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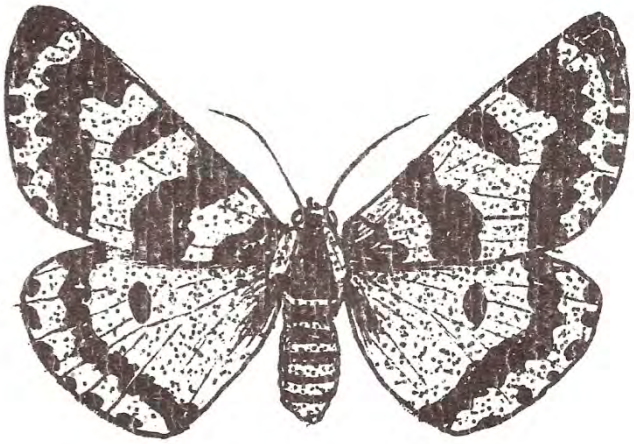


Callioratus millari (Geometridae) female
(Forewing length 26 – 34 mm)

LEPIDOPTERISTS' SOCIETY OF SOUTHERN AFRICA

EXECUTIVE COUNCIL

The **aims** of the Lepidopterists' Society of Southern Africa are to promote the scientific study and conservation of Lepidoptera in Southern Africa; and to promote the publication of original scientific papers as well as articles of a less technical nature in the journal, *Metamorphosis,* or other publications of the Society.

Membership of the Society is open to all persons interested in the study of Lepidoptera. There is no geographical limit to membership.

There are three categories of membership:

	Local	**Overseas**	
Full members	R55,00 p.a.	US$40,00 p.a.	UK £20
Junior members and Pensioners	R28,00 p.a.	US$20,00 p.a.	UK £10
Affiliate members (Scientific Societies, museums, libraries, schools, etc.	R55,00 p.a.	US$40,00 p.a.	UK £20

Persons may become **Life Members** by paying eight hundred Rand (R800,00) locally and US$600.00 overseas.

Membership fees are due on **1 April**. Overseas rates are higher due to increased postage.

CORRESPONDENCE

The Hon. Secretary, P.O. Box 470, FLORIDA HILLS, 1716

All drawings, unless otherwise stated, are by S.F. Henning.

EDITORIAL

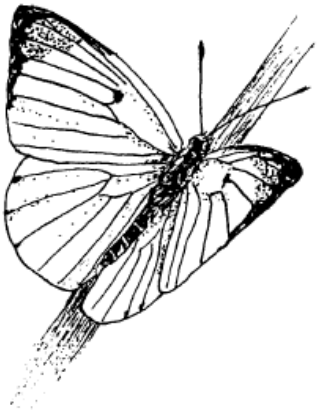
As editor of *Metamorphosis* I occasionally receive letters from members who want to know why I do not publish more popular articles and less scientific ones, and vice versa. The people who confront me with these criticisms are usually those who have never submitted an article to the Journal, and who are not prepared to get involved in the running of the Society. If I suggest to them that they might like to take over the job of editor or even just write an article, they are always too busy.

As editor I can only publish the articles that are submitted to me. For every issue of *Metamorphosis* I have ever published, I have had no choice of articles to include. I am lucky to get enough papers to fill an issue. So until you, the members, put pen to paper, and send me enough articles to be able to pick and choose what I can include, we will just have to accept what is sent in.

Those who criticise scientific papers should also remember that the prestige of the Journal and the Society revolves mainly around the standard of *Metamorphosis*. This standard is largely based on the scientific importance of the papers published. From a humble newsletter, *Metamorphosis* has grown into an internationally known Journal with an ISSN number and a rather unique blend of scientific and popular articles. I would like to thank all the members who have submitted articles over the past few years who have made this possible.

I am always looking for articles covering various themes, for example, like the series on how to go about photographing butterflies that Steve Woodhall did some years ago, or the current getting to know moths by Stephen Henning. If any members have suggestions for articles be they 'how to' or otherwise please contact me.

W.H.Henning



Colotis eunoma male upperside

COMMENT BY THE PRESIDENT

The Conference and Annual General Meeting was again a great success this year. The results of the election were also announced and the members of the Sixth Council of the Society are as follows: Stephen Henning (President), Graham Henning (Secretary), Stephen Woodhall (Treasurer), Mark Williams, Rolf Oberprieler and Hermann Staude. A warm welcome was given to Hermann the new member on the Council. John Joannou who did not stand for re-election was thanked for all the hard work he put into the Council over the past two years.

John Joannou in characteristic pose (*del*. W. du Toit)

A member of the Society asked me the other day what had the Society contributed towards the conservation of butterflies. When I told him, he was absolutely amazed as he did not realize the scope of our activities. If he was unaware, I am sure that a lot of you are in the same position.

As you are all aware one of the major aims of our Society is conservation. Early on we tried to make contact with the Nature Conservation Departments to offer our cooperation and help on all projects conserving Lepidoptera. As a Society we were aware that a number of species had limited distributions and had their unique habitats destroyed by human interference. One of our first successes was backing the establishment of the Ruimsig Entomological Reserve at Roodepoort for the protection of the rare lycaenid butterfly *Aloeides dentatis* (Swierstra). The success of this venture made us even more aware of the importance of conserving the habitats of our rare species. Our concern led us to motivate for the protection of other species. This culminated in the establishing of Natural Heritage Sites for the protection of *Poecilmitis aureus* van Son, *Erikssonia acraeina* Trimen and *Alaena margaritacea* Eltringham.

At the same time we were working closely with the Transvaal Nature Conservation Department. We felt that before we could institute measures to protect butterflies outside the reserves, we would have to know which species were already protected inside the reserves. This meant we had to make checklists of the reserves and this we did with the cooperation of the Transvaal Nature Conservation Department. Over the past ten years we have made fairly comprehensive checklists of six Transvaal Nature Conservation Reserves - Blyderivierspoort, Suikerbosrand, Wolkberg, Doorndraai Dam, Percy Fyfe and Verloren Valei. In addition we have compiled checklists of the Golden Gate Highlands National Park, Pilansberg, Lapalala, Ruimsig Entomological Reserve and Kloofendal Nature Reserve. These projects are still ongoing as it takes considerable time to make comprehensive checklists. Each reserve has to be visited during all months of the year and possibly for several years. As you all know the flight periods of many species are very short and vary from year to year. This necessitates the numerous visits to each reserve. The problem has been to get members to visit these reserves on a regular basis as they do not get anything out of it except the compilation of the list.

We organized a Lepidoptera Conservation Symposium in 1987 and invited all interested parties to join us and share ideas. From among others we had representatives of the Transvaal Nature Conservation Department, the Department of Environmental Affairs (Forestry Department) and the Wildlife Society of Southern Africa. It was a great success and gave our visitors a better idea on the difference between the conservation of insects and big game like rhinos and elephants.

In 1989 the *South African Red Data Book - Butterflies* was published by the CSIR which formalized the status of threatened species.

In 1992 the Society updated the South African and Lesotho Red Data List and compiled ones for Zimbabwe, Botswana, Namibia, Mozambique and Swaziland.

At this time the Enviro Club of Florida Park High School was raising money to build an Information Centre at the Ruimsig Entomological Reserve and the Society donated money, display cases and offered their full support for the project. This centre was officially opened by the mayor of Roodepoort in January 1994.

Education is the key to conservation. We have to get to the children, the decision makers of the future, to preserve our heritage. This is why the Society has tried to encourage and institute projects by schools and groups like scouts and guides. The official emblem of the Western Transvaal Division of the Girl Guides is *Aloeides dentatis*, drawn by Graham Henning. The Southern Transvaal Division also has a butterfly as their emblem. We have established permanent collections of butterflies at the Roodepoort Cultural Museum which is visited by thousands of school children every year. This collection and our accompanying conservation propaganda displays, over the past eight years or so, has proved to be one of the museum's most popular exhibits with the schools. We have presented a similar collection to be displayed in the new Ruimsig Information Centre which we intend in the near future to be open to the public on one day every month. At the moment we conduct groups from other interested societies, scouts, guides, around the reserve on request.

We also give talks to as many societies, garden clubs and school groups as we possibly can, to spread our message as wide as possible. Unfortunately, at the moment this is left to a small core of Council members. We all live in the PWV area and we all have full time jobs, so we cannot get everywhere. This year alone I have already given 14 lectures to the Gifted Child Centre, school groups, cubs, brownies and wildlife societies, not counting visits to the Ruimsig Entomological Reserve. I cannot do any more. We hope to establish regional councils to coordinate events in other areas in the future.

It is up to you the member to bring our message to the people. Remember education is the key. You are all ambassadors for the Society. If, like me, you have got years of enjoyment out of Lepidoptera, maybe you too would like to give them something back, like their long term survival.

To help in our conservation efforts it was decided at the last Annual General Meeting that the Society should appoint Conservation Officers for all nine provinces in South Africa, Botswana, Namibia, Zimbabwe, Swaziland, Lesotho and Mozambique. These people would be able to liaise on behalf of the Society with the local conservation bodies. It carries far more weight if resident people are involved in the negotiations with the various conservation bodies than some "foreigners" from the PWV. Also, although we have compiled checklists of 10 reserves in the Transvaal and one in the Orange Free State, we have not yet done one in the other provinces in South Africa or the other southern African states. Our regional Conservation Officers might be able to organise this in the future.

Recently we have been approached by Tony Boniface and Dave Edge to do something about one of the last localities for *Orachrysops niobe* at Knysna which is being threatened by development. *O. niobe* is classified as vulnerable in the *South African Red Data Book - Butterflies* which means unless something is done about preserving this habitat this species could be facing extinction in the near future. The Council of the Society is looking into this matter at the moment

Stephen Henning

Orachrysops niobe female the vulnerable lycaenid species from Knysna.

REGIONAL ROUNDUP

The winter has seen little activity and most Lepidopterists are eagerly awaiting the spring. In the Cape those species which emerge early are already on the wing. My own experiences over the last few months are nil, so I will have to rely on the experiences of my colleagues.

The following three reports are from Jon Ball writing from Cape Town:

1) In *Metamorphosis* Vol. 5 no. 1, Dave Edge reported that I had caught *Poecilmitis uranus* on the recently burnt Kammanassie Mountains on 16 Dec 93. It was in fact a single male specimen of *Poecilmitis nigricans* that appears to be very similar to *P. nigricans zwartbergae* Dickson. This specimen was noted at approximately 1400m and is the second time a male of this stunning butterfly has been recorded on this inselberg, so rich in endemism. Dickson records in the original description of *Poecilmitis daphne* Dickson that Cottrell had caught a single male specimen of a butterfly resembling *P. nigricans* on Mannetjiesberg, Kammannassie on 22 Dec 1969.

2) A remarkable extension to the range of distribution of *Leto venus* (Stoll), the Venus or Silver Spotted Ghost Moth, has been recorded by Alan Heath. On the 27th Jan. 1993 Heath, in the company of John White, found a single specimen of what appears to be *Leto venus* at high altitude (+-1300m) on the Waaihoek Mountains near Worcester. This fresh specimen was on the path and John, who was leading, had very nearly trod on it! *Leto venus* has previously only been recorded from the Knysna - Tsitsikamma region. This Hepialid was classified as Rare by G.A. & S.F. Henning, Appendix 11, in the *Practical Guide to the Butterflies and Moths of Southern Africa*, 1992. This record extends the range to high altitude and some 345km west. No specimens of its foodplant, the Keurboom (*Virgilia oroboides*), have been found in the area of capture and the fresh condition of the male specimen suggests that this was not a windblown example. No strong winds had been recorded prior to this capture. The forewing length of this specimen is 47.5mm, measured from base to apex, which is fairly small in comparison to those from the normal habitat. I will be investigating this matter in the future, to find more specimens and to ascertain the foodplant.

3) The Large White (Cabbage White), *Pieris brassicae* (Linnaeus), has established itself in the Western Cape. Charles and Vernon Wykeham and myself have together and independently seen eggs, larvae, pupae and about two dozen imagines of *P. brassicae* in Cape Town between 25th and 28th August 1994. The butterfly has been seen flying in the suburbs of Gardens, Oranjezicht, Tamboerskloof and Pinelands. The majority were seen in the first three areas. The specimens collected and seen were all very fresh specimens of the spring form which has the apices of the forewings broadly margined with grey on the upper surface. This butterfly was not noted in Cape Town during the previous Summer or Autumn, yet the present numbers indicate that this butterfly is now an established unwelcome resident. We have seen a number of cabbage leaves with the characteristic batches of primrose yellow eggs. One of these batches contained 123 eggs due to the habit of the female laying large quantities while hidden away in the foliage. The female, when seen flying from a distance, seems to 'disappear for about half an hour into the cabbages whilst ovipositing.

This Palaearctic species, originally found in Europe, North Africa and Asia, was recorded to have spread rapidly in Chile in South America during the early 1980's. This was regarded as a form of passive dispersal after the probable accidental introduction by man. The spread in Chile has been to a latitude approximately of that of Cape Town. In Europe and Asia this species uses members of the Mustard family (Cruciferae) as foodplants. Various cultivated crops are utilized such as cabbages, turnips, radishes, mustard and other tresses. The common garden nasturtium (*Tropaeolum majus*) is another plant used, and the prevalence of nasturtiums, as well as cabbages, in Cape Town provides plenty of available foodplants. This coupled with its prodigious laying abilities and lack of natural predators could possibly result in

a rapid increase in the population. In Europe the minute Ichneumon fly *Apanteles glomeratus* parasitizes this butterfly and probably keeps some control on the population.

The spread of this butterfly in the Western Cape Province could have serious agricultural consequences. Numerous farmers on the nearby Cape flats grow cabbages. The limitation of spread in the Palaearctic regions southwards is thought to be high summer temperatures. In Israel for example it only breeds in winter. Should this species become established in South Africa it would thus probably be restricted to, coastal and sub-coastal areas from Cape Town to Port Elizabeth. The high summer temperatures may preclude a summer brood. It is hoped that this is a temporary invasion and that in the forthcoming seasons this population will be eliminated. We will monitor this situation with extreme interest.

AGM & CONFERENCE

The Eleventh Annual General Meeting and Conference over the weekend of 13-14 August 1994 was a resounding success. More than fifty members attended the event which began early Saturday morning and continued, with a short break to sleep, until late Sunday afternoon.

Many new faces were seen, with the Plowes family making a stout effort to come from Natal and Botswana to attend and we were very pleased to meet Harold Seib who came up from Cape Town. Steve Collins from Kenya gave some interesting talks and the quiz he presented on Sunday morning was great fun. It was won by Rob Paré, a very welcome visitor from Zimbabwe who also took his turn to entertain us with slides and an interesting talk on his Hesperid breeding experiments. A report on the photographic competition, conservation proposal and some extracts from talks follow this roundup.

Please contact me with your records or Fax your notes to me on (011) 474-2985.

Graham Henning

Pieris brassicae male underside

LEPIDOPTERA CONSERVATION PROPOSAL

A proposal on Lepidoptera Conservation was presented to the AGM on 13th August 1994 by G.A. Henning.

1. DECENTRALIZE THE CONSERVATION DRIVE IN SOUTH AFRICA
The Society will invite members to be official Representatives in each of the nine new provinces. All formal contact with Conservation Bodies will be made through these Representatives.
2. EXTEND THE CONSERVATION DRIVE INTO OTHER AFRICAN COUNTRIES
As with the South African provinces we will invite members to represent the Society in countries throughout Africa.
3. TO FACILITATE ACCEPTANCE THROUGHOUT AFRICA THIS PROJECT SHOULD HAVE ITS OWN NAME UNDER WHICH TO OPERATE
It is not prudent to assume that our southern African society will be accepted throughout Africa.

The proposals were accepted in principle by the meeting and a working name was proposed, African Lepidoptera Conservation Group.

Provisional objectives of the group as proposed and a brief history of Lepidoptera Conservation in Africa:

The AFRICAN LEPIDOPTERA CONSERVATION [RESEARCH] GROUP (provisional name; the word 'research' has been added due to this word being widely accepted throughout Africa) has been formed to assist conservation bodies of all African countries in their decision making as regards Lepidoptera.

In the light of any impending legislation the group would provide conservation bodies with information regarding current international trends in Lepidoptera conservation. It is believed that the protection of habitats is fundamental to the preservation of Lepidoptera and that we can identify and monitor potentially endangered habitats.

The first efforts in butterfly conservation in the southern African region was the *SOUTH AFRICAN RED DATA BOOK - BUTTERFLIES* S.F. & G.A. Henning in 1989. Two ENDANGERED taxa and six VULNERABLE species were identified in South Africa. Subsequent research has shown that one of the two ENDANGERED species has been reclassified as RARE and the other is a subspecies whose habitat apparently no longer exists, so no conservation measures can be applied.

The three Transvaal species which fell into the VULNERABLE category have been the subject of intense research by the Transvaal Nature Conservation Division for about four years. Some of the localities are already Natural Heritage Sites. The other three VULNERABLE species are all endemic to the Cape.

In a publication by the LEPIDOPTERISTS' SOCIETY OF SOUTHERN AFRICA titled *A PRACTICAL GUIDE TO THE BUTTERFLIES AND MOTHS IN SOUTHERN AFRICA* the red data lists were expanded to include Namibia, Botswana, Zimbabwe, Mozambique and Swaziland (with Lesotho incorporated under SA).

It is imperative that we identify any further threatened species so that the habitats can be preserved for future generations.

The taxonomic status of the butterflies of southern Africa are well known and have recently been reviewed and this information will be published in the forthcoming second edition *of Pennington's Butterflies of Southern Africa*, due out in September 1994. It has been

recorded in South Africa that many localities for particular species of butterflies have already been destroyed by housing development due to their restricted distribution. Many of these species are ant associated and the life histories have still not been satisfactorily resolved. Butterflies like these are the foremost indicators of specialised habitats which once properly researched will often lead to other new discoveries to science. Butterflies in general are regarded worldwide as an indicator of habitat well being. Any imbalance or disturbance in habitats will usually manifest itself in the butterfly fraternity before other indications arise. There is a fairly comprehensive history in butterfly circles and these historical records are used extensively overseas to assess conservation requirements.

The formation of small reserves for threatened butterflies is well documented by the Roodepoort City Council in the Transvaal who proclaimed a twelve hectare reserve at Ruimsig in 1985 to protect the habitat of the rare ant associated lycaenid, *Aloeides dentatis* (Swierstra). This locality had been zoned for housing development and it took the efforts of the Lepidopterists' Society, SA Nature Foundation, The Wildlife Society of SA and finally the Television Program 50/50 to secure the reserve.

This group will be an autonomous working group of the Lepidopterists' Society of Southern Africa and we hope to have representatives throughout Africa.

Representatives should be willing to assist with information on any conservation projects. We can supply expertise in the management of small reserves and will do our best to promote conservation to its fullest advantage. We will assist in any way we can in the development of conservation and in the promotion of African conservation worldwide.

