000-1400 m, 26.VI.1982: 1 ♂; St. 41, Sihli, 3 km NW of Tekir, 1300-1750 m, 28-29.VI.1982: 3 ♂. Holotype, allotype and most paratypes in ZMA; some paratypes in RMNH and authors' collections.

Ecology. — We found *albocilia* in a dry watercourse on an eastern slope (st. 36), at the edge of a pine forest with some low vegetation (st. 41), in a very dry and hot field (st. 46), and at the highest locality (st. 45, 2500-2900 m) we captured one male on rocky ground with very scarce low vegetation at 2750 m.

On the other hand, we found populations in much wetter situations. One (st. 42) concerned in a rich vegetation with young poplars enclosed by a winding of a river and a dry dirt road. *Maniola jurtina* (Linnaeus) and *Coenonympha pamphilus* (Linneus) were flying in masses in the high grass. A wet strip with a scarce vegetation was a real haunt for Lycaenidae, such as *Agrodiaetus carmon* (Herrich-Schäffer) and *A. damone* (Eversmann). Here we captured 23 fresh males of *albocilia*, flying low above the ground. Finally, hundreds of *albocilia* were flying at two wet spots one being a drinking place for sheep and cattle (st. 43 and 44).

Most of the collections were made in the period 26.VI-3.VII.1982. The second author visited st. 43 on 21.VII.1983, but did not observe any specimen. A few weeks later in the same year all earlier localities of *albocilia* were revisited. Now we found only four fresh males at st. 137 on 7-11.VIII. Again, no females could be found, although we had five days with excellent weather conditions in that area.

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