

Notes on the *Papilio machaon* group (Lepidoptera: Papilionidae) from the Palaearctic Papilionidae collection of the Zoological Museum of Amsterdam

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KEY WORDS

Europe, *Papilio saharae*, Sicily

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While sorting the Palaearctic Papilionidae collection in the Zoological Museum Amsterdam, the following species in the *Papilio machaon* group have been acknowledged: *P. alexanor*, *P. hospiton*, *P. machaon*, *P. saharae*, *P. asiatica*, *P. verityi* and *P. hippocrates*. Surprisingly, the collection contained a male specimen of *P. saharae*, found in Lentini, Sicily, whereas in Sicily until now only *P. machaon sphyrus* was found while *P. saharae saharae* was found in North Africa only.

Introduction

Over the last years I have sorted the Palaearctic Papilionidae collection of the Zoological Museum Amsterdam (ZMAN) and the *Papilio machaon* group was the last project. Herewith, the whole Palaearctic Papilionidae collection is now up to date. From June 2011 the insect collections of ZMAN are part of NCB Naturalis and have been moved to Leiden.

Papilio machaon and related species

Papilio machaon Linnaeus is a variable species. This explains the description of many forms and subspecies. The description of many of these taxa is based on only one or a few specimens. Additionally, in each population one can find quite different specimens. This makes the taxonomy of *P. machaon* very difficult. It is obvious that more subspecies are described than one can actually recognize.

However, it is obvious that there are several distinct species in the *P. machaon* species group (J. Haugum 1983 personal communication, Lee 1980). Nice series of specimens from the *P. machaon* group from Asia helped in better understanding the taxonomy of the taxa and their range. So far, I recognize the following species in the *P. machaon* group from the Palaearctic Region:

- *Papilio alexanor* Esper, 1799 with a range from southern France to Afghanistan.
- *Papilio hospiton* Guenée, 1839 from Corsica and Sardinia. This species is so closely related to *Papilio machaon*, that sometimes natural hybrids occur.
- *Papilio machaon* Linnaeus, 1758 from Morocco and western Europe to Siberia in Russia.
- *Papilio saharae* Oberthür, 1879 lives in northern Africa and to the East of Yemen.
- *Papilio asiatica* Ménétries, 1855 (*P. machaon asiatica* auct.) from the high mountains in the Himalaya and China.
- *Papilio verityi* Fruhstorfer, 1907 (*P. machaon verityi* auct.) from Assam, Myanmar (Burma) to Yunnan. This species is not represented in ZMAN.

- *Papilio hippocrates* C. & R. Felder, 1864 (*P. machaon hippocrates* auct.) from Japan, Sachalin, Ussuri region, China and Taiwan. I regard the subspecies: *hippocrates* C. & R. Felder, *sachalinensis* Matsumura, 1911, *ussuriensis* Sheljuzhko, 1910, *sylvina* Hemming, 1933 and *venchuanus* Moonen, 1984 as belonging to this species.

This taxonomic order is followed in the collection of ZMAN.

The distributional data are based on the major works of Seitz (1906), Jordan (1908-1910), Verity (1905-1911), Bryk (1930) and many other authors as Eller (1936), Seyer (1974, 1986). For *Papilio saharae* I have found these data especially in Larsen (1982, 1990), Meerman & Boomsma (1986), Pierron (1990) and Seyer (1986). Although he treated *P. saharae* as a subspecies of *P. machaon*, Pierron (1990) has given enough reasons for the specific level of *saharae*. In fact, he has compared *P. saharae* with *P. machaon emisphyrus* from France instead of *Papilio machaon machaon*.

Checking the taxonomy and the validity of the names of all these species, as well as checking for synonyms, will be a job for the future.

Papilio saharae

A surprise was the discovery of a male *Papilio saharae* (figure 1) in the collection with the label: 'Italia, Sicilia, Lentini 20.IX.1978. don. H.v.Oorschot'. There is no doubt about the locality (H. van Oorschot personal communication) and therefore it is the first record for Europe.

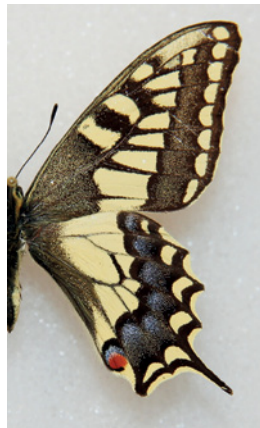
The question arises whether this specimen represents a single occurrence in Sicily or whether a population exists in that region. North of Lentini there is an agricultural field that is irrigated by the river Lentini. On the north, this field touches the low land plain Piana di Catania. In this area, the rivers make agriculture practises possible. However in the summer, from approximately June onwards, practically all rivers are dry. The hills south of Lentini are very dry. Trees and bushes can only be found in the valleys. The ridges and summits of the hills are filled with dry, long grass that set seeds before mid-May.