This group will be committed to conservation and the provision of expertise to aid in the preservation of the habitats of the threatened species of butterflies and moths in Africa.

Please contact the council should you have any advice or comments on this project.

Graham Henning

Orachrysops ariadne male underside

A BRIEF REVIEW OF CARNIVORY IN MOTHS

By Martin Krüger

Lepidoptera Dept., Transvaal Museum, P.O. Box 413, Pretoria 0001

The brief outline of carnivory among moths given below was first presented at the 11th AGM of the Lepidopterists' Society earlier this year.

That such a review might be of interest seemed likely since the phenomenon of carnivory is so well-known among our lycaenid butterflies, mostly under the guise of myrmecophily, whereas little literature exists about this fascinating habit among moths. Carnivory of one form or another exists in three out of the six subfamilies of Lycaenidae found in southern Africa, and is of course most familiar from the large genera Thestor and Lepidochrysops. Leaving the question of whether the habit was acquired independently several times aside, it is still interesting to note that it is confined to just one family of butterfly.

But what of the much more diverse moths? Current classifications of the order Lepidoptera (e.g., Vári & Kroon, 1986) recognize some 30 superfamilies and 135 families, of which 3 and 9, respectively, comprise butterflies. Among the remainder, carnivory has been reported from the following groups:

TINEOIDEA: Tineidae
YPONOMEUTOIDEA: Heliodinidae, Schreckensteiniidae
GELECHIOIDEA: Blastobasidae, Momphidae, Cosmopterygidae
COSSOIDEA: Epipyropidae
TORTRICOIDEA: Tortricidae
PYRALOIDEA: Pyralidae
GEOMETROIDEA: Geometridae
NOCTUOIDEA: Noctuidae

Carnivory is, therefore, a fairly widespread phenomenon which occurs in nearly 10% of lepidopterous families, including a high proportion of microlepidoptera. The preferred prey items are various groups of Coccoidea, which are utilized by Heliodinidae, Blastobasidae, Schreckensteiniidae, Momphidae, Cosmopterygidae, Tortricidae, Pyralidae (Phycitinae), and Noctuidae (Acontiinae).

Of these, the acontiines are maybe relatively best known to butterfly collectors, being small, colourful, and frequently diurnal moths which are easily flushed when walking through grassland during the daytime. Although predominantly phytophagous, they possess a number of carnivorous species in southern Africa. Their caterpillars feed on waxy and other soft scales and their eggs, and use prey remains to camouflage themselves. Pupation takes place under the scale.

In addition to coccid feeding, there exist several rather more bizarre forms of carnivory and true parasitism.

The pyralid *Tirathaba parasitica* feeds subterraneously on larvae of the family Hepialidae, better known as swifts or ghost moths.

Apparently the only true case of parasitism is provided by the small family Epipyropidae, represented in southern Africa by *Epipyrops fulvipuncta* Distant. The larvae are ectoparasites, attaching themselves to the ventral surfaces of the hind wings or to the dorsal surface of the abdomen of various homopterans, particularly fulgorids. Here they feed from wounds made in the dorsal abdominal surface of the host. The effect of the caterpillar on its host varies; it may

be unharmed or it may be killed. Pupation sometimes occurs on the host but usually some distance away from it in a cocoon of labial silk which is formed interior to a tangled mass of silk-like fibres that are secreted from the laterodorsal surfaces of the body (Marshall, 1970). The general aspect is strongly reminiscent of the waxy secretions of the host, and it was indeed at first believed that they form the cocoon. There still exists some confusion whether all epipyropids are true parasites, and recent literature reports larval feeding on the waxy secretions, rather than the haemolymph, of the host (Scoble, 1992).

A somewhat different association is formed between the pyralid *Stemauge parasitus* and its saturniid hosts. The larvae of *Stemauge* spin threads between spines of the caterpillars of *Automeris* and sometimes *Dirphia*. They feed on the spinules, causing fatal damage to the host (Scoble, 1992).

Closer to home, I should finally like to mention the curious brachypterous tineid *Pringleophaga marioni* Viette from subantarctic Marion Island. The widespread occurrence of aptery or brachyptery among insects of various orders inhabiting subantarctic islands is interpreted as an adaptation against the strong winds prevailing in these parts. The larvae of *Pringleophaga* are omnivorous in captivity and aggressively attack and eat earthworms. As they live in close proximity to earthworms in their natural habitat, it appears likely that this behaviour occurs to some extent under natural conditions as well (Scoble, 1992).

Lastly, we have to consider the famous Hawaiian killer caterpillars of the genus *Eupithecia* Curtis. These larvae are ambush predators, using their raptorial legs to execute strikes which last for about 1/12 of a second. They are capable of handling a wide variety of prey sizes, from booklice to flies nearly their own size. Apart from being cryptically coloured like the caterpillars of most pugs, they further prepare the ambush by biting holes into the leaves on which they rest and then withdraw through the hole, waiting for prey items to come their way. The adults look quite innocent like their flower-feeding congeners from other parts of the world.

As we have seen, obligatory carnivory has arisen independently several times in an order of insects otherwise overwhelmingly phytophagous in their larval stage. What are the reasons?

Firstly, one has to assume a certain predisposition of caterpillars in general. As every breeder of Lepidoptera, and particularly of noctuids will know, overcrowding and lack of water will very quickly awaken cannibalistic tendencies in one's livestock. Larvae of the Holarctic genera *Cosmia* and *Eupsilia* must be kept singly as they will readily attack and devour any other caterpillar they happen to encounter; this habit earned them the German name of 'Mordraupen' or killer caterpillars.

Secondly, when looking at the list of prey items, sedentary homopterans account for the by far greatest portion. This is not really surprising; since caterpillars are largely unable of swift movements (with the exception of the Hawaiian *Eupithecia* mentioned above), a transition from feeding on plant tissue is more likely when a more or less immobile new source of food is already present on the food plant. Even so, the metabolic changes which are necessary for a plant-feeding animal to adopt to digesting animal tissue must be considerable. Although carnivory or parasitism occurs in about 10% of lepidopteran families, the actual number of species involved is very small.

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BEYOND EMPEROR MOTHS - THE SUPERFAMILY BOMBYCOIDEA

By R. G. Oberprieler

National Collection of Insects, Private Bag X134, Pretoria 0001

Emperor moths (Saturniidae) belong to a larger group of related moths, which are classified as a superfamily Bombycoidea. The composition and relationships of the various families and subfamilies of Bombycoidea are not yet fully resolved, but recent studies on bombycoid phylogeny have begun to shed some light on the affinities and relationships of certain groups.

The most primitive bombycoids are the **Mimallonidae**, sometimes also placed in a separate superfamily Mimallonoidea. They are a small American family of smallish, drab moths with case-bearing larvae. A much larger and cosmopolitan family are the **Lasiocampidae** (eggar moths), small to large, usually sexually dimorphic moths with densely hairy and mostly urticating larvae that spin dense cocoons for pupation. Their classification into subfamilies is still contentious. Closely related to lasiocampids are the **Anthelidae**, a small family endemic to Australia with also hairy larvae and dense cocoons. The Lasiocampidae and Anthelidae are sometimes split off into a separate superfamily Lasiocampoidea.

At the base of the true Bombycoidea stand the **Eupterotidae** (monkey moths), an Old-World group of large furry moths with generally densely woolly larvae and hairy cocoons on or in the ground. On larval characters they appear closely related to Lasiocampidae, and recently included in the family is also *Hibrildes*, a small African genus of day-flying moths with mimetic females but as yet unknown larvae. Similar hairy larvae are found in the American **Apatelodinae**, which have been included in Eupterotidae or placed in their own family but were recently transferred to the Bombycidae. The **Bombycidae** (true silk moths) are also an Old-World group including, besides the domesticated silkworm *Bombyx mori*, numerous small Asian and African moths with cryptic, mostly velvety larvae and dense silken cocoons. The families **Endromididae** and **Mirinidae** both contain only a single Palaearctic species, that of the former family with a naked larva that pupates in a flimsy cocoon on the ground, and that of the latter with a densely spinose caterpillar and an arboreal cocoon. The large cosmopolitan family **Saturniidae** is presently classified into seven subfamilies, with the status of an eighth, the **Oxyteninae**, still uncertain. Saturniid larvae and pupae are very diverse.

The last bombycoid group contains four families. The family **Carthaeidae** is endemic to Australia and also consists of a single species, which has a naked larva and pupates without a cocoon under leaves on the ground. Two small genera make up the family **Lemoniidae**, viz. the Palaearctic *Lemonia* with a hairy larva and subterranean pupa, and the African *Sabalia*, black-and-white aposematic moths with similarly coloured larvae with long dorsal processes. Closely related to Lemoniidae are the **Brahmaeidae**, of which the Eurasian *Brahmaea* has bizarre, black-and-yellow larvae with long dorsal filaments, while those of the African *Dactyloceras* are brown with shorter tubercles. Brahmaeid pupae also rest in the soil without a cocoon. The rare and monotypic South African genus *Spiramiopsis*, whose life history only became known last year, is related to Brahmaeidae and Lemoniidae but is more primitive then either of these. Also related to these two families are the **Sphingidae** (hawkmoths), a large cosmopolitan family of robust, fast-flying moths with naked larvae carrying a long caudal horn and with smooth, subterranean pupae. The monotypic southern African genus *Xenosphingia*, which is traditionally included in Sphingidae, is rather atypical of this family in possessing strongly combed antennae and may also, like *Spiramiopsis*, represent a relict species of uncertain affinities, which will presumably only become clearer when its larva is discovered.

Much further study is still required on the phylogeny and biology of the Bombycoidea, and in most families there is a wide scope for collecting and discovering life histories. Africa

Harbours several isolated and taxonomically critical taxa whose characters and relationships are crucial in understanding the evolution and phylogeny of the superfamily.

WEEVILS: ATTACKING PLANTS FROM THE INSIDE

By R. G. Oberprieler

National Collection of Insects, Private Bag X134, Pretoria 0001

In contrast to Lepidoptera, whose larvae feed predominantly on the outside of plants, weevils generally do so inside of various plant organs. This endophytic way of life offers a much better protection from predators, but requires certain adaptations in both the larval and the adult stage. Weevils are characterized by a long to very long snout (rostrum), which the female uses to drill an oviposition hole into the hostplant of its larvae. Her ovipositor can extend to the same length as the rostrum and is pushed down the oviposition hole to place the eggs right inside the tissues on which the larvae feed. The larvae themselves are pale and grub-like without any legs but with a large head and strong mandibles. They pupate inside the hostplant or in the soil beneath.

Weevils constitute the largest superfamily of organisms in the world, with about 60 000 species described and 180 000 estimated to exist in reality. They originated in the Jurassic period, as evidenced by several fossils, and radiated during the Cretaceous alongside the angiosperm plants, whose structural and taxonomic diversity they have exploited to the full. They are classified as the superfamily Curculionoidea and includes about six families and 20 subfamilies, of which the large majority belongs to the true weevils, the family Curculionidae.

The most primitive weevils belong to the small family **Nemonychidae**, whose members occur mainly in South America and Australia and develop predominanty in male cones of pines and related gymnosperms. The **Anthribidae** are a larger, cosmopolitan group of broad-snouted weevils that develop mainly in rotten wood or seeds. The small family **Belidae** is again found largely in South America and in Australia, and its members mainly bore in stems or inflorescences. The genus *Rhopalotria* develops in male cycad cones in Central America and at the same time pollinates its hosts. The larvae of **Attellabidae** generally feed on decaying plant matter, which the female brings about by partially cutting a flower head or a part of a leaf so that it wilts, rolling the latter into a cigar-shaped structure in which the larva lives. **Brentidae** are a much larger group of elongated or round weevils. Members of the subfamily **Brentinae** mostly develop in decaying wood, while the larvae of **Apioninae** bore in stems, flowers or fruits and those of the **Cyladinae** in tubers or fruits of Convolvulaceae. The Brentinae, however, also include the famous South African cycad weevils of the genus *Antliarhinus*, whose females have a grossly elongated rostrum with which they pierce the thick scales of female cycad cones to deposit their eggs inside the seeds.. The **Curculionidae**, finally, are extremely diverse in their development and habits. **Brachycerinae** develop mainly in the soil feeding on roots or inside bulbous plants, **Curculioninae** attack virtually all plant organs but mainly flowers and seeds, while **Rhynchophorinae** develop in soft-stemmed plants such as bananas, palms and cycads. The **Cossoninae**, **Scolytinae** and **Platypodinae** all bore in wood, the latter two subfamilies in large communal galleries in which they often grow fungi to feed on.

Because of their extreme specialization to feed inside plants and to attack nearly all plants on earth, weevils are of considerable economic importance. Nearly all of man's crops suffer from the attack of some or other weevil, and many of them are severe agricultural pests. On the beneficial side, they are extensively used in the biological control of alien invasive weeds.

PHOTOGRAPHIC COMPETITION 1994

By S.F. Henning

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The photographic competition really came of age this year. When we initiated the competition some ten years ago the standard of photography was on average quite poor. I really battled to find enough good natural shots for my book the *Charaxinae Butterflies of Africa* published in 1989.

To encourage an improvement in standard John Joannou donated a magnificent floating trophy for the best slide submitted.

We introduced a second category for the best Scientific Slide. Here we changed the criteria in judging the slide. We wished to encourage people to go out into the wild and get that shot of a rare species in its natural surroundings engaged in characteristic behaviour patterns such as mating, courtship, feeding and so on. A photo often taken in these unfavourable conditions could not compete on even terms with those posed and taken in a controlled environment. This category has proved to be very popular but always appeared to have second class status.

However, this year to encourage, and to emphasize the importance of the Scientific Slide Category, Alf and Neville Curle and family donated a magnificent floating trophy for this competition, together with a smaller 'Curle Trust Trophy' to be kept by the winner. I would like to thank the Curles again on behalf of the Society for this magnificent gesture.

In addition this year Agfa again donated slide film to be presented to the first three places in both categories.

The standard this year, as I have already mentioned, was particularly high.

The winner of the Best Slide Category was Rolf Oberprieler for his slide of a *Spiramiopsis* comma larva. He was presented with the Joannou Trophy and nine rolls of film.

Second was John Joannou with his slide of an *Iolaus (Epamera) sidus* male showing false head. He was presented with four rolls of film.

Third was Steve Woodhall with a slide of a *Chrysoritis oreas* male taken in the wild. He was presented with two rolls of film.

The winner of the Best Scientific Slide Category was Steve Woodhall for his slide of the rare *Chrysoritis oreas* male taken in the wild. He was presented with the Curie Floating Trophy, the Curie Trust Trophy and nine rolls of film.

Second was Hermann Staude with his slide of the final instar larva of *Callioratis millari* an "extinct" species not recorded for nearly 70 years. He was presented with four rolls of film.

Third was Reinier Terblanche with his slide of *Coeliades forestan* a mating pair under leaves of *Vangueria infausta* taken in the wild. He was presented with two rolls of film.

Over the past few years we have tried to use different judges for the competition in an effort to eliminate any bias any one judge may have towards a particular type of photograph. Last year we used Tony Bannister, probably one of the most well known wildlife photographers in South Africa who has had considerable experience in photographing insects.

This year we asked Robin Frandsen a publisher and editor of natural history books to be our judge. He has picked up considerable expertise in judging the quality of slides to be used in publications. He was the editor and co-publisher of my book *The Charaxinae Butterflies of Aftica*. He judged the best slide of the year category.

This year I was given the rather pleasant task of selecting the best scientific slide. This was particularly difficult as we had a number of good slides of very rare species. Here I must mention, besides the winners, Alf and Martin Curle, Graham Henning and Mark Williams who were all very close to running off with the prizes.

I would like to thank all those members who submitted slides this year: Alf Curle, Martin Curle, Graham Henning, John Joannou, Rolf Oberprieler, Peter Sharland, Reinier Terblanche, Dave Upshon, Mark Williams and Steve Woodhall. Keep up the good work. A special thank you should also go to Steve Woodhall who organized the competition again this year.

Vanessa cardui male upperside

THE CONDITION OF BUTTERFLIES IS A POOR INDICATOR OF MIGRATION

By Torben B. Larsen

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On several occasions in *Metamorphosis* I have seen references to butterflies probably not being migrants because they were in mint condition, or of butterflies probably being migrants since they were very worn. This is the worst possible criterion on which to assess whether a butterfly was a migrant or not.

In most mass butterfly migrations, the butterflies begin their migration immediately on hatching. The most dramatic description of such an event is that of Skertchly (1879) concerning *Vanessa cardui* in the Port Sudan area of Sudan:

'At the foot of the high country is a stretch of wiry grass, beyond which lies the rainless desert as far as the sea. From my camel I noticed that the whole mass of grass seemed violently agitated, although there was no wind. On dismounting I found that the motion was caused by the contortions of pupae of *V. cardui*, which were so numerous that almost every blade of grass seemed to bear one. The effect of these wrigglings was most peculiar - as if each grass stem was shaken separately, as indeed was the case, instead of bending before the breeze.... Presently the pupae began to burst and the red fluid that escaped sprinkled the ground like a rain of blood. Myriads of butterflies, limp and helpless, sprinkled the ground. Presently the sun shone forth, and the insects began to dry their wings, and about half an hour after birth of the first, the whole swarm rose as a dense cloud and flew away eastwards towards the sea. I do not know how long the swarm was, but it was certainly more than a mile, and its breadth exceeded a quarter of a mile'.

Once on the wing the butterflies will continue migrating till they reach their destination, at most roosting at night and possibly feeding occasionally, and they normally arrive undamaged. Virtually all the butterflies collected by me during the huge migration in Botswana and Transvaal in 1991 (Larson 1992) were in perfect condition after having crossed the entire Kalahari, probably from Namibia and Namaqualand.

A similar conclusion was also drawn by Captain Dannreuther and others who for many years (1930s and 1940s) collected butterflies arriving from the sea in southern England. Many of the very few butterflies captured on Iceland, where there are no resident species, are in perfect condition. This is also the case for many butterflies caught on ships.

Butterflies get damaged not by flying long distances but by fluttering about among vegetation, feeding, laying eggs, and tangling with predators.

On the other hand a worn specimen may well be a migrant. Large migrations appear to pick up resident butterflies along the way, so damaged butterflies in a mass migration may possibly be used to assess the extent to which a migration has recruited participants along the way. It is also possible that a worn specimen is a migrant which has spent considerable time after arriving in its new habitat.

In general, the condition of a butterfly is no indicator of how far it has travelled, a common misconception which is scattered throughout the butterfly literature, not only in South Africa.

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A NEW SUBSPECIES OF TRIMENIA WALLENGREN11 (TRIMEN AND BOWKER) (LEPIDOPTERA: LYCAENIDAE) FROM THE WESTERN CAPE PROVINCE, SOUTH AFRICA

By J. B. Ball

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Abstract. A new subspecies of the lycaenid butterfly *Trimenia wallengrenii gonnemoi*, ssp.nov. is described from the Cape Province of South Africa.

