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Covers: Front: *Pseudonympha narycia* (Satyrinae) [Photo J. Joannou
Back: *Dichroma equestralis* (Geometrinae) [Photo H. Staude]

Editorial

The species concept, an editor's dilemma.

Of all the articles we publish in *Metamorphosis*, those dealing with taxonomy, in particular those that contain new species descriptions, spark the most controversy. As editor I am constantly being bombarded with wide-ranging view points of the problems surrounding the description of new species. Advice given to the editorial team ranges from a recommendation that all taxonomic manuscripts should be in Latin/Greek, to those submitted by non professional taxonomists should be rejected outright, and a recommendation that we should stop peer-review altogether, and leave the author alone, because he ultimately bears responsibility for what he writes. In addition to all the valued comments and recommendations volunteered to us, I consulted widely on the subject in order to set a satisfactory editorial policy.

The real reason behind all the controversy seems to be that what constitutes a species today is not clearly defined, and differs from discipline to discipline, and author to author. As our knowledge increases, old definitions have become unusable and impractical. New, generally accepted definitions, have not yet emerged. Much of the criticism around today seems to be aimed at improving the position of the individual's viewpoint, rather than at improving the situation for all. All this is very confusing for most of us.

Perhaps some debate through *Metamorphosis* could be useful, as the subject touches us all in some way or another. To start the ball rolling I am giving you my current personal view in the following article.

Publishing the early stages of Afrotropical Lepidoptera.

Available literature on the early stages of Afrotropical Lepidoptera is very poor. Of many species nothing is known about the early stages, but there are also many species of which they are known but unpublished. We are attempting to illustrate at least one life history per issue, in colour, in order to rectify the situation. If you have reared something that you think has not been done before, and you took some photographs, please contact the editor and we will help you to get it published in this series. Elsewhere in this issue you will find another addition to the series.

Hermann Staude.

AN IDIOT'S GUIDE TO SOME CURRENT SPECIES CONCEPTS AND THEIR APPLICATION IN TAXONOMY.

By H. S. Staude
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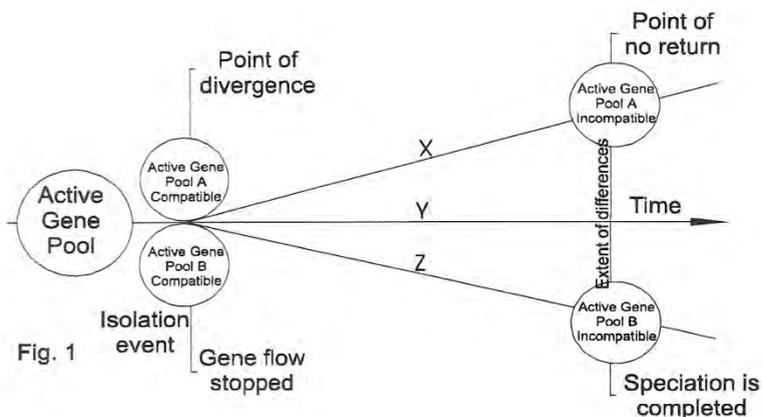
What is a species?

Traditionally we were told that a species is a group of individual organisms that are able to interbreed with one another and produce viable offspring. Within that group (the species) we may have groups (the subspecies) that do not currently interbreed because they are geographically isolated, but that would interbreed and produce viable offspring, should the groups come into contact with one another. Groups within the species that are phenotypically different but form part of the actively interbreeding group are known as forms.

This definition sounds fine, but, in the words of a prominent taxonomist: "it is very naive". As our knowledge increases we find more and more cases that do not fit the definition, either in space, or in time. In addition it is very difficult to prove the species boundaries conclusively, and species described are based on morphological and other characters, that are deemed to be indicators that 'speciation has taken place'. Much research is being conducted world-wide to find the magic character that would best indicate the species boundaries for each group. In the mean-time we have much controversy about the value of different characters as indicators of distinct species. Additional extensions such as '*in Nature*' or '*without the interference of man*' or '*distinct species*' are often attached to the above definition in an attempt to make it more practical.

One could rephrase the above definition from a gene-flow point of view: (which is very useful because it simplifies and focuses the definition) as follows: *A species is a group of all the individuals that have compatible genes. Subspecies are groups within the species between which there is no current gene-flow because they are geographically isolated. Forms are groups that have phenotypical differences within an active gene pool.* [I would have liked to exclude the word 'geographically' here].

What makes the above definition so attractive is that it makes the species the only taxonomic grouping that is based on a natural phenomenon. This natural phenomenon is that genes which become isolated diverge through time, show increasing differences (morphological and otherwise) and that the organisms carrying them eventually become genetically incompatible, thereby halting gene-flow permanently. This is very important because it probably forms the basis for the diversity of life as we know it. (if genes did not become incompatible life would probably have constantly reverted to its original state and we would probably not have been here.)



This phenomenon is illustrated graphically in figure1.

Explanation of figure1:

The graph illustrates the relationship between time and the diversification of genetic characters when gene flow stops.

The line x shows the divergence of one phenotypic character in active gene pool A from lines y and z.

Line y represents no change from the original character.

Line z represents the phenotypic character in active gene pool B that has diverged from line y and line x.

There is no negative or positive divergence, just divergence away from one another, (ideally the model should be three dimensional).

This very simple model represents one phenotypic character only, if one considers that there are over 100 000 different genes, producing thousands of phenotypic characters in humans for instance, then one can comprehend the complexity of the real situation.

The 'Point of divergence' is a point in time when an active gene pool splits up into two or more isolated gene pools and gene flow between them is stopped, as a result of an isolation mechanism.

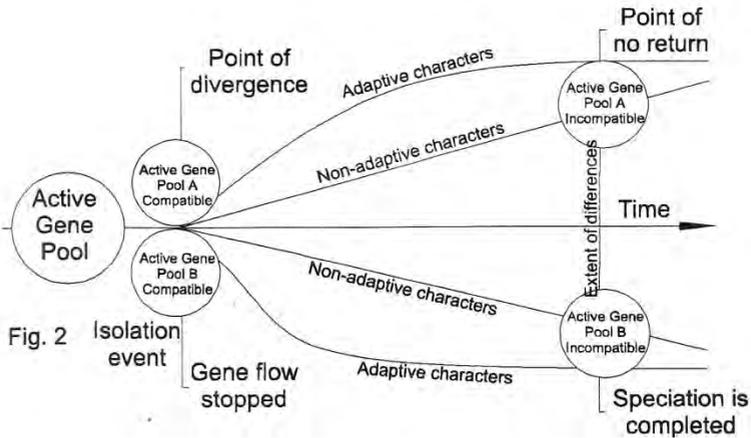
The 'Point of no return' is that point in time when the isolated gene pools have become incompatible, and can no longer revert back to a single, active, gene pool, even if the isolating mechanism is no longer there. Here speciation is completed.

Without attempting to answer the eternal how and why questions, I think that most agree that the evidence indicates that what is illustrated does take place all the time.

Taxonomists look at phenotypic differences, which indicate genetic divergence, between taxa and must make the decision whether the differences

are **sufficiently disparate** to validate the description of two separate species. By the nature of things, **sufficiently disparate** often means two different things to two different taxonomists. Taxonomists in reality are looking at a vertical line (a point in time) in the above diagram which may be anywhere from before the point of divergence to beyond the point of no return. Those taxonomists that deem '**sufficiently disparate**' to be near the **point of divergence** are commonly referred to as splitters and those that deem '**sufficiently disparate**' to be past the **point of no return** are commonly referred to as lumpers. Whether the point of no return has been passed or not is practically impossible to determine in most cases, hence all the controversy.

The situation in reality is of course far more complex than the simplified model in figure1 indicates. Lines x and z are never straight for most characters. Lines x and z are probably the straightest in non-adaptive characters (characters that are not usually subjected to environmental pressure, eg. genitalic characters). In adaptive characters (characters that are subjected to environmental pressure eg. Wing patterns) lines x and z sometimes diverge rapidly (see fig.2).

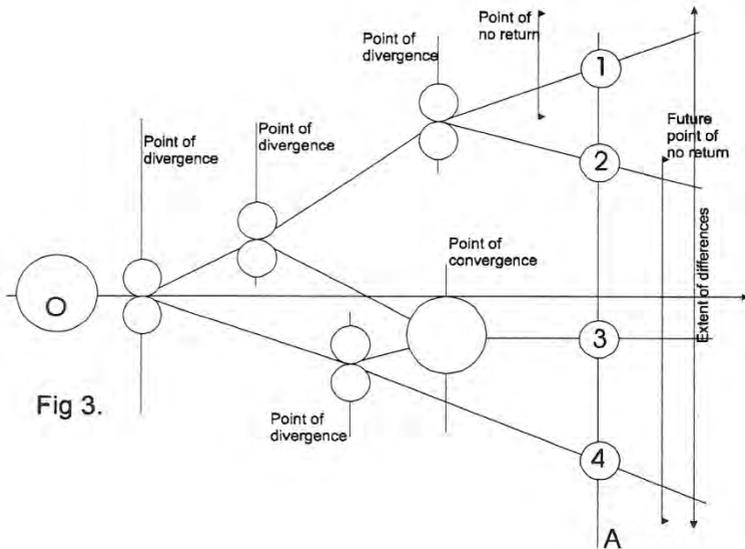


That is why taxonomists prefer to use non adaptive characters.

Figure 3 illustrates how complex the real situation that one would find in nature probably is. If one is looking at a number of closely related taxa at any given point in time (line A), the taxa in question (1,2,3,4) may have gone through a number of points of divergence (as a result of a number of different isolation events), subsequent to the initial one; some of them may even have reverted back to the original gene pool (point of convergence) resulting in variable forms (taxon 3); some may have reached their respective points of no return (taxon 1), and others not (taxa 2,3 and 4). From figure 3 it is thus easy to see that, at the time of A, taxon 1 is a distinct species whose characteristics

are closest to taxon 2 but that taxa 2, 3, and 4 are subspecies of a single species of which taxon 3 is variable with distinct forms. If one had all the historic information at hand of the taxa in question, (like a complete fossil record, almost an impossibility), one could very easily determine the exact status of the taxa 1-4 in real life. Of course taxonomists have only a tiny fraction of all the information available, but must still determine the status of the taxa studied. I for one, do not envy taxonomists in having to make these decisions. It is not surprising therefore, that often these decisions are made by precedent and that all the controversy exists.

We clearly have in the above biological species concept a very important one



but a concept of which the boundaries are very difficult to determine in nature.

Why do we bother to name species and attempt to determine their boundaries?

There seem to be two major reasons. Firstly the naming of species forms an important part of the systematic classification of life, which has become the framework for our understanding of the emergence of the diversity of life through time. Secondly it provides us with a very good labeling system to which we can safely attach all kinds of data. If one considers only the first reason then the above biological species concept is fine because it provides us with a standard that is clearly defined and is based on an actual natural phenomenon. Regardless of how inaccurate our current determinations may be, it is something to strive for and refine as our knowledge increases.

If one however considers the second reason then the picture is somewhat different. We know that soon after the point of divergence, differences appear between the sexually isolated taxa, long before the taxa become sexually

incompatible and the point of no return is reached. Because biologists need to attach their data to as unclouded a 'species-label' as possible, the pressure is to describe species as close to the point of divergence as possible. For the most part it is not important to the general biologist whether the taxon he is studying has reached the point of no return or not. It is far more important that his data applies to all the individuals which carry that label. It would be to his advantage, if all populations between which gene-flow has ceased, or even been severely restricted, were named. A good example is the case of wide-ranging species in which the individuals do not migrate over long distances. Invariably in such cases clinal differences develop because gene-flow is increasingly restricted and gene-flow between the two ends is **virtually** nonexistent. In cases where the cline is circumpolar the two ends sometimes occur sympatrically, do not interbreed, and could be regarded as **virtual** species.

Conclusion

It is my contention that because the 'species name' is widely being used more and more out of the context for which it was originally intended, and because the original species boundaries are so difficult to determine, the concept itself is in the process of change and taxonomists often are using the best of both worlds. On the one hand they justifiably argue that the biological species concept is naive and impractical, and on the other hand they still use it as the basis for "the validity of a species", sometimes softening it with attachments such as "...without the interference of man". I predict that splitters will ultimately overrun lumpers, because as long as current genetic isolation can be shown, it is very difficult to prove such names as being conspecific synonyms. Even if it can eventually be proven, such synonymy would be extremely unpopular with biologists that have successfully attached their data to the sunken names. Already, in many disciplines, one would probably be better off to look at genus, subgenus or species-group level if one were to seek the level at which " ...speciation has been completed"

The system lends itself to possible abuse, and species are sometimes described or synonymised for reasons other than pure taxonomy. It is here that journal editors are often expected to play the role of arbitrator through their advisors, who are recognised experts in their fields. This probably contributed to the tendency that the criteria for the naming of species varies significantly from discipline to discipline, in line with the current views of the recognised experts in each particular field.

Acknowledgements

Numerous discussions with many people whose views are not necessarily similar to mine but which I respect very much have helped to build my perception on the subject. I would especially like to thank John Joannou, Rolf Oberprieler, Graham Henning, Stephen Henning, Martin Krüger, Willem Prinsloo, Nelis Moll, Alf Curle, Douglas Kroon, Alan Heath, Henk Geertsema, Ernest Pringle, Mark Williams, Steve Woodhall, Jan Coetzee, Steve Collins, Malcolm Scoble, Dick Vane-Wright and Alan Gardiner for sharing their views with me.

