METAMORPHOSIS

JOURNAL OF THE LEPIDOPTERISTS' SOCIETY OF AFRICA

Volume 13 September 2002 Number 3

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METAMORPHOSIS
ISSN 1018-6490

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Front cover: Top – Mating pair of *Acraea horta.* Below – female of *Acraea horta* (photos - Andre Claassens).
Back cover: Female *Acraea horta;* two melanistic aberrations – see article in this issue (photos - Andre Claassens).

Editorial

Many of our members have interesting experiences, discover new things about Lepidoptera, or do original research. There are a number of reasons for having one's experiences and findings published in a journal, such as *Metamorphosis.* These reasons range from a simple desire to share with others who will appreciate what is being reported, because they have similar interests, to a desire to add to the scientific knowledge concerning Lepidoptera. Articles that deal with the anecdotal "sharing of experiences" are known as popular articles, whereas those that involve scientific methodology are designated scientific articles.

Although there are fundamental differences between them, popular and scientific publications also share important similarities. Before submitting anything for publication, be it of a popular or scientific nature, it should be prepared in a proper manner. Prospective authors should take the trouble to look at a similar type of article to the one you propose sending in, in a recent back-issue of the journal in which you intend to publish. Use the same format, font, font-size and layout. Once you have typed up the script (or had someone else do so), check it - thoroughly. Once you have done this, give it to someone whose spelling and grammar is better than yours and ask him (or her) to check it - thoroughly. If you use the spell-check facility on your computer program, make sure that it is the correct spelling mode (UK or USA English, depending on the target journal). Then find as many people as possible (the more the better) who may be able to help refine your style, find ambiguities, or suggest improvements in content. For scientific articles it is imperative to ask one or more of your peers to review your paper. If you think that you have asked all the relevant questions and have all the right answers this is incontrovertible proof that you have not and do not. Remember, always, to acknowledge all this input. In summary, by the time you submit your contribution there should be little that the editor (and referees) need to do.

One of the major reasons we do not go to this trouble (apart from laziness) is fear of criticism. Nobody likes to be told that that they may be wrong but, believe me, it is the best way to learn not to commit mistakes to print. Once you are in print you stay in print. Surely it is preferable to "suffer" a bit during the preparation of your article than to rush into print blindly, forever to be considered, at best, a bit slap-dash or at worst, a moron.

Mark C Williams

PS: This editorial was edited by the 'Head Honcho ' aka Mrs Williams.

Port St Johns - ten years after.

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It was actually more than ten years ago, more like eleven, but what the heck it's a good title. Some of you may remember another article a good few years ago on Port St Johns (PSJ). A bunch of us went on a safari that became a bit like that old story "Three Men in a Boat", except it was four men in a Combi ... we had vehicle breakdowns, one of us got fired, but we spent some time in an unspoiled forest and found some seriously good butterflies. We started off in Ntafufu but were stranded in PSJ whilst the Combi was fixed. During this time a very kind chap called John Costello put us up, and eventually we got home after finding our Holy Grail, *Abantis bicolor* (Bicoloured Skipper) on the very last day.

Bill Steele and Nolan Owen-Johnston, of the original foursome, had kept contact with John because they are all members of the Fly Fishing Fraternity. It has become obvious to me down the years that fishermen and butterfly collectors share a lot of quirks and it's no surprise there are plenty that are both. Manny Milner (a lady), who runs John and Kathryn Costello's Outspan Inn, is a novice lepidopterist and as a present John organised some fully grown versions! Very kindly he offered to put us up for a weekend, but knowing that a weekend is far too short in PSJ we arranged to come for longer.

Thus it was that Nolan and I loaded up Brutus, the Land Rover Defender, and set off south on 18th April 2002. Some say that Brutus should be called a Rand Lover (nice Chinese spoonerism) since his appetite for spare parts and diesel has rivalled mine for crayfish and beer during our short relationship to date. But that's another story. He was on his best behaviour on this trip and it only took us 9½ hours to get from Edenvale to PSJ via Bulwer, Kokstad and Lusikisiki. I remembered the road being a nightmare from Flagstaff on but now it is good tar as far as the Ntafufu turn-off, then reasonable dirt. There is a long detour where they are completely rebuilding the road for the last few km's but when that is done it'll be a bit like the end of an era. Development comes to the Wild Coast - not always a good thing. Ten Years After, what would we find?

Arriving just before lunch, we said hello to Manny and Kathryn, and set about putting up traps in the garden. Setting off from Durban, Bill and Chris Steele timed their arrival to perfection and reached the Outspan Inn only half an hour after us. By this time we were chafing to get to the top of Mount Thesiger where,

we were convinced, Nolan would finally consummate his relationship with a Bicoloured Skipper. The weather was glorious and I remembered how the ridge above the pinnacle above the town swarmed in 1991. The road to the top is much easier now and goes through magnificent forests to the airstrip. Bill, Nolan and I were having fun regaling Manny with lepidopterists' tales (she's used to fishermen's tales and twigged soon on that the former can be shaggier and even more economical with the truth). On the way to the pinnacle a greyish thing flitted onto the ground and sat tight. At first I thought it was a *Thestor* (Skolly) but on capture it turned out to be a perfect female *Capys disjunctus* (Russet Protea Butterfly). Nolan found some tiny yellow moths which excited him somewhat since there were a lot of *Stangeria erioloba* cycads around. A new Cycad moth? Probably not, but the Eastern Cape form of *Durbana setinata* (Geometridae).
Then to the pinnacle, and almost no butterflies! There was one lonely *Myrina silenus ficedula* (Fig Tree Blue), Manny's first ever. That's where I envy novices - they have all those Primary Experiences ahead of them. I had been looking forward to getting a *bicolor* in the lens of my new camera but 'twas not to be. There was a coolish breeze blowing that we blamed for the lack of butterflies - or so we hoped.

Defeated by *bicolor* once again we returned to the bottom via the forest, which turned out to have plenty of butterflies about. There were very many *Papilio dardanus cenea* (Mocker Swallowtails) and pierids such as the sought after *Colotis erone* (Coast Purple Tip). Finally we tried the spot where the river road splits off upstream where the Lusikisiki road crosses the river, for *Gnophodes betsimena diversa* (Yellow Banded Evening Brown). No luck - the busy detour from the new road has ruined the spot, as well as the fruiting tree that used to attract them being inactive.

We then set off to fish. Modesty prevents me from mentioning who caught the only fish, a l kg perch. Chris Steele tells me she has photographic evidence. In the still night we heard a few gunshots - poachers? we thought.

After an evening of good cheer in the Restaurant, hosted by Kathryn's sister Christine who has a nice line in dry wit and ribald repartee, we started logging our observations in Lepibase. Trouble with this is trying to do it after an 18 hour day and a lot of beer. And then Nolan and I compounded the folly by going out fishing again ... to no avail.

The next day dawned like the morning of the world - glorious pale blue sky and little fluffy clouds sailing high. We found out that the gunshots of the night before had stirred up the local constabulary and army. There were roadblocks set up on all the routes in and out of town; Christine having been held up and we had

a late breakfast. Finding that Bennie and Andre were stuck in the roadblock Nolan and I, and Bill and Chris wound our way slowly back up to the top of the hill, laying traps on the way. Manny had to work so she took a raincheck for Monday. There was lots of stuff in the forests, such as *Neptis trigonophora* (Barred Sailer), a Pondoland special, but again the top was quiet. The Coetzers met us on the hill and later Peter Roos came up and went off with Nolan on the little yellow moth trail. One of my traps produced an aberrant *Charaxes cithaeron* (Blue Spotted Charaxes) with the zigzag black and white hindwing underside median lines missing. Just another example of the wisdom of having Bill Steele along on a trip. Unfortunately, *Charaxes xiphares thyestes* (Forest-King Charaxes) were very rare and all I got was a single male.

