

THE EMPEROR SWALLOWTAILS (*PAPILIO HESPERUS* WESTWOOD AND *P. HORRIBILIS* BUTLER) IN WEST AFRICA (LEP.: PAPILIONIDAE)

TORBEN B. LARSEN

UNDP Vietnam, c/o Palais des Nations, 1211 Geneva 10, Switzerland

(E-mail: torbenlarsen@compuserve.com)

Abstract

Papilio hesperus Westwood, 1843, *P. horribilis* Butler, 1874, and *P. pelodorus* Butler, 1895 (Lepidoptera, Papilionidae) are shown to be three wholly allopatric species. It would be possible to treat them as subspecies of a single butterfly, but it is probably best and simplest to maintain them as three distinct geographical and ecological vicariants.

Introduction

The Emperor Swallowtails (*Papilio hesperus* Westwood, 1843, *P. horribilis* Butler, 1874, and *P. pelodorus* Butler, 1895) are among the largest and most dramatic butterflies in Africa. They are extremely powerful fliers that generally stay high in the canopy, from which they sometimes swoop down to feed from flowers or to visit damp patches. One favoured plant is the *Mussaenda* with its large white calyx lobes ("pseudopetals"), which quite dwarf the small yellow flowers. These calyx lobes, probably strongly ultraviolet, are spotted from the canopy by the butterflies which swoop down at great speed like a diving hawk, the wings held immobile at 30 degree angle; I keep wondering about the lack of an audible whoosh! I have seen the same single flower visited by three males in the course of half an hour. In Kakum National Park in Ghana they regularly performed a display flight, taking place just above a depression in the canopy, with two or three males frequently coming to blows and with all other butterflies immediately being chased off. Males would usually only manage to scare off other Emperor Swallowtails for a short while. This would last for more than an hour between 10.00 and 12.00. The power and elegance, even exuberance, of the butterflies was irresistible and much appreciated even by visitors to the park with no particular interest in butterflies.

The ranges of the three species are usually given as:

P. hesperus – Ivory Coast, to Nigeria, Equatorial Guinea, Angola, Democratic Republic of Congo, Sudan, Central African Republic, Uganda, Tanzania, Zambia.

P. horribilis – Sierra Leone, to Ivory Coast, Ghana, and sometimes Nigeria.

P. pelodorus - Tanzania, Malawi, Zambia, Mozambique.

This is the information included also in the new CD-ROM of the butterflies and skippers of Afrotropical Region (Williams 2002) as it has, roughly, been done for more than a century.

The implication of this information is that the three species have a slight degree of overlap: *P. hesperus* and *P. horribilis* overlap in Côte d'Ivoire and Ghana, while *P. hesperus* and *P. pelodorus* do so in Zambia. In fact, there is no overlap but full geographical and/or ecological segregation. However, the story behind how *P. hesperus* supposedly became sympatric in Ghana and Côte d'Ivoire, west of the Dahomey Gap, is interesting.

The range of *Papilio horribilis*

The actual range of *P. horribilis* (type locality Ghana, Cape Coast, Fantee) extends further west than conventionally assumed. There are recent records from Guinea's Fouta Djallon in the African Butterfly Research Institute, Nairobi, and it was reported from near Conakry by Prangley *et al.* (1994). There are also definite records from Liberia (Fox *et al.* 1965). It thus covers the entire rainforest zone west of the Dahomey Gap except for those of the Volta Region in Ghana. It is widely distributed and not uncommon, though sometimes missing from forests where one would expect it. A few old records from Nigeria are due to confusion with aberrations of *P. hesperus*, especially f. *calabaricus* Distant.

The range of *Papilio hesperus*

This species was described from the "Gold Coast" – present-day Ghana. The description and the type make it quite clear that the type is what is commonly known today as *P. hesperus*. Ecologically there is little reason why it should not be in Ghana. The problem is that no-one else seemed to find it. Its presence was re-recorded in the Nimba Mountains of northwestern Côte d'Ivoire by Condamin & Roy (1963), and then again by no-one else. The Nimba record seemed especially convincing as it included genitalia drawings which correctly showed the type of slight differences between the two species that is often a sign of distinct species in the Papilionidae.