**NOTES ON THE MYRMECOPHILOUS EARLY STAGES OF TWO SPECIES OF
THESTOR HÜBNER (LEPIDOPTERA: LYCAENIDAE) FROM SOUTH AFRICA**

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ABSTRACT: New information is given on the final instar larva of *Thestor yildizae* Koçak, 1983 and its associated ant *Anoplolepis custodiens* (F. Smith, 1858) between which, trophallaxis was observed. Observations made on the very similar *T. rileyi* Pennington, 1956 are also discussed. Comparisons are drawn between the life history of *T. yildizae* and of other *Thestor* species.

Key Words: Lepidoptera, Lycaenidae, myrmecophily, trophallaxis, Homoptera.

INTRODUCTION

The Cape Peninsular butterfly *Thestor yildizae* Koçak, 1983 (= *T. obscurus* Van Son, 1941) is endemic to the Cape Peninsular where it occurs on several mountains, including the Table Mountain range (Claassens & Dickson, 1980). The closely related and allopatric *T. rileyi* Pennington, 1956 occurs on several mountains close to Cape Town but not on the Cape Peninsular. The above two species belong to a group termed "the black *Thestor* species" by Clark & Dickson (1971:258); they are both single brooded and are on the wing in December and January.

Clark & Dickson (1971) described and illustrated the egg and first instar larva of *T. yildizae* and *T. rileyi*. The final instar and pupa of *T. yildizae* were described by Claassens & Dickson (1980) who also described how the first instar larvae of this *Thestor* were carried by Pugnacious ants *Anoplolepis custodiens* (Smith, 1858) (Formicidae) into an artificial nest (built by one of the authors for the ants), however, the diet of this black *Thestor* was not determined since the first instar larvae died after a few days. Clark & Dickson (1960,1971) described how the first three larval instars of *T. protumnus aridus* Van Son and *T. basutus* (Wallengren) feed upon Coccids and Psyllids (Homoptera) respectively and that on moulting to the fourth instar they enter or are taken into the host ant's (*A. custodiens*) nest where they remain and pupate.

This paper deals mainly with the myrmecophilous behaviour of the final instar larvae of *T. yildizae* which is fed by means of trophallaxis, a form of ant association which has not previously been recorded in *Thestor* larvae.

MATERIAL AND METHODS

The formicaria used in the investigations consisting of a plaster-of-paris nest compartment and a glass sided arena were similar to those described by Claassens (1974), however the mosquito-wire mesh top was replaced by glass to prevent the smaller workers of the polymorphic 'pugnacious ant' from escaping.

Colonies of ants were made up of between 100 to 200 workers and one or two queens together with plenty of brood in various stages of development. These were collected from the Saddle between Table Mountain and Devil's Peak where a strong population of *T. yildizae* is known to occur. The ants were fed on a varied diet of 'sandwich ham', insect carrion and chopped-up small lizards and geckos. They were also supplied with fresh water, sugar water and dilute honey. The plaster-of-paris nest was kept slightly humid by periodically adding water to a trough on one side of the plaster-of-paris nest. The nests were protected from bright lights and vibrations to ensure the occupants were not disturbed unnecessarily.

On the 13th November 1996, several final instar larvae and a few pupae of *T. yildizae* were collected from the Saddle. Three of the larvae were placed in the arenas of the formicaria, next to, or inside the entrance to the nest, from which they moved inside the nest compartment on their own or were blown in by means of a straw. Two final instar larvae were placed inside a small container with ant brood in various stages of development to ascertain whether the larvae's diet was ant brood as Clark & Dickson (1971) had postulated.

Several live adult females of *T. yildizae* were captured on the Saddle and on the Vlakenberg early in January 1996. Some of these females were kept in transparent plastic boxes to ascertain if they would oviposit without the stimulation of ants or plant material. Others were placed in a container with ants present. Females of *T. rileyi* from the Helderberg mountain at Somerset West were also collected in early January 1996 and placed in a transparent container with ants present. A few pupae of *T. rileyi* were also collected from the Helderberg mountain and placed inside a formicarium's nest compartment but two were retained alone in another container.

The following term used by Cottrell (1984) has been adopted here: PCOs - perforated cupola organs or lenticles, these are minute epidermal glands present on both larvae and pupae and capable of secreting substances which may be attractive to certain ant species.

The final instar larva and pupa of *T. yildizae* drawn from photographic slides, are illustrated in figs 1-4.

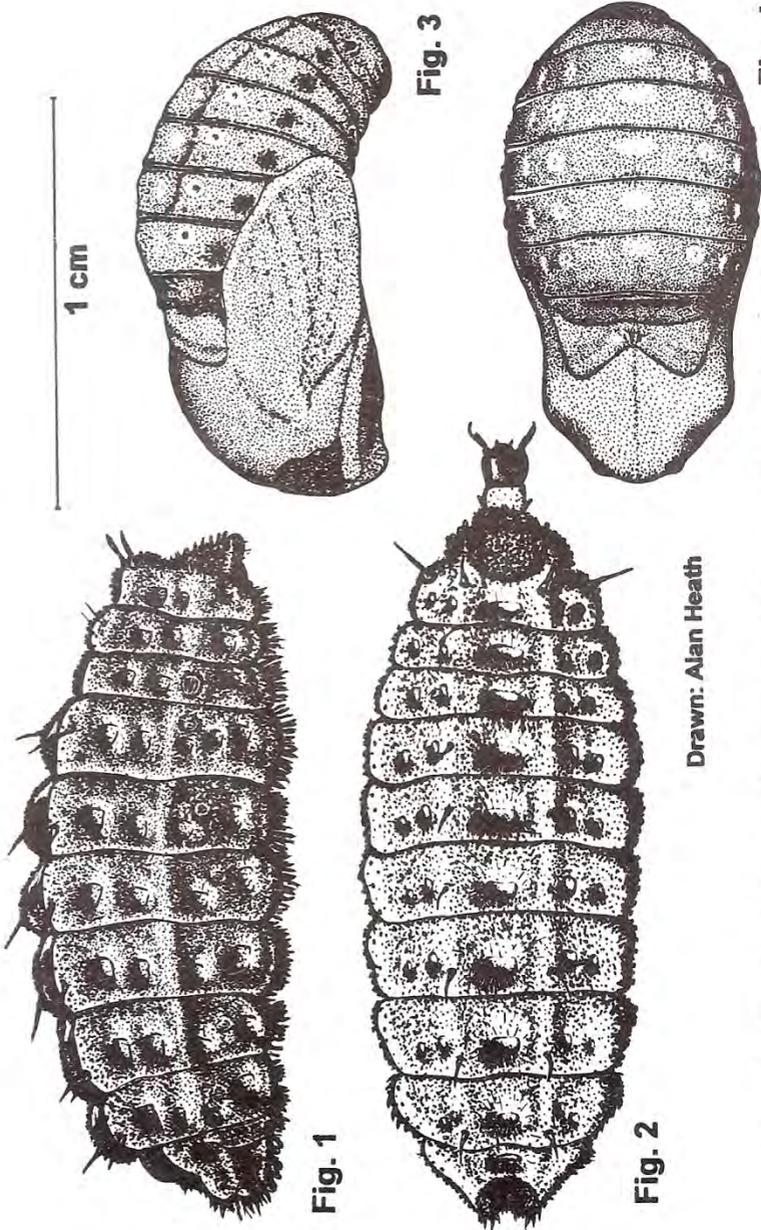
RESULTS

Field observations

The searches for early stages of *T. yildizae* and *T. rileyi* involved turning over large boulders and examining beneath, in habitats where the imagines are known to fly commonly. The ants would disperse quickly after being disturbed, leaving the pale amber coloured larva or pupa exposed in a shallow recess in the soil or in the ant tunnels or on very few occasions, adhering to the boulder.

Behaviour of larvae towards ants

Three final instar *T. yildizae* larvae placed in the nest compartment of the formicarium took up different positions among the ants from where they hardly



Figs 1-4: *Thestor yildizae* Koçak 1: Final instar larva, lateral view, head extended. 2: Final instar, dorsal view, head extended. 3: Pupa, lateral view. 4: Pupa, dorsal view.

moved and where they eventually pupated. These larvae were often observed extending their very small heads towards passing ants, whilst raising their head slightly as if seeking attention. The larva can extend its head horizontally at almost any forward angle whilst the bulk of its body remains motionless, thus giving the impression of its head being attached by a long neck. This behaviour was most often observed during the evening and night when the ants were most active.

Behaviour of ants towards larva and pupa

Worker ants often visited the larvae, concentrating their attention to the dorsal and lateral surfaces, where PCOs are assumed by the authors to be present. The ants were often seen to touch the larval surface with their antennae in a manner similar to that illustrated and described as "palpating" (Malicky, 1970: 192). The ants subsequently pressed their mouths against the larval surface, presumably to obtain an attractive chemical secretion. This behaviour, with one or more ants in attendance occurred at random times during day and night but was most frequent at night.

Worker ants also visited the pupae, remaining on their surface for long periods, sometimes as many as ten on one pupa. We believe that numerous very small structures observed on the surface of the *Thestor* pupae may represent PCOs having a function similar to those on the larvae, PCOs having been observed on other lycaenid pupae (Malicky, 1970).

At times ants were absent from particular larvae or pupae which suggested that the PCOs were not active continuously. The queens took no interest in the larvae or pupae.

Diet of larvae - trophallaxis

Host-ants were often seen to approach begging larvae, place their mouthparts on those of the larvae where they remained for a few seconds. Trophallaxis is hence assumed to be the normal method of food intake for the final instar larvae, since no other was observed during our investigation. Each of the larvae which had been placed in a small container with only ant brood, wandered about restlessly moving its head in and out intermittently whilst ignoring the ant brood, thereby indicating that ant brood was not its normal diet.

Pupation

One of the *T. yildizae* larvae pupated five days after entering the nest compartment, another pupated 13 days and a third on 28th December 1996, 15 days after introduction. A few days before pupation the larvae stopped their begging behaviour, assumed a more contracted shape and eventually changed colour from light amber to almost white. The pupae were very pale at first but gradually turned amber in colour.

Eclosion

The three *T. yildizae* which had pupated in the nest compartment eclosed perfectly between 24 and 27 days later. Three or four days prior to emergence the pupae turned darker, to almost a dark blue colour but this turned to grey, a day before emergence. The ants visited the pupae until the day of eclosion, which occurred early in the morning, at about 05:30hrs; this caused the ants in the vicinity to appear disturbed although no definite pattern of behaviour could be detected. The tip of the imago's abdomen had a quantity of fluffy material

adhering to it; this was assumed to ward off potential aggression from the ants, however, no attempt at attack was observed. The wings of the imagines were very small at this stage,

which allowed them to move freely and quickly about the nest compartment and they soon found the exit into the arena which was about 300mm away. In the arena, they climbed up a twig to allow their wings expand and dry; this process was rather lengthy, involving 40 to 50 minutes of slow expansion followed by ten minutes of faster expansion to complete the process. Ants present in the arena paid no attention to the imagines. Of those pupae collected in the field and retained without ants, the ones eclosing within a day or two, did so satisfactorily but some others taking longer, tended to eclose unsatisfactorily, e.g. with deformed wings.

Oviposition and first instar larvae

The females of *T. yildizae* which were placed in plastic boxes without either ants or plant material were observed to oviposit freely on almost any surface. The larvae of the two species *T. yildizae* and *T. rileyi* were alike in appearance and behaviour, being 1,5mm long, very slender and of a pale pinkish-brown colour with a darkened head. The following account applies to both species of *Thestor*. On being placed in the arena near the entrance to the nest compartment they moved about, but not very far. They frequently raised the anterior part of their bodies as if seeking attention as described by Claassens & Dickson (1980). Some of the larvae were picked-up by passing ants; grasped by the head (possibly the mouthpart) and deposited inside the nest compartment. Some of the larvae were left in the arena where they died a day or two later very near to where they had initially been placed. Those larvae deposited by ants in the nest compartment tended to remain where they had been placed and often raised their anterior part but despite occasional visits by passing ants who touched them with their antennae, no trophallaxis was observed. Occasionally an ant would pick-up a larva and place it in a different position in the nest compartment but after one or two days all the larvae died and were then placed on the trash heap by the ants.

DISCUSSION AND CONCLUSIONS

Several lycaenid species have been recorded as accepting ant regurgitations (Pierce, 1995; Heath & Brinkman, 1995; Heath, 1997). It is probable that many more examples of trophallaxis have yet to be discovered among myrmecophilous species, however, this is the first account of trophallaxis being observed in the genus *Thestor*. In view of the similarity of the two *Thestor* species included in this paper and both being associated with the same species of ant *A. custodiens*, we believe that trophallaxis as observed for *T. yildizae* would also be the diet of the final instar of *T. rileyi*. It is possible that this may also be true for other *Thestor* species.

The first three instars of *T. basutus* and of the 'yellow' *Thestor* species *T. protumnus aridus* are known to feed upon Homoptera (Clark & Dickson, 1960; 1971; Williams & Joannou, 1996), however the diet of the final instar(s) was not determined, although the larvae were known to enter the ants' nest where they subsequently pupated. We suspect that trophallaxis may possibly take place and form the final instar diet for these species, as we have observed for *T. yildizae*.

The death of all first instar larvae of *T. yildizae* and *T. rileyi* (this study) suggests that an important food element is missing; it now seems possible that Homoptera form their diet or have some other association during the early instars of the *Thestor* larvae.

