

Newsletter of the Lepidoptera Study Group of Southern Africa

Editor: M.C. Williams, P O Box 12580, Onderstepoort, 0110, RSA

Editorial

The Lepidoptera Study Group of southern Africa has its first birthday this month and with it gets its first steering committee. The ballot held in March 1984 yielded the following results:

Chairman: Mark Williams
Secretary: Stephen Henning
Treasurer: Graham Henning

Additional members: David Edge, Douglas Kroon and Rudi Mijburgh

The above positions are determined by section 2.1 of the regulations (*Metamorphosis* 1 (1)). I would like to take this opportunity of welcoming my fellow committee members on board a ship that was becoming increasingly difficult for me to keep on tack. Perhaps now the sails will be better trimmed to the wind and the group's activities during the next two years will slowly expand.

The preservation of endangered Lepidoptera in southern Africa is one area of activity in which the group will increasingly be involved. As some of you will be aware we are already making representations with regard to the critically endangered *Aloeides dentatis* colony at Roodepoort. Below is a letter, reprinted in full for your information, addressed to the Town Clerk by me on behalf of the group.

The financial report for 1st April 1983 to 31st March 1984 is also included in this issue.

Letter to the City Council of Roodepoort

Lepidoptera Study Group of southern Africa
c/o P.O. Box 12538
ONDERSTEEPOORT
0110
R.S.A.
26 March 1984

The Town Clerk
City of Roodepoort
Private Bag X30
ROODEPOORT
1725

Dear Mr Zybrands

**PRESERVATION OF THE HABITAT OF *ALOEIDES DENTATIS*
(SWIERSTRA) (LEPIDOPTERA: LYCAENIDAE) AT ROODEPOORT
(RUIMSIG)**

As chairman of the Lepidoptera Study Group, formed in July 1983, and which represents over 130 lepidopterists in the sub-continent, I am writing to you on their behalf concerning the above matter. Our group has been kept informed of developments through Mr Stephen Henning, an entomologist at the S.A. Institute for Medical Research and a founder member of the Study Group.

In a letter dated 30 July 1982 Mr Henning informed Mr Cedric Edwards, chairman of the Roodepoort branch of the Wildlife Society, about the status of the endangered butterfly *Aloeides dentatis* (Roodepoort Copper) and recommended that urgent measures were necessary to protect the colony at Roodepoort. Mr Edwards sent a copy of this letter, together with a covering letter dated August 13 1982, to your offices. In his covering letter Mr Edwards stated: "We would be grateful if the Conservation Officer could have a look at this area and take note of its sensitivity to ensure that *if it is developed at a later stage, the butterflies will be protected*" (my emphasis).

From the above dates it is clear that these representations were made nearly a year before the formation of the Study Group in July 1983. In consequence of the Wildlife Society's involvement in the matter the Study Group has merely attempted to monitor developments. Since negotiations between the Wildlife Society and the Roodepoort City authorities still seemed to be proceeding it came as something of a surprise when we were informed about six weeks ago by Mr Henning that the Conservation Officer for Roodepoort, Mr D. Bosman, had told him that the area was to be developed in the near future.

The Lepidoptera Study Group has as one of its constitutional aims the conservation of endangered Lepidoptera in southern Africa. We therefore wholeheartedly endorse and support the efforts of both Mr Henning and the Wildlife Society through Mr Edwards to have the habitat of *Aloeides dentatis* at Ruimsig preserved. We have read Mr Henning's representations to the Roodepoort City Council in this regard and can vouch for their objectivity and scientific accuracy. There is no-one more competent than he to state the case since the bio-ecology of this species formed an important part of his MSc. thesis. However, we would like to add some general remarks of our own.

Insect conservation on a global scale is still in its infancy and to-date has concerned itself mainly with butterflies, a relatively minute but fairly well studied component of the insect fauna. Protection has been afforded to the huge birdwing butterflies of the Malay archipelago and a few endangered butterfly species in Europe, the United Kingdom and the United States of America. There are no protected insects or insect habitats in Africa apart from South Africa. In the Republic legislation protecting 16 species of butterflies and 1 moth in the Cape was promulgated in 1976 (schedule 2 of the Cape Nature Conservation Ordinance, 19 of 1974) and in 1983 the Transvaal Provincial Council passed a statute protecting *Charaxes* spp. and *Poecilmitis aureus*. In both provinces the legislation bans the collecting of the listed species but does not address the crucially important question of habitat preservation. Although overcollection is to be frowned upon there is not a single documented case of extinction of a butterfly resulting from this cause anywhere in the world. On the other hand, a number of species (e.g. the large blue and large copper in the U.K. and the xerces blue in California) became extinct when their habitats were radically changed or destroyed by the actions of man. If the Roodepoort City Council implements Mr

Henning's recommendations this will certainly be the first sincere and scientific attempt to preserve intact the natural habitat of an endangered butterfly anywhere in the world.