After lunch Bennie, André and I went off towards Poenscap to try and find the spot where Bill and I had found *Lepidochrysops ketsi leucomacula*, the rare coastal form of the Ketsi Blue. Everything looked very unfamiliar and the road had been improved beyond all recognition. The steepest bits are now concreted. After to-ing and fro-ing for a while we met Bill and Chris who had gone all the way to Poenscap. Bill remembered the place, I was not surprised I missed it because it is completely overgrown with bush. The grassland where Bill found the blues was almost gone. Happily the overgrowing bush is all indigenous, no *Chromalaena* or Bugweed - but I wonder where those *Lepidocluysops* are now? One thing we did see was a female *Chrysoritis chrysaor* (Burnished Opal). We thought at first it was a *C. natalensis* (Natal Opal) and Bennie got all excited trying to catch it (after I got a great photograph). I don't possess a specimen of true *natalensis*; neither does Bennie who was chiding me about photos taking priority over Primary Experiences. It looked like one with its hindwing tail lobes, but there was no *Chrysanthemoides monilifera*, the foodplant, in evidence – whereas there was lots of *Diospyros, chrysaor's* foodplant. I suspect they are actually the same species and would have loved to get that female's DNA over to Naomi Pierce for a DNA check, but I will have to get a proper KZN specimen from a *Chrysanthemoides* clump, preferably with ant specimens as well.

We set traps in a gully full of Umzimbeet *(Milletia grandis)* trees, but no *Charaxes pondoensis* (Pondo Charaxes) came to them. What we did find were larvae of *Artitropa erinnys* (Bush Nightfighter) on *Dracaena hookeriana.* Slowly we got back to the Outspan where we found that Nolan and Peter had been up the road to Second Beach to look for bicolor on the hilltop, to find said hilltop now home to a housing development. The traps in the garden produced the usual array of *Charaxes* such as *varanes* (Pearl) and many *cithaeron*, and Bill got one *pondoensis.*

As we were tired, there was no fishing this night. A *Melanitis leda Helena* (Evening Brown) posed nicely on a leaf near the braai for me to photograph, and after this we had a super braai with crayfish kindly courtesy of Manny, cooked by her partner Bricky. The cooking area was crowded and my perch was a casualty that fell off the edge (the only fish I have ever seen escape me when dead, gutted and cooked!). Some of him remained edible so I was able to taste my catch. Under these rowdy conditions we managed to get Lepibase updated in the Restaurant. Good cheer really got going when one of the locals, marine photographer Rod Haestier (his dolphin prints adorn many a boardroom) picked up his guitar and led a singalong. Christine, our host, proved a good interpreter of the Rocky Horror Picture Show as well. Music seems to be an essential part of PSJ trips, on the last one Ron Clay's rugby songs supplied it, but Rod's contribution was more tasteful and tuneful. Rod also told us that his banana plantation on the Umtata road was home to many large brown butterflies ...

In the morning the pale survivors gathered for breakfast before setting off to Ntafufu. Whilst packing, an excited André came shooting around the corner shouting *"Antanartia* !!!" and grabbed his net. Following him I saw an *A. hippomene* (Southern Short-tailed Admiral) sunning himself on the herbaceous border, André poised to strike. The only South African *Antanartia* I haven't photographed! Pleading with Andre to have patience I ran up to the room to get the Nikon, luckily tackled up and ready. On my return I saw he was still there. He flew a few feet and landed on the ground. That was my cue to say to André "vat hom" and hope he would take a good studio pie. But I crept closer to try and calm the insect with the "Hiroshima Effect". As I triggered my flash test button, instead of sitting still like a good little butterfly he zoomed off into the blue. André is a very polite and calm young man but I could see he wanted to wring my neck and I don't blame him!

Hiroshima Effect - after the Mayor of Hiroshima, whose last words according to legend were "what the**** was that?! ". A manual triggering of the test button on a flashgun often dazzles butterflies into sitting still, allowing a photo to be taken before the shock wears off.

Bill and Chris set off to Embotyi and the rest of us, with Manny, piled into Brutus and Bennie's Pajero, and set off for Ntafufu. Remembering how the last bit of road had treated Bill's Combi all those years ago, we advised Peter Roos to travel with the Coetzers. To our surprise the road was in wonderful condition and had been upgraded. Even Dave McDermott's famously low ground clearance Merc would get down it and back. The forest was just as beautiful and unspoiled as it had been years ago, lots of butterflies but we were too late for *Coenyra*

aurantiaca (Pondo Shadefly). *Cymothoe coranus* (Blonde Gliders) flitted about the canopy and there was the odd *Pseudacraea eurytis imitator* (False Wanderer) to get the blood coursing. The riverine bush at the bottom is very overgrown with Guava and the path to the spot where I had found *Anthene otacilia* (Otacilia Hairtail) on our last visit, had gone. There is a lot of Ribbon Flower *(Hypoestes aristata)* attracting hordes of *Papilio dardanus cenea,* and true to form I missed a female form trophonius - I never seem to be able to catch these. But I made up for it with a nice female *Charaxes pondoensis* in one of the traps. This is still an idyllic spot, there are still Fish Eagles yelping it up in the trees across the river and you still get the feeling of isolation.

We rendezvoused at the point where the farm track, which had damaged the Combi on the earlier trip, split off. Nolan had caught a nice *Coeliades libeon* (Spotless Policeman), a good record. I was a bit cross that he had not kept it alive so I could get a photo, but happy we had got something special for the list. After lunch we took the 4x4's down the track. Like the road in, it has been repaired, but you do still need a 4x4 - there is a deep vlei to cross. We got to the farm where the old chap still remembered the mad butterfly bunch. Taking the vehicles down to the river, we found the Guava plantation that used to harbour the *Gnophodes* is no longer there - several log cabins now line the riverbank.

This seemed like a good cue to pack up and go back to PSJ. There were no mishaps - Bennie was worried about punctures so he Jagged back, and Brutus reached the Mzimvubu River Bridge first. That's where I had a brainwave and asked Manny where Rod's farm was. She said it was a short way up the Umtata road so we parked across the road to wait for Bennie. Unfortunately when he got to the junction he didn't see us parked and shot off towards PSJ. We tried chasing him but Brutus is not a Ferrari and there was too much traffic in between. We went back to the farm and stalked into the banana trees .. .

This bit was serious fun. The trees were planted about 1-1½ metres apart and there was lots of leaf litter among them. They were only about 1½ metres high as well. Imagine - a hot and sticky afternoon, gloomy shade, the possibility of snakes and a rare butterfly to look for. A soupçon of the keyed-up feeling I last felt in Cote d' Ivoire came over me, even though I have caught a couple of *betsimena* in Zimbabwe before. One could imagine the multifarious *Euphaedra* population of Lamto feeling right at home here. Rod's comment about the browns was correct, *betsimena* was there and I managed to catch three before we decided to rush back to PSJ to get the others, rather than hog the spot.

We returned with the Coetzers and Peter, Matthew and Sarah Ward, who had arrived during the day. It was getting dusky and we had some superb sport.