The localised populations of *Thestor* species are similar to that recorded for *Chrysoritis dicksoni* (Gabriel) as discussed by Heath & Brinkman (1995) which they argued, was associated with Homoptera at some stage during its larval cycle, as well as with ants; trophallaxis also having been observed. It is possible that the territory of these species is governed by the presence of both the ant and the Homoptera concerned. It is probable that the imago can detect the presence of ant and Homoptera whilst in flight.

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THE GREEN HILLS OF AFRICA
(With apologies to E M Hemingway)

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I have wanted to go to East Africa since I was a little kid, growing up in the cold north of England, watching movies like *Born Free* with big eyes. A childhood friend moved to Dar-Es-Salaam, and sent me parcels of butterflies from there, which only whetted my appetite. Novels by Hemingway, Ruark and Kipling were devoured. Eventually I made it out to South Africa, which provided lots of "primary experiences" at first. But seventeen years of living there had jaded me somewhat. When ABRI was founded and Steve Collins announced the conference, I was determined to go. But would all my childhood dreams be fulfilled, or dashed? Nairobi was more or less what I expected. The hospitality was great, and there were many meetings. Old acquaintances were remade and new friendships forged. A couple of whisky drinkers of awesome talent emerged, and tales of derring-do exchanged. We had little chance to see what flies in Nairobi as it rained most of the time. I took my net to the conference in the hope of emerging into blazing lunchtime sunshine, but this didn't happen. The lunches were excellent - I've never eaten plantain before - so that was a plus side of the dull weather. Reports of a washed-out Kakamega came in from those who had got there earlier, but even that couldn't make me worry. I was in Kenya, the sun *would* shine.

This is a story of a hunting trip, so I won't dwell on the conference - someone else can write about that. What I want to do is to tell you what it felt like to go to a place I've been wanting to visit, and hunt butterflies in, all my life. I was not disappointed. I was *determined* not to be disappointed. The end of the conference saw us all invited to Steve and Jackie Collins' house for lunch and a drooling session in the dudu room. Lo and behold the sun shone. Those less conscientious souls who played truant on the last morning had caught such treasures as *Papilio nobilis*. A couple of local collectors dangled in front of my nose the temptation of a quick safari to Ngong Forest. Ah, the romance of that name, redolent of Karen Blixen..... the place is a real wild forest on the outskirts of Nairobi - like finding the depths of Zululand in darkest Sandton. We saw a few butterflies, including the aforementioned *P.nobilis*, as well as the incredible green and black *P.phorcas*. *Colotis aurigineus* with its dayglo orange wings and silvery wing bases made the heart beat faster. I amused everyone by getting a ducking in a river. But there was not really anything flying, and we returned wet and weary. I regret now missing the undoubtedly excellent lunch that Jackie had organised.

Words cannot adequately describe the dudu room. After an hour or so, total sensory overload takes over. A few memories stand out - two Hennings standing speechless over a box full of *Charaxes fourmiera*, for example. Graham's face was a picture of longing. I spent a while silently praying over a box of *C.lactetinctus*, hoping to influence the gods of butterflyflying to put one in my trap

whilst in western Kenya. Afterwards we repaired to the house where we were had some wonderful brie (and lots of red wine to help it down). A party atmosphere, well known to all who have been to a conference braai in South Africa, prevailed. I even told my Aramis joke, which someone pointed out is not really a joke at all.

Seven o'clock the next morning, in the cold and wet, the real adventure began. I was at first a bit disappointed not to have a full three days at Kakamega, but as it turned out this was for the best. In a minibus and Ivan Bampton's Subaru, we set off into the mist. As we dropped off the edge of the Rift Valley, we stopped at the viewsite, braving the curio sellers to glimpse Mt Longonot as it drifted through the clouds. As we drove further north, the sun emerged. Lake Elmenteita was pink with flamingoes, whose reflections in the water contrasted marvellously with the baby blue sky and little fluffy clouds. I began to seriously anticipate fun.

Crossing the equator, we came at last to Lembus Forest. We all jumped out as Ivan said "you've got an hour". Oh lord, where first? Not a lot was flying but as we stalked down the forest edge a *Papilio mackinnoni* batted past, causing instant heart attacks. I was wary of the mad swishing of other peoples' nets and after missing a couple of specimens to younger, fitter, faster people I announced I was off alone. I found a little path leading down to what looked like the marsh at Cloudlands in Zimbabwe. Strangely, although wet it was not soggy and wonderful things were drinking on the mud. Some *Mylothris yulei*, little pied *Tuxentius* and some nice *Anthene* were about, but nothing big - then a *Papilio chrapowskii* came floating from the canopy looking just like a blue *Morpho*. This was more like it! With a bad case of trembling dead log syndrome I caught it. No sooner had I finished shaking than I was catching more *Anthene*. As I was packeting one a *Charaxes ansorgei* came arrow-like across the vle, straight at me. I hastily dropped what I was doing but could only manage a weak hook shot that saw it winging contemptuously into the canopy. Never mind thought I, there'll be more. But I was wrong. Not another one did I see.

The hour was miraculously up, so I ran back to the car to find Ivan unpacking lunch. Hell, I thought, I came here to hunt, I can eat lunch on the road. But I realised things are done differently if Ivan is leading things. His desire to get going pronto was thwarted by a flat tyre on the minibus - I'm sure I saw Renier Terblanche whip the valve out - so we had another half hour. André Coetzer nailed a mint *Iolus diametra*, the first orange-barred sapphire he (or I for that matter) had ever seen on the wing. More *P.mackinnoni* eluded me - it was starting to look like my bogey bug. Eventually we were off, stopping briefly at a viewsite, but keeping on to Kitale and Sirikwa Safaris with Jane Barnley and her daughter Julia. We were earlier than expected, which caused a few dark mutterings that we could have had longer at Lembus.....

The hospitality at the Barnleys' was wonderful, home-cooked food all done on an ancient woodburning stove. After this we went comet watching - Hale-Bopp being a big white streak in the night sky. Then quite a few Tuskers and a scotch nightcap with Lee Miller and Mark Simon from Florida, and it was time to turn in.

The morning was like the dawn of the world. To be woken by tropical Boubou shrieks calling in harmony is an alarm clock straight from heaven, or at least Out Of Africa. Unfortunately soon after this, the local *Matatu* fleet left town, all horns blaring. This shattered the peace but got me out of bed. After a leisurely breakfast

we were off to the Cherengani Hills. The level of overpopulation in this part of Kenya was daunting, but once we were into the hill country it was reminiscent of the country around Sabie in Mpumalanga. Renier expressed a desire to hunt the higher part of the forest so we dropped him and Juanita off, and went down the hill. The Coetzers and I set off down a forest path and set our traps. I found a *Charaxes pollux* sucking a nice wet, fresh monkey turd, which of course went into a trap. Waste not, want not. But very little was flying. We got a few *Neptis* and that was it, until we found a stream bed. Here, there were some stunning *Uranotauma*, and nice *Anthene*. A little orange bullet came out of the canopy to look at us, I missed it with an unlucky swipe. It looked uncannily like *Chrysoritis phosphor*, but was probably one of the *Lipaphnaeus*. On the way back to the car a little greenish white flew at me like a *Dixeia*, I caught it casually only to find a *Colotis elgonensis* !!!!! JOY! After this triumph it was a comedown to find the traps empty, except the one with the monkey turd which had caught every fly west of the Rift. And then we were back at the car and more lunch. Renier had had little luck on the hill but he made up for it later.

After a hasty lunch we set off for Marich Pass at Ortum. The road wound down through some awesome hill country to the lowveld. Wonderful green rolling hills and a million miles of bloody Africa in the distance, with savage mountains on the horizon. It was like being in one of my childhood dreams. Ortum is a spot next to a river between some of these hills. The riverine bush was teeming with turquoise-and-black butterflies, of which I caught a few and judged them to be all worn *Graphium antheus* and *policenes*. The latter was a totally different colour to the South African version, which is green. I got tired of them, which was a mistake as I found out later.

The hill across the road beckoned. Straight away I started getting nice *Acraeas*. *Colotis chrysonome* was out in numbers, gladdening the heart. Every now and then a different type of Pierid would be seen, but the frustrating thing was the countless *Catopsilia florella*. And then I got a female *Lepidochrysops pterou suk*. A frantic search netted me two more, both males. This is similar to our local *L.coxii* but a more silvery blue. Remembering Renier's evening declaration the night before that he really coveted a Kenyan "Leppie", I resolved not to hog the colony to myself, and shouted for him. As it turned out my shouts attracted some Coetzers who caught them all. Renier was too late and was a picture of dejection. I was on the point of feeling really sorry for him and giving him one when the swine showed me a fresh *Euxanthe eurinome* he had caught on the riverside. It had been amongst all those turquoise and black jobs I had so contemptuously dismissed. To make it worse, at first I mistook it for *E.wakefieldi*.

All of a sudden I realised why Hemingway called his book *The Green Hills of Africa*. In it, Papa and his friend Karl are hunting animals. Every time Papa thinks he's shot the prizewinning Rhino or Kudu, after marathon feats of stalking, Karl is waiting back at camp with one twice the size, shot five minutes away. Hemingway's description of his envy, hating himself for being so competitive yet being unable not to feel it, describes my feelings exactly as I gazed, sickened, at one of the butterflies I had REALLY come to Kenya to catch. Also, Juanita in the bus later was looking through her captures and found a *L.pterou* she didn't know

she had. Such luck really ought not to be allowed. I made her an honorary member of the "what's this" club on the spot.

We had by this time passed Ivan's four o'clock deadline so he gave up on us and set off back. We followed, stopping to photograph a "Mandela Store" in a village.

Another evening of good cheer followed, then to bed. The boubous woke me up again, this time to get packed as after a morning's collecting we were off to the fabled Kakamega Forest. Eventually we got going, and Ivan took us to a delightful waterfall in some of the most beautiful country I have ever seen. Again, it was on the edge of the lowveld, further south than the previous day. Mt Elgon glowered, cloud-shrouded, in the western distance, hinting at the mysteries of Uganda beyond. Stunning were the views of semi-desert flats with jagged hills in the distance, evocative flat-crowned trees in the foreground. It was a good job the view was so sustaining because not much was flying but the ubiquitous *C. florella*. Hastily hung traps proved fruitless. I climbed a small koppie, tantalised by an enormous *Papilio rex* floating unattainably through the canopy. My koppie produced but one butterfly of note, an *Iolais diametra*.

As it turned out we only had an hour before having to leave for Kakamega. It was a pity because the green hills struck again. There was no sign of Renier when we rendezvoused back at the vehicles, and Ivan stayed behind to wait for him whilst the minibus went to Sirikwa to pick up the luggage and have more lunch (I have never eaten as many lunches on a collecting trip before!). They eventually appeared half an hour late with a somewhat tight-lipped Ivan. The luck of the Terblanches had struck again - the koppie Renier climbed - lower and closer to the cars than mine - produced such desirable beasties as *P. rex* and *Charaxes jasius epijasius*.

The less said about the interminable drive to Kakamega the better. I was surprised to see that the roads were not as badly potholed as I had been led to believe, but they are all narrow single carriageway affairs with more than their share of slow trucks and the countless overloaded *Matatus*. Eventually we took the turning to the forest. I annoyed everyone in the minibus by keeping on saying how much it looked like Manguzi. *It did*, but Manguzi doesn't go on for kilometers, and eventually we hit the real thing - massive forest trees and bush like the tiny remnant at Pungwe in Zimbabwe - but stretching for miles. It was late in the afternoon so no butterflies were out. Poor Ivan still had to drive back to Kitale with the party whom we were replacing.

There was a happy reunion at Rondo Retreat, which has to be the most romantic resort in Africa. The undergrowth has been removed from around the tallest trees in the forest (over 60m) and replaced with tranquil gardens. Black and white colobus, and Sykes' Blue monkeys play Tarzan in the trees. The unearthly cries of Crowned Cranes and Great Blue Turacos rend the air, the latter crawling about in the canopy like *Archaeopteryx*. The accommodation is in spotless white bungalows with wide verandahs, straight out of Somerset Maugham. Rondo is "dry" but a few diehards had laid in supplies in their rooms, so good cheer prevailed.

The mood, however, was a bit glum. Kakamega had not been at her best. Two days of rain with only fitful sunny intervals had produced very few butterflies. Graham Henning had got an *Epitola iridana* so he was happy, but had not got a

lot else. The famed clouds of lepidoptera were missing, at night as well as by day - there were a few saturnids, but not a lot else. The evening when we arrived was sunny and warm, but I was warned wearily that the rain would return in the morning. I decided that I would worry about that evil when it appeared, and enjoy myself.

I woke up early the next day and went birding with Mike Prettejohn and Diane. It was a glorious morning - so much so that we missed breakfast! Colin Congdon took me off into the jungle with Paul, a guide to ensure I didn't end up in Rwanda. The sun began to get hot as we hung our traps along a bosky road and some deep tracks in the primeval forest. The clouds stayed away and Kakamega showed us her stuff.

This is the bit it is going to be difficult to describe. Twelve years of collecting in Southern Africa had left me a bit jaded. I had forgotten the sense of wonder one gets in a totally new environment when *literally anything can turn up!* Guaranteed primary experiences. I was completely hyped up and excited, as slowly but surely the real central African butterfiles emerged.