Roodepoort's conservation record with respect to both its cultural and natural heritage is well known and widely admired. In the past it has shown the way for other local authorities and it would be a tragedy if its reputation were to be marred by the accusation that it did not care enough to try and prevent the extinction of an endangered butterfly.

Mr Henning has suggested that 22 Ha be preserved and has also informed you of the relevant stand numbers. It is our opinion that this area is the absolute minimum. Scientific data on the habitat size required to ensure the continued existence of an insect population is unfortunately virtually non-existent. A study concerning endangered butterfly species on San Bruno mountain in California (Arnold 1983) indicated that, at least for some species, the area required may be in excess of 1000 Ha. However, this area will obviously vary tremendously from one species to another.

It has been noted that the first 30 1 Ha plots in Ruimsig auctioned on 17 March 1984 fetched in excess of R80, 000 each i.e some R30,000 per stand in excess of the reserve price. This means a possible windfall of some R6 million if 200 stands are sold. If the 22 stands required are thus left unsold their deducted value of about R2 million still leaves the Council R4 million in the black, surely a strong argument from the point of view of affordability.

The study group forwards the following reasons in support of efforts to conserve *Aloeides dentatis* at Ruimsig.

1. This population represents unique genetic material that may one day prove to be of benefit to science and man.
2. It has aesthetic value for our and future generations - something which is very difficult to place a monetary value on.
3. Such an unique preserved habitat will be of great educational value for the public and can supply ecologists and conservationists with invaluable and critically needed data on the viability of this type of exercise.
4. This butterfly is to the best of our knowledge at present the only critically endangered butterfly in the Transvaal.
5. As custodians of this planet it is our duty to preserve and properly manage its natural riches.
6. Finally, Roodepoort and its citizens will in the future be looked to for inspiration and guidance in matters of urban nature conservation.

Should you require additional information or need clarification on any point please do not hesitate to contact us. We are also prepared to answer questions or present data in person before the responsible committee. In short we would be delighted to be of service.

Yours sincerely

Dr M.C. Williams
(CHAIRMAN)

Financial report - Lepidoptera Study Group of southern Africa

1 April 1983 to 31 March 1984

Income:

Subscriptions	R1 045.00
Advertisements	R 10.00
Interest	R 2.87
TOTAL	R1 057.87

Expenditure:

Stationary	R118.11
Stamps	R109.50
Typing	R 41.00
Roneoing	R 68.00
Photocopying	R 39.75
TOTAL	R376.36

Assets:

Balance in Savings Book: R681.36

M.C. Williams

1 April 1984

Euxanthe wakefieldi (from the D.A. Swanepoel 1978 memoirs)

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

Chance or planned encounters with this butterfly during recent years have enriched our knowledge of its habits considerably - something which has been very scant during the time my book was underway. Collectors in general who contributed to this happily relate their experiences and stress the fact that they now know more about where, when and how it flies.

It was Felix v.d. Riet on their sugar cane farm near Chakaskraal that first observed a female laying eggs on a smallish plant. Beaming with excitement and knowing how scarce and elusive they are he captured her. Placed with leaves of the foodplant in a breeding cage she eagerly laid a number of eggs. From these and others collected subsequently he managed to breed many beautiful specimens of this butterfly. Needless to say other collectors soon followed suit and were never short of excitement in watching the caterpillars feed, moult and ultimately pupate. The highlight came when the butterflies emerged.

D. Whiteley almost bubbled over with excitement when he recounted his experiences with *wakefieldi* at the Tugela River mouth. There, in December one year, he stood spellbound watching males and females come to suck at ant-holes on the branches of tall thorn trees along the edge of the forest. The species, sometimes willingly, sometimes not, also comes to bait in trapnets strung under trees where the sucking holes are.