Everyone caught specimens, I got a photo and eventually it was like chasing black cats in a coal cellar at midnight. These butterflies are real devils to catch. You simply cannot see them as they sit on the ground, camouflaged underside blending perfectly with the leaf litter. All you can do is try and beat them up. Eventually there is a flash of yellow and a dark shape flits off at low level, jinking around the banana tree stems like a jinni. You crash after it, knowing that if you lose eye contact all you can do is try to flush it again. Eventually one settles in sight. No good crashing the net down over it. These things are agile. I found a technique perfected against *Bebearia* worked well - slide the net flat along the ground, open face down, until it is right next to the insect, then lightning fast, zap it over him. Not foolproof but effective!

That night we were all tired, but again we had a good braai - Manny and I had been to get more crayfish that morning. Again we captured data in Lepibase whilst enjoying a drink - laptops are such a boon, but we gave up halfway through and discussed the best plan for the morrow. The Steeles reported lots of activity at Embotyi including possible *bicolor,* so we decided on a visit there. The road, according to Bill, has improved tremendously and is now Mercedesable, so the Wards would be able to come as well. Bill and Chris were setting off betimes the next morning to get home.

We got an early start the next day. Manny was unfortunately unable to come, which was a shame because Embotyi was prime. It's the biggest coastal forest I have seen outside Knysna and is in pristine condition - even the odd stand of gum trees has been ring barked and is destined for removal. A good concrete road runs down the steepest bits, and an enchanting little track runs off into it at one point. Here the Rufous-Winged Flat *(Eagris nottoana)* was found, always a good record.

Traps produced the usual hordes of *Charaxes varanes* and *cithaeron*, with the odd *brutus* and *pondoensis* thrown in. Peter Ward found a lovely female *Charaxes karkloof capensis* (Karkloof Charaxes). *Paralethe dendrophilus albino* (Bush Beauties) were common in the thicker bits of forest. There was a marvelous open clearing where some gum trees are being cut down, full of Ribbon Flowers swarming with *Papilio dardanus cenea.* Several species of pierid were also about, mostly *Dixeia pigea* (Ant Heap White), which was common all over the area, but with quite a few of the sought-after *Colotis erone* as well. A mint female form *jobina,* with glorious yellow underside, led me a merry dance with the camera before I managed to get some great shots of her. As I had made a complete cods of an opportunity with this form at Shongweni a few weeks before I was specially chuffed. She got away in the process but I was happy. Then I promptly committed a really lame brained piece of attempted

photography. A mint fresh female *Hyalites igola,* the pale yellow form, sailed down from the canopy and landed on a leaf, wings wide akimbo. Oh boy, thought I, as I crept forward, Nikon at the ready. I actually had her in focus but Woodhall the perfectionist wanted a touch more frame filling. As I inched forward she shut her wings. Curses! This was when a wiser Woodhall would have stood up from his creaking knees, bagged her and bottled her for later indoor photography, which Heliconiinae are quite good for. The fool running my brain at this point remembered that a gentle puff of breath sometimes gets Acraeas and their relatives to open their wings. Not this lady ... she took umbrage at the HP Sauce fumes on my breath and took off. Off and up she went without a pause - I scrambled to my feet despite my sore knees but I was too late. I don't have one of those forms in my collection at all. Harsh words followed her into the canopy, directed more at myself than at the butterfly!

This clearing is where Bill had thought the skippers flying in the mid-afternoon could be *Abantis bicolor,* but all Nolan and I were able to identify for certain were *Coeliades forestan* (Striped Policeman). There were a couple of high fliers that we watched with binoculars. All we could say for sure was that they were not *Abantis* - the sitting posture was wrong, more like a *Coeliades,* but all dark so they could have been more *libeon*. But we cannot say for sure. Right at the end, that female *Colotis erone* came back with a male in pursuit. I got them both with a *"Coup Cockburn"*.

"Coup Cockburn" - a double butterfly shot analogous to the "Coup du Roi" in bird shooting where one kills two with one cartridge. First immortalised by Kevin Cockburn who (unsuccessfully) attempted this with two hilltopping males of *Euxanthe wakefieldi* (Forest Queen) at Manguzi.

This is where we said good-bye to Bennie and André Coetzer who left for home at lunchtime. Peter and his youngsters had met a friend of the owners of the newly renovated Mbotyi River Lodge below the forest so we went down for a look. This is the old Embotyi Hotel, which was abandoned during the troubles of the l990's but was kept from vandalism by the locals. It certainly looks very nice now and Embotyi is worth another visit.

It was a long drive back to PSJ, and the exertions of the day left us all very tired. Manny cooked Sunday supper for us all. She made a huge spread for a large bunch of travel agents and Department of Tourism people, and included us. We managed to get Lepibase updated for Embotyi and to finish the previous day's Ntafufu records with an increasingly joyous party going on around us. We could have joined in, but we were really too tired and decided on an early night after a couple of nightcaps.

Monday was our last day at PSJ and the weather was probably the best of thetrip. We went to the top of Mount Thesiger again, putting up traps with the Wards on the way. Despite the wonderful weather there were still no butterflies at the summit, so we went down a 4x4 trail below the cliffs that the Steeles had found earlier. This was really magical. It goes right through the thickest jungle one can see from the pinnacle, really unspoiled rainforest with hardly any exotics and loads of butterflies. *Paralethe dendrophilus albina* were very common. Also, there were lots of Heliconinae, Nymphalinae and Limenitinae including sought after species such as *Pseudacraea eurytis, Neptis trigonophora* and *Cymothoe coranus.* I missed a freshly emerged female *Hypolycaena buxtoni* (Buxton's Hairstreak), another thing I need to photograph.

At lunchtime we went back to collect Manny and we went to Christine's cottage on the Poenscap side of the river, to look for butterflies on her basil patch. Patch is not the word - forest is a better one, I have never seen it grow ten feet high before! Every sweep of the net produced a wave of scent that made me feel I was sitting inside a huge spaghetti al pesto. Most of the butterflies were *Dixeia pigea*, but there were a few *Appias epaphia contracta* around, whose male I had not photographed until now. To his everlasting joy, Nolan got a *Gegenes hottentota* (Marsh Hottentot Skipper).

Finally we went back into the banana plantation to look for more *Gnophodes betsimena diversa.* I found the best way was to lurk in the depths of a rubbish dump spilling over into the plantation - not the most salubrious way to collect but certainly effective!

Over lots of beer and our last steaks and wors, we discussed the trip with Manny and John Costello. Port St Johns is looking very good after ten years. It does not have the recent civil war look it had then. There is a positive vibe – like lots of African towns there are chaotic crowds and scruffy old vehicles, but there is also a lot of new paint, new structures and a new optimism. Roads are being fixed, as mentioned several times in this article.

The forests are still in very good condition and it was a pleasure not to have the huge infestations of exotic alien weeds found in KZN's forests. There are small pockets of *Chromalaena, Lantana camara* and Bugweed, as well as some Barbados Gooseberry that played havoc with our nets. One very large pocket of *Chromalaena* has taken hold in the seemingly inaccessible forest directly below the pinnacle on Mount Thesiger, but Embotyi and Ntafufu are clear - the only problems they seem to have are guava trees. There is still time to save these forests if a determined alien eradication programme is implemented.

