Newsletter of the Lepidoptera Study Group of Southern Africa
Editor: M.C. Williams, P O Box 12580, Onderstepoort, 0110, RSA

Editorial

Everyone accepts that cabinet specimens must bear data labels if they are to have scientific value. In contrast, the often superficial approach to the recording of larval foodplants in the scientific literature is hard to understand in view of its importance to the ecology, distribution and taxonomy of Lepidoptera.

For example, the bald statement that "a larval foodplant of *Papilio constantinus* is *Clausena* sp." is highly unsatisfactory since a number of important questions are left unanswered. Who made the discovery? Where were the observations made? Was oviposition on the plant noted? Was the species bred on this plant? If so, were full-sized imagos obtained? Who identified the plant? Was the identity of the female and/or offspring established? What material, if any, was preserved and where is it kept? The answers to these questions, if provided, allow any rational enquirer to verify or disprove the assertions – this is the basis of the scientific validation of data i.e. the scientific approach.

The above may seem tedious but it should be remembered that the reliability of such information greatly reduces the possibility of misconceptions arising, which may in turn lead to much wasted investigative effort. I would like to make a sincere appeal to all our members to follow the scheme I have set out below when reporting on larval foodplants.

Example:

Vepris reflexa, a larval foodplant of *Papilio constantinus*.

Name of observer: M. C. Williams.
Locality where observations were made: Nelspruit, Transvaal, South Africa.
Notes: A female of *P. constantinus* was observed ovipositing on *V. reflexa* on January 22, 1976 at the above locality. From eggs laid by this female imagos of normal size were bred using *V. reflexa* as the foodplant.
Plant identification: National Herbarium, Brumeria, Pretoria.
Butterfly identification: Observer identified female and offspring using keys in G. van Son's *Butterflies of Southern Africa*, part I, 1949.
Preserved material: Eggs, larvae of each inster and pupae preserved in Pempels solution. Five males and six females, ex ova. Pressed plant material, 35 mm colour slides of early stages. All in authors possession.

Some notes concerning the high mountain satyrids (*Pseudonympha* species) of Lesotho

Ernest Pringle, Huntly Glen, Bedford 5780

Three trips to Lesotho have proved to be most interesting and rewarding, from a butterfly point of view. It was particularly fascinating to watch and note the habits of the Drakensberg satyrids which, during the three trips concerned, we had ample opportunity to do.

A great deal of collecting was done in the vicinity of Sani Pass, as well as on the Black Mountains, further inland. I might also add that a great deal of sitting around and book-reading was also done while working this area, this being because of the almost ceaseless mist, rain and drizzle to which the peaks of the Drakensberg are subjected in summer. But when the sun did shine, one found oneself collecting in a glory of green grass saturated with clear bright-silver streams of running water. What a thought for the drought of 1983!

We soon noticed that a series of possible misconceptions seem to have crept in concerning the Satyridae of this area. We noticed, for instance, that Pennington in his book noted four species of satyrid flying together on the Escarpment (nearly all of which is at an excess of 3080 m (10 000 feet). The four species referred to appear to have been *Pseudonympha penningtoni*, *P. paludis*, *P. machacha* and *P. gaika*. This was not our experience of the Escarpment at all. Considerable exploration (which included climbing Nthaba Ntlenyana, the highest point in southern Africa), revealed that *penningtoni*, *machacha* and *gaika* occurred up there in considerable numbers – but not *paludis*, which was conspicuous by its absence. In fact it is unlikely that *paludis* flies on the escarpment at all but that it occurs – as we subsequently found – lower down on the slopes of the Natal Drakensberg, as well as on the lower mountains of central Lesotho. This conclusion was reached after we had noted that all the high mountain satyrids of this area are found flying only at certain altitudes – and that, at different altitudes, you will find different species of satyrids.

We had, in fact, noted this before, while looking for *machacha* at Barkly Pass. At the base of the mountain for a considerable distance we found only *paludis*. At this point my father despaired of finding *machacha*, and concluded that there were none out. However, I decided to continue walking to the summit of the mountain concerned, and, to my joy, found that I walked right out of the area in which *paludis* was flying, and into a very strong colony of *machacha*, about three-quarters of the way up the mountain. There was no degree of overlap whatsoever between the flight areas of these two butterflies.