Other collectors had similar experiences at the Dukuduku Forest near Matubatuba. In another forest near Kwambonambi females were observed

by the writer laying their eggs on the foodplant – *Deinbollia oblongifolia*. Eggs collected on such occasions were often bred successfully at home. It has been ascertained that the caterpillars of the species are attacked by a host of predators, thus evincing the reason for the scarcity of the butterfly.

K.M. Pennington once returned home from Swaziland and vividly described in several letters to his friends how he had seen males soar about the tree-tops on a koppie; the same way as some species of *Charaxes* are wont to do. The writer also witnessed this habit of theirs at Sodwana Bay.

For years *wakefieldi* had almost been an unheard of thing around Durban, since many of the coastal forests there were cut down. When D.E. Whiteley moved to Durban his enthusiasm to track it down gained momentum and so we now know that it still flies there in small bits of bush – remnants of what were once extensive forests such as Stella Bush on the Berea, now covered with buildings, and those northwards from Durban to Umhloti. Here and there the foodplant had managed to survive the onslaughts of the axe.

Males often select playgrounds in the heart of a dense forest. There, if a monkey rope is at hand, the male will perch on the spikes when tired or soar in a leisurely fashion around it in patches of sunlight penetrating the forest canopy. To see this black creature with sunlight on the green spots of its wings while it floats above one is an exhilarating and unforgettable experience.

When the female gets the wind of bait in a trapnet she makes for it with such haste that she appears to be quite annoyed when intercepted by a male with love-making intentions. It is quite an experience seeing these unique butterflies come to bait. Overindulgence of the bait juice often causes their abdomens to look like oversized rugby balls.

Mate-locating in butterflies

Stephen Henning, 6 Verne Road, Florida North, Florida 1710

Mate-locating behaviour is defined as behaviour which brings the sexes together for mating. It includes the methods used to find mates, the location of mating, and the time of day of initiation of mating (Scott, 1974).

Chemoreception is known to be very important in the long-distance location of females by males in moths, and in the courtship of moths and butterflies. It may possibly prove to be important in location of females by males in the Acraeidae as well. For most butterflies, however, the maximum distance of attraction is limited by sight, while chemoreception is important only within a few metres of the females by the release of pheromones from hair pencils, androconial scales and so on.

There are two main types of mate-locating behaviour in butterflies. The first is perching behaviour, which is defined as a mate-locating method in which males sit at characteristic sites and dart out at passing objects in search of females. The females generally fly to these sites to mate, then they depart. The second is patrolling behaviour, a mate-locating method in which males fly almost constantly in search of females.

Movement, size, wing colour, wing pattern, and odour are stimuli which can be transmitted during sexual communication in the approach of a male

to a female. Perching males are highly attracted to moving objects, whereas patrolling males often are attracted to motionless objects resembling females in some way. Perching species usually mate in limited areas of habitat, often during only part of the day, whereas patrolling species usually mate throughout the habitat at any time of day.

Territoriality is usually exhibited by males which perch or patrol in a particular beat or area. They will investigate and challenge not only other males of the same species that enter the territory but other appropriately sized flying insects as well. The resident male most frequently succeeds in his challenge. Virgin females entering a territory are at once pursued and courtship commenced. In the case of many Hesperidae and Lycaenidae a particular male will have a favoured perch or perches in its territory on which it will settle, often returning after an encounter to the exact spot from which it launched itself. If that individual is caught it may be replaced within minutes or hours by another individual of the same or a different species. Surprisingly, the new individual may rest on or near the same twig as its predecessor. Evidently there are certain particularly favoured spots in any small area of habitat and these are occupied in preference to others. On the other hand, in some species (e.g. *Papilio demodocus* Esper) the males patrol for long periods and perch only briefly. The males seldom engage in feeding activities while they are perching or patrolling. Since they only appear as the day warms up, they probably go nectar-gathering before starting their territorial behaviour.

Both perching and patrolling species also exhibit other types of behaviour which help the sexes to locate each other. The most noticeable is hill-topping behaviour, in which males of low-density species fly to the summits of hills and there show perching or patrolling behaviour. In these species the males ascend to the hill-tops to be in a conspicuous spot so that the newly hatched females know where to find them. Otherwise the females might fly for kilometres without finding a mate if they tend to be sparsely scattered. So the female goes up to the top of the hill, very soon gets fertilised and goes away again and almost never returns. Hill-topping behaviour will be described in more detail in the next article in the series.