So: the Wild Coast looks like Durban probably did over a century ago. It is a

gorgeous place, and once the new roads have been finished demand for building plots will increase and prosperity will come on the back of a tourist boom. This is good for South Africa and everyone living in the area. But there are some warning signs. Although the renovation of the hotel at Embotyi has not affected the forest there, we saw at least two developments that have destroyed butterfly habitat - at Ntafufu and Second Beach. We were lucky to find a new spot for *Gnophodes betsimena diversa.* It will take a lot of care from the authorities to ensure that development does not destroy the unique charm of the Wild Coast, but its forests as well - and we know that this will destroy the butterflies. Port St Johns may well become an easier place for lepidopterists to visit in future, but will the butterflies always be as good?

A full list of species seen has been captured in Lepibase and is available to interested parties. Manny and John are going to join the Lepidopterists' Society of Africa and keep a copy of Lepibase up to date, so PSJ should become one of the best documented areas for Lepidoptera in South Africa! Many thanks to John and Kathryn for putting us up, Christine for permission to hunt her basil patch and her superb breakfast, and last but not least to Manny and Bricky for being total troupers - Manny was making corned beef and HP sarmies in the early hours most mornings!

Additional revisionary notes on Afrotropical Macariini (Geometridae: Ennominae: Macariini).

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Abstract
Three new species of the macariine genus *Milocera Swinhoe,* 1904 are described: *Milocera serratignathos* sp. n. from Tanzania, and *M. punctum* sp. n. and *M. obtusilinea* sp. n. from Uganda. New distributional records are provided of other Afrotropical Macariini.

Key words: Geometridae, Ennominae, Macariini, *Milocera*, new species, new records, Afrotropical region

Introduction

The tribe Macariini includes in excess of 500 species of worldwide distribution, although it is poorly represented in Australia (Nielsen *et al.*, 1996). In a recent contribution, Krüger (2001) revised the macariine fauna of Africa, Madagascar, and Arabia. Since completion of the manuscript in 1998, material of three new species in the genus *Milocera* Swinhoe, 1904 has come to hand; these taxa are described below. At the same time, significant new distribution records of several other species of Macariini are detailed.

Material and methods

Type material of taxa described in this paper is housed in the collection of the National Museums of Kenya, Nairobi (NMKE).

The material on which the new distribution records are based is in the collections of the Transvaal Museum, Pretoria, South Africa (TMSA), the National Museum, Windhoek (NMW), the National Museums of Kenya, Nairobi (NMKE), the Zoologisches Museum der Humboldt-Universitat, Berlin, Germany (ZMHB), and the private collection of H.S. Staude, Magaliesburg, South Africa (HSS).

Preparation of genitalia slides and other technical details follow Krüger (2001).

Species descriptions

***Milocera (Milocera) serratignathos* sp. n.**, fig. 1 (scale bar in mm), fig. 4 (scale bar = 0,3 mm)

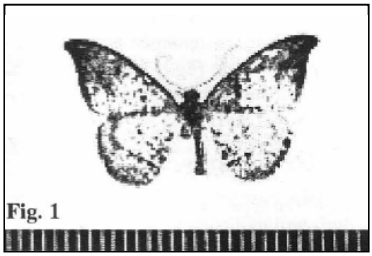
Fig. 1

TYPE MATERIAL. Holotype ♂, [TANZANIA]: 14861; Mufindi, T[anganyika] T[erritory], 1955 (P. Burdon) / Coll. 14861 (A. Townsend), *M. arcifera dubia* [misidentification].
- (NMKE).

Paratype (1♂). [TANZANIA]: *ibidem*, dated 1954 (A. Townsend); genitalia slide M. Krüger No. 60 – (NMKE).

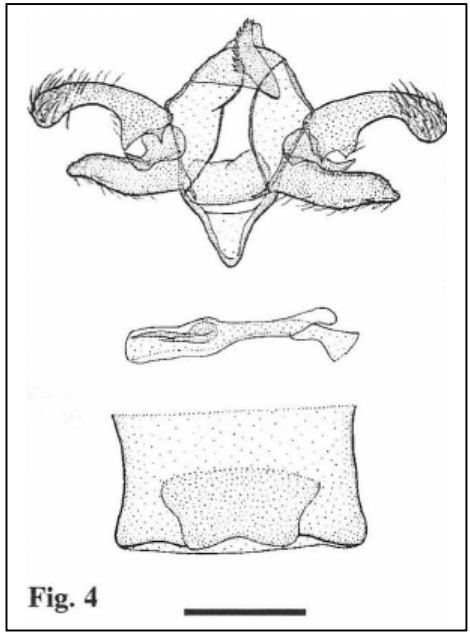
Fig. 4

DESCRIPTION. *Adult male* (Fig. 1). Antennae ciliate, longest cilia barely exceeding diameter of shaft. Forewings with produced, rather pointed apex and slightly concave termen. Wings yellowish-ochre, sprinkled with light brown scales and with localized light brown suffusion near forewing apex and along termen of hind wings. Basal line present on forewings only, dark brown, bold, and meandering. Posimedian line very fine yet distinct, extending across both pairs of wings, acutely angled below costa of forewings. Discal spots small, brown. Cilia concolorous with wings. Underside similar to upperside but markings and brown striation much more pronounced. Vestiture of body concolorous with wings.

Forewing length. 12 mm (0) (n = 2).

Male genitalia (Fig. 4). Uncus triangular, arising from broad base; apical region appearing truncated, with a small inserted point. Gnathos strongly modified, medial element taking the shape of an axe-blade with serrated margin. Genital

capsule of inverted drop-shape. Costa of valve curved, strongly spiniferous apically. Sacculus shorter, somewhat tongue-shaped, with setose margins. Aedeagus iffegularly clubshaped; vesica bearing two strong cornuti, apparently arising from a joint base. Octavals somewhat trapezoidal, with sides and posterior margin concave.

DIAGNOSIS. Somewhat similar in habitus to *Milocera eugompha* and *M. divorsa* but with forewing apex more strongly falcate (compare Fig. 1 with Figs 37 and 58 in Krüger, 2001). The development of the gnathos in the male genitalia is unique within the genus.

PHENOLOGY AND HABITAT ASSOCIATIONS. Unknown.

DISTRIBUTION. Tanzania; only known from the type locality.

ETYMOLOGY. The name refers to the characteristically serrated gnathos in the male genitalia.

***Milocera (Milocera) punctum* sp. n.,** fig. 2 (scale bar in mm),
figs 5, 6 (scale bars = 0,3mm)

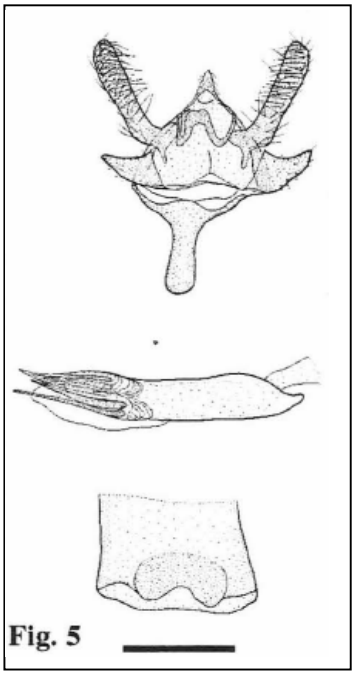
Fig. 5

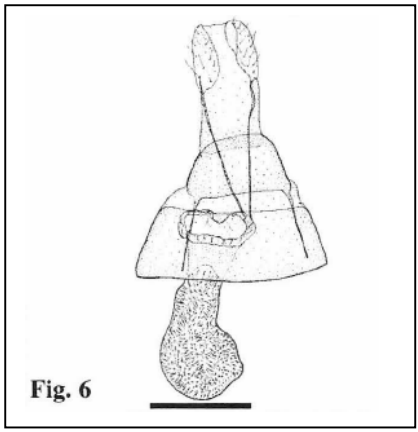
Fig. 6

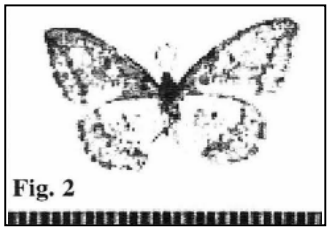
Fig. 2

TYPE MATERIAL. Holotype ♂, UGANDA: Impenetrable For[est], Kigezi, Mar[ch] 1967 (RC. Otieno); genitalia slide M. Krüger No. 61. - (NMKE).