When I was unable to trace any specimens of *P. hesperus* from Ghana or Côte d'Ivoire, and failed to find it myself, I decided to look more closely into the matter. As mentioned the holotype was clearly *P. hesperus* as understood today, and it was labelled "Gold Coast" and "type" in the manner of Westwood. The description was also clear and the colour painting could well be that of the holotype. In short, no evidence of anything untoward. But ... in the very same paper and on the very same plate was described another swallowtail, *Papilio charopus* Westwood, 1843, also from the "Gold Coast", with similar labels. But this definitely cannot be so, and has long been discounted as a case of *patria false*. This is a sub-montane butterfly which in our area is limited to the mountains of the Nigeria/Cameroon border, not occurring below 1,300 m or so – and the highest point in Ghana is only just over 1,000 m. *P. hesperus* is occasionally met with together with *P. charopus* between 1,300 and 1,500 m in Nigeria/Cameroon. It would beggar belief that the two were not caught together, and that must have been in Cameroon (suitable areas of eastern Nigeria were not accessible at the time). What of the Côte d'Ivoire record with its authentic looking genitalia drawings? Close reading of the text makes it clear that the actual specimen from Nimba was not available to Condamin & Roy when the manuscript went to press; the *P. hesperus* genitalia came from elsewhere. So the specimen must have been an aberration. The main immediate difference between the two is that *P. horribilis* has four large submarginal spots on the hindwing and *P. hesperus* only three. *P. hesperus* occurs in aberrations with four spots (including f. *calabaricus*) and there is no reason why the occasional *P. horribilis* in the dry season should not lose a spot.

The range of *Papilio pelodorus*

The apparent overlap between *P. hesperus* and *P. pelodorus* in Zambia is also not so; the two are segregated geographically and/or ecologically. In Zambia *P. hesperus* is limited to the lowland forests of the north, as are many other equatorial butterflies that only just reach Zambia; *P. pelodorus* is somewhat montane in habits and is found only 500 km to the east on the border with Malawi (Heath *et al* 2002). Similarly in Tanzania, with *P. hesperus* in Kigoma, Mpanda, and Bukoba in the east, and *P. pelodorus* on the arc of mountains stretching from Malawi to the Usambara. *P. hesperus*, obviously, does not occur in Malawi or Mozambique.

Species or subspecies?

The presence of three very similar and wholly allopatric taxa throughout the African forest zone, with distributions matching well-known biogeographical patterns (Larsen 1997), raises the issue whether they should be treated as distinct species or as subspecies of a single butterfly. This, in truth, is not a very important matter, despite the heat often generated by discussions of the exact status. The controversy over the *Pieris napi*-complex in the Palaearctic has probably generated more literature than on all butterflies in any single country in Africa, bar South Africa – and many a friendship foundered in the process. The evolution of a subspecies to a full species is a continuous process that cannot be expressed in just two taxonomic categories. In my manuscript on West African butterflies I maintain *P. horribilis* and *P. hesperus* as two species since the small genitalic differences are as large as between many sympatric species, but I would not get worked up if someone decided to treat them as subspecies. *P. pelodorus* seems to be adapted to a different ecological regime than the two others and is likely to have evolved in such a way that were it to become sympatric with *P. hesperus* the two would probably not interbreed.

Discussion

This paper was inspired by my first perusal of the new CD-ROM on Afrotropical butterflies and skippers (Williams 2002) to show that taxonomic and nomenclature problems remain even amongst the largest and best known Afrotropical butterflies. Myriad such problems, some known, some not, permeate the disc – through no fault of the author. The continued updating to the disk will be a mammoth task and the author will need much help. The original “Afrotropical Catalogue” (Ackery *et al.* 1995) has assisted me immensely and saved me innumerable hours of hard work in libraries and museums. At present the CD-ROM mainly represents an update to include the new taxa described between 1995 and 2001 (a ten percent increase) and major generic reviews during that time, as well as beginning to add colour illustrations. This is a good start. The aims, objectives, and the mechanisms for continued updating now need to be more precisely specified to mobilize the necessary support.

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Some interesting moths recently confirmed for or new to the Devon fauna

Examples of Morris's Wainscot *Chortodes morrisii morrisii* were found by hand held light at Culverhole Point, near Seaton, on 26 June 2002 by Barry Henwood and Phil Sterling. This appears to constitute the first record for the species in Devon since that of Barrett (*Victoria County History of Devon*, 1906) who noted that it "occurs in the extreme south-eastern corner of the county towards Lyme Regis amongst the foodplant *Festuca arundinacea*". South (1907. *The Moths of the British Isles* repeated in the fourth edition in 1961) gives references to the species at Charmouth, Dorset (where positive records were made in 1995), Lyme Regis and Sidmouth.

On 12 April 2003, two examples of the Lead-coloured Drab *Orthosia populeti* were taken by Rob Wolton, at Hannaborough Moor, near Hatherleigh. This is, perhaps surprisingly, the first confirmed record of this species in Devon; the only other records available are not supported by voucher specimens. They were allegedly recorded by Parfitt (1878. *Transactions of the Devonshire Association for the Advancement of Science Literature and the Arts*, 10), who details sightings by a Mr Reading who said.



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