This brings me to a second misconception created in our literature concerning the satyrid species of the Drakensberg. In his book Swanepoel states that *machacha* and *penningtoni* are seen flying together on the Escarpment. In fact, this is generally not the case, although there is, obviously, a certain degree of overlap between their respective colonies. Having come across both species in great numbers over a wide area, and having recorded with great care the altitudes at which they were seen flying, we came to the following conclusions: firstly, *machacha* flies at a lower altitude than *penningtoni*, and is seldom seen at an altitude in excess of 3080 m. In fact, the colonies seemed strongest at an altitude of plus/minus 2825 m. Secondly, there is very little overlap between these two species, because *penningtoni* is seldom seen below an altitude of 3145 m. But, above this altitude, *penningtoni* occurs everywhere on the escarpment. Collecting *penningtoni* is therefore a simple matter of referring to the contour map. Interestingly, *gaika* was found to occur at lower altitudes, like *machacha*. It also was not seen at altitudes much in excess of 3080 m.

When we crossed Lesotho from east to west (in a Land-Rover at an average speed of 16 km an hour, with innumerable crossings of some strong-running and deep rivers; collectors are warned to be prepared to shed some clothing and measure the depth of all innocent-looking streams before driving a

vehicle through them), we relied on these and other observations to enable us to break down some old myths surrounding these species.

We saw that Swanepoel stated in his book that *machacha* does not occur around Mokhotlong, inland from the Drakensberg. Indeed, we found that it did not occur on the north-facing aspects of these mountains, but that it was common on the south-facing aspects. The reason for this is obvious: different grasses grow on different aspects and all satyrids are grass feeders. It was, furthermore, logical that the species should occur in this area where the mountains do not exceed plus/minus 2825 m.

We are also informed by Pennington in his book that *penningtoni* does not occur on the western side of Lesotho. We noticed, however, that the areas mentioned in his book – Mount Machacha and Blue Mountain Pass – were of comparatively low altitude. We then proceeded to check altitudes on our contour map and found a high ridge of mountains near Oxbow on the western side of the Lesotho Highlands, reaching altitudes of up to 3325 m. We then investigated these mountains and, sure enough, found *penningtoni* flying in good numbers. Again, the key was altitude. This discovery led us to conclude that *penningtoni* could be found anywhere in the Drakensberg mountains at a suitable altitude.

But why the importance of altitude? The answer is surely that the grass upon which each species breeds is confined to certain altitudes. Therefore above and below these altitudes the species cannot exist.

However, I must stress that we at no time saw any females of these satyrids ovipositing, and that we have therefore not been in a position to identify any of the possible foodplants concerned. Therefore our theory has yet to be proved conclusively.

Cyrestis camillus sublineatus – The conundrum

D.A. Swanepoel, P.O. Box 264, Duiwelskloof 0835

Speculation among butterfly collectors has been rife ever since this butterfly was discovered in the forests of the far north eastern Transvaal. While some top level butterfly collectors pleaded that the butterfly periodically migrates into the Transvaal from Zimbabwe and Mozambique, others contended it had established itself in the Transvaal forests.

When rumours did their rounds one year that Russel Badham had captured *camillus* in the Malta forest people thought he had had one too many. Some years later, in April, the writer observed a pinkish white butterfly fly across the road in Woodbush and alight on the underside of a leaf. To his amazement the butterfly turned out to be *camillus*. He had been to the Malta forest and Woodbush more times than he cared to remember and never seen the beast there before, or afterwards, despite the fact that he conducted extensive searches for it there subsequently.

The collector who claimed he had encountered this butterfly abundantly at a certain place in Mozambique failed to back up his assertion with an appreciable number of specimens in his collection. The few he displayed were in a somewhat belated condition.

During his short sojourn of about two years in Sibasa, J. Steenkamp had enviable good fortune in observing the butterfly feeding on poinsettia flowers in his garden. Now and then one would come out of the dry bushveld near his house. None captured was in any noteworthy condition.

This captivating species indeed stirs the imagination of the collector to no end and awakens a desire to learn more about its habits, particularly within the borders of the R.S.A.

Observant Rhodesian collectors have so far not chronicled migratory phenomena. One and all declared it an uncommon species frequenting the vicinity of streams in dense forest glades. An astounding migration to the south, largely along the African east coast, of *Sallya amulia rosa* was recorded in 1937. One wonders if *camillus* is also stimulated some time or other to fly south from its classical habitat. Its presence in the dry open bushveld around Sibasa is indeed very perplexing.

Remembering that butterflies do not respect political boundaries a butterfly collector with a flair for history might one day feel inclined to solve the mystery and follow the fugitive trail to the legendary crook's corner on the far north eastern border of the Transvaal and sit there patiently under the fig tree watching renegade *camillus* come across from Mozambiue and Zimbabwe. Or he might hope to catch a sound of peals of laughter echoing from the spooky past when renegades reached the shade of the tree where the long arm of the law was unable to arrest them.