Paratype (1♀).TANZANIA: Amani, E. Usambara, Nov[ember] 1965 (R.H. Carcasson); genitalia slide M. Krüger No. 64. - (NMKE).

DESCRIPTION. *Adult* (Fig. 2). Antennae ciliate; cilia comparatively long and thin in male, reaching 1.5 times diameter of shaft, cilia shorter in female. Wings broad; forewings with rounded, only weakly falcate apex and straight termen. Wings yellowish-ochre, unevenly irrorated with greyish-brown scales. Forewings with basal and postmedian line present, both indistinct, especially basal line, but their position indicated by an ill-defined brown macula each on costa. A similar macula present on postmedian line slightly below level of the small and indistinct discal spots. Hind wings with small discal spots and faint postmedian line only. Cilia pale ochreous tinged with brown. Underside similar to upperside but markings and brown striation much more pronounced, especially in female. Vestiture of body concolorous with wings.

Forewing length. 12 mm (♂) (n = 1); 13 mm (♀) (n = 1).

Male genitalia (Fig. 5). Uncus comparatively weak, triangular. Gnathos with broad arms and prominent but weakly sclerotized medial element. Genital capsule with large, dome-shaped tegumen and vinculum almost entirely consisting of a prominent saccus. Costa of valvae bar-like and angled near base, setose; sacculus much shorter than costa, triangular. Aedeagus massive relative to size of genital capsule; vesica bearing a densely packed apical group of approximately six long cornuti. Octavals broadly crescentic, as illustrated.

Female genitalia (Fig. 6). Papillae anales large. Apophyses long and thin, a. anteriores approximately two-thirds length of a. posteriores. Sterigma elliptical, with wrinkled texture. Ductus bursae short and stout, funnel-shaped; corpus bursae pear-shaped, completely spinose, of same length as ductus.

DIAGNOSIS. Similar in adult habitus and male and female genitalia structure to *Milocera (Milocera) eugompha* Krüger but distinguished by the presence of an indistinct brown macula on the forewing postmedian line (compare Fig. 2 with Fig. 38 in Krüger, 2001).

PHENOLOGY AND HABITAT ASSOCIATIONS. Label data suggest an association with forests. The type specimens were collected in March and November, respectively.

DISTRIBUTION. Uganda and Tanzania.

ETYMOLOGY. From Latin *punctum*, a dot: from the brown dots on the forewing postmedian line that characterize this species.

***Milocera (Milocera) obtusilinea* sp. n.,** fig. 3 (scale bar in mm), fig. 7 (scale bar = 0,3mm)

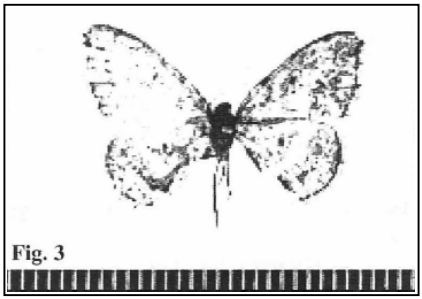
Fig. 3

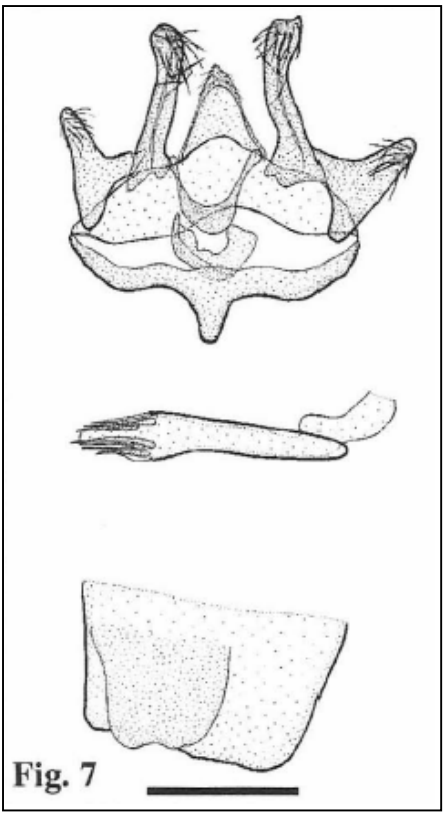
Fig. 7

TYPE MATERIAL. Holotype ♂, UGANDA: Kayonza, Kigezi, Mar[ch] 1967 (R.C. Otieno); genitalia slide M. Krüger No. 63. - (NMKE).

DESCRIPTION. *Adult male* (Fig. 3). Antennae ciliate, longest cilia approximately 1.5 times diameter of shaft. Forewings with rounded apex and slightly convex termen. Wings pale ochreous, finely irrorated with light brown, especially in postmedian area and near base of hind wing. Forewings with basal and postmedian line, both broad but quite indistinct, their position marked by a small macula on costa. Discal spots blackish-brown, small but distinct. Markings on hind wing similar but basal line absent. Cilia concolorous with wings, but termen of both pairs of wings with small blackish-brown dots in interneural areas. Underside similar to upper side; discal spots on hind wings larger.

Forewing length. 11 mm (♂) (n = 1).

Male genitalia (Fig. 7). Uncus small, triangular, densely setose dorsally. Gnathos with broad arms and shovel-like, angular medial element. Genital capsule with broadly rounded, well-sclerotized tegumen and narrower vinculum, the latter extended to form a distinct saccus. Valvae with bar-like, apically curved costa and smaller, triangular sacculus. Aedeagus relatively small, somewhat club-shaped; vesica bearing two apical groups of at least seven nail-like cornuti each. Octavals simple, lip-shaped, with concave posterior margin.

DIAGNOSIS. Characterized by the indistinct postmedian line, brown irroration in postmedian area and presence of small, dark interneural spots along the termen of the forewings.

PHENOLOGY AND HABITAT ASSOCIATIONS. Probably a forest species like its close relatives. The holotype was collected in March.

DISTRIBUTION. Uganda; known from the type locality only.

ETYMOLOGY. From Latin *obtusus*, indistinct, and *Linea*, a line: from the indistinct lines on the wings that partly characterize this species.

Distributional notes

The revision by Krüger (2001) contains detailed information about the localities at which a given species has been collected, further summarized in distribution maps for the southern African species, as well as a list of species and subspecies by countries. In the list below, only those macariine species have been included for which new first country records have become available, or where there were less than five records known from a country to-date.

***Platypepla persubtilis* Krüger, 2001**

First record for Namibia (1♂, Okahandja, 25.XI.1935; 1♂, Tsumeb, 30. XII. 1937) (NMW)

***Milocera (Milocera) divorsa* Prout, 1922**

First record for Uganda (1♀, Kalinzu Forest, Ankole, November 1961 (R.H. Carcasson) and 1 ~, Malabigambo Forest, Sango Bay, February 1968 (A.L. Archer)) (NMKE.).