The first major capture was a yellow form female *Papilio phorcas*. The green males were quite common and easily netted on mud or flowers. The wet road steamed in the sun and *Sallya* began to fly around, as well as numerous *Anthene*. Occasionally a *Junonia stygia* would put in an appearance, as well as stunning *Acraeas* - such as *perenna*, *penelope* and the tiny *cinerea*. It was great having Paul around because he had a net and was not prone to overexcited chinese swipes as I was.

Walking in the deep forest, along the paths, we only saw butterflies after ten when the day got properly warm. This is something I have lived all my life to do. Sorry, Manguzi, but this was the real thing. It was hard work as butterflies were quite scarce, but what there was, was.... glorious. It is a very fine thing to stalk along a path in the dense, cathedral-like gloom of the understory. All one's being is focused on what might be sitting on a leaf around the corner - things like Gaboon Vipers don't even enter the imagination. All of a sudden, a green-blue flash!..... as a *Euphaedra* goes off into the understory like a flying saucer. Did I really see that? It was enormous! I eventually caught a tatty *E.rex* and a pair of *Euryphene*, the one with the sapphire-blue male. Yellow-and-brown *Catuna*, totally unlike anything we see down south, flitted about the path. Occasional skippers bounced around. Then Paul walked into a little sun-dappled glade and a massive, perfect, coppery-and-greeny *Euphaedra raffrayi* took off, hotly pursued by me through the thick undergrowth. It kept settling, on a leaf, slowly opening and closing its wings, tantalizing me. I crept up, net at the ready, determined not to strike until exactly in the right position. I moved that fatal millimeter too far, and off it went. This happened a few times until it finally disappeared. I kept returning to the same spot and there it would be. I kept missing it. The blasted thing was playing with me, and in my mind it grew to the size of a *Papilio antimachus*.

Back to the road and a puddle of beery urine had attracted some interesting things. *Cyrestis camillus*, the unbelievable-until-you-see-one black Pierid *Belenois raffrayi*, and a nice *Abantis* among others. Steve Collins said later that the *Abantis* was a good catch. As I was standing in the road, a *Charaxes eupale* came belting along towards me. I positioned myself for a shot but it eluded me as easily as a

Shane Warne googly beating Darryl Cullinan. Ah well, I thought, at least I saw one. Steve had told me they really only fly in July. This was another of those butterflies I've wanted all my life. *Colotis elgonensis* proved to be much more numerous than at Cherengani. And then in the trap there was a perfect female *Charaxes numenes*. But that was all. Unfortunately like at the other spots, traps were not working well.

The day went by like a shot. I missed Colin coming back to pick me up, and eventually an amused Steve came along to look for me. He said the collecting had been rather poor, and I suppose in the cold light of the relatively small number of specimens I actually caught it was, but I was happy. We South Africans are used to working hard for our butterflies. When I got back to Rondo, Colin had left for Nairobi, but he had left me some specimens on my bedspread, including a very nice *Danaus formosa*. I never had chance until now to say "thanks, Colin".

The evening passed by with plans being made for the morrow. I was determined to return to the same spot, because that *Euphaedra raffrayi* was NOT going to defeat me. Captures were compared, I was pleased to see that the Coetzers had got *Charaxes pythadoris* and vowed to follow their example and put my traps closer to the stream on the next day.

Another beautiful day dawned and I went off with Mike Prettejohn and Diane to my spot. They dropped me off and went birding. I was alone this time, and I hardly stopped patrolling about all day. All attempts at my friend the *Euphaedra* ended in defeat again. I began to seriously entertain thoughts of leaving there without her. The sun got hot and I found a little genet turd in the road. I placed it on the verge where it would not be run over and returned to it periodically. I was not disappointed - it produced *Charaxes tiridates* at first, and then to my everlasting joy a fresh *C.eupale*. This was a primary experience of a lifetime, made sweeter by the ex-pupa condition of the specimen. It looked like it had been freshly carved from jade.

My mud puddle was if anything more effective this day, producing lots of *Papilio phorcas*, *P.bromius* and the polka-dotted *Belenois sudanensis*. Long walks through the forest paths produced a few heart-stopping *Euphaedra* moments but few specimens. The strange little yellow skipper *Ceraticria flava* turned up, as well as a single, perfect *Papilio zoroastres*. I spent half an hour poking around in a bamboo patch but the *Kallima ansorgei* I had read might be found there, were absent. There were a few *Salamis temora* flying, a wonderful sight but all were badly broken. As time went on it got closer to the 1400hrs deadline for Mike picking me up to fly to Mweiga, and still no *E.raffrayi*. When Mike arrived, we picked up the traps to find a much better haul than yesterday. Not only *Charaxes pythadoris*, but also *C. fulvescens* (which I mistook for good old *C.varanes* at first), *C. eudoxus* and a perfect *Euptera elebontas*, looking like a strange day-flying moth sitting with wings open in the trap. And then it was time to go. Was there time for one last shot at the *Euphaedra*? Yes, there was.

We drove the 4x4 into the bush as there was no time to walk, and then I set off, trying to creep silently, with Mike waiting for me. Lo and behold, there she was again. Tippy-toeing forward, I was about to crash the net down when off she flitted. Disappointment washed over me, then she did a 180 turn and came back

at me, landing on a leaf in easy reach. I hesitated not. CRASH! GOTCHA! Mike came running around the corner convinced a lion had me - but they were yells of triumph. This was an appropriate time to say farewell to Kakamega. I'll be back.

The rest of the afternoon was taken up with what has to be the most stunning aeroplane flight I have ever had. In Mike's little Cessna Stationair 6, we flew across Kenya. It was an experience like the flight in Denys Finch-Hatton's plane in *Out of Africa*, even to the waterfall in the Aberdares. One can only really see how big Kakamega is from the air, there was one bit where it stretched as far as I could see. Other fabled spots were seen, including Nandi Forest which looked just as interesting as Kakamega.

We touched down in the late afternoon sunlight at Sangare Ranch, between the Aberdares and Mt Kenya, on the Laikipia plateau. To quote Bror Blixen, the very act of breathing here is a pleasure. The terrain was much more like the Kenya of the movies, rolling bushveld with flat-topped acacias and rock formations. Mike's house is a bit of old Kenya, nearly seventy years old and covered in flowering creepers. We had sundowners on the verandah, looking out at a cloud-covered Kirinyagga, and discussed the day's collecting.

I was woken in the morning by a bronze sunbird fighting his reflection in the window. The weather was flawless, except for Mt Kenya which still insisted in coyly hiding behind clouds. After breakfast - Kenyan fruit is delicious, with tiny little bananas the size of my thumb - I hunted *Baliochila fragilis* in the garden before Mike took me down into the gorge by the river. Here I hung traps, and caught some pierids as well as my first *Papilio nobilis*. This thing looks for all the world like a yellow manila envelope that has magically taken wing. *Colotis aurigineus* were numerous. We then set off for Thego Forest.

Thego is a high altitude area in the foothills of Mt Kenya. Although it is called a forest, it is more like parkland. Patches of thick bush are surrounded by short grassland. It is reminiscent of parts of Zululand, but the massive bulk of Kirinyagga in the sky dispels that illusion. The clouds had at last parted and it was a weird feeling to be hunting in the tropical heat, but be able to see glaciers just by looking up. Butterflies were quite scarce, but good quality. *Charaxes pollux*, and the ubiquitous *C.candiope* - it is as much of a pest in Kenya as it is in SA - came to the traps. *Papilios*, including *rex*, were flying in the canopy. We were able to get a few *P.nobilis* and some *P.phorcas* by using decoys. I then discovered that the forest edges were the place to be, where I at last got a *P.rex*, a perfect female as well. *Mylothris jacksoni* and *M.ruepellii* were also about, as well as some small *Anthene* and a strange looking *Gonatomyrina* which I am told is *gorgias* but is very different to the one we see in SA.

Sundowner time was enhanced by Mt Kenya glowing pink in the last rays of the setting sun.

The next day, we went first to Nyeri Forest, but to our surprise the place was dry as a bone with almost nothing on the wing. All I got was a perfect female *Charaxes berkeleyi* in a trap, so we went back to Thego where I broke my duck with *Papilio mackinnoni*, getting a pair. Going collecting with Mike and Diane gave me a taste of what the old-time safaris were like. We had a lovely picnic on both days, with cold beers and scotch eggs and the most wonderful cheeses - definitely the most civilised hunting trip I have ever been on.

On the way back from these trips, Mike took us through his game area, where for the first time in Kenya I saw some big animals. All those things we do not see down south such as Thompsons Gazelle and Reticulated Giraffe. We had a glimpse of elephant but did not pursue them. Traps set near the farm produced some nice *Charaxes baumanni*.

Then all of a sudden it was my last day. I still lacked a male *Papilio rex*, so Mike took me up a hill behind the Aberdares Country Club. There, on this lofty perch I finally got this butterfly. Floating over the treetops like a kite (or a massive tailless *P.euphranor*), with majestic Mt Kenya in the background, this was a stunning sight. It was also a perfect end to a safari which, whilst I did not catch the sheer numbers of butterflies I had hoped for, provided lots of memorable experiences.

On the flight back to cold, grey Johannesburg, I read a copy of *The Green Hills of Africa* that I picked up in a Nairobi bookshop. Funny, I enjoyed it even more now I've actually walked them.

Acknowledgments: Steve and Jackie Collins for organising the trip - it was very well run and must have been a logistical nightmare to put together. Ivan Bampton for his guiding and putting up with my nonsense, and finally Mike Prettejohn and Diane Wilson for their unforgettable hospitality during the last three days of the trip. Not forgetting all the lepidopterists who came on safari, for being such good company.

**NOTES ON THE LIFE HISTORY OF *EULYCIA SUBPUNCTATA*
(WARREN, 1897) (LEPIDOPTERA: GEOMETRIDAE).**

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Abstract: The early stages of *Eulycia subpunctata* (Warren, 1897), are described and illustrated for the first time. The final-instar larvae of *Omphalucha maturnaria* (Moschler, 1883) and *Plateoplia acrobelia* (Wallengren, 1875) are illustrated for the first time.

Key words: Geometridae; Ennominae; life history; *Eulycia subpunctata*.

Introduction

Eulycia subpunctata (fig. 6) (Subfamily Ennominae) was described by Warren in 1897 from Weenen, Natal as *Eubyja subpunctata*. Janse (1932) created the genus *Eulycia* for Warren's *Eubyja grisea* but placed *Eubyja subpunctata* in the genus *Hemerophila* in the same publication. Prout (1938) placed *E. subpunctata* in the genus *Omphalucha*. Varí & Kroon (1986) placed it in the genus *Eulycia*. *E. subpunctata* occurs widely in South Africa, in grassland and savannah areas. Adult specimens from colder highveld areas (above +1200m) differ from those occurring in warmer lowveld areas (below +1200m). These notes apply to the highveld colonies.

Nothing known to the author, has been published on the early stages of *E. subpunctata*.

In November 1995 a final instar larva of *E. subpunctata* was found feeding on *Maytenus heterophylla* (Eckl. & Zeyh.) N. K. B. Robson (CELASTRACEAE) at Golden Valley, Magaliesburg, South Africa (1550m, 26 02'S.27 33'E). On 8 October 1996 a female of *E. Subpunctata* was collected at Gloster Game Farm, Hekpoort (25 56'S.27 38'E, 1500m) and on 18 October 1996 a female was collected at Modderpoort, nr. Ladybrand (29 04'S.27 24'E, 1600m) both in the vicinity of large stands of *Maytenus heterophylla*. Both females were kept alive and subsequently laid more than fifty eggs each on *M. heterophylla* leaves. No differences could be observed between the progeny of the two above females. The following notes are based on observations made in rearing both the above egg-batches to adults.

Materials & methods

Ova were kept in 80mm ø petri-dishes, indoors. After hatching the first instar larvae were placed in their own petri-dishes (twenty per dish) with fresh leaves of *Maytenus heterophylla*. After two days the larvae were placed in 150mm sq. X 100mm plastic containers with a *M. Heterophylla* shoot, the end of which was inserted in a sealed vial containing sterilised water. This was done to minimise disturbing the larvae and the intricate web that they were building, but still supplying them with fresh food.

Larvae were inspected daily and observations made, under a microscope with a 10x140 magnification range where necessary, and changes were noted.

Samples of each stage were preserved in a 70% alcohol solution for further study. After the third instar, larvae were placed on larger branches of *M.heterophylla* and kept in a 500x300x250 mm aerated glass container indoors. Pupae were removed from their flimsy cocoons and placed in inflated sealed plastic bags (280x220mm), in which the adults emerged.

Description and habits of the early stages

Ovum (plate 1, fig. 1):

Eggs mustard brown when laid turning reddish brown after three days, turning black(from the black larva detectable inside), one day before hatching. They are cylindrical ~1.0 x 0.5 mm with one end flattened and the other end rounded. The surface is covered with a typical reticulate network of ribs forming a rosette around the micropyle. First instar larvae hatched after 12-16 days.

First instar (plate 1, fig. 3):

First instar larvae (size~0.2mm x 2mm) hatched by eating a hole through the transparent eggshell, leaving the eggshell and not feeding on it after emergence. Head black, thoracic and abdominal segments dark brown. Abdominal segments 1-5 with two prominent dorsal and two prominent lateral white chalaza (see Scoble, 1995) bearing white setae 0,2-0,3 mm long. They are typical loopers with prolegs on abdominal segment 6 and 10 only. The gregarious larvae spin a complex system of webs across leaves and twigs of the host-plant. The majority of larvae stay on these webs and move on to the leaves, only a few at a time, to feed on the leaf surface (fig. 2).