Another type of behaviour is foodplant congregation. Most butterflies, especially the weak fliers, spend their entire lives, except for brief forays in search of mud or flowers for nourishment, around stands of the foodplant, and therefore have a built in mechanism for bringing the sexes together. Often the sexes are limited both to foodplant and to certain areas of the environment such as marshes, rockslides, or forests, which may or may not be the only locations of the foodplant. The behaviour of these species usually limits them to these areas so that mating is possible with 'random' flight by both sexes or by patrolling of the area by males.

In some species the males occupy small areas along the bottom of a gully or gorge, presumably for mating purposes. Males may occupy an area for some time, but this behaviour may not be territorial since the males may wander to another gully and show the same behaviour. A group of butterflies which show this behaviour are the *Poecilmitis*.

The males of rainforest species usually show perching and patrolling behaviour in forest clearings, roads or along the outskirts of the woods.

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***Mylothris chloris agathina* - successful westerly drive**

Bill van der Riet

I wonder how many collectors have noticed or have recorded the remarkable westerly movement along the southern Cape coast of *Mylothris chloris agathina*, a species which now abounds in previously uninhabited areas. My own account of this occurrence is as follows.

In the early 1960's a small band of collectors (myself included) based in Mossel Bay, used to regularly hunt in the Wilderness-Knysna area; we never encountered *chloris* there. Or for that matter, in Mossel Bay itself. We see from Pennington's account that the species was taken at Knysna a short while later (1965) and at the Wilderness in 1976. In the early 1980's I noticed it for the first time hundreds of kilometres to the West of the Wilderness at Onrust River and also Hermanus. The species now occurs abundantly there and appears to be firmly established. I have seen it at Gordon's Bay and would not be surprised if it has reached the Cape Peninsula. I attempted to establish the foodplant, and strongly suspect *Colpoon compressum*, a common coastal and montane species, closely allied to the known foodplant of *chloris*, *Osyris lanceolata*. Seeing this butterfly flitting about gardens in the Western Cape was to begin with quite surprising, but I regard it as a welcome 'visitor' there.

(Editor's note: Mr Charles Dickson of Cape Town has informed me (January, 1984) that Charles Wykeham, one of our members, is preparing a paper on this phenomenon. In January, 1984 I observed the species flying all over the slopes of Muizenberg Mountain, above St James, and larvae were found feeding on *Colpoon compressum* on both sides of Boyes Drive, which traverses Muizenberg Mountain. There is therefore little doubt that the species has now established itself on the Cape Peninsula.)

How much damage do collectors do?

Nolan Owen-Johnston, P.O. Box 2466, Johannesburg 2000

In recent years much has been said and written about the 'commercial' collecting of butterflies in South Africa. I know of only one commercial 'collector'. This gentleman imports exotic butterflies from overseas breeders and frames them for sale locally. The cost of collecting local species, together with the lack of sufficiently gaudy butterflies flying in South Africa prevents his exploiting local species to any marked degree.

Let us examine the economics of a collector living in the Johannesburg area who decides to embark on a commercial butterfly venture. Our entrepreneur is immediately faced with the question: "What species do I attack?" There is no market for our local lycaenids - much more spectacular ones are available at very low prices from central African collectors. Similarly, one can discount the satyrids, hesperiids and pierids. This leaves the papilionids and the nymphalids. The obvious choice is one of the spectacular *Charaxes*. Of these the natural choice is the legendary *C. marieps*.

Our entrepreneur duly sets off to catch his prey. At this stage let us examine the foreign market. Any old battle-scarred bug will not sell. This sophisticated market calls for a full-size perfect specimen, preferably a matched pair. As any collector knows, perfect specimens are extremely uncommon in the wild and the only economical method of obtaining these specimens is to breed them out.

So our entrepreneur's target is a half-dozen or so females. (It is interesting to note that this is exactly the same, or probably less, as a *bona fide* collector would take). Let us assume that the trip is a success and the quarry is captured. Now starts the process of discovering the foodplant, inducing the females to lay, successfully breeding the butterfly, securing fresh foodplant and so on. All in all a very time consuming and labour intensive exercise. As any person who has bred butterflies knows, this can run into several hundred hours of work. Let us bless our entrepreneur with good fortune and allow him to successfully breed out 10 pairs of *C. marieps*.