***Milocera (Milocera) ustatoides* Krüger, 2001**
First record for Malawi (1 ♂, Chitipa District, Mughese Forest Reserve, 5800-6200 ft., 29.IV.-9.V.2000 (R.J. Murphy)) (HSS).

***Isturgia deerraria* (Walker, 1861)**
Krüger (2001: 99) lists a single record from Ghana (N. Territory, Navaro). There is now a second record from this country (1 ♂, Northern Region, Tamale, 09°25'N 00°5l'W, 28.VI.1971 (S. Endrödy-Younga)) (TMSA).

***Isturgia spissata* (Walker, 1862)**
First record for Swaziland (1 ♀, Mlawula, 29.XII.1995 (N.J. Duke)) (TMSA).

***Chiasmia frontosa* (Wiltshire, 1986)**
Only the type material was listed in Krüger (2001). Further records from Saudi Arabia are: 3 ♀, W. Saudi Arabia, Escarpment, road Mecca-Taif, 700m, 19.-25.IV.1993; 1 ♂, W. Saudi Arabia, 42 km W. Taif, 12.-16.XI.1993 (all A. Legrain) (TMSA).

***Chiasmia tecnium* (Prout, 1916)**
In Namibia hitherto only recorded from the north-east (Caprivi Strip, Katima Mulilo). A very conspicuous dark population has recently been recorded from the isolated Brandberg in the northwest of the country (Brandberg, Hungarob-Valley, 1200 m (W. Mey)) (ZMHB).

***Chiasmia nubilata* (Warren, 1897)**
First record for Botswana (2 ♂, Kasane, 13.XIl.1974 (Scholtz & Kirsten)) (TMSA)

***Chiasmia conturbata* (Warren, 1898)**
First records for the Central African Republic: 2 ♂, Nbata, 25.VIl.1995 (Curle); 2 ♂, Botambi, 30.V.1995, 4.VIII.1997 (S.C. Collins); 1 ♂, Mokpotu, 24.V.1995 (S .C. Collins) (all HSS).

***Chiasmia inquinata* Krüger, 2001**
A third record from Mozambique (2 ♂, 10-15 km N".E. of Beira, 15.-16.IV.1996 (N.J. Duke)) (TMSA).

***Chiasmia subcretata* (Warren, 1905)**
First records for Ghana (1 ♀, Kibi, July 1993 (S.C. Collins)) (HSS) and Central African Republic (1 ♀, Yakoli, 16.VI.1997 (S.C. Collins)) (HSS).

Second records for Tanzania (1 ♂, Budongo, 31.V.1993 (Curle) (HSS) and Cameroon (l ♂, Ebogo, March-April 1996 (S.C. Collins)) (HSS).

***Chiasmia unigeminata* (Prout, 1923)**
First record for the Central African Republic (1 ♂, Mbeko, 10.VI.1995 (S.C. Collins)) (HSS).

***Chiasmia orientalis* (Krüger, 2001)**
First record for the Central African Republic (1 ♂, Botambi, 30.V.1995, 1 ♂, (S.C. Collins)) (HSS).

***Chiasmia percnoptera* (Prout, 1915)**
First records for the Central African Republic (3 ♂, Nbata. 25.VII.1995 (Curle) (HSS); 1 ♂, Yakoli, 25.V.1997 (S.C. Collins)) (HSS).

***Chiasmia buettikeri* (Wiltshire, 1986)**
Additional Saudi Arabian record (1 ♂, 1 ♀, Saudi Arabia, Shafa, env. Taif, 2000-2400 m, 19.-23.IV.1993 (A. Legrain)) (TMSA).

***Chiasmia majestica tropica* (Prout, 1915)**
Second record from Ghana (2 ♂, 3 ♀, N. Region, Damongo Game Reserve, 09°04'N 01°48'W, 12.VIII.1971 (S. Endrödy-Younga)) (TMSA).

***Chiasmia rectistriaria* (Herrich-Schüffer, 1854)**
First record for Guinée-Bissau (1 ♀, Boube, l.IX.2000 (S .C. Collins)) (HSS).

***Chiasmia boarmioides* (Krüger, 2001)**
Krüger (2001) gives Buffelspoort Dam, Magaliesberg as the only South African locality. Further records are Northern Province: 1 ♂, Blouberg, 1.5 km E. of Indermark, 23 °03'S 29°04'E, 26.XI.1996 (M. Krüger); Gauteng, 1 ♂, Pretoria, 1.XI.1996 (M. Krüger) (TMSA).

***Chiasmia procidata fumida* (Wiltshire, 1980)**
The subspecies is endemic to Saudi Arabia; the fifth record is: 1 ♂, 1 ♀, W. Saudi Arabia , env. Taif, Shafa, 2000 -2400 m, 19.-25.IV.1993 (A. Legrain) (TMSA).

***Chiasmia s. subcurvaria* (Mabille, 1897)**
Additional records from Botswana (1 ♀, Kasane, SE 17 25 Cc, 13. XII.1974

(Scholtz & Kirsten); 1 ♂, Moremi Nature Reserve, 15 km SE south gate, 9.XII.1974 (Scholtz & Kirsten)) (TMSA).

***Chiasmia suriens* (Strand, 1912)**
The second record from Swaziland (1 ♀, Mpisi, 28.I.1993 (N.J. Duke)) (TMSA).

Acknowledgements
I wish to thank M. Mungai, National Museums of Kenya, Nairobi, for arranging the loan of the *Milocera* specimens; the Photographic Unit, University of Pretoria, for providing the photographs; and H.S. Staude, Magaliesburg, for access to material in his collection.

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Melanistic aberrations in *Acraea horta* (Linnaeus, 1764) (Lepidoptera: Acraeinae). Two new records from Cape Town, South Africa.

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Taking into account the abundant occurrence of *Acraea horta* in almost all of South Africa and especially in the extreme Western Cape Province, where it is the only representative of the genus *Acraea,* relatively few records exist of melanism in this species. One may, however, assume that many more melanistic specimens emerge than are recorded, but to notice them one has to be at the right place at the right time. I have, over many years, reared hundreds of *A. horta* imagines from larvae and pupae collected from various localities in and around Cape Town, and during all seasons of the year, in the hope of obtaining an aberration. It was not until 9 October, 2001, that I was lucky. I collected twelve pupae and several larvae of *A. horta* from a white-painted garden wall situated under a wild peach tree *(Kiggelaria africana)* in Cape Town, where this tree is the most commonly used larval food-plant of the butterfly.

The pupae and larvae were kept at room temperature in a mosquito netting covered carton box. The first (normal) imagines emerged the next day, but on 12 October two melanistic females emerged during the early hours of the morning. Encouraged by my success, I collected, at fortnightly intervals, many more larvae and pupae from the same site, but not one more aberration was obtained. Moreover, parasitoids soon caught up with the butterfly and most pupae and larvae were parasitised before I collected them and progressively fewer imagines emerged. Parasitism in *A. horta* is very common (Claassens, 1991).