Nominotypical *Trimenia wallengrenii* was originally discovered on hills near Stellenbosch in December 1862 and described as *Zeritis wallengrenii* Trimen. This butterfly has not been found in the type locality this century (Clark & Dickson, 1971), most likely due to destruction of its presumed original renosterbosveld habitat (Acocks, 1975 coastal renosterbosveld). Renosterbosveld (Renoster shrubland) is the most poorly preserved South African vegetation type, with only 5% remaining in the west and south-west Cape (Rebelo, 1992). Specimens of this species were subsequently found on renosterbosveld covered hills between Mamre and Darling in the Western Cape Province, at altitudes of between 200 and 350 metres a.s.l. Very slight differences are detectable between specimens from these renosterbosveld colonies (Dickson, 1967). C.G.C. Dickson and A.J. Duke found this subspecies of *T. wallengrenii* on the Piketberg on the 14th December 1949, these specimens are generally darker and have silver markings on the underside compared with the golden markings of the lower-altitude Mamre-Darling specimens, and were found in Mesic Mountain fynbos (Moll et al., 1984).

Trimenia wallengrenii gonnemoi ssp. n., Plate 1.

Diagnosis

This subspecies differs from the nominotypical one in the following aspects:

1) Upperside dark markings blacker and more extensive, with thus a corresponding reduction in the extent of the orange coloration.
2) Underside ground colour generally darker.
3) Metallic hindwing undersurface markings usually larger and silvery.
4) In a number of specimens, mainly female, there is some purplish-red scaling on undersurface of hindwing.

Description

Male. Forewing length 14,1 - 18,2 mm, mean 16,2mm (in nominotypical specimens 15,0-18,4 mm, mean 16,9 mm); antenna-wing ratio 0.52. *Wings, upperside*. Forewing with a roughly ovoid, rich orange central area surrounded by a dark black border; area 1a and sometimes 1b totally black and tornal and other black marking more expansive than in nominate subspecies; heavy black scaling present in basal part of the orange area. Cilia black with white interneural coloration, the latter being more pure and thus more distinct than in Renosterbosveld specimens. Hindwing with extensive dark basal 'clouding' and dark apical area wider and extending further posteriorly than in nominotypical specimens; black postmedian streak running postero-medially from large apical patch more distinct, extending to anal angle and enclosing a smaller amount of orange than in nominotypical specimens. In some specimens

there is virtually no orange coloration lateral to continuous post-median streak. *Underside*. Forewing similar to nominotypical *wallengrenii* but antero-lateral ground colour slightly darker. Hindwing with ground colour as in forewing and metallic markings silvery and slightly larger than in nominotypical subspecies. *Genitalia*. Not significantly different from nominate subspecies.

Female. Forewing length 14.5 - 20.1 mm, mean 17.6mm;(in nominate 18.7 - 20.7mm, mean 19.2mm) antenna-wing ratio 0,45. *Wings, upperside*. Wing shape as in nominotypical specimens, but with considerably more extensive black antero-lateral markings and basal black clouding considerable-, orange-yellow mark at end of discoidal cell more prominent than in nominate subspecies. *Underside*. As in male except silvery marks not larger than those seen in nominate specimens; slight purplish-red scaling in half the population, mainly neural, in distal part of hindwing.

Etymology

During the first few years of European settlement at the Cape, the Khoi (Hottentot) chief (Gonnemo) and his Cochoqua tribe lived in the present Riebeek-Kasteel/ Piketberg region. During the governorship of Isbrand Goske (1672-1676), the colonists who were involved in a war with the Khoi under Gonnemo, stationed a platoon or a picket (old Dutch 'piket') of soldiers on the mountain where this butterfly race is found - hence the Piketberg. This new subspecies is named for chief Gonnemo. (*Standard Encyclopaedia, of Southern Africa*, 1973).

Material examined

Holotype ♂ SOUTH AFRICA, Piketberg, 32° 53' S 18° 44' E, Cape Province, 28.xi.1992, J. B. Ball. Allotype ♀: same data as holotype but 9.xii.1989, A.K.Brinkman. Paratypes: same data but 7 ♂, 1 ♀ 30.xi. 1991; 34 ♂, 5 ♀ 28.xi.1992, J.B Ball; 1 ♂ 9.xii.1989; 3 ♂ 2 ♀ 23.xi.1991, A.K. Brinkman. The holotype and allotype are to be deposited in the Transvaal Museum, Pretoria, paratypes in the collections of J.B Ball (Cape Town), A.K Brinkman (Cape Town), W. H., S. F. & G.A. Henning (Roodepoort), and the South African Museum (Cape Town).

Distribution and habitat

This subspecies occurs on open stony ground on the plateau and upper slopes of the Piketberg. It is found at an altitude of between 650 and 750 metres, in vegetation classified as mesic mountain fynbos (Moll *et al*, 1984). This attractive dark subspecies flies at the same time and in the same locality as the colourful diurnal ant-lion *Pamexis luteus* (Thunberg). The males of this butterfly have an irregular, low, quick flight that is usually short, settling abruptly on the ground with their wings closed. They are occasionally seen feeding on flowers

Acknowledgements
I wish to acknowledge the provision of material for examination by A.K. Brinkman. A. Heath kindly performed genitalic studies on the two races of *Trimenia wallengrenii*. Dr. S. Newton-King of the History Department of the University of the Western Cape assisted with the accepted spelling of Gonnemo. N. Larsen did the photography for the plates.

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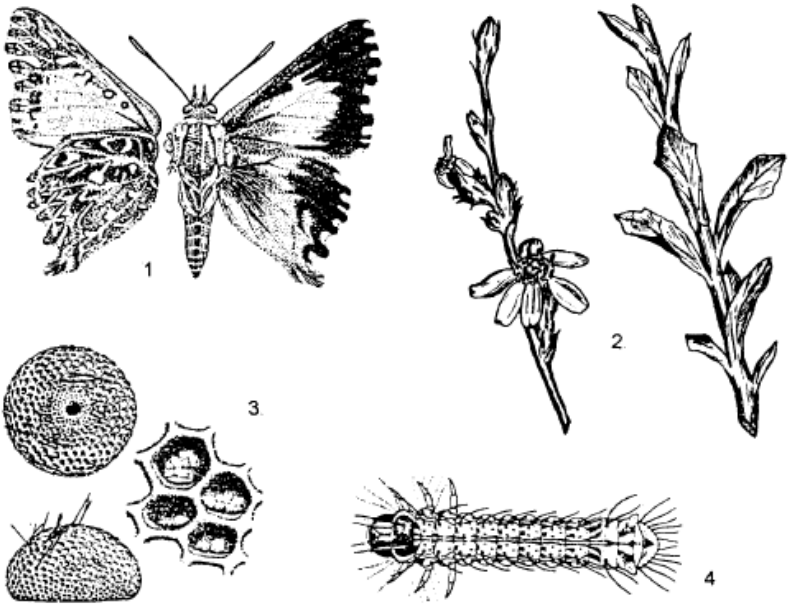


Trimenia wallengrenii wallengrenii. 1. Adult male. 2. Plant, *Senecio* sp., on which eggs have been laid. 3. Egg, top, side and enlargement of side. 4. First instar larva with only the more anterior of the fine lateral setae represented (after Dickson, in Clark & Dickson, 1971).

Plate 1.

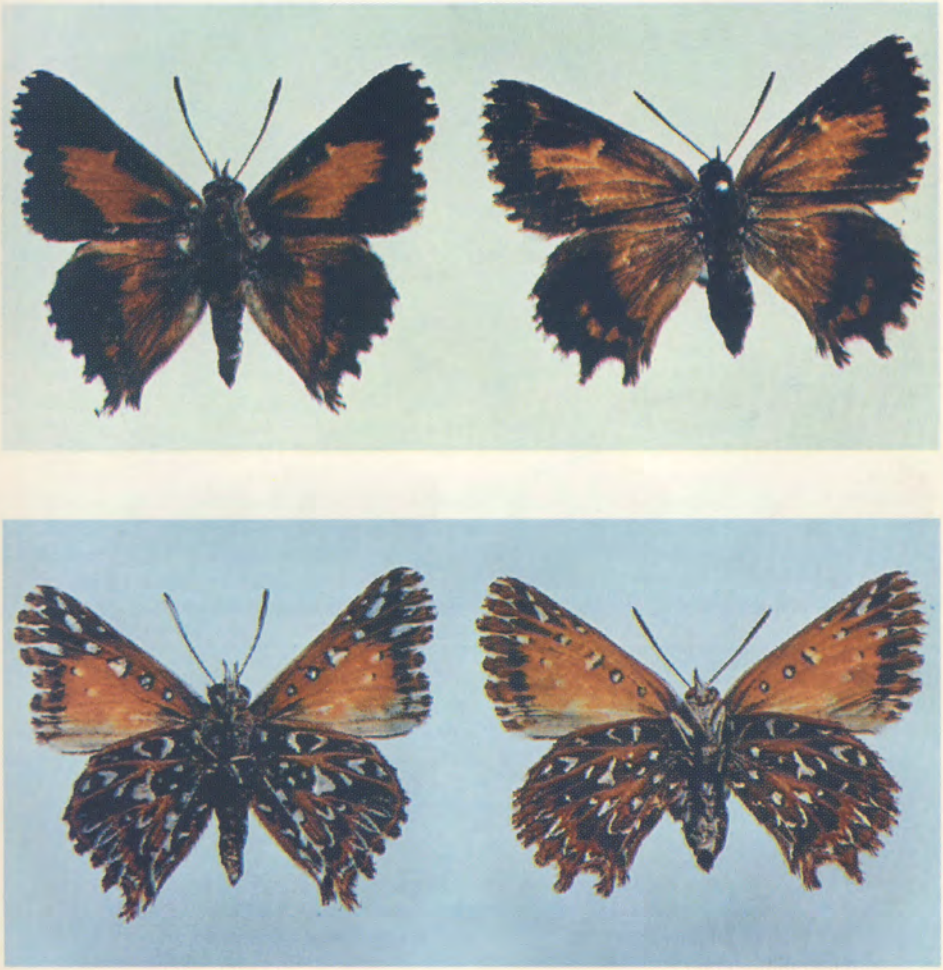
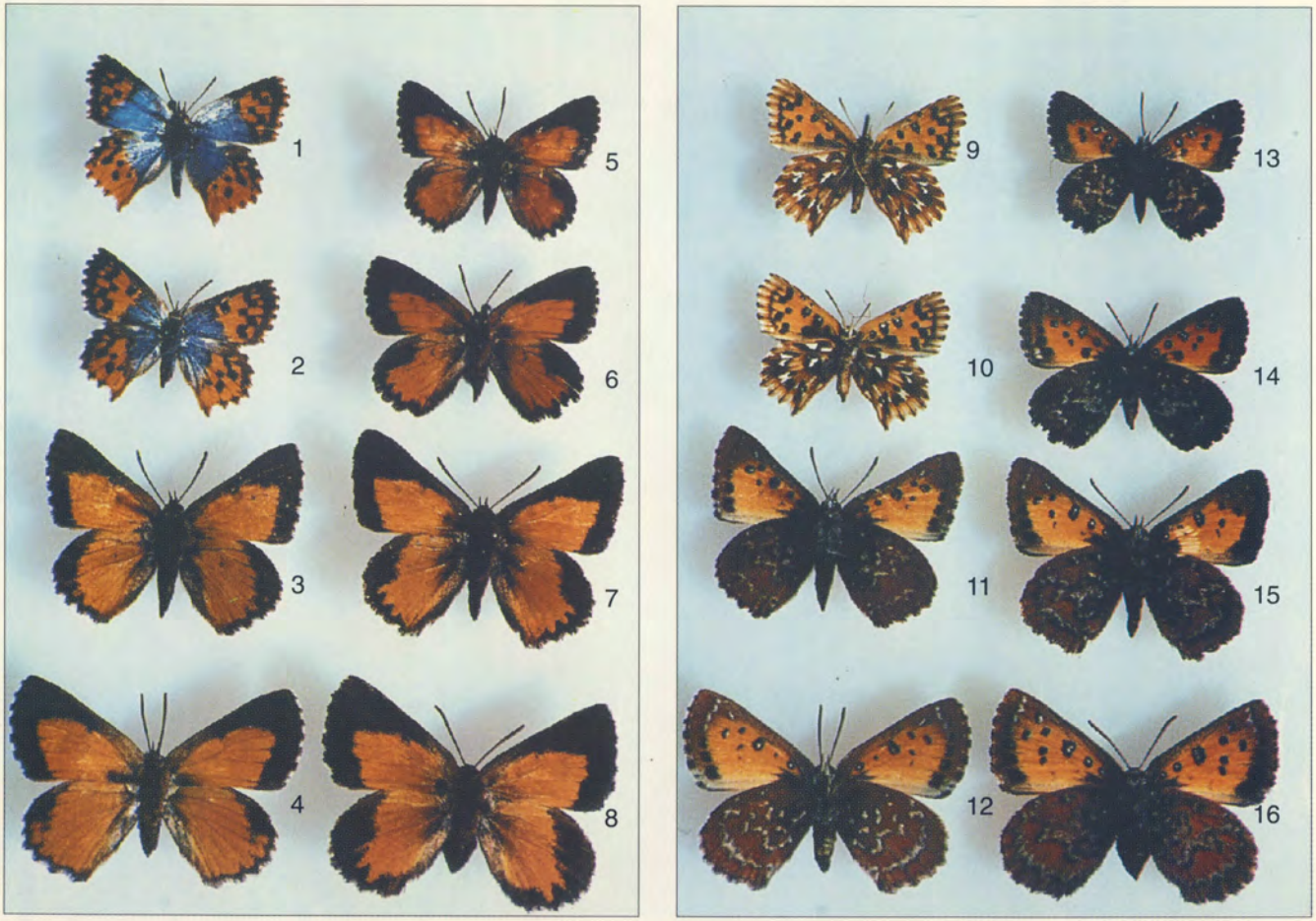


Photo. N. Larson

Trimenia wallengrenii gonnemoi ssp. n.
Holotype male (left), allotype female (right).
Uppersides - top; undersides - bottom

Plate 2.



FOUR NEW LYCAENIDAE FROM THE CAPE PROVINCE, SOUTH AFRICA.

By E. L. Pringle

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Abstract. A new species of *Poecilmitis* Butler, a new species and two new subspecies of *Aloeides* Hübner are described from the Western Cape Province: *Poecilmitis mithras* sp. n., *Aloeides thyra otientis* ssp. n., *A. pallida juno* ssp. n. and *A. monticola* sp. n.

Poecilmitis mithras sp. n. Plate 2 - Figs 1, 2, 9, 10.

It has long been realised that specimens of the *Poecilmitis thysbe* (Linnaeus) complex from Knysna differ from topotypical material. Examination of a long series of specimens of *P. thysbe* from the Cape coast west of Knysna, as well as *P. whitei* Dickson from Port Elizabeth to the east, has shown that the Knysna specimens differ quite markedly from those from either area. Furthermore, it can be shown that they are not part of a cline, as there is in many respects greater affinity between *P. whitei* and topotypical specimens than between these and Knysna specimens. It is of great importance to note that examples of typical *P. thysbe* from the mountains of the Cape Peninsula show very little variation and are quite consistent with specimens from the Cape south coast, as far east as Mossel Bay. However, north of Cape Town along the west coast the species becomes highly unstable, making further taxonomic evaluation extremely difficult.

Diagnosis

Male forewing apex more rounded and distal margin slightly straighter than in either *P. thysbe* or *P. whitei*. Upperside basal blue darker and more restricted, orange-red outer area more reddish. Hindwing basal blue more restricted than *P.* whitei but not as restricted as typical *P. thysbe.* Upperside black markings very pronounced in comparison with either of the other species as are the white cilia along the fringes of the wings. The pink irridescence in orange-red ground-colour adjacent to basal blue of hindwing is comparatively restricted.

Female forewing apex more evenly rounded than in either of the other species. On the upperside the basal blue is darker and the orange-red ground-colour more reddish. Black markings comparatively more extensive with a very broad marginal line along the margin, leaving only the faintest vestige of orange-red markings along the cilia. The underside has a much more pronounced black submarginal line than the other two species, there is also greater contrast in the markings of the hindwing.

PLATE 2 (opposite page).
Figs 1-2. *Poecilmitis mithras*. Upperside - 1. ♂ holotype. 2. ♀ allotype. Figs 3-4. *Aloeides monticola*. Upperside - 3. ♂ holotype. 4. ♀ allotype. Figs 5-6. *Aloeides thyra orientis*. Upperside 5 ♂ holotype. 6. ♀ allotype. Figs 7-8. *Aloeides pallida juno*. Upperside - 7. ♂ holotype. 8. ♀ allotype. Figs 9-10. *Poecilmitis mithras*. Underside - 9. ♂ holotype. 10. ♀ allotype. Figs 11 -12. *Aloeides monticola*. Underside - 11. ♂ holotype. 12. ♀ allotype. Figs 13-14. *Aloeides thyra orientis*. Underside - 13. ♂ holotype. 14. ♀ allotype. Figs 15-16. *Aloeides pallida juno*. Underside - 15. ♂ holotype. 16. ♀ allotype.

Description

Male. Forewing length 13-14mm, smaller than related species. *Wings, upperside*. Forewing ground colour orange, basal area blue; basal blue area extending up costa to cell spot, reaching but not covering spots in areas 1 a and 1 b, and reaching black marginal border in 1 b; postdiscal spots large, with upper three and those in 2 and 3 confluent and situated within orange ground-colour; spots in 1 a and 1 b invaded by basal blue, and those in 3, 2 and 1 b more proximal than others; black marginal border broad, cilia white with black and a vestige of orange at vein ends. Hindwing ground-colour orange, basal area blue with an irregular series of six large discal spots, those in 1 c and 3 placed proximal to others, and a broad black marginal band along costa, which tapers to a fine line from vein 4 to 1 b; a narrow irridescent area extending beyond basal blue to spots in 1c, 2 and 3. Cilia white but black and orange at the vein ends. *Underside*. Forewing ground-colour orange, becoming fawn along the outer and inner margins; discal series as in upperside, but less pronounced, with those in 2 and 3 separate; two small gold-centred spots along costa, as is the larger discocellular and mid-cellular spot; a well-developed black submarginal line from 1 b to 5, and a long spot in area 1 b from origin of vein 2 basad; white internervular streaks along outer margin. Hindwing ground-colour dark brown with light fawn along outer margin from vein 2 to 1 b, and faintly along discal area-, silvery-white markings basally in areas 8, 7 and in cell, as well as along costa in 7, and in postdiscal area in 1 b, 1 c, 3 and 5; prominent white internervular streaks along margin.