Second instar (plate 1, fig. 3):

Second instar larvae (size~0.8 x 6mm) head and body now black, main chalaza now yellow, secondary white chalaza spread across body on thoracic and abdominal segments 1-5. Prominent row of white chalaza on first thoracic segment bordering head. Larvae display the same gregarious resting and feeding habits as in the first instar.

Third instar(plate 2, fig. 4):

Third instar larvae (size~1.2 x 10mm) as in second instar except that thoracic segments now with mottled white lines and the prominent thoracic row of chalaza now white and yellow. Larvae display the same gregarious resting and feeding habits as in the first and second instars.

Fourth instar (plate 2, fig. 4):

Fourth instar larvae(size~2.0 x 20mm) as in third instar except that thoracic mottling now more extensive and also appearing on abdominal segments 7-10, broken yellow and white longitudinal dorsal lines appearing, ground colour between segments now grey, and the thoracic segments now prominently swollen. In the fourth instar some of the larvae (but not all) move off the web permanently to feed on other parts of the host-plant.

Fifth instar (plate 2, fig. 5) :

Fifth instar larvae(size~4,8 x 35mm) as in fourth instar except that lateral ground colour now reddish brown mottled with large black patches, dorsal longitudinal lines now more complete and prominent. Dorsal two chazala on abdominal segment 8 enlarged and black with white setae appearing as a pair of horns. Larvae now solitary becoming shiny and appearing very swollen immediately prior to pupation.

Pupa (plate 1, fig. 2):

Final instar larvae spin a flimsy brown cocoon in the leaf-litter. Pupa (size~4.1 x11mm) reddish brown, cremastal hooks developed, typical ennomine pupa.

Adults(plate 2, fig. 6):

Adults emerged 3-4 weeks after pupation. The emerged adults were all slightly smaller than most of those caught in the wild.

Duration of instars:

A very large variation in the speed of larval growth between individuals from the same egg batch was observed. Some individuals in the same container were already in the fourth-instar when the last ones changed into second-instar. The fastest duration for an individual larva from hatching to pupation was 40 days. In contrast when rearing experiments ceased after 51 days some larvae were still in their third instar.

Discussion

The high variation in the duration of larval growth between individuals of the same egg batch that are subjected to the same conditions is unusual. Perhaps the unavoidable disturbance to the web-network they experienced during the changing of the food supply, in laboratory conditions, is a major contributing factor. Early instar larvae that were given fresh leaves were reluctant to move away from their webs and preferred to continue to feed on the older wilted leaves. They were then moved to the fresh leaves manually. It is also interesting that the early instar larvae stayed on the web and only moved on to the foodplant briefly to feed. To help understand this seemingly unique behaviour, it would be very useful to find and observe the undisturbed webs under natural conditions.

The gregarious behaviour of the early instars, and the colour and patterns of the larvae, render them conspicuous and are typical of aposematic species, yet the adults are very cryptically marked. The larvae of other Lepidoptera that use *Maytenus heterophylla* as their preferred host-plant are generally well camouflaged. *Maytenus heterophylla* is not regarded as an unpalatable plant and is often utilised by larger browsers such as Rhino and Kudu (C. Moll pers.comm.). It seems therefore unlikely that the larvae are unpalatable to predators. This leaves one to suspect that the larvae are true mimics that rely on the potential predator's general avoidance of anything conspicuous that is black and white / yellow. The final-instar larva of *Omphalucha maturnaria* (Mosschler,1883)(fig.7) is very similar to the final-instar larva of *E. subpunctata* in



Fig 1. Ovum.



Fig 2. Pupa in cocoon.



Fig 3. First- and second-instar larvae on web.

Plate 1. The life history of *Eulycia subpunctata* (Warren, 1897).



Fig 4. Third- and fourth-instar larvae.



Fig 5. Fifth-instar larvae.

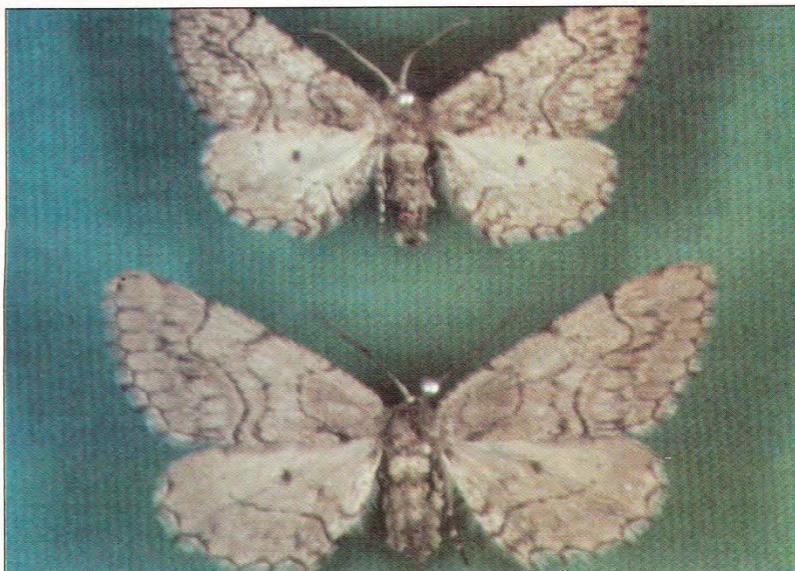


Fig 6. Adults.

Plate 2. The life history of *Eulycia subpunctata* (Warren, 1897).



Fig 7. *Eulycia subpunctata* (Warren, 1897).



Fig 8. *Omphalucha maturnaria* (Moschler, 1883).



Fig 9. *Plateoplia acrobelia* (Wallengren, 1875).

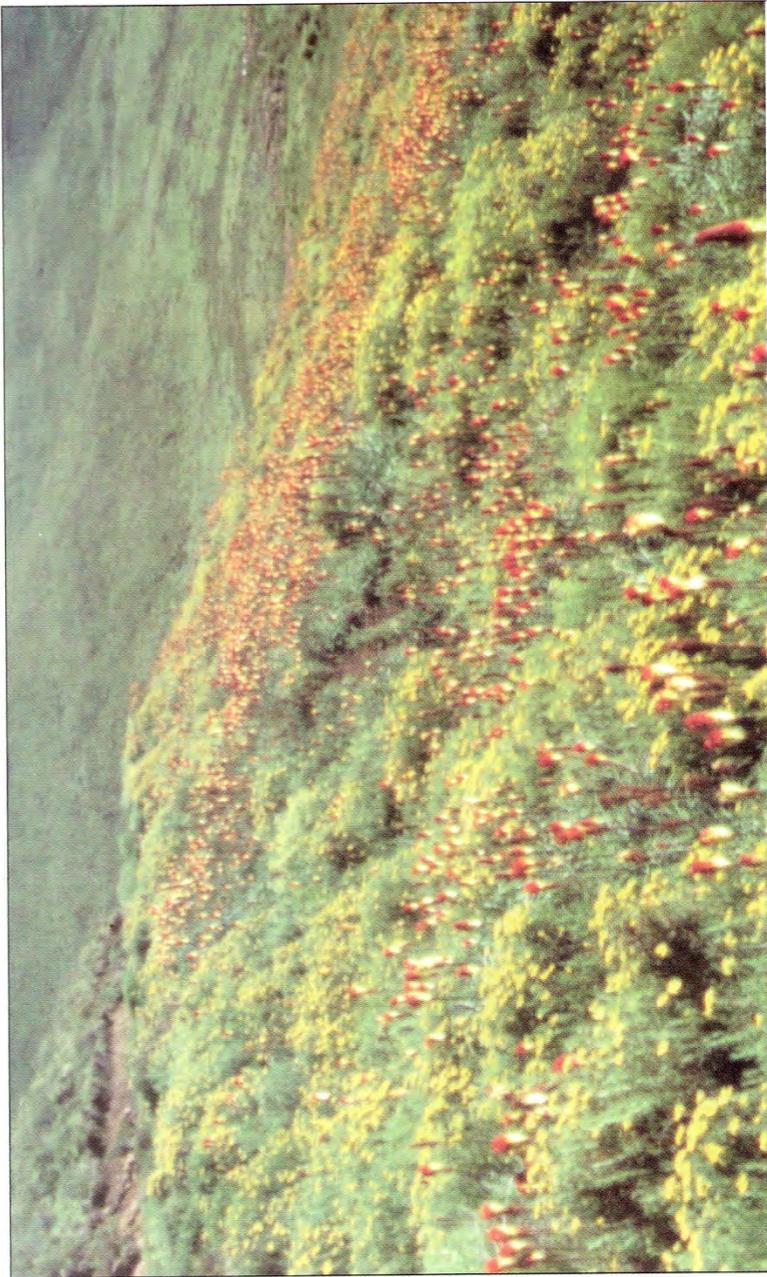


Plate 4. *Thermeda* – *Festuca* alpine veld, 2900m, near Oxbow, Lesotho, showing dense stands of *Kniphofia* sp. (Asphodelaceae).

coloration and the mottled markings, being much more slender and not having the swollen thorax. (The genera *Eulycia* and *Omphalucha* are closely related). The host-plant of *Omphalucha maturnaria* is *Rhus leptodictya* Diels (ANACARDIACEAE) (Staude unpublished). This plant is also generally regarded as being palatable and the adult moth is also cryptically marked. The final-instar larva of *E. subpunctata* is also strikingly similar to the final-instar larva of, the not so closely related ennomine moth, *Plateoplia acrobelia* (fig. 8) in the similar markings and coloration and in the swollen thorax. The larvae of *P. acrobelia* feed on *Ximenia* spp. (OLACACEAE)(Staude in Williams, 1993) again plants that are generally not regarded as being unpalatable. The adult of *P. Acrobelia* is dirty orange in colour with black borders and could be regarded as belonging to the very widespread black / orange aposematic group (Staude & Curle in prep.). Field observations of the behaviour of the larvae and a revision of the taxonomy of the group would further enhance our understanding of these interesting ennomines.

Acknowledgements

I would like to thank Willem Prinsloo of Gloster Game farm for unending support in the field and Standard Bank , the owners of Gloster Game Farm, for permission to conduct research on the farm; Nelis Moll for information on browsers; and Steve Woodhall for collecting larvae of *P. acrobelia* for me.

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THE MOTH FAUNA OF LESOTHO

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Among the countries of southern Africa, the mountain kingdom of Lesotho has remained largely inaccessible for a remarkably long time. The absence of roads suitable even for four-wheel drive vehicles in the mountainous interior meant that the entomologist had to resort to other means of transport; the illustration facing p. 257 in Swanepoel (1953) gives a good impression of conditions to this day. This picture has begun to change only since about 1980 with the implementation of several development schemes, notably the Katse Dam project and the improvement of the road linking Butha-Buthe and Mokhotlong in the north. Even so, the traditional Basotho ponies remain the chief means of transport throughout much of the country.

As in other parts of southern Africa, it was the butterflies that first attracted collectors to Basutoland, as it was then known. Among these, the Satyrinae and certain Lycaenidae are of particular interest, *Neita lotenia*, *Torynesis pringlei*, *Aloeides rileyi* and others coming to mind.

The moth fauna, on the other hand, remained largely unknown. British collectors had been active in the vicinity of Maseru in the early parts of this century, and David Swanepoel brought back a small collection from Mokhotlong in 1949, but this remains almost the sum total of activities until the 1990. In that year, a field trip by Duke, Kroon and Stephen to the Maluti Mountains between Oxbow and Thabang resulted in the collection of large quantities of material of exceptional taxonomic and faunistic interest. Further field trips by Duke, Staude and Transvaal Museum staff since then have confirmed the extraordinary richness of this area.

The faunistic composition of the samples, which were taken at altitudes between 2500 and 3100 m, reveals several striking aspects. Darwin during his voyage aboard the *Beagle* was among the first to note that similar climatic and geological conditions will produce structurally similar plant and animal communities around the world, although these may differ vastly in taxonomic composition. Having had some experience of collecting at similar altitudes in the Alps and the Canadian Rocky Mountains, it was with a sense of *déjà vu* that I first collected in the Malutis. In taxonomic composition, strong similarities exist between the fauna of Lesotho and that of the Palaearctic Region on the family level. As with the butterflies, where the Lycaenidae and especially the Satyrinae (in the Alps one thinks immediately of the large genus *Erebia* Ochsenheimer) form a major part of the mountainous fauna, the same families of moths tend to dominate catches. These include the Hepialidae (ghost moths), Arctiidae: Lithosiinae (footmen), some subfamilies of Noctuidae and the subfamily Larentiinae of the Geometridae. The large families Geometridae and Noctuidae in general are well represented in both regions, with the at least equally species-rich Pyralidae being apparently less diverse in Lesotho.

A further characteristic of Lesotho's moth fauna is the often extreme abundance of some species. The brightly coloured ennomine *Biclavigera uloprora* Prout, an undescribed hadenine noctuid of the genus *Borolia* and several of the hepialids are among about a dozen species that will be attracted in their hundreds to a U.V. light and can render the task of finding 'interesting' specimens somewhat difficult. Lastly, I have been intrigued by the total absence of females of two common species in light trap samples. In the case of *Biclavigera* species it is known that the females are apterous or brachypterous, and although the female of *B. uloprora* remains unknown, the fact that none have been collected at light is obviously best accounted for in this way. A second example concerns a probably undescribed species of *Agrotis* Ochsenheimer (Noctuidae) related to *A. contingens* (Warren). Whereas the latter species, which has a wide but localized distribution in the Western and Eastern Cape, possesses fully winged females, only males have so far been found of its Lesotho counterpart. It is worth noting that wing reduction has also been reported from Palaearctic *Agrotis* species occurring at high altitudes. In this case, the strong winds often prevalent in the moths's habitat are likely to be the causing factor.