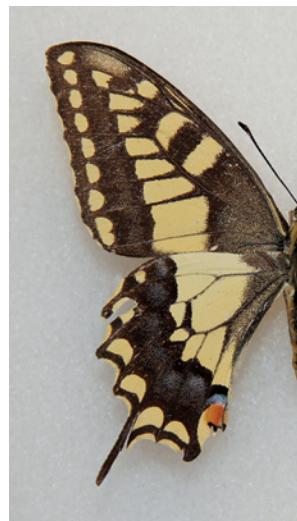
1. *Papilio saharae saharae* Oberthür, male. Collection label: 'Italia, Sicilia, Lentini 20.ix.1978. don H. v. Oorschoot'. The length of the fore wing is 34.5 mm. Left: upperside, right: underside. Photos: Jan Moonen
1. *Papilio saharae saharae* Oberthür, man. Collectie-etiket: 'Italia, Sicilia, Lentini 20.ix.1978. don H. v. Oorschoot'. De voorvleugellengte is 34.5 mm. Links: bovenzijde, rechts: onderzijde.



2. *Papilio saharae saharae* Oberthür, male. Collection label: 'Tunesia, Hamman, Sousse. 5.ix.1990'. The length of the fore wing is 34.5 mm. Left: upperside, right: underside. Photos: Jan Moonen
2. *Papilio saharae saharae* Oberthür, man. Collectie-etiket: 'Tunesia, Hamman, Sousse. 5.ix.1990'. De voorvleugellengte is 34.5 mm. Links: bovenzijde, rechts: onderzijde.



3. *Papilio saharae saharae* Oberthür, male. Collection label: 'Tunesia, Tataaoulne. 4.iii.1980'. Length of the fore wing is 36 mm; left: underside, right: upperside. Photos: Jan Moonen
3. *Papilio saharae saharae* Oberthür, man. Collectie-etiket: 'Tunesia, Tataaoulne. 4.iii.1980'. De voorvleugellengte is 36 mm. Links: onderzijde, rechts: bovenzijde.



4. *Papilio machaon sphyrus* Hübner, male. Collection label: 'Sicilia, Trápani, Bresciana. 25.ix.1971'. The length of the fore wing is 40 mm. Left: upperside, right: underside. Photos: Jan Moonen
4. *Papilio machaon sphyrus* Hübner, man. Collectie-etiket: 'Sicilia, Trápani, Bresciana. 25.ix.1971'. De voorvleugellengte is 40 mm. Links: bovenzijde, rechts: onderzijde.

After mid-May all that remains is dry, stiff hay (W. Hogenes personal communication 2010). My cautious conclusion is that this dry area could be suitable for a *Papilio saharae* population. But further inventories in this region are of course required.

Diagnostic characters

The figures show a comparison with *Papilio saharae saharae* Oberthür from Tunisia (figures 2-3) and *P. machaon sphyrus* Hübner, 1827 from Sicily (figure 4), also a September specimen.

Papilio saharae is small compared to *P. machaon sphyrus*. In the series of *Papilio saharae* of ZMAN I can not see structural differences in the spring and the summer brood. The spring specimens of *P. machaon sphyrus* are smaller than the summer specimens and they have normally the typical broad black nerves in

the forewings as in the rare *forma nervosa* Dufrane of *P. machaon gorganus* Fruhstorfer, 1922 from our region. In the summer specimens (figure 4) the nerves are narrower black. The tail is in *P. saharae* relatively longer than in *P. machaon sphyrus*. *Papilio saharae* has 30-31 and *P. machaon* 33-36 antennal segments (Tolman & Lewington 1997).

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Samenvatting

Aantekeningen over de *Papilio machaon*-soortengroep (Lepidoptera: Papilionidae) in de Palaearctische Papilionidae-collectie van het Zoölogisch Museum Amsterdam
Bij het sorteren van de collectie Palaearctische Papilionidae in het Zoölogisch Museum Amsterdam zijn de volgende soorten in de *Papilio machaon* groep erkend: *P. alexanor*, *P. hospiton*, *P. machaon*, *P. saharae*, *P. asiatica*, *P. verityi* (niet aanwezig in de collectie) en *P. hippocrates*. In de collectie bevond zich heel verrassend een mannetje van *P. saharae* dat verzameld was in Sicilië, Lentini, terwijl van dit eiland alleen *P. machaon sphyrus* bekend was en *P. saharae saharae* alleen van Noord Afrika.



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