Female. Forewing length 15mm. *Wings, upperside*. Forewing as in male except that wingshape rounder, and basal blue darker and more restricted, basal blue reaching approximately two thirds of distance between base and discocellular spot, its outer edge forming a straight line to origin of vein 2 and approximate centre of inner margin. Hindwing, as in male, except more rounded and basal blue darker and more restricted, extending from costa inwards to origin of vein 7, along a straight line to origin of vein 2, to a point approximately halfway along inner margin. *Underside*. As in male.

Material examined

Types: Holotype ♂: Knysna, 1 I.III.1987, E.L.Pringle. Allotype ♀: Knysna, 26.II.1992, E.L.Pringle. Paratypes: 12 ♂ Knysna, 26.II.1992; 1 ♀ Knysna, 26.II.1992; 6 ♀ Knysna, 5.XII.1992; 1 ♀ Knysna, 10.IX.1992; 5 ♂ Knysna, 10.IX.1992, E.L.Pringle. Holotype in The Natural History Museum, London. Allotype and paratypes in collection of V. L. & E. L. Pringle.

Comments

Basal silvery-blue of a darker, less greyish tone, and orange-red outer area more reddish than in either *P. thysbe* or *P. whitei*. *P. whitei* shares a similar upperside ground coloration; basal blue is much more restricted than in *P. whitei*, reaching, but not covering, the cell spot as well as the postdiscal spots in areas 1 a and 1 b, and touching the black outer margin only in 1 a. Spots in areas 2 and 3 are well clear of the basal blue. In *P. whitei*, the basal blue of the forewing partially covers the cell spot, usually reaching the spots in areas 2 and 3, and invariably reaches the margin in 1 b, where it covers the spots. In *P. thysbe*, the basal blue of the forewing extends much as in the present species, though it normally covers the black spots in 1 b, and hardly ever reaches the outer margin in 1 a.

Hindwing basal blue reaching the postdiscal series only in area 6, leaving the rest of the series well clear within the orange-red ground-colour. In *P. whitei*, the basal blue frequently, though not always, reaches all the spots in the postdiscal series, with the exception of the most outwardly placed spots in areas 2 and 4. In nominotypical *P. thysbe*, on the other hand, the basal blue is even more restricted than in the present insect, normally being well clear of

the entire postdiscal series.

Upperside black markings are very pronounced in comparison with either of the other species, especially along the margin of the forewing. This is particularly evident when compared to typical *P.thysbe* which, of the three species, has the greatest reduction in the size and extent of these markings. The positioning of all the black markings, insofar as they are not covered by the silvery basal blue, is the same in all three species. The white cilia along the fringes of the wings are very pronounced in comparison with the other two species, where the cilia are less conspicuous because the outer margin of the wings are fringed by orange-red. The black marginal line extends to the cilia in nearly all individuals. Where specimens do have reddish markings along the outer margin, these are reduced almost to obsolescence. In the other two species, particularly in *P. thysbe*, the females have an orange-red line distad of the black marginal line, causing the cilia to be strongly invaded by orange-red markings.

The underside in comparison with the other two species has black submarginal lines much more pronounced extending from areas 1 to 6 of the forewing; there is also greater contrast in the markings of the hindwing, as a result of darker and more extensive brown shading in the median and basal areas.

Habitats and Habits

The species was found on sandy ground in the vicinity of Brenton- on-Sea near Knysna, flying among tall bushes of *Chrysanthemoides monilifera* L., which is probably its foodplant. Specimens were uncommon and generally scattered singly over a fairly restricted area. They appear to have disappeared completely from one of their original localities, and there is a real possibility that ongoing development will threaten their survival in other localities in this area. The capture of two rather worn specimens of this insect from between Stilbaai and Riversdale extends its distribution to well within the area occupied by typical *P. thysbe*, and gives confirmation to its status as a distinct species.

Aloeides thyra orientis ssp. n. Plate 2 - Figs 5, 6, 13, 14.

Specimens of an *Aloeides* closely related to *A. thyra* Linnaeus have been taken from Knysna and Stilbaai; these colonies nevertheless show marked differences from those of nominate *A. thyra*, which occur west of the Breede River, and thence over much of the south-west Cape Province. There is, however, instability in certain characteristics of specimens from Stilbaai: these are somewhat transitional towards *A.thyra*, and it is for this reason that this insect has been given subspecific status only.

Diagnosis

In comparison with nominotypical *A. thyra* it has a blunter apex and a more rounded outer margin to forewing. Anal angle of hindwing normally also more rounded. Upperside ground-colour more reddish in tone and veins of both sexes largely lack the black scaling characteristic of *A. thyra*. Distal band of forewing narrower than nominate *A. thyra*. On hindwing, apical patch much smaller.

On underside the ground-colour of hindwing, as well as apical area and outer margin of forewing, dusky brown, as opposed to salmon-pink or mauve which is normal in most specimens of nominotypical *A. thyra*. The markings of hindwing bright silver, edged with black; they are very finely etched and more clearly defined in comparison with nominate race.

Description

Male. Forewing lengths: 12-15mm. *Wings, upperside*. Forewing ground-colour orange-red, with a broad black costal and marginal area, black marginal border of approximately even width, widening slightly between vein 2 and inner margin, veins blackened very slightly, and only for a short distance adjacent to distal band. Cilia greyish-white, becoming black at ends of veins. Hindwing ground-colour as in forewing, with a black apical patch extending inwards along margin for approximately one third of length along vein 6, and with its lower edge along vein 5, only veins 6 and 7 with noticeable traces of black scaling, a continuous narrow band of marginal lunules between vein 5 and tornus, anal fold ochreous, cilia greyish-white, becoming black at ends of veins. *Underside*. Forewing ground-colour orange-red, becoming ochreous towards inner margin, and with a broad dusky brown area along costa, apex and margin, a submarginal series of 6 black spots, diminishing in size from 1 b to apex and outwardly bordered by marginal line which is broken at veins; remaining spots as in *A. thyra*. Hindwing ground-colour dusky brown, only one specimen from Stilbaai showing any variation in this regard, silvery markings conspicuous edged with black; basal spots, discoidal fascia and median series normally clearly separated, although there is some variation in this regard, sinuous submarginal series extending from anal fold to veins 3 or 4, where there is a row of faint marginal lunules, which are sometimes outwardly edged with white.

Female. Forewing lengths: 15 - 16mm. Similar to male, except that wings rounder and abdomen stouter, distal band of forewing broader than in male, being almost as broad as in nominate race, very faint dark scaling along veins of forewing in one specimen examined as well as along veins 4-7 of hindwing; other specimens largely devoid of this, as in male.

Material examined

Types: Holotype ♂: Knysna, 11.III.1987, E.L.Pringle. Allotype ♀: Brenton, 29.X1.1991, E. L. Pringle. Paratypes: 5 ♂ Knysna, 11.III.1987, E.L.P.; 2 ♂ Knysna, 11.III.1987, A. B. Pringle; 2 ♂ Knysna, 5.XII.1989, E.L.P.; 1 ♀ Knysna, 5.XII.1992, E. L. P. 6 ♂ Brenton, 29.XI.1991; 1 ♂ Stilbaai, 3.XI.1987, V.L.Pringle; 1 ♂ Stilbaai, 25.X.1984, V.L.P. Holotype in The Natural History Museum, London. Allotype and paratypes in collection of V. L. & E. L. Pringle.

Comments

The wings are structurally very similar to *A. thyra*. Nevertheless, there is a certain amount of variation in the wingshape of both species although only one of the Knysna paratypes has a wingshape similar to that of true *A.thyra*.

On the hindwing, the apical patch is much smaller than in the nominate, not extending inwards from the margin beyond one third of the length of veins 6 and 7. There are no scattered markings basad of this apical patch, as is normally evident in nominotypical *A. thyra*. The cilia and distal lunules are similar. The underside has the orange-red ground-colour of the forewing of a more reddish tone and the spots are comparatively reduced in size, though similarly positioned. Unlike nominotypical *A. thyra*, the submarginal series of the forewing always reaches the apex, and has a marginal line, broken at the veins, between it and the outer margin.

Habitats and Habits

This insect has been known for a long time, but has simply been referred to as "Knysna *thyra*" when dealing with the complexities of the *A. thyra* group. Specimens fly on sandy ground in small colonies, seldom exceeding three or four in number. They are scattered over a fairly wide area in the vicinity of Brenton-on-Sea and also on the hills overlooking the Knysna lagoon. Their habits are typical of all members of this group, the butterflies flying up as one

approaches, then whirling rapidly about and settling with folded wings on the ground in the same small area.

Aloeides pallida juno ssp. n. Plate 2 - Figs 7, 8, 15,16.

This large Aloeides was discovered by Dr. J.B. Ball at Nature's Valley, and was subsequently taken by the author and his wife at Karreedouw in the Eastern Cape. It is clearly distinct from *A. pallida littoralis* Tite & Dickson, with which it was initially confused and which occurs nearby at Knysna. The area between Patensie and Knysna, a distance of approximately 120 km, has an astonishing number of races of *A. pallida* Riley - five in all, inclusive of the present insect. Because each population has its own distinctive features it is possible that this might be a species complex rather than merely several subspecies of a single insect. It is felt, however, that the rugged mountainous nature of this terrain probably causes isolation and therefore subspeciation and for this reason it has been decided to maintain the present conservative treatment of the *A. pallida* group. Should further fieldwork prove that any of these races actually overlap, then the entire group will have to be revised.

Diagnosis

Male wing shape similar to that of *Aloeides pallida grandis* Tite & Dickson, apex of forewing blunter and more evenly rounded than in *A. p. littoralis*. In size the same as *A. p. grandis*. In comparison with *grandis* orange-red ground-colour a lighter, clearer orange, black distal band of forewing narrower and inwardly less lunulate, veins of forewing free of dark scaling except where they meet distal band. Hindwing black apical patch comparatively reduced. In contrast to both *A. p. grandis* and *A. p. littoralis*, there is normally no dark irroration within orange-red ground-colour of hindwing, nor any dark scaling along any veins.

Hindwing underside either deep crimson or olive brown, quite different to ground-colour of *A. p. littoralis* which varies from a straw colour to light mauve, with a full range of intermediates. Silvery-grey markings prominent edged distally with black, irregular sinuous submarginal series clearly defined and extending across entire hindwing from anal fold to area 7. In both *A. p, grandis* and *A. p. littoralis* this series is comparatively indistinct. This band is also more dentate than in any other races of *A. pallida*, its outer edges reaching the cilia in nearly every instance.

Description

Male. Forewing lengths 16mm-18mm. *Wings, upperside*. Forewing ground-colour orange, with a black costal, apical and marginal area, distal band of approximately even width, broadening slightly from vein 2 to inner margin, in most specimens, veins usually free of dark scaling, though sometimes with a slight dark scaling adjacent to discal band. Cilia white, but reduced by extensive black markings at vein endings. Hindwing ground-colour as in forewing, with a black apical band that extends to approximately one third of distance along veins from margin, and towards inner margin only as far as vein 4, a continuous lunulate black band along margin from vein 4 to tornus, veins devoid of black scaling, except in some instances along veins 6 and 7. Cilia white but faint, as they are extensively invaded by black at ends of veins *Underside*. Forewing ground-colour orange, ochreous along inner margin, and crimson or olive-brown along costa, apex and margin, other markings as in *A. p. grandis*, but dark suffusion surrounding spots of submarginal series less extensive. Cilia white, but black at the ends of the veins. Hindwing ground-colour olive-brown or crimson, silvery-grey markings rather dull, but rendered very prominent against ground-colour by extensive black distal edging; discoidal fascia prominent, and normally fused with broad median band, but not with basal spots or median costal spot, strongly dentate submarginal band extending across entire

hindwing from anal fold to area 7. Cilia white and indistinct, heavily invaded by black at vein ends.

Female. Forewing lengths: 19mm-20mm. *Wings, upperside*. Ground-colour and markings as in male, except outer margins much more rounded, sometimes a weakly developed black submarginal streak on hindwing in areas 1 and 2 as in *A. p. grandis*, but normally absent, black discoidal spot of hindwing normally also absent, though faintly evident in one of the Natures Valley specimens examined. *Underside*. As in male.

Material examined
Types: Holotype ♂: Karreedouw, 27.X1.1982, A. B. Pringle. Allotype ♀: Karreedouw, 27.X1.1982, E.L.Pringle. Paratypes: 1 ♂ 1 ♀ Karreedouw, 27.X1.1982, E.L.P.; 3 ♂ Idem, 13.X1.1984, E.L.P.; 10 ♂ Idem, 22.XI.1983, E.L.P.; 1 ♀ Idem, 22.XI.1983, A.B.P.; 1 ♀ Idem, 22.XI.1983, E.L.P.; 1 ♂ Idem, 22.XI.1983, A.B.P.; 2 ♀ Idem, 13.XI.1984, E.L.P.; 4 ♂ Nature's Valley, 13.XI.1984, A.B.P.; 13 ♂ 4 ♀ Nature's Valley, 13.XI.1984, E.L.P.; 2 ♂ 2 ♀ Nature's Valley, 9.X11.1975, Dr. J.B.Ball; 1 ♂ Nature's Valley, 10.X1.1984, J.B.B. Holotype in The Natural History Museum, London. Allotype and paratypes in collections of V. L. & E. L. Pringle and J. B. Ball.

Comments.
On the upperside it comes closest to *A. p. grandis*, to which it is structurally very similar. On the hindwing, the black apical patch is comparatively reduced, as it does not extend beyond approximately one third of the distance along the veins from the outer margin, and only reaches towards the inner margin as far as area 4. There is normally no dark irroration within the orange-red ground-colour of the hindwing, nor any dark scaling along any of the veins of this surface. In exceptional specimens where this does occur, it is only very faintly evident. This is in marked contrast to the majority of specimens of typical *A. p. littoralis*, in which dark markings are liberally scattered over the entire ground-colour. The black distal lunules of the hindwing are very variable, but are on the whole narrower than in *A. p. grandis*. There is generally no black discoidal marking on the hindwing, though this is faintly evident in a small proportion of the specimens examined from Nature's Valley.

The basal spots and discoidal fascia of the hindwing underside are much as in *grandis*, except that they have more prominent black edging. In no instances do the discoidal fascia fuse with the submarginal band, as happens in some specimens of *A. p. grandis* and nearly all specimens of *A. p. littoralis*.

Habitat and Habits
This large and handsome *Aloeides* species is known to occur in two very restricted areas in relatively open "islands" in tall Macchia country. The males are extremely robust and territorial, each guarding a small area of open ground, where they sit with wings folded upright, making infrequent sorties in search of others of their kind.

Aloeides monticola sp. n. Plate 2 - Figs 3, 4, 11, 12.

This striking insect was discovered by V.L. Pringle on the highest slopes of the Cedarberg mountains on 23 October 1990. It is closely related to *Aloeides caledoni* Tite & Dickson, which flies over a wide area of the south-western Cape Province, from Caledon to Matjiesfontein. Both these insects are related to the *Aloeides pallida* group, but form no part of this group, because in at least two localities *A. caledoni* occurs sympatrically with various races of *A. pallida.*

Diagnosis

In both sexes of *A. monticola*, the last joint of labial palpi proportionally shorter than *A. caledoni* being barely a quarter the length of second segment. Long white ribbon-like scales on ventral portion of second segment of the palpi longer and more numerous than in *A. caledoni*.

Forewings slightly more rounded than *A. caledoni*. Orange-red ground-colour slightly more reddish and black upperside markings more extensive and more intensely black. Dark scaling of costa reaches further towards base of wing, only basal quarter of its length being covered with orange scales, and there is a small dark spot in cell adjacent to this costal scaling.

On underside of both sexes ground colour of forewing slightly more reddish and submarginal series of forewing much better developed than in *A. caledoni*. Submarginal series which runs from the anal fold to area 7 generally more extensive than *A. caledoni*.

Description

Male. Forewing lengths: 15mm - 17mm. *Wings, upperside*. Forewing ground-colour orange-red, with black costal, apical, and marginal area, small dark spot adjacent to black costal border in cell, inner edge of distal band straight, no darkening of veins. Cilia white, indistinct, and weakly invaded by black markings at ends of veins. Hindwing ground-colour as in forewing, black apical patch narrow and band-like, being only slightly thicker than distal lunules, veins rarely blackened for a short distance adjacent to apical patch, no discocellular marking, and discal lunules forming a continuous band from vein 4 to the tornus. Cilia white but indistinct, and only faintly invaded by black at the vein endings. *Underside*. Forewing ground-colour orange-red, becoming yellowish towards outer margin and inner margin; costal, apical and marginal areas varying from deep crimson to crimson-tinted brown; submarginal series consisting of dusky spots in areas 1 to 3, replaced by silvery markings in 4 to 7; three spots in cell white-centred, and white-centred postdiscal spots in areas 4, 5 and 6, those in 4 and 5 black-ringed, and that in 6 brown-ringed; other than for indistinct black spots in areas 2 and 3, remainder of the median series obsolete; black basal streak in area 1 b, and very faint marginal dots in most specimens. Cilia white, indistinct, and faintly chequered at the ends of the veins. Hindwing ground-colour varying from deep crimson to crimson-tinted brown-, silvery underside markings silvery-grey, faintly edged with brown; basal spots, discoidal fascia and median series comparatively reduced, either separated, or weakly fused; submarginal series, which runs from anal fold to area 7, narrow and weakly dentate. Cilia indistinct and white, being rather indistinctly chequered with blackish markings at vein ends.

Female. Forewing length: 19mm. *Wings, upperside*. As in male, but with wings more rounded. Hindwing with apical patch very narrow and more quadrate than in male, extending as far as vein 4. *Underside*. Forewing as in male. Hindwing ground-colour crimson lake, much brighter than in male; silvery markings also brighter than in male, and outwardly edged with brown; basal spots, discoidal fascia and median series clearly separated; submarginal series, narrow, weakly dentate and running from anal fold to area 7.

Material examined.

Types: Holotype ♂ Cedarberg, 23.X.1990, V.L.Pringle. Allotype ♀: Cedarberg, 4.XI.1991, V.L.Pringle. Paratypes: 5 ♂ Cedarberg, 4.XI.1991, V.L.Pringle. Holotype in The Natural History Museum, London. Allotype and paratypes in collection of V. L. & E. L. Pringle.

Comments.

A. monticola is slightly smaller than *A. caledoni*, although it is felt that more comparative material is needed to confirm this.

The forewing of the male is slightly blunter and more rounded along the apex than in *A. caledoni*, although some variation exists in this respect. The apical and distal black markings are noticeably broader and more intensely black than in *A. caledoni*, as are those of the apex and inner margin of the hindwing. As in the male, the orange-red ground-colour on the upperside of the female is of a darker, more reddish, coloration than in *A. caledoni*, and the black markings are more intense. However, the black markings are not much more extensive than in the female of *A. caledoni*, although the black distal margin is slightly broader. The cilia, which are chequered with black and white, are more prominent than in the female of *A. caledoni.*

Submarginal series of the forewing much better developed than *A. caledoni*, having dusky spots in areas 1 to 3 which become smaller and are replaced by silvery markings faintly edged with black in areas 4 to 7. In *A. caledoni* the submarginal series is normally obsolete in areas 4 to 7, although one female from Touws River does have faint silvery spots in these areas.