I cannot say with certainty how many undescribed species have been collected in Lesotho since 1990, but there are likely to be several dozen. Because of other commitments, study of this material will take several years to complete, although a start has been made with the description of a striking noctuid whose larvae are stem-borers in the ubiquitous red-hot pokers (*Kniphofia* sp., Asphodelaceae) (Krüger, 1997) (Plate 4) and a new species of *Hypotephrina* Janse (Geometridae: Ennominae) (Krüger, *in press*).

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**NOTES ON THE GENUS *PLATYLESCHES* HOLLAND
(LEPIDOPTERA:HESPERIIDAE)
WITH A DESCRIPTION OF A NEW SPECIES FROM SOUTH AFRICA**

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Abstract: *Platylesches dolomitica* sp.n. from Mpumalanga and North West Province is described and notes on its known habits and distribution are given. Keys to the Afrotropical species of *Platylesches* are also provided.

Genus *Platylesches* Holland

Platylesches Holland, 1896. *Proc. zool. Lond.* 1896:72.

Small to medium-sized, strongly built skippers with stout bodies and short antennae. Palpi porrect, the apical segment long and thin, projecting from the scaling of second segment. Vein M_2 of the forewing arising much nearer to M_3 than M_1 . Upperside of both wings blackish or brownish-black with a uniform pattern of spots. Upperside of forewing with a row of white or yellowish hyaline spots at end of cell, joining a row of subapical dots and thus roughly forming a U or Y. Hindwing upperside with a few whitish or yellow dots in a short bar across the middle. Hindwing underside exhibiting species-specific patterns. There may be a nebulous coloured zone, with or without white spots; or grey speckling; or striations; or with a broad yellow or white band. There are 18 species of *Platylesches* in the Afrotropical region (Ackery, Smith & Vane-Wright, 1995). The genus was previously reviewed by Evans, 1937, and only two species have been described subsequently, *P. rossii* Belcastro, 1986, and *P. larseni* Kielland, 1992.

All species recorded appear to use *Parinari* Aubl. (Chrysobalanaceae) as their foodplants (Woodhall, 1994). Records of Poaceae are apparently incorrect.

KEY TO THE SPECIES GROUPS OF THE *PLATYLESCHES* OF AFRICA

1. Male forewing upperside with 1 subapical spot
..... *P. chamaeleon* Mabille species group
- Male forewing upperside with 2 or 3 subapical spots 2
2. Forewing underside with pale scaling at apex
..... *P. neba* (Hewitson) species group
- Forewing underside without pale scaling at apex
..... *P. moritili* (Wallengren) species group

KEY TO THE SPECIES OF *PLATYLESCHES* OF SOUTH AFRICA
***P. chamaeleon* species group -**

1. Hindwing underside with a broad pale band *P. picanini* (Holland)
- Hindwing underside without a broad pale band *P. tina* Evans

***P. neba* species group -**

1. Hindwing underside not evenly striated 2
- Hindwing underside evenly striated 4
2. Hindwing underside with purple or violet scaling *P. robustus* Neave
- Hindwing underside with grey or white scaling 3
3. Abdomen white-tipped *P. galesa* (Hewitson)
- Abdomen without white tip *P. neba* (Hewitson)
4. Upperside forewing subapical series of spots evenly sized; underside with white marginal lines at tornus and near anal angle *P. ayresii* (Trimen)
- Upperside forewing subapical series of spots increasing in size from costa, no white marginal lines on underside *P. dolomitica* sp.n.

P. moritili* species group -P. moritili* (Wallengren)**KEY TO THE AFRICAN SPECIES OF THE *P. AYRESII* SPECIES COMPLEX**

1. Upperside forewing subapical series of spots evenly sized; underside with white marginal lines at tornus and near anal angle 2
- Upperside forewing subapical series of spots increasing in size from costa, no white marginal lines on underside 3
2. Valve of male genitalia heavily spined *P. langa* Evans
- Valve not heavily spined *P. ayresii* (Trimen)
3. Hindwing underside striations closely aligned, ground colour dark brown
- *P. larseni* Kielland
- Hindwing underside striations widely separated, ground colour pale greyish brown *P. dolomitica* sp.n.

Platylesches dolomitica sp.n. Plates 1 & 2.

This species was discovered flying sympatrically with the closely related *Platylesches ayresii* (Trimen) by Johan Greyling and Andrew Mayer near Lydenburg in Mpumalanga.

Description

Male. Forewing length: 15,2-16,5 mm, mean 16,0 (n=5); antenna- wing ratio 0,39-0,41, mean (n=5). Wings, upperside. Forewing: dark brown, usually with two subapical spots in R₄-R₅, occasionally a faint third spot in R₃; two white spots in areas M₂ and M₃; distal part of cell with a white streak; one large spot subbasally in CuA₁; faint yellowish scaling medially in CuA₂; yellowish streak along inner

margin from base to medial area. Hindwing: dark brown with a greyish-yellow discal band in areas M_1 - CuA_1 . Cilia white. Underside. Forewing: dark brown, becoming paler along outer and costal margins; white spotting as on upperside. Hindwing: pale greyish-brown evenly striated with darker brown and brown at anal angle. Cilia greyish becoming whiter posteriorly. Genitalia: Uncus triangular narrowing distally with two small distal protuberances close together; tegumen narrowing slightly distally and convex anteriorly; valva distally acute and slightly serrated distad, dorsal process long, narrow and acute, saccus narrow and rounded at the end; aedeagus acute distally, dorsally open for half of outer portion, broad centrally without spines, inner portion with elongate narrow anterior lobe.

Female. Forewing length 17,2 mm (n=1); antenna-wing ratio 0,35 (n=1). Wings larger and slightly more rounded than those of male; upper and underside markings and colour similar to that of male.

Material examined

Types. Holotype , SOUTH AFRICA: 30 km South-east of Steelpoort, Lydenburg District, Mpumalanga, 8.ix.1995, A. Mayer. Paratypes: 3 1 same data but 1.ix.1995 and 7.ix.1996; 3 1 same data but 1.ix.1995 and 10.ix.1995, J.H. Greyling; 1 Carletonville, North West Province, 6.x.1996, A. Mayer; 1 1 Carletonville, 12.ix.1966 and 11.ix.1964, W.H. Henning. Holotype in the Transvaal Museum, Pretoria. Paratypes in the collections of A. Mayer, W.H., S.F. & G.A. Henning and J.H. Greyling.

Habitat and habits

Inhabits dolomite ridges in bushveld and sour grassveld. The species flies very fast and elusively. It is very wary and will fly swiftly away and not return if disturbed. It is much more active than *P. ayresii*. *P. dolomitica* and *P. ayresii* fly sympatrically in South Africa, similarly *P. larseni* and *P. langa* (initially described as a subspecies of *P. ayresii*, Larsen 1992) fly sympatrically in Tanzania.

Distribution

Known from the type locality in Mpumalanga and near Carletonville in North-West Province.

Diagnosis

Most similar to *P. larseni* Kielland, but slightly larger and with a much paler ground colour on upperside and underside. Wing shape more rounded than in *P. larseni*. Upperside markings larger and more diffuse than in *P. larseni*. Underside of forewing with paler markings along costal margin. Striations spaced wider apart than in *P. ayresii* and *P. langa*, and much more so than *P. larseni*. Forewing striations more extensive than in *P. ayresii* or *P. langa* but not as extensive as in *P. larseni*. Genitalia most similar to *P. larseni* but with uncus more acute apically and more triangular in shape and tegumen not concave anteriorly. The valve is more elongated distally with apex more acute and extended dorsad with small spines, the dorsal projection is narrower, longer and pointed. The aedeagus is broader than in *P. larseni*.

Etymology

The name is derived from the dolomitic rocks of the ridges that it inhabits.

Acknowledgements

Our thanks go to A. Mayer, J.H. Greyling and our father W.H. Henning.

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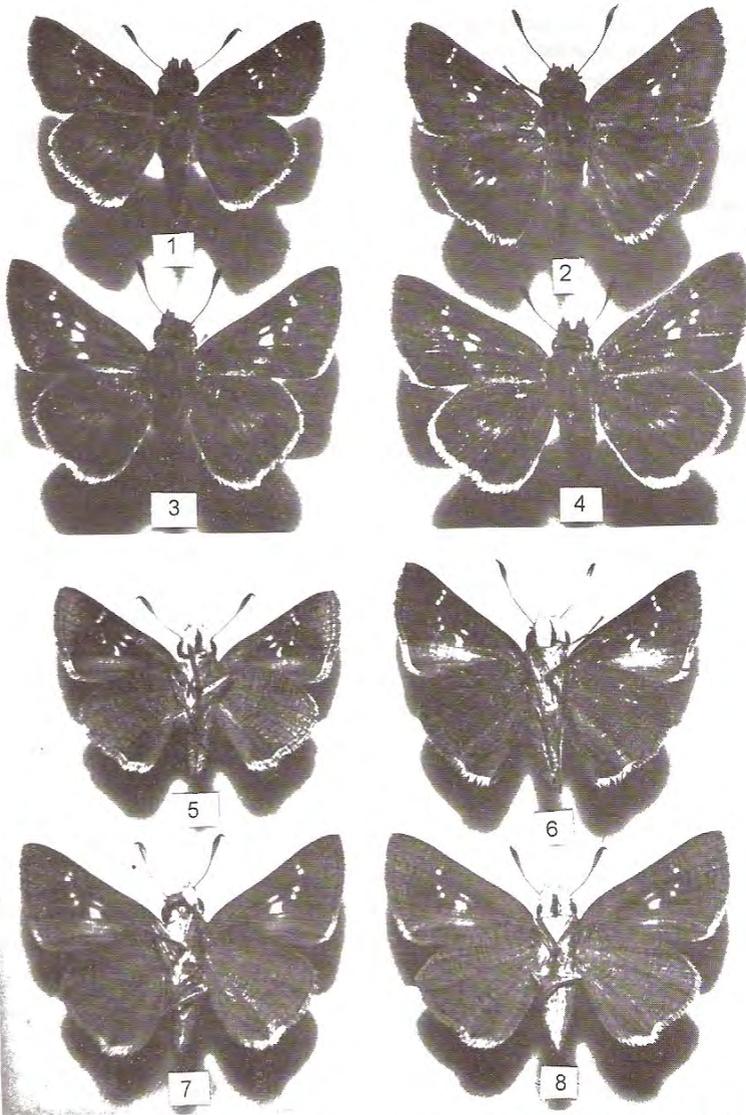


Fig. 1: *Platylesches ayresii* species group, 1-8. 1-4, uppersides. 1. *P. ayresii* ♂; 2. *P. langa* ♂; 3. *P. dolomitica* holotype ♂; *P. dolomitica* paratype ♀. 5-8, undersides of above.

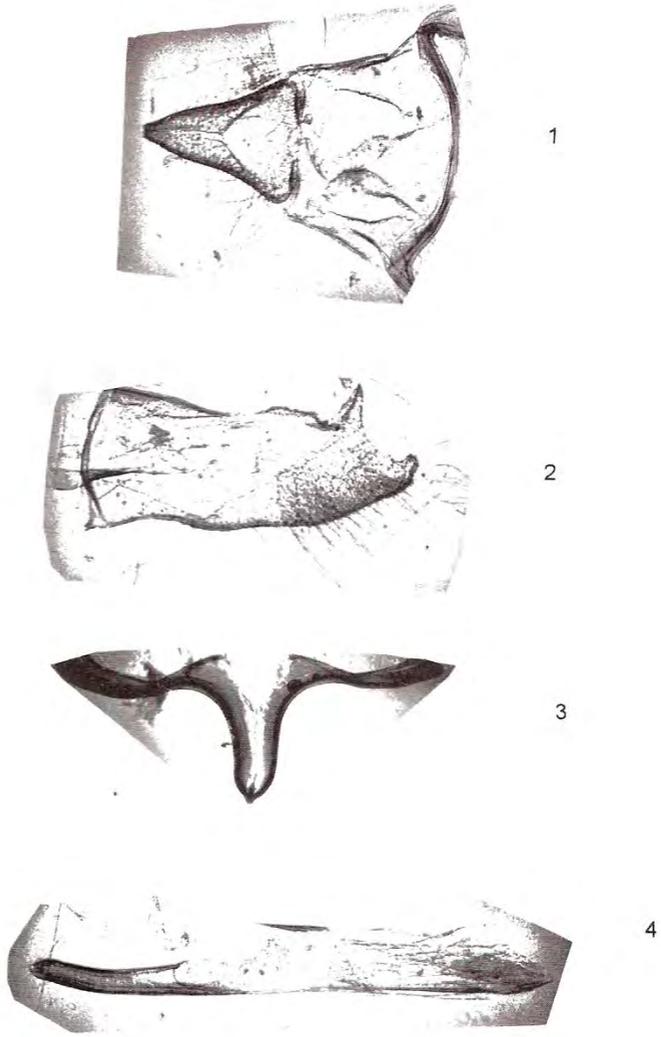


Fig.2: Male genitalia *P. dolomitica*. 1-4. 1. Uncus & tegumen; 2. valve; 3. saccus; 4. aedeagus.

BUTTERFLY BREEDING AREAS - A MICROCLIMATIC PERSPECTIVE.