Good luck to the collector who stages special efforts one day to cast more light on the habits of this enigma!

(Note: Mr Swanepoel has asked me to inform our members that he has discontinued his newsletter in favour of the Lepidoptera Study Group's publication. The above article would have been included in his June Newsletter. Ed.).

Butterfly migration in southern Africa

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Butterfly migrations have been a source of wonder for many years, all the facts contributing to this phenomenon are not known but the following account, while requiring further study, is my interpretation of these events.

Butterfly populations are balanced by their predators, particularly insect parasites predating on the early stages. This results in a cyclic phenomenon where periodically the population of parasites reaches a low point while the butterfly population reaches a high. This is known as a swarm year.

With most species the habitat can cope with the increased numbers for that short period of time but in the bushveld of the Northern Cape this balance can apparently be disrupted by climatic conditions or there is an inherent imbalance of the predator/prey ratio which results in an enormous quantity of butterflies hatching in a swarm year.

The assumption is that the lack of viable foodplant after such a devastating feeding spree results in a stress situation which in certain species stimulates the release of a migration pheromone (all insects communicate by means of

pheromones which are volatile secretions with an inherent chemical message e.g. brood, alarm or sexual). This pheromone, which presumably would be allied to the alarm pheromone, stimulates the excess population to move away from the region. In the case of the Northern Cape, which is surrounded in the North, West and South by some very arid areas, the only direction in which to fly is to the North East and East. They eventually disperse into the existing populations of eastern Botswana, northern and eastern Transvaal, Zimbabwe, Mozambique, the Orange Free State and Natal. In exceptional years the migration can turn southwards to the eastern Cape and even the western Cape.

Fig. 1 gives a map with a number of records to indicate the flow of this migration.

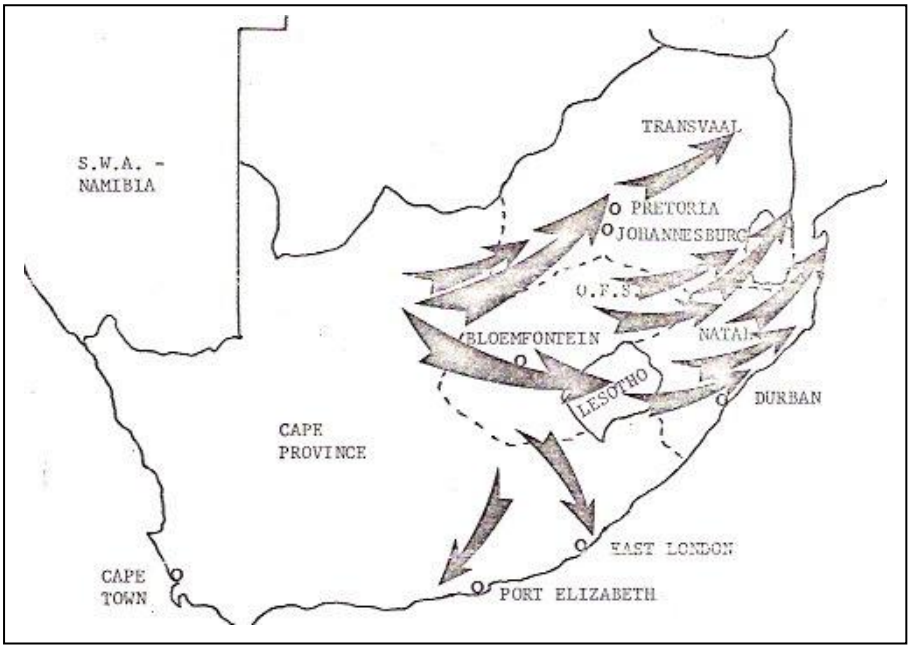

Figure 1: Migrations recorded with the northern Cape as the apparent origin

The main species involved in these migrations are *Belenois aurota* (Fab.) and *Catopsilia florella* (Fab.); other pierids and a few Acraeas participate in certain years but this is an uncommon occurrence. It is not known if these other species release their own migration pheromone or whether they are stimulated by the pheromones released by the two main migrating species. In a large number of the records *B. aurota* has been recorded migrating on its own and there are a number of records of *C. florella* migrating without *B. aurota*. Perhaps it is a combination of the different migration pheromones from these two species that stimulates other species to join in.

The largest migration, as far as species were concerned, occurred in 1966 when no fewer than eight species were reportedly involved. A number of species were found far from their natural habitat.