In the male, the silvery underside markings are inconspicuous against their background, being rather dull silvery-grey, faintly edged with brown. The basal spots, discoidal fascia and median series are variable but, like *A. caledoni*, are weakly fused, appearing as scattered spots in many specimens.

In the female the hindwing underside ground-colour is brighter than in the male, and is a crimson lake colour, as in the female of *A. caledoni*. The silvery markings of the hindwing are brighter and more extensive than in the male, being also of a brighter silvery colour than in the female of *A. caledoni*, this renders them very conspicuous against the ground-colour, they are very faintly edged with brown. The submarginal band of the hindwing is well-defined and extends from the anal fold to area 7, in the female of *A. caledoni* this series is fainter and does not extend beyond area 4.

Habitat and Habits

A single specimen of this colourful insect was taken on open rocky ground in a small area on the higher slopes of the Cedarberg range on 23 October 1990, and more were subsequently found there on 4 November 1991. On the second occasion, a number of very worn specimens were sighted, indicating that the species emerges relatively early in the spring, much like its relatives *A. caledoni* and *A. kaplani* Tite & Dickson. It is interesting to note that members of the closely-related *A. pallida* group generally emerge somewhat later in the year, during November and December. Like *A. caledoni* and *A. kaplani*, it is likely to emerge only once a year. It was found in the same vicinity as strong colonies of *A. apicalis* Tite & Dickson and *A. arida* Tite & Dickson.

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A LEPIDOPTERIST ON GRANDE COMORE ISLAND

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Abstract. A description of a trip to the Grand Comore Island with a discussion of the major vegetation types and a provisional checklist of the butterflies.

The Comoro Islands are steeped in mystique and myth, associated with pirates, sultans, perfumes, the coelacanth and buried treasure. On the 26th June 1993 I arrived on Grande Comore with my family - trading two weeks of a particularly wet Cape Town winter for a tropical paradise. The flight from Jan Smuts was rather festive and I enjoyed my window seat gazing at the northern coastal area of Mozambique - which was often lacerated by rivers with many clusters of granite hills punctuating the landscape. I imagined all sorts of magnificent butterflies, beetles, cicadas and moths living there. Near the Tanzanian border we turned east heading halfway across the northern Mozambique channel to Hahaya airport - which is just north of the capital Moroni on Grande Comore. Coming in to land we flew over some old conspicuous black lava flows and it seemed strange seeing baobab trees growing near the coast.

The Comoro archipelago is composed of four major islands, all of volcanic origin. Grande Comore (also known as Ngazidja) is the largest and youngest of the islands, the other islands are Anjouan, Moheli and Mayotte. Grande Comore has a map outline that is roughly the shape of an inverted papilionid butterfly or the aedeagus of an *Aloeides* butterfly!

Walking across the tarmac to the airport buildings one noted the southern end of the island dominated by the active volcano Karthala - which rises to an impressive 2361 metres. The last eruption was in 1977 - when the village of Singani was partially destroyed.

A number of *Phalanta phalantha aethiopica* (Rothschild & Jordan) butterflies were seen feeding on flowers just outside the rather humble airport buildings. Formalities were quickly dispensed with and we were soon on our way to the very pleasant Le Galawa Beach Hotel. (Galawa is the local name for a dugout canoe.) The coastal road is narrow and it soon was evident that only the better drivers had both side mirrors on their vehicles!

We had arrived in the so-called 'dry and cool season' which lasts from May to October. Temperatures during May and June average 30°C warming up from July. In September the monsoon winds begin with rainfall reaching a peak in January. We had a few days with temperatures up to 30°C.

Le Galawa Beach Hotel is beautifully situated right next to the white beaches on the north of the island. The beaches are fringed with many coconut palms - which are found in abundance all over the island. A large baobab tree near the entrance of the hotel had some flowering epiphytic orchids growing on it. The hotel has a very impressive array of boats for all manner of water sports - and the coral reef makes swimming and snorkelling very safe. It did the soul good seeing cold front after cold front pounding the Cape on the CNN global weather report -contemplating an hour or two of snorkelling in the sea warmed nicely to 25°C with the underwater visibility 30 metres! The gardens of the hotel teemed with butterflies and the sea filled with many species of butterfly fish as well as numerous other species.

A nice touch from the hotel management was the presence of two cream and black fruit-chafer Cetoniid beetles *Mauscleopsis comoriensis* Bourgoin in our room. (They had been attracted there by the welcoming scented flowers!)

The coastal Kapok trees attract the large common fruit bat (*Pteropus seychellensis comorensis*) and large groups of these "flying foxes" were seen roosting and feeding in them. They have a wingspan of up to one metre and they were much in evidence around the island.

Grande Comore is roughly 64 kilometres long and 25 kilometres wide at its very widest, with an area of 115 000 hectare. We went on a "round the island" day trip. At Chindini I saw *Colotis evanthe* (de Boisduval) and *Colotis evanthides* (Holland) as well as *Hypolimnas misippus* (Linnaeus). I got one specimen of the antlion *Centroclisis brachygaster* (Rambur) there as well. Numerous cycads (*Cycas thouarsii*) were seen all over the island.

Major Vegetation Types

Rainforest/Cloud forest. This is found between 500 and 1900 metres. Unfortunately only 15% remains. The forests are being cleared and underplanted with manioc and bananas. The canopy is 20-30 metres high and many epiphytic ferns and orchids adorn the tree trunks. The tree fern *Cyathea similis* is common. Thirteen species of bird are endemic to the island - most are found in this habitat and I did see a number of the little red Comoros fody above N'tsaoveni. No *Charaxes* were seen while I was in the rainforest. *Mylothris ngaziya* (Oberthür) was the only butterfly seen in numbers.
Scrub. This is the habitat around the Le Galawa and the major habitat of the drier areas of the island. Cycads, Coconut palms, Kapok and Baobab trees punctuate this vegetation type. The Baobab is, I think, *Adansonia digitata* which is the only species found on mainland Africa. (This species and six others of Baobab are found on Madagascar).
Savannah. There is a small amount of herbaceous and bushy savannah that has been greatly affected by grazing and burning.
Mangroves. These are fairly small with not much diversity in species - the largest seen was between Chindini and Foumboni in the south-east.
Heathland zone. This is found above 1900 metres on the Karthala Volcano. The giant heather *Phillipia comoriensis* may grow up to 4 metres in height. This is where the small and very rare Grande Comores scops owl *Otus pavliani* is found. I did not climb Karthala - but plan to do so on my next trip.
Colonising Vegetation on Volcanic Scoria . The age of an old lava flow can be determined by the successional progression from lichens to ferns, herbaceous and eventually woody annuals and perennials.
Plantations and Crops. Include groves of ylang ylang (used in making perfumes), vanilla (no natural pollinators and therefore hand pollinated), cloves, manioc, coconut palms, bananas, papaws, citrus, mangroves, breadfruit and pineapples are much in evidence. Eucalyptus and acacias have also been introduced.

There are probably about 2000 species of plants (Including ferns) on the island - half of which have been introduced with ±100 being endemic to the Comoros. There are ±286 species of Lepidoptera on the Comoros, 33% of which are endemic and 427 beetles, 24% of which are endemic. In the check list that follows I have put an * next to the species I saw near Le Galawa and a § next to those seen on my four trips to the rain forest at La Grille.

Many beautiful butterflies and moths (including *Utetheisa pulchella pulchella* (Linnaeus) and *Utetheisa elata elata* (Fabricius) of the Arctiinae) were seen close to the hotel. There was a fairly high percentage (for me) of *Danaus chrisippus aegyptius* (Schreber*) f. dorippus* - being about 2% with no other forms being seen. *Acraea ranavalona* de Boisduval was found in abundance breeding on the introduced *Passiflora foetida*. One male emerged after seven days as a pupa.

I went with a bush taxi (Peugeot 404) "taxi-brousse" to the rain forest at La- Grille on four occasions. This was mainly because the first three visits were associated with heavy rain! On the fourth visit I hired one of the hotel receptionist's "mountain" bicycles which was strapped to the top of the "taxi". I was dumped near the top of the mountain where the microwave tower

is situated and had two glorious hours up there. There were no *Charaxes*, but numerous *Mylothris ngaziya* (Oberthür), a few *Neptis comorarum comorarum* Oberthür, as well as the exciting *Papilio aristophontes* Oberthür and *Papilio dardanus humbloti* Oberthür (the female of which is tailed). In clearings I found many *frambois* (like raspberries) which were delicious. My problems started when I started going down the steep road back to the coastal road. The brakes of the bicycle were not able to hold my 75 kilogram mass, and after removing 10mm from the soles of my Reeboks I came to a haft ably assisted by a banana tree trunk! I had to walk the bicycle a few kilometres down to the coastal road. When I got down to the road I was able to resume my cycling, but after some 200 metres I had developed a puncture in "my' back tyre! I was then forced to flag down a "taxi-brousse" and was taken back to the hotel in this slightly overloaded vehicle that had in addition, 18 Comorians, 2 goats, 8 chickens and many coconuts!

There was even time for taking strolls on the moonlit beach scented by the heavy perfume of ylang-ylang flowers and dancing the waka-waka (for which you really need an independent suspension).

I found the Comorians very friendly. The population of Grand Comore is about 225,000 and the political life must be healthy as there are about 25 political parties. Not many speak English, but with some "pigeon" French and knowing a few Comorian words (accent is underlined) like Habaresa? (How are you?); Njema (I am fine); Oujouha (How are you?); Sijouha (I am fine); Lalaunono (Goodbye); - I could get by. The two weeks flew by too fast and I shall certainly return to the magical perfumed island of Grande Comore.

A PROVISIONAL CHECK LIST OF THE BUTTERFLIES OF GRANDE COMORE ISLAND

Family Papilionidae

§ *Papilio dardanus humbloti* Oberthür
Papilio epiphorbas de Boisduval
§ *Papilio aristophontes* Oberthür
* *Papilio demodocus* Esper
Graphium levassori (Oberthdr)
**Graphium angolanus angolanus* (Goeze)

Family Pieridae

* *Eurema brigitta pulchella* (de Boisduval)
* *Eurema floricola anjuana* (Butler)
* *Colotis evathides* (Holland)
* *Belenois gidica* (Godart)
* *Appias epaphia contracta* (Butler)
Mylothris humbloti (Oberthür)
* *Eurema desjardinsi desjardinsi* (de Boisduval)
* *Colotis evanthe* (de Boisduval)
* *Belenois creona elisa* (Vollenhoven)
* *Appias sabina comorensis* Talbot
§ *Mylothris ngaziya* (Oberthür)
* *Catopsilia florella* Fabricius

Family Nymphalidae
Sub-family Charaxinae

Charaxes paradoxa Lathy
Charaxes castor comoranus Rothschild & Jordan

Sub-family Nymphalinae

* *Phalanta phalantha aethiopica* Rothschild & Jordan
Hypolimnas dubius drucei (Butler)
* *Junonia rhadama* (de Boisduval)
Precis oenone oenone (Linnaeus)
Pseudacraea lucretia comorana Oberthür
§ *Neptis comorarum comorarum* (Oberthür)
* *Phalanta eurytis eurytis* (Doubleday)
* *Hypolimnas misippus* (Linnaeus)
Junonia goudoti (de Boisduval)
Antanartia dimorphica comoroica Howarth
* *Vanessa cardui* (Linnaeus)
Eurytela dryope angulata Aurivillius

Sub-family Acraeinae

* *Acraea mahela* de Boisduval
* *Acraea dammii* Vollenhoven
Acraea igati de Boisduval
* *Acraea ranavalona* de Boisduval
* *Hyalites eponina* (Cramer)

Sub-family Satyrinae

* *Henotesia comorana* Oberthür
Bicyclus anynana Butler
* *Henotesia comorensis* Oberthür
* *Melanitis leda helena* Westwood

Sub-family Danainae

Amauris nossima Ward
Amauris comorana Oberthür
* *Amauris ochlea affinis* Aurivillius
* *Danaus chrisippus aegyptius* (Schreber)

Sub-family Libytheinae

* *Libythea labdaca laius* Trimen

Family Lycaenidae

* *Virachola antalus* (Hopffer)
* *Leptotes casca* (Tite)
* *Leptomyrina phidias* (Fabricius)
* *Cupidopsis cissus* (Godart)
* *Hypolycaena philippus ramonza* (Saalmoller)
* *Lampides boeticus* (Linnaeus)
* *Azanus sitalces mayotti* D'Abrera
* *Zizina antanossa* (Mabille)

Family Hesperidae

* *Coeliades ramanatek comorana* Evans
Tagiades insularis grandis Evans
Artitropa erynnis comorarum Oberthür
* *Coeliades forestan arbogastes* (Guenee)
* *Eagris sabadius comorana* Evans
§ *Borbo fatuellus dolens* (Mabille)

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IMPORTANCE OF FOODPLANTS TO BUTTERFLY LARVAE INCLUDING A LIST OF SOME FOODPLANTS UTILISED BY THEM

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Abstract Some notes on butterfly larval foodplants with a list of some foodplants used by the different butterfly families, with particular reference to the Wilderness area of the southern Cape

The butterfly families listed below all have representative species in the Wilderness area of the Southern Cape and an attempt is made to list the various foodplants utilised by them for the interest of botanists. The list includes a wide variety of foodplants, some of which do not occur in Wilderness but can be found further north,e.g. in the Transvaal. Many of the butterflies found in Wilderness will also be found in the Kruger National Park, which also has an abundance of plant life.

The female butterfly has three primary aims in life:

1. To be successfully mated.
2. To carry her eggs while they are developing inside her.
3. To find a suitable foodplant upon which to lay her eggs, when the time is ready.

She must also avoid any damage to herself or her wings during this time. Many female butterflies are fairly secretive during this stage of their lives and are not often easily seen. Many of them resort to mimicry as a successful ploy to avoid predators, by mimicking inedible butterflies. Others use camouflage and are difficult to distinguish among leaves and twigs. It is not unusual, therefore, to find that a female of a species looks entirely different to the male.

In addition, in the southern Cape, butterflies have to put up with sudden cold snaps as cold fronts pass through with high winds and driving rain.

Many butterfly larvae or caterpillars, are suitably camouflaged so as to blend in with their host plant and avoid detection by predators. In addition some caterpillars absorb toxins from their host plants and so become unpalatable; therefore camouflage colouring is hardly necessary for them and the caterpillars concerned usually carry bright, warning colours.

Debushing of areas for the development of projects such as exotic forestation, agriculture or urban building, has a profound effect upon the butterfly's natural habitat, in many cases causing extirpation of the species. In some cases, such as where citrus trees are planted, *Papilio* species abound as the family Rutacae - to which citrus is related - is actually one of their larval foodplants. In the case of some of the Lycaenidae butterflies which are myrmecophylous (ant-associated) the situation is critical as these butterflies require the presence of both the host ant and the host plant within the immediate vicinity of each other. For some of the *Lycaenids* e.g. genus *Lepidochrysops*, their host plant is *Lantana camara* (*Verbenaceae*) which is actively eradicated as a noxious weed in many parts of South Africa.

Wherever they can, authorities of local areas are willing to co-operate in preventing extirpation of species by protecting flora in small stands as required. Here, they need facts to be brought to their attention as soon as possible, or they may not be able to act in time and it is here that the amateur Lepidopterist plays an important part in the butterfly ecology, possibly without even realising it.

Food Plants

Papilionidae	Rutaceae -	*Vepris lanceola, Clausena anisata, Todalia, Teclea, Citrus, Calodendrum capense, Zanthoxylum capense, Fagara.*
	Flowers -	*Geranium, Pelargonium Brunsviggia, Craschula* and many cultivated flowers.
Charaxidae	Sapindaceae -	*Cardiospermum* sp
	Anacardiaceae -	*Rhus* sp.
	Fabaceae-	*Schotia brachypetalia, Longocarpus capassa, Acacia nigrescens Cryptocaya woodii*, *Scutia myrtina, Chaetachme aristata, Acacia karroo, Allophylus natalensis„ Catha edulis Maytenus, senegalensis, Afzalea quanzensis, Bauhinia galpini, Burkea africana, Copaifera baumiana,* possibly some *Combretums*.
	Flowers -	nil, damp patches on ground, fresh dung, sap
Lycaenidae	Proteaceae -	*P. cynaroides, P. nitida, P. repens, P. roupelliae, P. subvestita*.
	Olacaceae -	*Ximenia caffra*
	Sterculiaceae -	*Hermannia depressa*
	Zygophyllaceae	*Zygophyllum*
	Verbenaceae -	*Lantana camara* and other *Lantana* sp.
	Loranthaceae-	*Tapinanthus rubromarginatus.*
	Selaginaceae -	*Selargo spuria S. serrata„ Aspalathus, Trifolium, Medigo satavia, Clotalaria, Lupin, Ficus* sp.
	Flowers -	Pelargonium, geranium, proteas, *Craschula, Lantana*, fig, small legumes.
Pieridae	*Boscia oleoides, B.albitrunca, maerua caffra Medigo satavia, Trifolium* (clover) *vicia* sp.,*Robinia pseudoacrea*, *Hypericum aethiopicum, Cassia* sp.,*Capparis* sp., *Azima tetracantha.*	
	Flowers -	most indigenous flowers and many cultivated ones, creepers.
Danaidae	Asclepiadaccae	*Ceropegia, Stapelia huernia, Cynnanchum chirindense, Tylophera anomala.*
	Flowers -	various weeds, indigenous trees and cultivated flowers, creepers.
Satyridae	*Ehrharta erecta, Cynodon dactylon, Setaria sulcata* (alien), *Hyparrhenia hirta, Panicum deustum, Brachyposium dystachyum, Lolium* sp. (naturalised aliens), *Restio* sp., *Cincinnatus, Stipa dregeana, Stenotophrum glabrun, Afrachneria capensis, Juncus capensis, Avena sativa* (introduced), *Thamnochortus glabor, Danthenia stricta, Ficinia* sp., *Lasiochloa* sp., sugar cane.	
	Flowers -	various flowering and occasional cultivated flowers.
Acraeidae	*Kiggelaria africana, Passiflora* sp., *Tacsonia* sp., *Emmelina nudiflora, Polygonum pulchrum, Etigeron ganadense*.	
	Flowers -	Various and many cultivated flowers, creepers.

Nymphalidae *Portulacaceae* sp., *Acanthaceae* sp., *Kiggelaria africana, Justica natalensis.*
Flowers - most cultivated flowers, thistles, creepers.