By E.L. Pringle
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For too long it has been assumed that, if the food and ant ingredients of its life cycle are present, a butterfly will be able to survive indefinitely in a habitat. However, hard experience is teaching us differently: nothing is ever as simple as it appears. Most butterfly collectors know that the majority of butterfly species have a much more limited distribution than their host-plants - or than their combinations of host-plant and ants. Here are some obvious examples: *Cymothoe alcimeda* (Godart), *Charaxes xiphares* (Stoll), *Papilio daedanus cenea* Stoll, and a large number of the Hesperids that breed on grasses. Typically, all these butterflies are found only in particular habitats, and do not survive on their host-plants where they grow outside those ecosystems. The same scenario applies to certain Lycaenids which use a combination of host-plant and ant which is considerably more widespread than their distribution - *Chrysoritis zeuxo* (L.) being a case in point.

Of course, there are many butterflies that are just as widespread as their host-plants: these tend to be from hardy and adaptable families. They are usually, however, the exception rather than the rule.

In choosing examples of habitat dependency, I have deliberately avoided those species which have any form of ant association. This is to prevent anyone using the hypothesis that the ant is the limiting factor. In the case of most Lycaenidae, for instance, where a particular species is extremely localised, all collectors immediately shrug their shoulders and ascribe this to the ant with which it is associated. The purpose of this article is to state that this not necessarily the case - in fact in all probability it is not the case.

Let us first consider the case of *Cymothoe alcimeda*. It is well-known that this is a forest species which inhabits the following forest types (Acocks, 1988): Typical Coast-belt Forest (1a), Transitional Coastal Forest (1c), Dune Forest (1d), Pondoland Coastal Plateau Sourveld (3), Knysna forest (4), Ngongoni Veld (5) and North-Eastern Mountain Sourveld (8). The species is not normally encountered very far away from these forest habitats, notwithstanding the fact that its host-plant is widespread throughout the eastern areas of South Africa. The host-plant even occurs in semi-Karroid country, such as on my own farm, where larvae taken from the forests can quite easily be reared. However, it is quite clear that the species cannot survive away from its forest environs in the longer, or even in the medium term. Why? We know that the survival requirements of the species are simple, so why then can't it extend its distribution? The answer quite obviously lies in factors which are extraneous to the butterfly's life cycle chain of host-plant-egg-larva-pupa-adult, and are of vital importance to the long-term survival of the species. The first thing I noticed about removing larvae of *C. alcimeda* from the forests and rearing them in a different habitat was that, the longer they were required to remain on their host-plant in order to reach maturity, the more stunted they became, and the higher the

incidence of deformity among the imagines. In other words, the larvae were beginning to starve on their own host-plant. This could only mean that, when the host-plant grows out of the butterfly's normal habitat, it is unable to generate through its leaves the normal nutritional balance required by those larvae. This would probably be the result of a different soil nutrition and/or air moisture content. This, over a period, would not only result in increased dwarfism and deformity, but also cause an increase in the extent to which the larvae become diseased - just as humans also become increasingly disease-prone with unhealthy diets.

Very similar to this is the case of *Charaxes xiphares*. Typically, *C. xiphares* inhabits much the same forest types as does *C. alcimeda*, and, like *alcimeda*, utilises a host-plant that has an extremely wide distribution over South Africa's eastern areas - far wider than its forest habitats. In my experience, the larvae of *xiphares* are extremely sensitive to a change of environment - much more sensitive than those of *alcimeda*. So, for example, efforts to sleeve larvae of subspecies *occidentalis* onto the host-plant in the Knysna and Bedford forests (where other subspecies thrive) met with total failure. Somewhat unexpectedly, too, an attempt to sleeve larvae from the Knysna area onto hostplant in Van Stadens Pass (where the same subspecies occurs), also met with total failure. The remarkable sensitivity shown by certain Cape subspecies of *xiphares* to localised environmental conditions reaches an extreme in the case of subspecies *occidentalis*, which is found commonly at Grootvadersbosch, but appears to be absent from Boosmansbos, a forest only approximately 5 km away, at higher altitude. This has happened notwithstanding the fact that the hostplant occurs plentifully in both forests.

All this goes to show that soil type, climatic conditions, and general environment play a bigger role in the distribution of butterfly species than has generally been acknowledged. Of course, any alteration in any one of these factors can lead to a sudden expansion (or contraction) in the distribution of a butterfly species; in South Africa we have seen this happen many times. In the wet 1970's I saw two localised Lycaenids, namely *lepidochrysops southeyi* Pennington and *Actizera stellata* (Trimen), suddenly expand their distributions (only to contract them again when conditions reverted to normal). Other instances were with *Euryphura achlys* (Hopffer) in Zululand in the 1980's, with *Appias sabina phoebe* (Butler) in Zululand in 1996, and with *O. brinkmani* Heath last year. It is misleading, therefore, to think of butterfly populations or colonies as being totally static over a period of time. It is equally misleading to assume that one can expand a butterfly population artificially by translocation - unless one can be certain that, in addition to its life-cycle requirements, the correct environmental and climatic factors are present in the translocation area. Further, in the case of known rarities, it is sometimes very cavalier to assume that the butterfly must occur elsewhere. If it is a butterfly which has, through the forces of nature, become restricted to a particular microclimate, then in fact it is unlikely to occur elsewhere, unless that microclimate is exactly duplicated. As I have shown, it is not necessarily just the host-plant or ant or both which is the restricting factor: there are other important extraneous factors at work too.

This all brings me back to the current debate over the Brenton Blue. Many collectors (and Government Officials) have come up with the sweeping statement that the butterfly "must" occur elsewhere along that coastline - especially as it was previously found at Nature's Valley. Hard and patient fieldwork has so far produced no results. This at first seems incredible - especially since it has now been shown that the butterfly may not necessarily be dependent upon an ant species for its survival. However, the report by the expert botanists Roy Lubke, David Hoare and Janine Victor (employed by the Endangered Wildlife Trust to do a detailed examination of the localities at both Brenton and Nature's Valley) has drawn attention to some interesting aspects. First of all, the host-plant *Indigofera erecta* Thunberg is "an uncommon, localised species distributed between Humansdorp and Mossel Bay." The host-plant, though rare, is obviously much more widespread than the butterfly - a conclusion reached years ago by Dave Edge and myself, when we found the host-plant to be widespread, particularly on the Knysna Western Head. In addition, the authors of the report noted that the Brenton and Nature's Valley localities were of similar geological origin - both consisting of Pleistocene aeolianite dune formation. These Pleistocene deposits are very localised along the coast, being replaced by Cretaceous sediments around Plettenberg Bay, Keurbooms River and at Knysna eastwards of the heads; and by Table Mountain quartzite, shale and tillite from Knysna to Plettenberg Bay, as well as from the Keurbooms River eastwards to Cape St. Francis.

If one adds to this the fact that this rare geological formation is, at the two localities concerned, situated in particularly moist areas along this coastline, then one has a combination that is highly unlikely to be found elsewhere. In any event, it should also be kept in mind that the coastal belt in question has already suffered severe environmental degradation through building activity, agriculture and invasion by exotics: very little habitat is still available to the butterfly.

In conclusion, therefore, it should never be assumed that a rare butterfly necessarily occurs in other habitats. This depends upon whether a variety of factors can be found to occur in the same combination elsewhere. These factors include host-plant, ant (if utilised), and, most importantly, microhabitat. The concept of microhabitat embraces a network of ecological conditions which surround a butterfly's life cycle: as such, it is the forgotten factor, often overlooked when studying a species. It should not be forgotten.

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**A DESCRIPTION OF A NEW SPECIES OF THESTOR HÜBNER
(LEPIDOPTERA: LYCAENIDAE) FROM THE WESTERN CAPE PROVINCE,
SOUTH AFRICA**

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Abstract: *Thestor barbatus* sp.n. from the Western Cape Province, South Africa is described and notes on its known habits and distribution are given. A key to the genus *Thestor* is also provided.

Genus *Thestor* Hübner

Thestor Hübner, 1819. *Verz. bek. Schmett.* (5):73.

This genus is endemic to southern Africa.

KEY TO THE GENUS THESTOR

1. Upperside ground colour extensively white .. *T. basutus* (Wallengren) group
Upperside ground colour not extensively white 2
2. Ground colour extensively ochreous *T. protumnus* (Linnaeus) group
Ground colour not extensively ochreous .. 3 (*T. brachycerus* (Trimen) group)
3. Apex of male forewing upperside with small white mark
.....4 (*T. brachycerus* species group)
Apex of male forewing upperside without small white mark.....
.....*T. penningtoni* van Son species group
4. Forewing underside mid-cell spot double 5
Forewing underside mid-cell spot single 6
5. Forewing underside with sub-basal spot in cell *T. brachycerus* (Trimen)
Forewing underside without sub-basal spot in cell *T. dukei* van Son
6. Forewing underside with elongated sub-basal mark in CuA₂
.....*T. rileyi* Pennington
Forewing underside with rounded sub-basal spot in CuA₂ .. *T. barbatus*
sp.n.

***Thestor barbatus* sp.n.** Figs 1-6, Plate 3.

Description

Male. Forewing length: 14,8-18,5 mm, mean 16,8 mm (n=11); antenna-wing ratios: 0,29-0,32, mean 0,31 (n=11). Wings, upperside. Forewing: ground colour dark brown with black discal band from costa to vein 2A; pale grey streaks distal to cell in areas R₅-M₃; large black discocellular spot which extends to costal margin. Hindwing: dark brown with a black discal band extending from vein

Rs-CuA₂ and a black discocellular spot. Cilia white checkered with black at ends of veins. Underside. Pale grey becoming darker distally. Forewing: dark grey postdiscal sagittate marks from costa to vein 2A; broad discal black band extending from costa to vein 2A; large black quadrate mark at upper end of cell and a smaller one at about half way; an oval black spot subbasally in CuA₂. Hindwing: with black discal band from vein Sc+R₁-2A; quadrate dark brown discocellular spot. Cilia grey becoming darker at ends of veins. Genitalia: Uncus fairly broad, forked process short only being as long as tegumen; falces short, only slightly shorter than tegumen; upper fultura narrow distally from a broad base; lower fultura broad and angular; saccus very broad and rounded, as long as wide with a small distal point; valva broad with dorsal lobe large and prominent, ventral lobe half the size and rounded; aedeagus short and broad, open dorsally over distal third of outer portion, inner portion slightly shorter than outer, anteriorly rounded.

Female. Forewing length: 20,0 mm (n=1); antenna-wing ratio: 0,28 (n=1). Wings slightly more rounded than in male; upper and underside markings similar to male but paler.

Material examined

Types. Holotype ♂, SOUTH AFRICA: Spitskoppie, 6 km NW Herald, 1080 m, 33 48'S, 22 24'E, Western Cape, 17.xii.1994, R.F. Terblanche. Paratypes: 11 ♂ 1 ♀ with same data. Holotype in the Transvaal Museum, Pretoria. Paratypes in the collections of R.F. Terblanche and W.H., S.F. & G.A. Henning.

Habitat and habits

This species was discovered by Reinier Terblanche at Spitskoppie, 6 km North West of Herald, in the Western Cape Province. It inhabits Succulent Mountain Scrub (Acocks, 1975). It was flying at an elevation of more than 1000m on a rocky ridge.

Distribution

Only recorded from the type locality.

Diagnosis

A member of the *T. brachycerus* species group as it has the small apical white patch on the forewing upperside. The wings are more elongated and the upperside is darker than in the other members of the group, including *T. dukei*. The underside is a distinctive pale grey. On the forewing underside *T. barbatus* is characterized by a single mid-cell spot, a rounded spot in CuA₂ and the lack of a subbasal spot, the combination of these characters distinguish it from the other members of the group. The postdiscal sagittate markings are clearly defined and similar to *T. brachycerus*. The discal markings are broader than in *T. dukei* and *T. brachycerus* but not as broad as in *T. rileyi*. Genitalia. The uncus is most similar to *T. brachycerus* but with a longer stalk to the slightly shorter forked processes (the latter being a somewhat variable feature, Heath, 1994); the falces are slightly shorter than in the other species; the upper fultura resembles that of *T. dukei* (van

Son, 1951) in shape but lacks the serrations; the lower fultura is similar to that of *T. dukei*; the saccus is similar to that of *T. brachycerus* but even larger and more rounded; the valvae are most similar to *T. rileyi* (Pennington, 1956 & 1962) in shape and the size of the distal protuberances; the aedeagus is most like that of *T. dukei*.