Now comes the marketing of the butterflies. How does one fix a price? The cost of the trip to Mariepskop and subsequent breeding is:

Travelling	R350 (1000 km at 35c/km)
Hotel	R20
Time	R150 (30 hours at R5/hour)
Labour	R500 (100 hours at R5/hour)
Plant collection	R200 (10 trips)
TOTAL COST	R1220 [i.e. R122.00 per pair]

Add to this a 100% profit margin and we have a retail price of R244.00 per pair. Could someone please tell me how our entrepreneur is going to sell 10 pairs of butterflies at R244 per pair? The latest price I heard for *C. marieps* was R60.00 per pair, but this is academic as there were no takers at this price. Let us be generous and say that our entrepreneur sold his 10 pairs at R60 each. This gives him a nett loss of R620. How long can he continue to suffer this sort of loss? How much damage has he done to the species? Half a dozen females! Less than you or I keep in our collections!

In the light of the above I conclude that the commercial exploitation of our butterflies is non-existent and is no more than hot air being stirred up by people who do not have the brains to sit down and work out the economics of the situation as I have done above. Let us now drop this subject and afford the 'accusers' the scorn they deserve.

To return to our original question: "How much damage do collectors do?" At present there are about 140 collectors known in South Africa. I would suggest that there have been and are about 300 South African collectors (I personally feel that this figure is on the high side). If each of these collectors were to collect a series of 20 specimens of each butterfly flying in South

Africa, this would account for 6000 of each species (again, I feel that this figure is on the high side). Spread this over the last 100 years and we arrive at a figure of 60 per annum.

Now let us consider one unsuccessful lizard. I say unsuccessful because he only caught 60 butterflies in a year. This translates to one capture every 6 days; hardly enough to feed even the smallest most scrawny little lizard. And yet it is to stop the equivalent of this lizard that the Cape and Transvaal legislatures are putting butterflies on the protected list. Makes you think, doesn't it?

New book on insects of southern Africa in the pipeline

M.C. Williams

Professors Clarke Scholtz (a member of our group) and Erik Holm of the Department of Entomology at the University of Pretoria are in the advanced stages of putting the contributions for the above book together. Clarke is seeing to the editing and Erik is supervising the art work.

The book started out in early 1983 as a guide to the insects, with simple keys and notes on the biologies of the larger families. However, the response from most contributors was so enthusiastic and the standard obviously so much higher than was originally anticipated that the whole project had to be rethought. It was felt that rather than condense the contributions it would do greater justice to them to keep them in that form. Most contributors also felt that a book of a more detailed nature is long overdue and that there is a need for a reasonably comprehensive work on the fauna.

The book now contains contributions by 48 international authorities and deals with the systematics and biologies of the approximately 600 families of insects known to occur in southern Africa. It is illustrated with 1 500 black and white and 150 colour sketches and it contains some 800 selected references to the major works on southern African insects. The final manuscript will run to about 800 typed pages. The chapter on Lepidoptera was written by Malcolm Scoble (primitive moths), Rolf Oberprieler (saturniids and sphingids) and Stephen Henning (the rest).

The main theme throughout the book is the identification and biology of each of the major groups. A different order is treated in each chapter. Illustrated keys to the major taxa as far as families, and in large families, to subfamilies, are provided. A general descriptive diagnosis of each group is given and the general biology of each family or subfamily is discussed. Under most families common or interesting species are dealt with in some detail. The text and keys have been kept as simple yet authoritative as possible and a minimum of technical terms is used so that the book can be read and understood by amateur and professional entomologists alike.

The introductory chapter deals in detail with the general morphology of insects and all structures applicable to the text are illustrated and explained, and typical life-cycles, the various types of metamorphosis and general biologies are discussed. The introductory section to each later chapter has annotated line drawings of aspects of the general morphology of the group dealt with in that chapter. A glossary and detailed index are provided.

The book is to be published by Butterworths (Koedoe Building, Pretorius Street, Pretoria 0002) and will hopefully be out by the end of 1984. It will retail at under R40. A limited number of signed and numbered subscriber's copies will be available at R200 each. Orders can be placed now with the publishers in Pretoria. The royalties that accrue from the book will be paid into a bursary fund for post-graduate study in insect systematics at Pretoria University.