Both melanistic specimens, hereafter referred to as Abl and Ab2, and illustrated on the back cover of this issue of *Metamorphosis,* show a high degree of melanism on both sides of the hindwings, resulting in considerable elongation of the usual separate black dots. In Abl the elongation process has resulted in the formation of almost continuous black bars, while in Ab2 the darkening process has produced irregular black streaks. The characteristic, decorative, marginal markings of the hind wings are reduced to mere black marks. The darkening of the upperside is repeated on the underside. In Ab1 there is considerable darkening of the forewings. Another remarkable feature of the two aberrations is their unusually large size. Abl measures 66 mm across the forewings and in Ab2 the wingspan measures 60 mm. Normal females often measure less than 55 mm and,

rarely, a little more. Although all melanistic specimens are unique, there exists a remarkable similarity between my two melanistic specimens and two females reared by P. Burdon in Cape Town, as well as a male recorded from 'Yellowwoods', KwaZulu-Natal, by K.M. Pennington, all depicted in the first edition of Pennington's Butterflies (Dickson and Kroon, 1978).

Melanism in butterflies, as Woodhall (2000) pointed out, usually manifests itself in elongation of normally occurring black spots. According to the known and illustrated records of melanism in *A. horta*, the process of elongation of black dots occurs in varying degrees, from merely slightly elongated dots to the dots forming almost solid black bars. What causes melanism in butterflies can only be guessed at. A few facts arising from known records in *A. horta* are perhaps worth listing:

1) Melanism occurs in both sexes, but in *A. horta* more female than male aberrant specimens have been recorded.

2) Melanism in *A. horta* has been recorded in spring and in summer. So far there do not seem to be records of melanism in individuals which emerged on sunny days in mid-winter.

3) Inbreeding is not a likely cause of melanism in *A. horta.* Balinsky, (1974, 1977) stated that *A. horta* is a rather monotypic species with no geographic races. He reared ten generations of *A. horta* by inbreeding, but apart from detecting minor differences in spotting and in basic colour of females, he reared not one aberration.

4) Small numbers of aberrations found in the same colony on the same day. P. Burdon (in Pennington, *loc. cit.)* reared, on the same date, two females from pupae found on the same wall in "The Gardens" Cape Town in September, 1974. My two females were also reared from pupae found attached to a wall in the same general area of Cape Town and they also emerged on the same day. Were both, or quite possibly more, aberrant specimens of the offspring of one and the same female in both cases?

It is premature to draw any conclusions from these observations. Ideally, I should have endeavoured to rear offspring from my melanistic females by inducing them to mate with normal males flying plentifully in my own garden. I was not prepared for such an experiment, although it crossed my mind. I did not wish to

run the risk of losing two valuable specimens by exposing them to poorly conducted breeding procedures and end up with nothing at all. I shall try next time luck comes my way again.

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New butterfly reserve at Coega, Eastern Cape Province, South Africa.

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I am pleased to be able to inform you that South Africa's next butterfly reserve is now about to become a reality. This will be at Coega, for the Red Data species *Aloeides clarki* Tite & Dickson. As you all know, the Coega Industrial Development Zone has received the go-ahead, and will be an extension development, involving a harbour, an aluminium smelter, and a number of other tenant businesses. In its initial phase, the development will cover much of the area between the N2 highway and the sea, as well as the flat ground between the N2 and Coega village. There is a large colony of the endangered *Aloeides clarki* on a limestone ridge between the N2 and the sea; there is a smaller colony inland of Coega village, and a colony of the rare *Lepidochrysops bacchus* Riley near the village itself.

The fate of these restricted colonies has been the subject of ongoing discussion, and it was felt that finality on the matter should be reached prior to the commencement of the development. Accordingly, Mr John Raimondo, the environmental Manager of the Coega IDZ, and myself met on the 4th and 5th of May 2002, and reached the following agreement:

(a) No development is to take place closer than 100 metres from the existing extremities of the colony between the N2 and the sea. This is so as to allow a buffer zone of at least 100 metres around this colony, in order to minimize disturbance, particularly of the ants.

(b) A scale map shall be drawn showing the location of this habitat and the 100 metre buffer zone around it. It would seem that, in order to maintain this buffer zone, a planned tarred road will have to shifted, because it would encroach; this will be done.

(c) This locality will then become a nature reserve, to be known as "Butterfly Valley". The Coega Development Corporation has agreed to place a fence around it, in order to demarcate the precise area.

(d) A tourist information display, similar to the one erected at Brenton-on-Sea

for the Brenton Blue, will be placed at a strategic locality on the new Reserve. The necessary design and details for this display will be provided by members of the Lepidopterists' Society.

(e) The Lepidopterists' Society will also monitor the Reserve on an ongoing basis, and report any findings to the Coega Development Corporation. In particular, it will be necessary to establish all aspects of the insect's life cycle; only limited knowledge exists concerning this aspect.
(f) Finally, it was also agreed that measures would be taken to ensure that the second locality for *Aloeides clarki* on the Grassridge road, as well as the locality for *Lepidochrysops bacchus* near Coega village, would remain undisturbed in the future. The squatter camp adjacent to the locality for *bacchus* has already been disbanded and relocated. Fortunately, some of their grave sites are situated on the *bacchus* locality, which should also help to ensure its continued preservation.

There was a quarry planned for the Grassridge locality for *A. clarki;* however, this will be shifted to an alternative site.

I would personally like to compliment the Coega Development Corporation on their positive and co-operative attitude towards conservation of biodiversity within their area of jurisdiction: this bodes well for invertebrate conservation in the future.

I have also just been informed by Dr F.W. Gess, who has recently returned from a trip to Namibia, that he and Mrs Gess saw numerous specimens of the European Cabbage White *Pieris brassicae* L. flying about the streets of Swakopmund. They collected some samples, which confirms this record. The butterflies were surviving on Nasturtiums, which are common in gardens in the town. Other reports indicate that the butterfly has also established itself in Windhoek. It seems most likely that the insects came from Cape Town by road, as this area obtains most if its fresh vegetables through bulk deliveries from the Western Cape. If this is so, then deliveries of fresh produce from the Western Cape pose a similar threat to all parts of Southern Africa. As you all know, this butterfly is a real potential menace to vegetable farmers.

Callioratis (Lepidoptera: Geometridae) from the Eastern Cape Province, South Africa.

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The following notes cover several aspects of the discovery and field observations on two recently discovered species of the geometrid moth genus *Callioratis* in the Eastern Cape Province of South Africa.

Some history

Perhaps it is only in the movies that moments of incredible excitement occur. One remembers with some admiration the Indiana Jones stories. To be part of a real adventure is rare and most people search a life time for such a moment. Perhaps I was privileged to be part of one such an event.

It was in May 1998 (unfortunately the exact date is lost in the mists of time) that I received a telephone call from Nolan Owen-Johnston. He was residing with Andrew Mayer at the time and not having anything to do asked Andrew if he had anything in his freezer he would like him to set. Andrew produced two day-flying moths from the Eastern Cape and these were soon on the setting board. It was when he tried to identify them that Nolan telephoned me. Nolan thought they looked like *Callioratis millari* but somehow they did not quite answer to the description of that species. We went over the details on the telephone, realizing that something did not fit. The black markings were close but the other colours were not right. I asked to see the specimens urgently. Nolan discussed the request with Andrew who kindly volunteered to bring them across to my house that evening. By now the news was spreading. Hermann Staude had been contacted and he was also invited to see the strange specimens. He requested that we include Jon Joannou.