Etymology

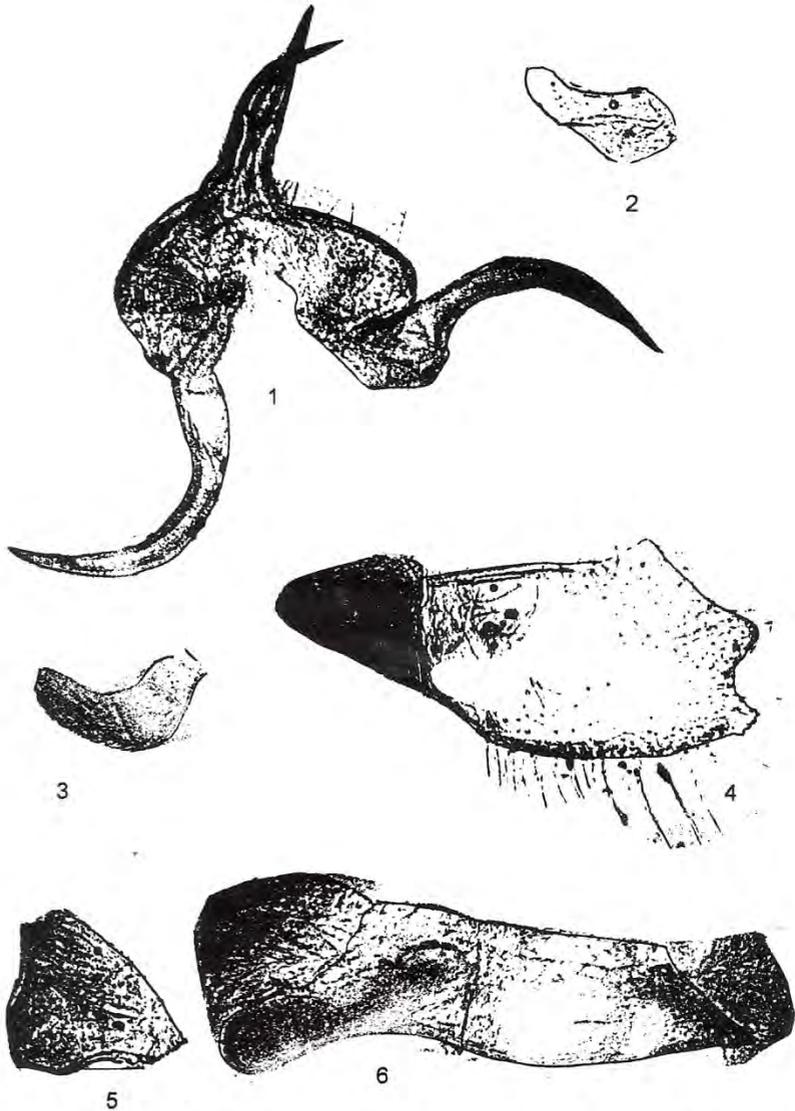
The name means "bearded" and refers to the pale androconial scales on the male forewing upperside which resemble whiskers.

Acknowledgements

Our thanks to Renier Terblanche and our father Bill Henning.

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Male genitalia figs 1-6. *Thestor barbatus* sp. n.; 1. Uncus, tegumen & falces, 2. upper fultura, 3. lower fultura, 4. valve, 5. saccus, 6. aedeagus.

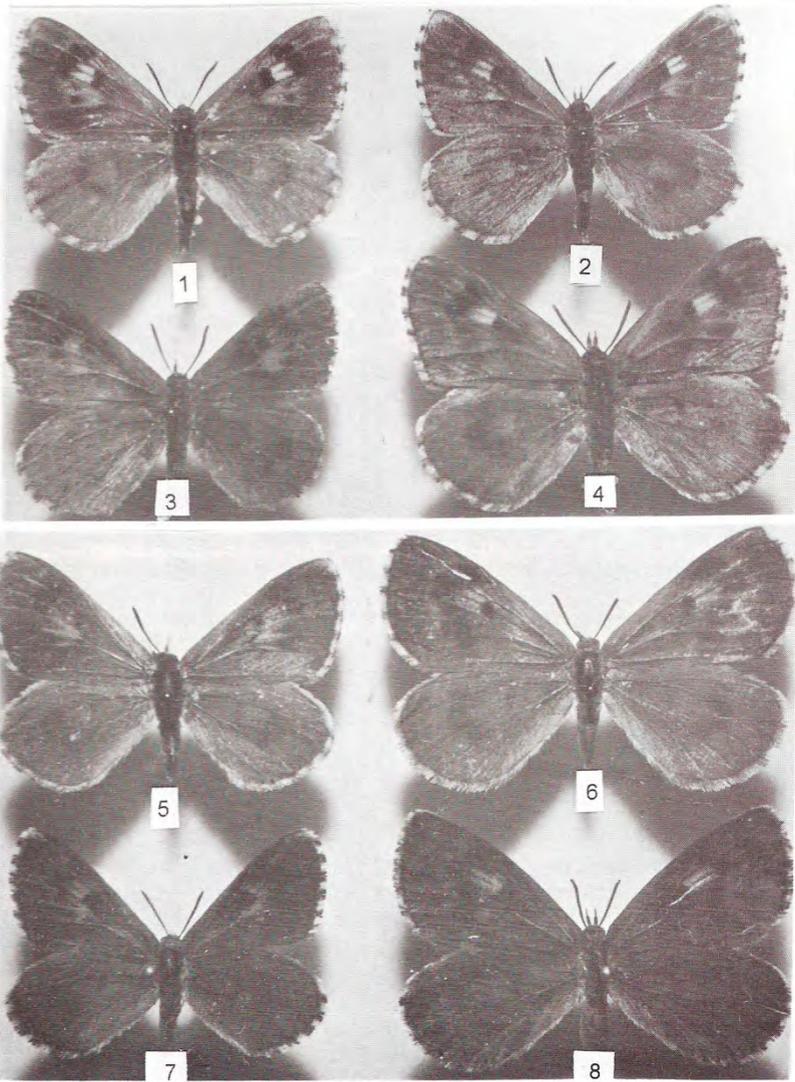


Fig. 7: *Thestor brachycerus* species group. 1-8, uppersides. 1. *T. brachycerus* ♂ (Knysna); 2. *T. brachycerus* ♂ (Stilbaai); 3. *T. dukei* ♂ (Matroosberg) 4. *T. dukei* ♂ (Swartberg); 5. *T. rileyi* ♂ (Lourenceford); 6. *T. rileyi* ♀ (Paarl); 7. *T. barbatus* holotype ♂; 8. *T. barbatus* paratype ♀; .

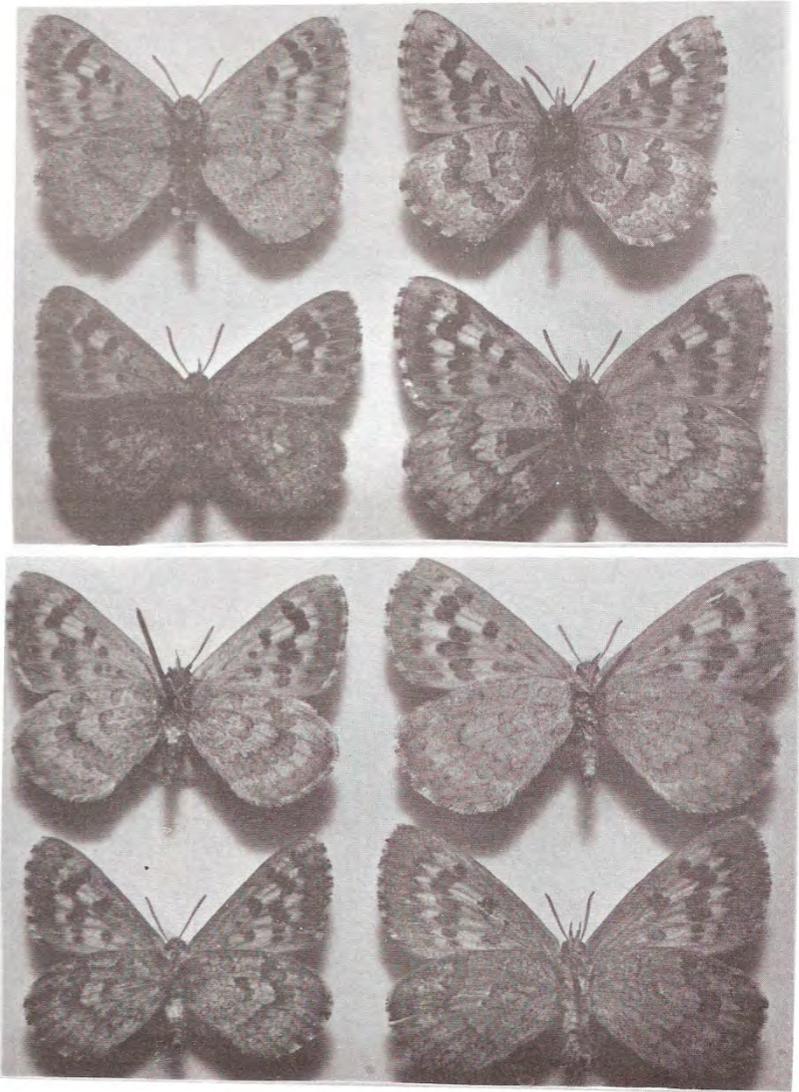


Fig 8. Undersides of fig. 7.

LETTER FROM THE TREASURER'S DESK: ANNUAL SUBS

Dear Members,

Subs are now due. Some of you responded to the reminder sent out with the March magazine. Some of you, including some pensioners, not only sent in their subs, but also included donations over and above their normal subs. Thank you very much.

Please note that the new fee structure is a little different from last years. A few members paid last years amount. A request is made for them to forward the outstanding balance. Could those of you who have not paid please send in your subs. For your convenience, the sub structure is listed below.

| Fees Per Annum | Local | Overseas US\$ | UK£ |
|-----------------------|--------------|----------------------|------------|
| Full Members | R68.00 | US\$ 44.00 | UK£ 22.00 |
| Junior Members | R34.00 | US\$ 22.00 | UK£ 11.00 |
| Pensioners | R34.00 | US\$ 22.00 | UK£ 11.00 |
| Affiliate Members | R68.00 | US\$ 44.00 | UK£ 22.00 |

Some people have asked for a receipt, while others have indicated that it is not necessary. To short cut matters, I am installing an accounting system which will record all your transactions including subs and donations. A statement will be sent to each member.

As you can see, your editor has upgraded Metamorphosis, so your financial support is urgently needed.

Your Hon. Treasurer,

Alf Curle

APPEAL

The 'endangered' species *Chrysoritis dicksoni* (Gabriel) formerly known as *Oxychaeta dicksoni* has not been seen at its Cape Town habitat for well over two years despite extensive searches. The last year when it was seen in fair numbers was 1991 after which the population numbers plummeted to almost zero for a period of over two years, since when it has not been seen.

A systematic and organised search for this insect will be conducted by members of the W. Cape Branch of the LepSoc during August and September in the habitat near Mamre. Any interested members are invited to participate. Please contact Jonathan Ball or Alan Heath who will be coordinating this activity.

In view of this conservation initiative we appeal to all LepSoc members to respect the vulnerability of this endangered species and refrain from collecting any specimens.

A. Heath & J.B. Ball

COMMENT BY THE PRESIDENT

Along with most of the Council of the Lepidopterists' Society and members from all over the world, I attended the Inaugural Conference on African Lepidoptera at Nairobi, Kenya, early in May. This conference was a resounding success. We had a chance to exchange ideas and meet African butterfly enthusiasts from 15 countries. I hope this conference has ushered in a period in of cooperation and friendship between all African butterfly experts.

The field trip to the Kakamega Forest and Cherangani Hills was a never to be forgotten experience. It has been a long time since I was surrounded by butterfly species I has never caught before. It rekindled feelings I had as a schoolboy when I first went to Malta Forest in 1964.

The organisation and planning that went into this exercise was tremendous. Steve and Jackie Collins really excelled themselves. I would like to congratulate and thank them both on behalf of the Lepidopterists' Society for organizing this successful conference and fieldtrip. It is going to be a hard act to follow.

This reminds me that we must now plan and prepare for our Annual General Meeting and Conference to be held on the 9th and 10th August. We would like you all to get involved. If you feel you cannot present a paper or your photographic skills are not good enough to enter the photographic competition, you can still bring along a box of your recent captures. Let's hope those lucky members who went to Kenya will bring along their captures and make us all envious.

Stephen Henning

THE ELEVENTH MEETING OF W. CAPE MEMBERS

The meeting was held on Friday 20 June 1997 and hosted by Mike and Pat Schlosz of Durbanville. Eighteen members were present. Alan Heath was unanimously re-elected as chairman of the Cape Branch for one year. Subjects discussed included: Family membership; possible workshops; annual away field trips; data- bank on literature available amongst members; members involvement in check-listing reserves; members code of conduct; education/ public awareness; AGM 9-10 August 1997; Kenya conference 1997. Anybody who wishes to have more information on these topics please contact Alan Heath.

EDITORIAL POLICY

Manuscripts dealing with any aspect of the study of Afrotropical Lepidoptera will be considered.

Manuscripts not conforming to the instructions below may be rejected and returned to the author. All manuscripts of scientific papers will be evaluated by at least one reviewer. Proofs will be returned to the author if necessary and only printer's errors may be corrected. Ten (10) offprints are provided free of charge to the author or senior author on request, and only if the manuscript has been submitted on computer diskette in a word processing format that the editors are able to convert. Authors should contact the technical editor to enquire if the software that they are using can be converted by the editors, as the situation changes constantly. Additional offprint numbers can be ordered, at cost, at the proof stage.

A hard copy of the manuscript, and the originals of illustrations, and the computer diskette must be submitted to the editor. The text should be printed on A4 paper, with double line spacing, and a margin of at least 2cm on each side. The pages should be numbered consecutively, beginning with the title page, and including those carrying references, tables and legends to figures. All figures and tables must be referred to in the text. If a computer diskette is not available, then tables are to be typed on A5 paper, exactly as found in the printed journal.

Figures must be boldly drawn in black waterproof ink, and arranged in clear and logical plates on stiff, white, preferably A4-sized board. All figures must be numbered in a common sequence in Arabic numerals, irrespective of whether they are line drawings, photographs, diagrams, graphs or maps. Magnifications should be indicated by scale bars on the figures.

Any opinions expressed in this journal are those of the contributors and not of the Editor or the Lepidopterists' Society of Africa.

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