A study is planned to prove the existence of the migration pheromones and also to determine which species in a multiple migration release pheromones. Any information with regard to migrations in southern Africa will be welcomed by the author.

The following is an annotated list of species recorded migrating in southern Africa.

Belenois aurota (Fabricius) – Prolific migrations regularly.

Belenois creona severina (Stoll) – Occasional records of odd specimens, not usually part of main migration in southern Africa.

Belenois gidica (Godart) – Recorded as migrating near Grahamstown, E. Cape with the following species.

Belenois zochalia (Boisduval) – Once recorded as above, doubtful identification.

Catopsilia florella (Fabricius) – Large number of records. With *B. aurota* they form the basis of the Northern Cape migrations.

Colotis agoye bowkeri (Trimen) – Participates in major mass migrations and as a result can be found far from its natural habitat in the Northern Cape.

Colotis subfasciatus (Swainson) – Also a participant in major mass migrations, the 1966 migration resulted in specimens being found in the eastern Cape.

Pieris helice (Linnaeus) – Two records, Northern Cape and Natal, with other species.

Dixeia pigea (Boisduval) – Very few records, doubtful identification.

Dixeia charina charina (Boisduval) – Recorded with *B. gidica* at Grahamstown.

Danaus chrysippus (Linnaeus) – Once recorded in Natal.

Sallya boisduvali (Wallengren) – Recorded migrating along the Natal coast.

Sallya natalensis (Boisduval) – Recorded with the above species.

Phalanta phalantha aethiopica (Rothschild & Jordan) – Recorded with *C. florella* at Harare, Zimbabwe.

Sallya amulia rosa (Hewitson) – Recorded migrating in Mozambique.

Acraea anemosa (Hewitson) – Recorded in 1966 migration.

Acraea lygus (Druce) – Recorded in 1966 migration.

Acraea machequena (Grose-Smith) – Not recorded in numbers but a sparse migration from Mozambique into Transvaal in 1978.

Acraea stenobea (Wallengren) – Recorded in 1966 migration.

Acraea terpsichore neobule (Doubleday) – Recorded in 1966 migration.

Coeliades libeon (Druce) – Recorded by Arnold at the Amatongas Forest in Mozambique migrating to the north-west in February 1917.

The emperor moths of South Africa

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Mark Williams and I have been studying the life histories of the South African (including S.W.A. and Botswana) emperor moths (Saturniidae) for some time now. Forty seven species have been recorded in this area so far, but some of them are extremely rare (absolutely or at least in the region). A search of the scientific literature has revealed that only 12% of the species have their life histories well documented, including descriptions and/or illustrations of all immature stages. The life cycles of about 30% of the species are totally unknown or at least undescribed, and only the final instars are more or less well known in the rest of the species.

With very few exceptions no information at all is available on the early larval instars, the duration of the immature stages, the colour variation and behaviour of the caterpillars and also the behaviour of the adult moths with regard to mating and oviposition. Also, the existing data on foodplants and distribution are scarce and present a very patchy picture of the habits of the majority of species. It is obvious that virtually nothing of this information is available to the layman, most of it being tucked away in old books and journals of the highly technical literature.

Yet, which lepidopterist has not seen one or another gigantic caterpillar defoliating a pine, cabbage, mopane or other tree and wondered what kind of moth this caterpillar will give rise to? Or who has never encountered the beautiful green tailed Lunar Moth or another large emperor moth at a street light and pondered about the larva and foodplant of such a great moth?

The aim of our study is therefore to describe and illustrate the complete life cycles of these exquisite moths and eventually compile most of this information in a colour-plate guide to the South African species, enabling easy identification of the adults and larvae of these moths. We also hope that such a work will trigger off similar studies in other African countries so as to provide additional information for the systematics of the family. Some African genera and species groups are presently in a shocking taxonomic state.

We have so far succeeded in breeding and recording the life cycles of about 30% of the Saturniid fauna of our region. The greatest impediment in breeding particularly the rare species is to obtain ova and an adequate supply of foodplants for a reasonable number of larvae to complete their development. However, we are optimistic that we will be able to breed the majority of the species in a few years' time. We have also recorded the localities and similar information of all the major museum collections in the country but there are undoubtedly many private collectors who might be in possession of valuable distribution and foodplant data of these moths. We would therefore greatly appreciate any co-operation and contribution of interested lepidopterists for this project in order to present as complete a picture of this family of Lepidoptera in South Africa as possible. Contributors will be duly acknowledged.