Hesperiidae *Hermannia* sp., *Pavenia* sp., *Hibiscus* sp., *Triumfetta* sp., *Grewia occidentalis, Dombeya cymosa, Scutia comnersoni,* various grasses e.g. *Ehrharta erecta, Stipa dregeuna, Themeda triandra, Pennisetum clandestinum, Stenotaphrum glabrum.*
Flowers - many culivated flowers and creepers.

Results and Discussion

Some butterflies do not utilise flowers at all, preferring sap, damp patches on the ground or fresh animal dung, e.g. Charaxinae, while other species will busy themselves among all sorts of flowers. It was found that many insignificant looking roadside and other pioneer - type plants were very attractive to butterflies when in flower. Particularly noticeable around these flowering weeds were many species of Pieridae, always conspicuous by their predominantly white colour. Of the cultivated flowers, marigolds and zinnia appeared to be very popular. Of the cultivated plants attacked by caterpillars in Wilderness Gardens, which were collected and bred out by the author, all appeared to be moths. No butterfly larvae were found on cultivated plants.

Conclusion

Butterflies in the Southern Cape use indigenous plants for breeding but will frequent certain cultivated flowers. Purple, mauve, white and yellow flowers are popular colours.

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Mylothris rueppellii haemus male underside

NOTES ON THE LIFE HISTORY OF THE INFLAMED TIGERLET, *VENILIODES INFLAMMATA* WARREN, 1894 (LEPIDOPTERA: GEOMETRIDAE)

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Abstract: The early stages, habits and food preferences of *Veniliodes inflammata* are described for the first time. The possible phylogenetic implications of the new information on the early stages of the group in support of the subfamily Diptychinae are briefly discussed as is the possible role of the group in a mimicry complex.

Key words:
Veniliodes inflammata; Lepidoptera; Geometridae; Diptychinae; Cycads; Mimicry;

Introduction:

Veniliodes inflammata (fig. 1) was described by Warren (1894) for a single male specimen only labelled "South Africa" and now housed in The Natural History Museum London. Until recently, only three other specimens have apparently been collected: one male in April 1894 from Eshowe; one male on 27 April 1908 from Amanzimtoti; one undated female from Bashee (river) Kaffraria, Colonel Bowker; (all housed in the Transvaal Museum Pretoria). On 19 April 1992, a female was collected by R. F. Terblanche in a kloof west of Ubombo in the Lebombo mountains, South Africa, (27°50S . 32°22E) and presented to the author

Subsequently, larger numbers were collected at the same locality by A. & M. Curle, C. Ficq, S. Woodhall and N. Owen-Johnston during May 1993. A survey by the author in May 1994 revealed five different colonies on the mountains between Ubombo and Jozini.

Based on studies of the genitalia of various genera of Geometridae, Janse (1933-1935) erected a tribe Diptychini under the subfamily Geometrinae, and placed four genera in this tribe: *Callioratis* Felder, 1874; *Zerenopsis* Felder, 1875; *Veniliodes* Warren 1894; and *Diptychis* Felder 1874. Pinhey (1975) who treated the loopers as a family Geometridae, accordingly raised the Diptychini to subfamily status. Except for Henning (1985) the subfamily has not been accepted in subsequent literature on the family Geometridae, despite the fact that the four genera in question do not conform to the patterns of wing-venation that characterise the subfamilies in which they are otherwise placed.

In recent years the immature stages of these genera have become known, shedding new light on the group:

Zerenopsis leopardina Felder, 1874 has long been known to feed on *Encephalartos* spp. (Zamiaceae) as well as other plants belonging to different families (Janse 1932). Donaldson (1993) has since proved that *Z. leopardina* is dependent in its early larval instars on a cycad specific toxin macrozamin, but that it can freely feed on a variety of plant species in the latter instars. Duke & Duke (1988) reared *Callioratis abraxas* Felder, 1874 from eggs on *Encephalartos altensteinii* Lem. in 1984. R. Oberprieler (personal communication 1993) found larvae of the same species on *E. princeps*. As did R. A. Dyer in the Kubusi valley, eastern Cape Province, during November 1992, but also on *Carissa* sp. (Apocynaceae) in the same area, in fact more specimens than on *E. princeps*. N. J. S. Duke (personal communication 1993) found large numbers of first - and second - instar larvae of *Diptychis geometrina* Felder, 1874 on *Stangeria eriopus* (Kunze) Nash (Stangeriaceae), from which they moved off in the third instar to feed on a variety of other plants in the area.

Final instar larvae of *Veniliodes pantheraria* (Felder, 1874) were found on *Apodytes dimidiata* EM (Icacinaceae) by E. E. Platt (Janse 1932) while Duke (personal communication) found the final instar larvae on *Diospyros lycioides* Desf. (Ebenaceae).

No biological information, however, had thus far become available for *V. inflammata.* Based on the above information and presuming Janse's grouping to be a natural one, it followed to suspect that the feeding preferences of *Veniliodes inflammata* should be similar to those of the other genera of Diptychinae. In June 1993 the author obtained eggs of *V. inflammata* from C. Ficq and S. Woodhall. These were laid by females collected in one colony near Ubombo. As N. Owen-Johnston had found *Encephalartos ngoyanus* Verdoorn and *Encephalartos villosus* growing in the vicinity of this colony, the newly hatched larvae of *V. inflammata* were offered fresh leaves of *E. villosus, A. dimidiata* and *Diospyros whyteana* (Hiern) in these feeding experiments. Fresh leaves of these plants were available to the author at the time.

Materials & Methods

The eggs and larvae were kept in closed, plastic containers, measuring 100x50x50mm, permitting restricted ventilation. The containers were kept indoors in a heated room regulated at about 18°C. The two egg batches received were kept in separate containers. Food was at first supplied in the form of cut strips of *E. villosus, A. dimidiata* and *D. whyteana* leaves (~ 5mm wide). After the first instar larvae had chosen their preferred food they were separated into 4 groups of about 20 larvae each, and placed in 4 containers. This was done to prevent possible diseases from spreading to all the larvae. After the larvae had been separated into 4 groups, all the groups were supplied regularly with fresh (now uncut) leaves of all of the above foodplants throughout this experiment. This was done to establish at what stage of their life cycle larvae would begin feeding on plants other than cycads, as it was suspected that the larvae would switch foodplant during their cycle*. D. lycioides* leaves were only supplied toward the end, about one week before the last larvae pupated. The dehydration process of the foodplant was retarded by inserting the freshly cut stems into a sachet of distilled water. The sachets were sealed to prevent excessive humidity in the rearing containers. Eggs and larvae were inspected daily and changes recorded as observed under a microscope with a 10x - 140x magnification range, where necessary.

Description and habits of the early stages

Eggs (fig. 2)

Two batches of eggs were obtained from females collected 21 May 1993 and 30 May 1993, respectively.

The eggs were deep yellow smooth and oval, ~0.5x 0.75 mm in size. Not dorso-ventrally flattened. Both batches turned brown 36 days after oviposition and a slight movement could be detected within. After another six days the larvae began hatching through a small hole, abandoning the transparent eggshell.

1st instar (fig. 3)

Larvae were offered freshly cut leaf strips of *E. villosus, A. dimidiata*, and D. whyteana. After hatching, the larvae showed no interest in feeding for about four hours. All the larvae (~50) without exception started to feed on the strips of *E. villosus,* which were mixed with cut strips of the other plants in one container. The larvae are gregarious at this stage. They seem to secrete an unknown substance onto the leaf which turns the affected area black and into a soft pulp. They feed on this soft tissue until the area is completely "skeletonized", before moving on to new tissue. Larvae that were removed from the black soft tissue and placed onto fresh tissue mostly died. The first-instar larvae are of a uniform muddy brown colour with head

and thoracic legs dark grey. They are covered with long white hair (longer than body diameter) arising from tubercles and possess a pair of hooked "thorn like" processes on the eighth abdominal segment. They are typical loopers with a pair of anal claspers and a pair of prolegs on the sixth abdominal segment. A deep constriction between the segments give the larvae a bead-like appearance. They move about in typical looper fashion but lie flat on the substrate while feeding or resting. First-instar -larvae grow from 2 mm to 5 mm in about 5 days .

2nd instar (fig. 3)
The hairs are relatively shorter (about length of body diameter). The larvae have a mid-dorsal and two ventral white lines as well as a thick creamy lateral one. The colour of the head is orange. The hooked "thorn-like" processes are now absent. The larvae are still gregarious and still blacken the leaves around the feeding area. Second-instar larvae grow from 5 mm to 8 mm in about six days.

3rd instar
Hairs are relatively still shorter (length now less than body diameter). The tubercles are much larger, giving the larvae a knobbly appearance. The hairs are now more bristle-like. Those arising from the black dorsal tubercles are black and those from the orange lateral tubercles are grey. The creamy white lines are still present but now interspersed by the enlarged tubercles. The larvae now feed on the edge of the leaves, are no longer gregarious and the leaves are no longer blackened. Third-instar larvae grow from 8 mm to 14 mm in 12-14 days.

4th-6th instar (fig. 4)
Except for their size, the larvae show little change during these instars. The lateral tubercles are more pronounced orange and the dorsal tubercles orange at base with small orange spots between the tubercles. They now have two dorso-lateral black lines and two distinct black spots on the head. During these instars the larvae continue to move in looper fashion but rest and feed with their bodies flat against the leaf. From the 4th instar some larvae started feeding on the leaves of *A. dimidiata*, but most still preferred to feed on *E. villosus*. When new buds and leaves of *Diospyros lycioides* Desf. appeared in early September these were supplied to the remaining larvae (some larvae had by then already pupated feeding on *E. villosus* throughout). All the larvae readily fed on *D. lycioides* leaves, ignoring the still freshly supplied leaves of *E. villosus* and *A. dimidiata*. The growth of these larvae increased rapidly and the pupae were all larger than those resulting from larvae reared on *E. villosus* throughout. The duration from the 4th instar to pupation varied from 38-50 days. The size of the larvae before pupation varied from 28 mm - 34 mm, the larger larvae being those that fed on *D. lycioides* in the end.

Pupa (fig. 5&6)
The pupae are uniform glossy dark reddish-brown in colour, 8 mm -14 mm long and 4 mm - 8 mm in diameter. They possess a single, well developed cremastal hook. They are completely immobile. Pupation takes place in a loose cocoon to which leaf litter and debris is attached. The adults emerged 4-6 months after pupation.

Remarks
The larvae were highly sensitive to disturbance and handling. A high rate of mortality was recorded in larvae that were handled, photographed or transported.

There was a strong fluctuation in the duration of the final instars (4-6). The locality from which the females that laid the eggs for these experiments were collected, was visited by the

author on the 4th of September 1993. At the time the larvae in this experiment were in 5th and final instar. Despite an extensive search of the area, no wild larvae could be found, but the leaves of *S. eriopus* and *Encephalartos* spp. in the area showed extensive feeding damage.

The size of the emerged adults compared favourably with that of adults collected in the wild.

Discussion

The successful rearing of *Veniliodes inflammata* from egg to adult on *Encephalartos villosus* confirms that all four genera of Janse's Diptychinae are cycad feeders . The fact that the larvae, without exception, rejected *Apodytes dimidiata* and *Diospyros whyteana* in the first 3 instars but freely fed on these plants in the latter instars is also in accordance the habits of the other genera. It therefore seems likely that all the diptychine genera are macrozamin-dependent in the early instars, as is the case with *Zerenopsis leorpardina* .

Certain characters of the early stages, such as the long setae and the non-flattened oval eggs, are similar in all the Diptychinae, but unusual for other geometrid moths in general. Very similar eggs and first-instar larvae, however, also occur in *Durbana setinata* (Felder & Rogenhofer, 1875) which is currently placed in the subfamily Ennominae (Vári & Kroon 1986). The foodplant of *D. setinata* is unknown. Unfortunately, fresh cycad leaves could not be supplied to live first-instar larvae of *D. setinata* when such recently became available, but it seems likely that this species also feeds on cycads in the early instars. The species flies in grassland where *S. eriopus* was observed to occur.

The toxin macrozamin which occurs in all cycads and was found to be sequestered by Z. leopardina (Donaldson, 1993) and probably also by the other diptychines, probably renders them unpalatable to predators. Hence, the orange to yellow and black coloration of the adults and larvae is probably a warning coloration advertising the noxious (aposematic) nature of the insects. In addition they have developed diurnal flight (they still possess tympanal organs) probably to enable them to participate in a mimetic complex: Both adults and larvae of Diptychinae display remarkable similarities to certain aposematic Arctiidae such as *Alytarchia amanda* (Boisduval, 1847) and *Amphicallia bellatrix* (Dalman, 1823). In the Krantzkloof Nature Reserve, Pinetown, Natal (30° 50E. 29° 46S) both *A. amanda* and *A. bellatrix* as well as the similarly marked *Pardopsis punctatissima* (Boisduval, 1833) (Nymphalidae); *Pentila tropicalis* (Boisduval, 1847) (Lycaenidae); and *Euproctis punctifera* (Walker, 1855) (Lymantriidae); have been observed to fly together with the diptychines: *V. pantheraria, Z. leopardina*, *Callioratis millari* Hampson, 1905 and *D. setinata*, by the author. It seems likely, as indicated by their known toxic foodplants, that all of these species are probably noxious to predators and therefore probably form a strong Müllerian mimetic complex. In addition intraspecific Batesian mimicry (Automimicry) seems to be involved as adult *Z. leopardina* that do not feed on cycads throughout their larval development, do not contain macrozamin (Donaldson 1993). The strong Müllerian mimetic complex that seems to exist where the diptychines occur probably allows them to switch foodplants during their larval development, thereby loosing their unpalatability but increasing their food source, but still be protected by the forces of the Batesian mimicry phenomenon.

With the successful rearing of *V. inflammata* on cycads it has been shown that all four genera of Diptychinae develop only on these toxic plants in their early instars. This, together with their similarity in adult wing pattern and larval characters, suggests that the Diptychinae may indeed constitute a natural grouping, despite the differences and instability of the wing venation, by which they have been placed in different subfamilies in the past. While the similarity in wing patterns could certainly be related to the mimicry complex that is evidently involved in these moths, and thus be a case of parallel development, it seems likely that the apparent similarity of their larvae is phylogenetically significant, as is their larval development on the same group of plants. A detailed taxonomic study of these moths, particularly of the

early stages, is thus necessary to resolve the classification and relationships of these unusual geometrids.

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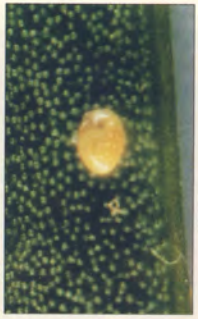
Zerenopsis leopardina female upperside.

Plate 3.

(3)



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The life cycle of *Veniliodes inflammata* Warren, 1894.

Fig. 1. Adult male top, female bottom.
Fig. 2. Ovum.
Fig. 3. First- and second -instar larvae feeding on blackend leaves of *Encephalartos villosus*.
Fig. 4. Final -instar larvae.
Fig. 5. Pupa.
Fig. 6. Cocoon.
Fig. 7. Male feeding on flowers in the wild.

Plate 4.

1

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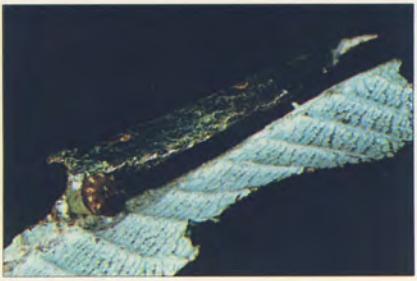

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Platylesches early stages.

1. *P. moritili* putative 3rd instar larva.
2. *P. moritili* final instar larva.
3. *P. picanini* putative 4th instar larva.
4. *P. picanini* final instar larva.
5. *P. picanini* pupa.
6. *P. tina* final instar larva.

NOTES ON THE EARLY STAGES OF THREE SPECIES OF *PLATYLESCHES* HOLLAND (LEPIDOPTERA: HESPERIIDAE)

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Abstract. The life histories of three species of *Platylesches* (Lepidoptera: Hesperiidae) are described in part; namely *P.moritili* (Wallengren), *P.picanini* (Holland) and *P.tina* Evans.

Introduction

Platylesches is an Afrotropical hesperiid genus comprising eighteen described species (Ackery, pers.comm., 1993). There appear to be no published records of the early stages of any of the species. Dickson & Kroon (1978) state that the larval foodplant of *Platylesches galesa* (Hewitson) is the grass *Ehrharta erecta* Lam. (Poaceae), but there are no published larval foodplant records for any of the other species (Ackery, pers.comm, 1993). M.C. Williams (pers.comm.) found the larval foodplant of *P.ayresii* (Trimen) to be *Parinaii capensis* Harv. (*Chrysobalanaceae*). T.B. Larsen (pers.comm., 1993) noted that M. Cock has bred *P.galesa* on a *Parinari* sp. in Kenya and that C. Congdon has observed the same species of *Platylesches* to breed on a tall, woody species of *Parinari* in the Uzungwa Mountains in Tanzania.

This paper records some of the early stages and the larval foodplants of three southern African species of *Platylesches*.

Materials and Methods

Four larvae of *Platylesches moritili* (Wallengren) and three of *P.picanini* (Holland) were collected near Tshatshingo Potholes in Venda, South Africa, in January 1989. There were two putative 3rd instar and two putative 4th instar *P.moritili*, and three putative 4th instar *P.picanini*. The larvae were found in leaf shelters on specimens of *Parinah curatellifolia Planch*. ex Benth. (Chrysobalanaceae), as identified from Palgrave (1977). Two final instar (putative 5th instar) larvae of *P.tina* Evans were collected in June 1989 from leaves of the same species of tree opposite the Thoyohandou Hospital in Venda, on the road between Louis Trichardt and Punda Maria.

The larvae were brought to Randburg (near Johannesburg) and kept in closed plastic containers and fed on cut foodplant placed in water. The foodplant was changed every three to five days, depending on the amount eaten and on the condition. A reserve of foodplant was kept at 4°C in a refrigerator. The distance between Randburg and the nearest locality for *P.curatellifolia* is some 450km, precluding regular gathering of fresh foodplant, and living specimens were unavailable. This may have put some stress on the larvae, although they showed no visible signs of it. The temperature was normal ambient for Johannesburg at the times of the year that the larvae were reared. In January and February, the temperature was approximately 25°C during the day and 15°C at night. The containers were kept in a north-facing room during June to avoid the worst of the winter cold, the daytime temperature then being approximately. 20°C and 10°C at night.

Description of the immature stages

Platylesches moritili (Wallengren)
Larva. Putative 3rd instar: length 15mm when found feeding on young foliage on coppice growth; body leaf-green; headshield black with 6 white, teardrop-shaped dots in a radial pattern (fig.1). These larvae had spun leaf shelters held in place by strands of white silk approximately 3mm long so that the larva was visible inside (fig.7). The larvae grew to 18mm in length and moulted over a 48hr period within 4 days of being collected.