And so it was that evening in 1998 that the four of us, Andrew Mayer, Hermann Staude, Jon Joannou and myself, gathered at my house to view the specimens. Often in cases of the unknown one turns to the area where the insects were found and a brief inventory of the possible species crosses one's mind. Perhaps some dilapidated old agaristid moths I recall I had thought as a possible explanation. The box containing the two specimens was opened and there to the astonishment of us all was a new species. Not only a new species, but obviously a relative of the rare and endangered *Callioratis millari;* not just a new species, but one of significant size and beauty. The tension and excitement could be felt

in the room. My skin was covered in "goose bumps" and tingled as I tried to grasp the situation. I still cannot find words to describe the look on Hermann's face. Even a dour German can look amazed, dazed yet extremely happy, all at the same time. The Greek, normally as calm and cool as a cucumber, was smiling from ear to ear. "Indiana" Mayer was playing down the event and the discovery. He claimed anyone could have caught them, that after all they were only moths, and quite frankly he did not want any more to do with them. We all stood there shaking our heads as the questions started to arrive. What had prompted him to collect on that mountain at that time of the year? Had Hermann's continuous message on moths alerted Andrew to at least make some effort? Even if there was a reasonable chance of collecting a butterfly, what had prompted him to visit the area where the cycads grow? This was not a known butterfly spot even though the mountain contained other well-known butterfly spots. Had he seen more specimens? Apparently he had seen more specimens but he had not bothered to collect more. Why and how could such a magnificent creature remain undetected on that hill which had been well traversed by many well-known collectors for decades? The questions were endless. I went to bed that night dreaming happily of the many expeditions and explorations to come. Perhaps I was a little jealous of "Indiana" Andrew Mayer. Would I one day find such an exciting species?

The story has a small sequel. A year later, on 28th March 1999, Nolan Owen Johnston, Hermann Staude, and I were on Longhill, Queenstown searching for more material and making observations on the strange new species of *Callioratis* obtained by Andrew Mayer a year earlier. We already knew about some of its strange habits and had decided to move to another locality. We had started on our way down the mountain. Nolan had chosen a different path to Hermann and myself. As Hermann and I approached a large cycad *(Encephalartos fidericiguiliemi)* he went below the plant which leaned away from the slope, while I went above the plant. As I drew level with the top of the cycad a moth flew straight towards me and landed on one of the outside fronds of the cycad. As I shouted an alert to Hermann my net was on its way. Upon examination, as the moth was gently removed from my net, we immediately noticed that this specimen was different to the other species found on the hill. What alerted us was the creamy ground-colour with chocolate brown markings, the bright orange hindwing with the dainty black lines, and the smaller size. At that moment we were not sure what had been found but that it was something special was without doubt!

Field observations

The recent discovery of two new species of the Genus *Callioratis* in the Eastern

Cape Province is amazing as it increases the known species in this genus from three to five. All species are closely associated with cycads, which are a very ancient plant form. What has followed these discoveries is some intense study on both of the new species. Both have been bred through the various larval stages to adulthood. However, the purpose of these notes is to record some of the more interesting field observations on the two species to-date. That two such similar species inhabit the same area and utilise the same larval food-plant is quite remarkable. Following the latest trend there will be a tendency to claim that they belong to two different species groups and I therefore look forward to the final analysis to see which of the five species in the group are most closely related. That no hybrids have yet been found is of interest. It raises the question of how the two avoid mating with each other? Chemical analysis apart, there seem to be differences in their behaviour and thus they rarely meet at the right place where they would both be comfortable with mating.

Callioratis mayeri, like its much smaller butterfly cousins, the *Durbania,* can truly be called the "Rocksitter *Callioratis".* Throughout its known range the males of *mayeri* congregate on rock faces. Although they sit far apart, one large rock face may have as many as a dozen or more specimens on it at a time. If disturbed, they fly off and patrol the rock face for a time before settling again. It is a wonderful sight to see a number of these colourful moths sailing back and forth in front of a cliff or large boulder. The females exhibit a similar fondness for rocks but are more singular in their behaviour and tend to stay at lower elevations than the males. Both males and females may even crawl into crevices or cracks in the rocks. One female was observed crawling into a rodent hole at the base of a rock. The rock faces used are normally in close proximity to the cycads, which are the larval food-plant *(Encephalartos fiderici-guiliemi).* The angle of the rock face used does not appear to be significant and neither does the direction in which the rock is facing. When settling on a rock-face the most common position adopted is head downwards although they have been seen sitting at other angles. This species, *Callioratis mayeri,* is extremely wary when approached and this can make its capture difficult at times. The female is an equally strong flier as the male and is best pursued in the early morning. It has been observed feeding on the small white flowers of a creeper that grows in the grass. It has also been seen "feeding" on a type of grass seed although it may simply have been obtaining some early morning dew from that source. The mating behaviour was noted on one occasion. A female sat facing downwards on a large rock. Several males must have been aware of the females' presence as they were vigorously patrolling the rock on which the female sat. Having located

the female one male presented himself to her by settling in front of her and facing upwards as she faced downwards. He flapped his wings in a half open position very rapidly, perhaps using pheromones to dazzle and subdue her. The male wing vibrating behaviour went on for about two minutes until the female turned sideways and the male responded by doing the same and their abdomens joined. The female then turned to face downwards again while the male settled calmly above her facing up the rock. Other males continued to patrol the area.

The behaviour of *Callioratis curlei,* the second of the new species to be found at this locality, is quite different to *C. mayeri.* Both males and females of *curlei* are more widespread. Females tend to sit for long periods inside and on the outside of the cycads. This behaviour is obviously to find a mate. Occasionally more than one male is seen hovering over a cycad, but this is rare and normally only one male at a time performs in this manner. The males visit the cycad plants and tend to fly fairly high and directly from one plant, or cluster of plants, to another. Females are sometimes seen on the wing but soon settle on a cycad. This is normally on the outside of the plant but they then move towards the centre of the cycad. When settled on the outside of a cycad they have an excellent view of their surroundings and are extremely wary and difficult to approach. Males hover above the cycad and when a female has been positively located they lift their wings upwards at a sharp angle and literally dive at the female. The writer, unfortunately, has been unable, to-date, to witness an actual mating. *C. curlei* does not appear to settle on rocks and concentrates on the cycad plants.

The observations indicate that by the time *C. mayeri* are ready to visit cycads for ovipositing, mating has already taken place, and as they search the cycads for fresh foliage upon which to lay their eggs they are not interested in encounters with the other species. The mating sites, one on rock faces and the other on or within the cycad leaves, may be sufficient to ensure that, while they may encounter each other occasionally in flight, they are not prepared to attempt to mate in just any surroundings. It is highly likely that pheromones also play a part in the courtship and mating of these species.

The larval stages of both species can be found together on the same plant and are difficult to distinguish from each other in the wild. However, the first and even the second instars of *C. mayeri* have the habit of burrowing into the cycad leaves. This habit has not been confirmed in the case of the larvae of *C. curlei.* Both species seem to retreat to shelters, which they spin in the woolly, brown crown of the cycad, although *C. mayeri* seems to be more proficient at this than *C. curlei.* The ability to disappear into this thick layer of "wool" for long periods, perhaps even to diapause, and to emerge to feed mainly at night, is probably the

reason that even cycad specialists have been unaware of what was causing the damage to the cycad leaves. Also, there may have been a tendency to blame feeding damage on the common cycad moth *Zerenopsis leopardina* or even *Callioratis abraxas.*

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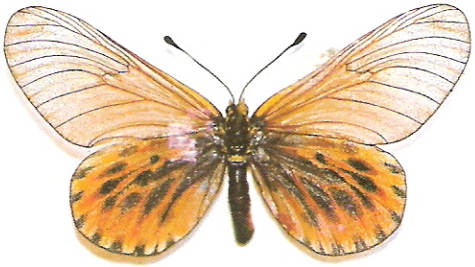

ISSN 1018-6490