Penultimate (putative 4th) instar: length 18mm when collected, growing to 22mm in about 10 days; body leaf-green; headshield brown, marked with creamy white outlined by darker brown as shown on the final instar larva (fig.2). Larval leaf shelter as for previous instar larva.

Final instar: length 22mm growing to 38mm in about 5 days, before ceasing to feed and shrinking in length to 30mm, but growing in girth from 6mm to 8mm. Prepupal stage lasting about 48hrs; otherwise similar to but larger than the previous instar (fig.2)

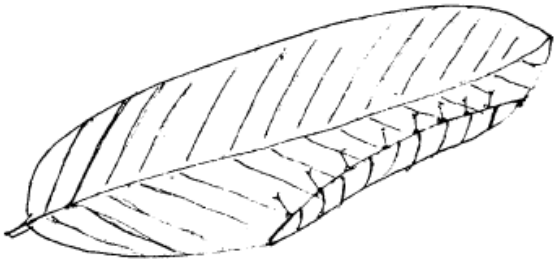

Fig. 7. *Platylesches moritili* larval leaf shelter (del. S. E. Woodhall)

Pupa. Length 17.5 - 20mm; creamy white with the adult appendages thinly outlined in pale brown; cremaster prominent, but pupa not attached to any solid substrate. Pupation in a thin white cocoon inside the larval leaf shelter similar to that of *P. picanini* shown in fig.5. Pupal period was about 14 days.

Platylesches picanini (Holland)
Larva. Putative 4th instar: length 20-22mm when found feeding on young foliage on coppice growth, growing to 25mm over the next 8-10 days; body leaf-green; headshield brown with 8 small white teardrop-shaped dots in a radial pattern (fig.3). The larvae inhabited leaf shelters in which the leaf was cut at either end of the shelter and with the edge of the leaf pulled across to touch the leaf surface. The joint was closed by means of many very fine, short, brown silk threads, concealing the larva (fig.8). Inside the shelter, the larva had spun a bed of strong struts of white silk, on which it rested (fig.4).

Final (putative 5th) instar: length 25mm, growing to 35mm in about twelve days then shrinking back in two days to a prepupa 30mm long with an increase in girth from 6mm to 8mm; body bright salmon-pink; headshield dark brown with a radial pattern of cream-white patches (fig.4). The larval leaf shelter was as for the previous instar.

Pupa. Length 15mm; colour dull creamy white, with the adult appendages picked out in dark brown. Pupation inside a thin cocoon in the larval shelter (fig.5). Pupal period about 12 days.

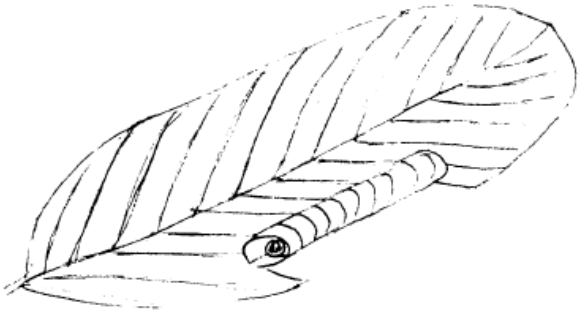

Fig. 8. *Platylesches picanini* larval leaf shelter (del. S. E. Woodhall)

***Platylesches tina* Evans**

Larva. Final instar (fig.6): length 10mm, girth 5mm when found on young foliage on coppice growth, not growing any further and pupating within two days; body leaf-green; headshield brown with white-cream patches outlined with darker brown in a radial pattern as in *P.moritili*. The larvae were inhabiting leaf-shelters constructed by taking a whole young leaf and folding it in two up the mid-rib, fixing the edges together with closely spaced short silk strands (fig.9).

Fig. 9. *Platylesches tina* larval leaf shelter (del. S. E. Woodhall)

Pupa. Length 10mm; dull cream coloured; adult appendages picked out in dark brown. Pupation inside thin silk cocoons within the leaf shelter. Pupal period about three months.

Discussion

From the available data it appears that *Platylesches* spp. breed exclusively on species of *Parinari*: *P.ayresii* on *Parinari capensis* (Williams, pers.comm); *P.galesa* on an unspecified *Parinari* (Larsen, pers.comm., 1993); *P.moritili, P.picanini* and *P.tina* on *Parinari curatellifolia*. It would thus appear that the record of *Ehrharta erecta* as a larval foodplant of *P.galesa* Dickson & Kroon (1978), is erroneous and should be disregarded.

It appears that the design of the larval leaf shelter may have some taxonomic significance. The larvae of *P.moritili* and *P.tina* are very similar in appearance if not in size, being the same colour and having similar headshields (at least in the final instar). The adults of these insects are distinct from one another but display some similarities, such as mauve-grey hindwing undersides (made up of whitish scales on a mauve-brown background) and essentially the same colour of chocolate-brown above. Their larval leaf-shelters, however, are quite different. *P.moritili* (fig.7) stitches the shelter together with 3mm-long strands of silk to create an open

structure through which the larva is visible. *P.tina* (fig.9) makes use of short, closely packed strands of silk to hold the leaves together. The two shelters are, however, similar in that neither larva cuts the leaf to make a shelter.

P.picanini, on the other hand is a very distinctive insect. The final instar larva is bright salmon-pink in colour (fig.6), distinguishing it from the other two species under discussion. Its headshield is similar to that of the others in that it has the same pattern of markings, but the colour is much darker. The adult is much darker and more robust than either *P.moritili* or *P.tina*, and its underside is marked with a bright yellow-cream hindwing band against a blackish background, very different from the other species' softly suffused grey. The larval leaf shelter (fig.8) is held together with small, closely packed short silk strands similar to those used by *P.tina*, but differs conspicuously in that the larva cuts the edge of the leaf to make the shelter.

On the above evidence *P. moritili* and *P.tina* are very similar insects that appear to be closely related, but on the type of silk strands used to close the shelter, *P.tina* is closer to *P.picanini*. *P.picanini* is distinctive in many ways, and possibly its larval habit of cutting the leaf edge to make a shelter is a significant indication of its distance in the evolutionary process from the other two species. When the other species of *Platylesches* are bred, it will be of interest to compare their mode of shelter design.

All these insects were reared in Johannesburg, about 600km south and at an altitude of approximately 1000m higher than their habitats in Venda. *P.picanini* and *P.moritili* were reared in the warmth and long daylight hours of January. The pupal period was short, being about fourteen days for both insects. *P.tina*, on the other hand, was reared in June, which is the cold Johannesburg midwinter, and had a pupal period of three months. This shows that *P.tina* can undergo pupal diapause, but it is uncertain whether it does so in its natural environment.

Although this work has shown up some similarities in the life histories of *Platylesches* spp., more information is required on the early stages of all the species of the genus. For the three species under discussion here, courtship has still not been observed and the eggs and early larval instars remain undescribed.

Parinari curatellifolia is a widespread African tree, its range in southern Africa (Palgrave, 1977) corresponding to the northern distribution of *P.moritili*, a widespread and common forest species. It is likely that *P.moritili* feeds on other *Parinari* such as *P.capensis*, because its range extends as far south as Durban according to Dickson & Kroon (1978) and that of *P.curatellifolia* only extends south to the Komati River.

P.picanini is only known from warm tropical areas, being a scarce insect in South Africa and commoner in the eastern districts of Zimbabwe. Its range will probably be found to correspond closely to that of *P.curatellifolia.*

P.tina is regarded as being rare throughout its range. The specimens discussed above were collected at the original Thoyohandou Hospital locality that was described by Swanepoel (1953) forty years ago. Henning & Henning (1989) quoted IA Coetzer as having recorded this species in eastern Transvaal, but concluded that the paucity of existing South African locality records for *P.tina* precluded the identification of its precise distribution range. The locality shown by Henning & Henning (1989) does, however, fall within the distribution of *P.curatellifolia*. It can now be confirmed that the Thohoyandou colony of *P.tina* is still in existence. The reasons for its rarity are unclear - it is a very small, fast-flying butterfly that may easily be overlooked. The best way to establish its true range will probably be to search for larvae on the foodplant wherever it is found. *P.tina* is the only *Platylesches* to be given Red Data Book status in South Africa. Until its true range is established, the Thohoyandou colony is the only definite breeding site known and is worthy of protection. At the time of writing the site was under threat from informal housing development, bordering on an informal soccer pitch. Fortunately, the foodplant is protected by local people as it is a source of food (the fruit)

and medicine (the bark) (Palgrave, 1977). The latter probably explains the large number of trees that have been coppiced, which would appear to be to the butterfly's benefit.

Acknowledgements
The author wishes to thank Dr M.C. Williams (Pretoria) for help in preparing the manuscript and in the field, Mr N.K. Owen-Johnston (Johannesburg) for field work, Dr T.B. Larsen (London) for information on the habits of central African *Platylesches* and Mr P.R. Ackery (The Natural History Museum, London) for searching the archives of his museum for references to the genus.

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Platylesches tina male underside.

THE *SALLYA ROSA* ENIGMA

By R.D. Paré

P.O.Box 183, Bindura, Zimbabwe.

Abstract Some notes and observations on *Sallya rosa* (Hewitson) (Lepidoptera: Nymphalidae) from Zimbabwe.

Early in April 1993, I visited Burma Valley, on Zimbabwe's border with Mozambique, taking along Simon Parker, who was on an extended holiday from Australia. We were interested to see whether the butterfly population had recovered after the devastating drought of 1992.

Driving down the escarpment into the valley with riverine forest on our left and magnificent *Brachystegia* woodland on the right, the steep descent and hairpin bends demanded concentration as exciting insects darted or sailed through shafts of morning sunlight. At the foot of the escarpment, where the road crosses the Nyamakari River, usually a fairly productive collecting spot, we stopped to hang a trap, with the intention of continuing a few kilometers further on to the best spot, known as Milly's Corner. Having duly hung the trap in a sunny glade on the outer edge of the riverine, away from prying eyes, we got on to the path which follows the stream back down to the road, where all sorts of surprises usually await the sharp-eyed naturalist. This was the sacred place where I first found a larva of *Euryphura achlys*, trying it's best to blend into a leaf of it's foodplant, *Erythroxylum emarginatum*.

No sooner had we reached the edge of a small weir built a few years ago on the stream, minus nets, which were still in the car, a largish butterfly appeared several metres above our heads. It circled lazily in a shaft of sunlight before plonking abruptly onto a vertical tree trunk, wings folded and head down, showing a bright orange underside. *Crenidomimas concordia* has occasionally been recorded in that locality, as has *Sallya rosa*, and although I didn't know which species we were looking at, I had already decided it was an extremely desirable insect. Praying it would sit tight for a minute or two, I sent Simon legging it down the path to the car at just under the speed of sound, to fetch our nets and extensions. And behold, from the overhanging foliage, disturbed by his passing shock-wave, a half dozen of the same delicious purple and orange beasties flew out sleepily and attached themselves to various tree trunks, as if a little dazed at being rudely awakened so early in the day. Speechless, a loud "AAAARRGGHH!" was all I could yell, upon which Simon, convinced that I was either raving mad, or had been bitten by a Great African serpent decided it might be safer to stay by the car. I eventually grabbed hold of my runaway brain, dusted it off, reconnected it to my mouth, and called him back up to come and witness a sight only a handful of people had ever been lucky enough to see. On the way back, he disturbed even more of the ghastly brutes from their shady resting places.

With much fumbling, we assembled long nets while craning our necks to keep an eye on those gorgeous creatures, some of whom were on the tree trunks while others had returned to their shady roosts. A few trembling seconds later the first specimen was in my net, and quickly despatched with a pinch to the thorax. Instant brain haemorrhage followed as the lilac-purple of a fresh female *Sallya rosa* seared our eyeballs! Since I last collected a worn male in July 1972, 1 felt this had to be as near as anything to a Primary Experience, rather like my first *Acraea cuva* near Gorongoza in Mozambique, also in 1972.

Primary or not, during the course of the day we saw an estimated 1500 to 2000 specimens along a stretch of about 400m of riverine bush. Wherever there was deep shade, dozens of *Sallya rosa* could be flushed out, and perfect specimens selected at leisure. Very few individuals were worn or damaged at all, leading us to believe they had bred in the

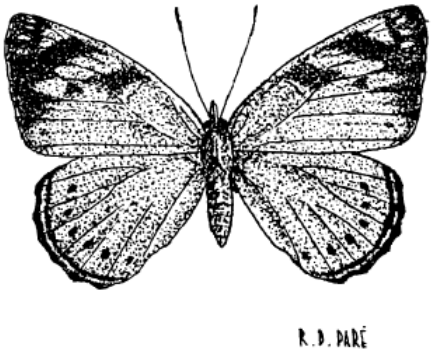
vicinity. Surely it was going to be an easy task to locate it's foodplant and life-history - or was it?

Neither sex showed the slightest interest in the other, even as the day warmed up and occasional specimens took to the air voluntarily. Their main pursuit seemed to be the adoption of as relaxed a lifestyle as possible. Not even the Bacchanalian fumes of my vintage bait seemed able to excite their senses, apart from a couple who flapped around the traps, decided that uncoiling their probosces was far too much like hard work, disappeared into the shade.

Three other *Sallya* species fly in that locality: *boisduvalii, morantii*, and *natalensis*, and they all use the same foodplant, *Sapium ellipticum* (EUPHORBIACEAE), which is found all along the river. A population of this size would have seriously stripped the foliage if it was indeed their foodplant, but these trees were still in good condition. Nevertheless, I imprisoned six females in plastic containers with fresh *Sapium* leaves, in the hope that they would oblige with a few hundred eggs. The ladies refused to part with even a single egg, and eventually passed into celibate eternity.

A Swiss Army post- mortem revealed a large egg mass but the eggs themselves were very small and undeveloped, adding weight to the theory that all these butterflies were over-wintering, and only going to start getting frisky when Spring was in the air. The subsequent "greasing" of set specimens showed that they were carrying stored fat, just like dry-season *Precis* that need to survive long periods until foodplant is again available.

I decided to make another trip to the area in September, in the hope that Cupid would be active! In spite of my doubts about *Sapium* being the foodplant, I procured some seedlings and got them established in my tame forest on the farm, just in case. In early September I eagerly set off again, convinced the life-history would now be revealed. Not a single *S.rosa* was to be found; they had either migrated elsewhere or even possibly died of boredom! So the enigma remains - a butterfly that is not seen for so many years, suddenly appears in swarms, and disappears again for who knows how long. Many collectors took good series of *S.rosa* all over the Vumba area, but I fear we are no closer than before to discovering it's secrets.



Sallya rosa female upperside (del. R. D. Paré)

IN SEARCH OF MILLAR'S TIGER AND OTHER LEPIDOPTERIST IDIOSYNCRASIES

By H. S. Staude

P O Box 5021, West Krugersdorp, 1742

Abstract A description of the events leading up to the rediscovery of the "extinct" Millar's Tiger, *Callioratis millari* Hampson (Geometridae).

It must have been a combination of the Henning's tactful prompting, Steve Woodhall's ignorance in the art of training Lepidopterist Transport, Ettiene Tereblanche's misconception of what constitutes a true Lazy Lepidopterist, Jo Joannou's "Phosphor Frolics" and a desire to share my emotions in the search for a rare moth, that has inspired me to put finger to keys and write this.

I wonder if there is a general publication on Moths of the World that does not illustrate the beautiful diurnal Millar's Tiger (*Callioratis millari* Hampson, Geometridae). Probably South Africa's largest and showiest Looper, Millar's Tiger was caught in numbers in the early part of this century around Durban and exported to museums worldwide.

The last specimen was caught in 1928!

During my search for information on this group of moths I realised this stunning fact. A talk with Neville Duke, who probably knows the most about this group, confirmed that it was probably extinct. In the meantime *Butterflies and Moths*, by David Carter, hit the bookshelves. As could be predicted: Millar's Tiger illustrated in all its glory, and to top it all an artful Natural History Calendar comes out, at last illustrating local butterflies and moths and ..... Millar's Tiger! It seemed to me that this looper is common everywhere except in existence. It would be embarrassing to tell the world that our most publicised Looper is extinct. To find Millar's Tiger alive became very important to me.

Recent, mostly unpublished, research has shown that this group of moths is dependant on Cycads in their early larval instars. Krantzkloof Nature Reserve harbours probably the largest wild populations of Cycads around Durban and Millar's Tiger used to occur there. This was the place I targeted for the rediscovery of Millar's Tiger. Specimen label data indicated that the animal is probably single brooded, its flight period being the end of March to April.

My first challenge was to persuade the Natal Parks Board to give me a permit. Imagine you were an official and you get a request for a permit to capture and kill an extinct species! Of course they did not know that it was supposed to be extinct, or probably even that it ever existed. It would have been much easier to just get a permit to collect Geometridae, but should I be successful I needed the correct build-up to ensure recognition and proper conservation of this then rare species. I decided to go the difficult route. To my surprise only a couple of phone calls to get to the right people, a letter, some correspondence and a board meeting were needed to secure my permit. As always the people of the N.P.B. were friendly and accommodating. I often wonder why some fellow Lepidopterists complain about access to reserves. I think the maxim, if you want them to accommodate your interests - you have to accommodate theirs, holds true in this case. In the end we all have the same interest.

My second challenge was to find a booking in a suitable seaside resort, close enough, to keep the family happy while I go bug hunting over the Easter long weekend. This was easy enough, we were in the midst of a civil war and Transvaal people were afraid to go to Natal just as Natal people were afraid to go to the Transvaal. Three weeks before THE ELECTION was certainly an unstable time in our country's history.

Krantzkloof Nature Reserve proved to be what the name implies. The kloof after which Kloof is named is certainly the kloof of kloofs, whichever way you pronounce kloof. The morning of the second of April 1994 soon saw my brother-in-law Nelis and I carefully peering over a 100 m plus sheer drop into the dense forest canopy on the opposite side of the river, searching for Cycads. A number of the larger *Encephalartos natalensis* were spotted. It was a perfect sunny autumn day and from here we had a good view over the canopy and could survey what was flying. There were lots of boring Charaxes, Papilios and Pierids about, especially the black Charaxes, but no Tigers. We proceeded along the path which eventually led us down onto the wooded slopes of the gorge where we came upon a large colony of *Encephalartos villosus*, a shade loving Cycad with magnificent leaves. We found typical Lepidoptera damage on the older leaves but no damage on the newer leaves or young shoots. While I was trying to convince myself that this was evidence of Millar's Tiger's previous years brood my heart almost came to a standstill. Overhead, just visible through the canopy, was flying a large orange moth.

I have spent many hours observing the Dimorphic Tiger (*Callioratis abraxas*) in flight and immediately recognised it as a *Callioratis*. Almost immediately it disappeared again. Nelis was not convinced of what I saw, he argued that I wanted to see this animal so badly that I was imagining things. He was right of course, I badly wanted to see this animal, but I was not imagining things. Still this was hardly conclusive evidence of the existence of Millar's Tiger. We surveyed many stands of Cycads in the kloof that day, in two small areas, only the old leaves were eaten but not the younger leaves. It was around three o'clock that afternoon when things took a dramatic turn. We were sitting on a large flat rock enjoying the surroundings down by the river, when Nelis casually asked whether this orange butterfly descending towards us was similar to Millar's Tiger. Memory of the following few minutes is still a bit hazy, all I can clearly remember is thinking that the name Geometridae has got nothing to do with the larvae measuring the earth, but rather refers to the adults cunning ability to measure the exact height of the maximum reach of my net, and then cruise at one hundred millimetres above that. Nelis said afterwards, that I would have made any Klipspringer proud with my rock hopping antics. I must say however, that at one stage when I fitted my four metre extension it briefly dove down to eye level, probably to make its acquaintance. Have you ever tried to net a bug, half a metre from your face, with a five metre net? At least we did make our acquaintance, the sight of Millar's Tiger at such close range that afternoon is something that will stay with me forever. It eventually settled in a tree on a ledge about fifteen metres above. Braving the stinging nettles, it took me a few minutes to climb up to this ledge. Nelis was watching to see where it would fly away to during my approach. It did not, true to style, it waited until my net was exactly one hundred millimetres away before it took off leaving me with a stinging sensation from head to toe, from the nettles that is. Over the next few days I was fortunate to observe a number of Millar's Tigers, some at quite close range, but none came within netting distance. These insects just love cruising along the cliff edges and over the forest canopy. Later that afternoon while celebrating our luck over a well deserved local draft beer at a nearby abandoned railway station turned restaurant, I remarked how relatively easy it was, we had almost walked straight to the colony. Nelis said that it was not just luck, we had acted correctly on the evidence at hand, he called this "Forensic Hunting". A tool essential to the Lazy Lepidopterist I thought.

It was with Forensic Hunting in mind, that I contemplated my next move. Boulder hopping, cliff hanging and getting stung by nettles was not exactly in character for this LLPD (Lazy Lepidopterist). Ettiene Terblanche (*Metamorphosis*, March 1994) coined the phrase Lazy Lepidopterist, for which we are all indebted to him, but he does not appear to understand the finer points. He shows great potential and I am sure with the correct training he will become an expert. To really understand and experience the term you simply have to go Nocturnal. As Rolf Oberprieler puts it: "After all the night life is always better ..... Collecting *Charaxes* by

trap comes close but is far too messy and dangerous to be pure. Ask Jo Joannou, it took only one caviar/ champagne/ armchair/ sunset/ bush collecting trip to convert Jo to the finer art of being a LLPD.

I now know for certain that Millar's Tiger is alive and well and flying in Kranzkloof, but in this game you have to deliver the goods. Millar's Tiger has still not been collected since 1928. The life history of the other species in this genus, the Dimorphic Tiger, is known. Knowing when the adults were flying, it was easy from Duke's notes on the life history of the Dimorphic Tiger to work out when the larvae of Millar's Tiger should be about 3rd or 4th instar. This was important because the larvae in this group are known to move off the Cycads and feed on just about anything from about the 4th instar. To find larvae then would be far more difficult. I figured that me searching for larvae would be far more in character than a repetition of the previous dangerous episode. The second week in May was what my calculations told me would be the best time to find these larvae, big enough for me to see but not yet big enough to become wanderers. The second weekend in May was also the weekend that I had extended an open invitation to members of our society to join me for a weekend of Lepidoptering at my in-laws farm near Mkuze. Now Krantzkloof and Mkuze are both in Natal, only about 350 Km apart. I decided that travelling to Mkuze from Magaliesburg via Krantzkloof would be a nice change. I knew that it would mean travelling over 1000 Km instead of 580 Km, but my well trained Sani could do it.

That reminds me, Steve Woodhall (*Metamorphosis*, June 1994) showed, through his unfortunate use of the words: abuse and neglect in describing my trusty Sani, that he does not have the faintest idea of what training Lepidopterist Transport is all about. To train a vehicle, the first thing you must do is win the psychological battle. Drive through any suburb on a Saturday afternoon and see all the losers wash their cars. Have you ever experienced the 4X4 driver who refuses to drive through a bush because it could scratch the paint on his Precious? You simply have to show your vehicle who is the Boss! Car manufacturers, with great success, put all the trimmings on a vehicle to intimidate you into becoming your vehicles slave. (This ensures that you spend maximum of your income on their products). Once you have learned to distinguish between trimmings and functional components, you know what to maintain and really go Lepidoptering.

By 3 o'clock the morning of the 12th of May my son Heiku, his friend Riaan, and I had already left Magaliesburg on the long journey to Krantzkloof. We arrived just before 9 o'clock to a lovely clear day. We rushed to the first spot where I had previously observed feeding damage to the older leaves of *E. villosus*. I turned over the first leaf and there it was, an unmistakable *Callioratis* larva. We searched every Cycad in that area for the next two hours but could not find another larva. By this time the kids were no longer amused and were lobbying to leave. I was adamant, I simply could not leave with just one larva. I realised that to search through every Cycad in the reserve would take days and did what I should have done in the first place. Go to the second spot where I had seen feeding damage on old leaves the previous trip. The third Cycad that I inspected at this spot produced two more larvae. One hour's search produced a further ten. I was absolutely delighted, they did not differ much from the description of the larvae of *C. abraxas* but *C. abraxas* is not known to occur there. A careful comparison later showed that there is very little difference between these larvae and those of *C. abraxas* in the 3rd and 4th instars. The final instars however showed dramatic differences. As I am writing this the last of the surviving larvae is going underground to join its mates, probably to pupate. I am too afraid to disturb the soil to see what they are doing in there. The last Millar's Tiger was collected in 1928, once my babies emerge I hope that I will be able to change that statement. I shall let you know.

We left Krantzkloof at about 3 o'clock that afternoon and all the way to Mkuze I was

dreaming dreams of Millar's Tiger and thinking of how well Forensic Hunting works. Before we knew it I was pointing out the Ngoye Forest to the kids as we passed Mtunzini and were on the farm in no time. We were welcomed by my Lepidopterist friends, Peter Ward, Barry Mee, Bennie Coetser, their kids, my brother in law Nelis Moll and the farm manager Erika Haveman. They all shared in the jubilation on our great find and we were poised for a great weekend of Lepidoptering, but that is another story.

SUMMARY OF THE SECOND MEETING OF CAPE MEMBERS OF THE LEPIDOPTERISTS' SOCIETY HELD ON 12 AUGUST 1994

By Alan Heath & Tony Brinkman

The meeting was held at "Blencathra", Cambridge Avenue, Tamboerskloof, Cape Town and kindly hosted by Charles Wykeham.

IN ATTENDANCE:

Dr Jonathan Ball	Simon van Noort (S A Museum)
Tony Brinkman	Dr Hamish Robertson (S A Museum)
Dr Andre Claassens	Mike Schlosz
Gordon Fraser-Grant	Andre Marais
Steve Collins	Maureen Marais
Alan Heath	Charles Wykeham

APOLOGIES:

David Edge	John White

Steve Collins was warmly welcomed to our second Western Cape meeting as were Simon van Noort, Andre and Maureen Marais, who had been unable to come to our first meeting. Steve came down specially to meet us and attend our gathering.

The meeting kicked off with a brief report back by Hamish on the proposed Cape Butterfly Atlas Project. He pointed out that invertebrates were often neglected when conservation studies were undertaken and that the Cape Atlas Project would greatly assist in this regard.

In concentrating on the project he stressed that those who took part needed to be dedicated and committed in their approach as the S A Museum (Hamish & Simon) was able to serve in little more than in a co-ordinating role. He urged as many persons as possible from the Cape to take part in the project since the success of the project depended upon the enthusiasm of the members themselves.

Detail records from private collections needed to be fed into the data base. This was seen as the first step in the process and would be up to the collection holder to do. A target date for completing this first step was set at December 1995 and Hamish confirmed that he would prepare a computer program for the capture into the database and that copies of the program would be made available to participants.

In regard to the area of coverage, Hamish pointed out that he had envisaged the Atlas covering only the Fynbos Biome but that after discussions with Alan and Jonathan, he recognised the advantage of extending the project to the entire Cape Province. Natal was already in the process of atlasing its province under the guidance of Dr Londt and during a telephone conversation Graham Henning had stated that if the Cape members were able to take on the entire Cape Province, the Transvaal would atlas not only their province but also assist with the Orange Free State.

On the question of vegetation types and co-ordinate plotting, it was suggested that these issues could be held over to the next meeting so that a simple approach could be formulated; in the meantime, the locality names would suffice. Finally Hamish referred to the two record forms which he had produced for the capture of data viz. one for the collection of data in an existing collection and the other to be used for field trips. He suggested that participants try out the practical use of the form in the next few months and that he or Alan would co-ordinate any suggested improvements.

Sample forms will be sent to all who are willing to participate in this exercise. For field trip records, the common species which are not collected but which can be readily identified would still be recorded as "observed".

Steve Collins said how pleased he was to have the opportunity to meet so many Cape members. He described his activities and his passion for the study of butterflies of the Afrotropical region. With the aid of slides he provided a visual documentary of his butterfly work in Kenya and throughout Africa. Steve spoke of the people in many different parts of the continent including Ivan Bampton and Chris Ficq, known to many of us, all working towards building a collection and gathering data on the habits and life histories of African butterflies. He described the arrangement of the collection and estimated that some 25000 specimens per year were being pinned. In comparing the collection to those of museums, he pointed out that one of the differences was that museum collections were not always actively worked on whilst his collection should be viewed as a source of African material upon which all people (amateur and professional) could work at all times. Steve spoke of the active breeding programmes with different vegetation types also undertaken on a continual basis in different parts of the country in order to study the life histories of tropical species. He pointed out that with a quarter of a million pinned and three quarters of a million unpinned specimens the collection was "a hobby that has gotten vastly out of hand".

He said that for obvious reasons the collection resulted from the combined efforts of many people and that he was currently in the process of setting up a Trust to administer its continued existence as a basis for ongoing studies in years to come.

Steve provided two very interesting and thought provoking slide presentations. The meeting was certainly enjoyed by all the Cape members present and it was indeed a tremendous opportunity to learn of the work being undertaken by Steve and his associates; it was also an opportunity to get to know Steve Collins, the man.

Aslauga australis female upperside

HAZARDS OF BUTTERFLY COLLECTING
- THAT WONDERFUL FAMILY FEELING -
Ghana, 1993

By Torben B. Larsen

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We parked in a little village in western Ghana, Malcolm Stark - a Canadian ecologist, myself, and five rangers from the Wildlife Department. The driver, Timothy, stayed behind. We were far from the beaten track, as demonstrated by the fact that everyone in the village came to gawk. This is usually not a problem in Ghana. We had been assured this was the closest we could get to the boundary between the forests of Kakum and Assin-Attandanso, home of the forest elephant, the bongo, many other rare animals - and, I hoped, lots of butterflies.

The rangers thought it was a 45 minute walk to the forest. I had been deskbound for the past six months and the temperature was just above 30° centigrade. I would have preferred to drive right up, but it did not seem too bad.

We eventually reached the forest after a brisk march of just over two hours, crossing what appeared to be at least two perfectly adequate car tracks, finally reaching a little village at the forest edge. One of Malcolm's objectives on the trip was, quite literally, to turn some of the most noted poachers into gamekeepers. Ghana is hoping to make the elusive bongo and the forest elephant - a much smaller subspecies than the savannah one - into the basis for ecological tourism.

Butterflies were fortunately not as elusive as the elephants and the bongo. More than eighty species were chalked up in a few hours, till the clouds started building up. In less than half an hour, in the way of the tropics, a thunderstorm spewed down more than 50mm of rain in an hour, and we reached the poachers' village soaked to the skin. The women of the village fussed over me like a regiment of mothers, bringing towels, dry loincloths, and wanting to light a fire. They had hardly seen a bruni (white man) before, and never one as wet as I. But being soaked at 30° centigrade is not that much of a hardship - as long as the camera equipment is safely packed.

The two hour walk back to the village through endless well-managed cocoa plantations was as boring as it was tiring. The village was small and with no electricity, so there was not even the reward of a cold beer at the end of the walk. But, then .... ecological research in West Africa is not meant to be a piece of cake.

There must have been stronger stuff than beer available in the village, though, for we found Timothy drunk as a pope in the bosom of his extended family. In the immortal phrase of a former British cabinet secretary, Timothy had been 'economical with the truth'. He did not know how to get to the forest by car, but the thought of his family and country liquor also meant that he had not bothered to do much research on the subject. So we had all walked an unnecessary 24 kilometres to strengthen his family ties. I would have let him walk home, about the same distance as we had done, but Malcolm was too soft-hearted for that!

The Central Region Development Commission (CEDECOM) is trying to make Kakum Forest the focus of ecological tourism. As far as I am concerned this particular hike was taking ecological- tourism a bit too far.

Among the butterflies I had caught was a large and beautiful Glider of the genus *Cymothoe*, belonging to the group of blood-red species, but this one a subdued orange-yellow. Already when I caught it, I knew it was something very special. That night, at Cape Coast, I found it to be *Cymothoe aubergeri*, a species described by Plantrou after a small series from Abengourou in Cote d'Ivoire in 1977, and not recorded since. But for Monsieur Auberger, my wife would now have had a truly splendid *Cymothoe nancy* as a reward for my

frequent absences!

I am writing this in a small hotel called Dans Paradise in Cape Coast. There is no apostrophe, so I am not sure whether it is French for 'in paradise' or English for 'Dan's paradise', and the staff do not know. There is even the suggestion that it is named for the Dan tribe in neighbouring Cote d'Ivoire. I am, however, quite sure that it is the most absurdly mis-named hotel that I have ever stayed in. The name 'Paradise' would not meet the standards of the UK trade descriptions act.

But I must stop now. I really do not like the steady stream of little red ants emerging from disk drive B on the portable computer. The section on debugging in the manual says nothing about it!

Catopsilia florella female upperside (top), male upperside (bottom).

GETTING TO KNOW MOTHS
- CLEARWINGS -

By Stephen Henning

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Clearwings belong to the family Sesiidae (Superfamily Sesioidea). This family of small to medium wasp-like moths are readily distinguishable by (Sc - R1) in the hindwings being concealed by a fold of the costa. Their most striking character, however, is the absence of scales from the greater part of both wings, and the abdomen which is terminated by a conspicuous fan-like tuft of scales (fig. 1). The body is also long and slender, often with red or yellow markings. Species are often sexually dimorphic. The forewings are extremely narrow owing to the great reduction of the anal area. The wings are linked by a series of spines or hooks on the radius of the hindwing which engage with an inner marginal fold of the forewing. The proboscis is naked and the ocelli are prominent. The antennae are somewhat thickened before the apex, sometimes pectinate and the labial pales are erect.

The larvae are borers in wood, bark or pith of trees or shrubs. They are colourless with greatly reduced setae. The abdominal prolegs bear two transverse bands of uniordinal crochets, and a single row on the anal claspers. Pupation takes place in the larval gallery and the pupae have various hooks for working their way to the surface. There are two rows of spines on most of the abdominal segments which extend around to the ventral surface. A definite cremaster is lacking.

Many species of these brightly coloured moths bear a striking resemblance to wasps. Most of them have clear hyaline wings, in others the wings are coloured but still wasp-like. Sometimes the abdomen is yellow-banded like many wasps, occasionally with sharp waists. Others may be like hairy bees, particularly the genus *Melittia* (fig. 2) which have very hairy legs which quiver whilst the moth is hovering near a flower. There are examples remarkably like a *Megachile* (leaf-cutter bees); and large ones more like *Serapista* or even *Xylocopa* (carpenter bees). However, the antennae are often thickened towards the tip which distinguishes them at rest from most Hymenoptera. The end of the abdomen frequently fans out like the larger day-flying hawkmoths.

These moths are diurnal and have a rapid flight which makes them difficult to see. They can sometimes be found settled on foliage in the sunshine. In Europe a, few species are pests in orchards or on berry plants but they do not appear to be of economic importance in southern Africa.

There are about 60 species in southern Africa belonging to 20 genera and two subfamilies. The subfamilies are the Sesiinae and Paranthreninae. However, as this family is poorly known, many species undoubtedly await description. The only comprehensive work on this family is that of Seitz (1930), but this is now very out of date. Pinhey (1975) discussed several common species.

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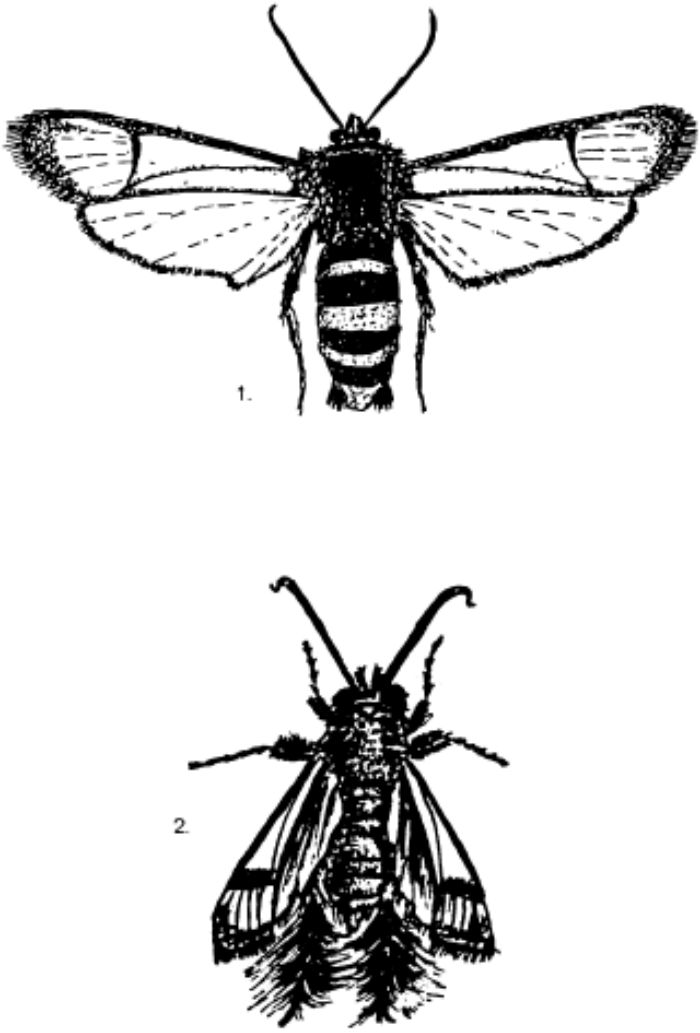

Clearwings (Sesiidae) - 1. *Monopetalotaxis candescens* Felder male; 2. *Melittia rufodorsa* Hampson male in characteristic resting pose.