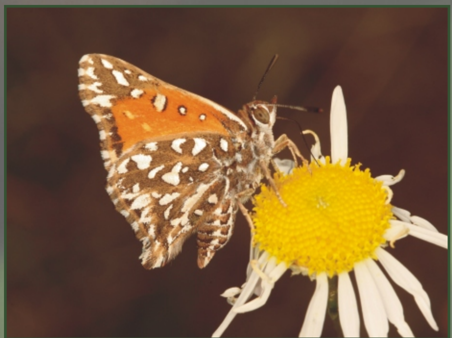

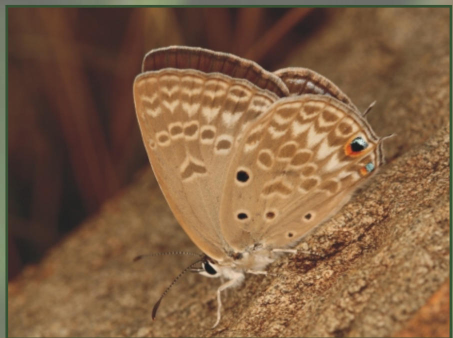

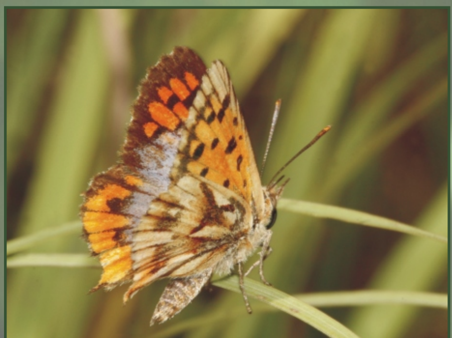

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Early stages and larval shelters of some species of *Platylesches* Holland (Lepidoptera: Hesperiidae)

Colin Congdon, Ivan Bampton & Steve Collins
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Summary

Early stages and adult butterflies of several species of *Platylesches* are illustrated. The two basic types of larval shelter are described and illustrated.

Key words

Platylesches, headshields, shelters, tubes, chambers.

Skippers (Hesperiidae) have larvae which live in shelters. The geometry of skipper shelters is discussed by Greeney and Jones (2002). The authors describe 10 basic shelter types, provide illustrations, and coin various terms to describe them. Our own, much simpler classification is based on function rather than geometry. It consists of just two fundamentally different types.

Type 1: Tubes
The larva folds or rolls a leaf, and eats the leaf from the tip back towards the base, extending the shelter backwards as it goes. When it reaches the base of the leaf it moves to a new one and repeats the process until fully fed. As far as we know, all the species which feed on grasses, palms, etc. (monocotyledons) make this kind of shelter. So do some of the species which feed on broad leaved plants (dicotyledons), and many of these feed on soft leaves near the growing point of the plant, feeding up quickly before the leaves harden. *Andronymus* do this, and so do some *Platylesches*.

Type 2: Chambers
The second strategy is to make a more or less permanent shelter usually in more mature foliage, the larva coming out at night to feed, and returning to the chamber during the day. The larva only makes a new chamber when it outgrows the old one. *Celaenorrhinus, Tagiades, Eretis*, *Netrobalane, Abantis,* and some *Platylesches* adopt this strategy. These species usually develop more slowly, perhaps because mature foliage is less nutritious.

Recently we have made a study of *Platylesches*. As far as we know, larvae of all species in this genus feed on *Parinari*, although in West Africa, one species has also been recorded from *Maranthes* (Vuattoux, 1999). Both foodplant genera are in the Chrysobalanaceae. There are several references to *Parinari* in the literature

(Woodhall, 1994; Larsen, 2005; Coetzer, 2006), but ultimately all these sources derive their information from Ivan Bampton's original discovery.

Plates 1 & 2

Tube makers.
Figure 1, Plate 1 is from the Rondo Plateau, southern coastal Tanzania, in forest clearings at about 850 m. Figure 2, Plate 1 is from Harare, Zimbabwe, around 1500 m in *Brachystegia* woodland. They appear to be the same thing, and Figure 1, Plate 1 is *Platylesches moritili*. (The Harare larva died soon after we found it.)

Figure 3, Plate 1 comes from below the Mufindi Escarpment, south central Tanzania, in savannah grassland at about 1250 m. It looks very similar to Figure 4, Plate 1, which is from Mutinondo in eastern Zambia, in *Brachystegia* woodland at about 1500 m. This in turn is virtually identical with Figure 5, Plate 1, from Hwange in north-western Zimbabwe. These are also *moritili*.

Figure 6, Plate 1 shows another larva from the Rondo Plateau, Tanzania. It appears to be the same as Figure 1, Plate 2, which also comes from Mutinondo in eastern Zambia. Again, both are *moritili*.

Figure 2, Plate 2 is from Mufindi, this time in highland *Brachystegia* woodland at 1830 m, and must surely be the same as Figure 3, Plate 2, another *Platylesches* from Mutinondo. Again, both these are *moritili*.

In the majority of cases we were dealing with good series of each form from each locality. The form shown in Figure 1, Plate 1 was abundant on the Rondo, uncommon at Mufindi, and only one was found in Harare. On the other hand, the form shown in Figure 5, Plate 1 was uncommon on the Rondo but was the dominant form at Mufindi.

In localities where there were more than one '*moritili*' we did not find intermediates between the various headshield patterns, and where there was only one form it was constant in appearance. Fully fed larvae of all these types turned red prior to pupation, and this applies to virtually all the species we have bred.

It now appears that *moritili* may in fact be a complex of a number of very similar species. Larsen (2005) illustrates two sets of male genitalia, both belonging to '*moritili*'. These may be referable to yet more species currently included in *moritili*. Either that, or the species has a variety of distinct larval forms. We believe this is the less likely alternative, given that the larvae remain hidden in their shelters during the hours of daylight, so that there would be little apparent survival advantage in having a variety of forms. The situation may be similar to one which was encountered in Costa Rica. There, a large and colourful skipper was found to have different larval forms and a variety of foodplants. DNA analysis revealed that in fact it consisted of ten species, all with the same wing markings and very similar genitalia. According to Kielland (1990), *moritili* ranges from South Africa to the Sahel. Larsen (1991) records it from the Kavirondo area of Kenya, but not elsewhere in that country, and remarks that it appears to be a species of the transition zone between forest and grassland.* It also occupies this habitat on the Rondo, but in South Africa, Zimbabwe, Zambia and at Mufindi it is a butterfly of woodland and wooded savannah grassland. If more than one species is involved, this variety of habitat preference is not surprising.

*It has recently been found near Embu in eastern Kenya, in dry woodland, where *Parinari curatellifolia* was found by Q. Luke.

Plates 3 & 4

Also in tubes we found three or four species in the group which includes *Platylesches iva* Evans, 1937 and *P. affinissima* Strand, 1920. Both are rare in our experience, and it may well be that they have been incorrectly identified, because species in this group are very difficult to separate. The ones we have reared appear not to agree exactly with either of the two named species. *Platylesches iva* is known from Ivory Coast through Nigeria to Uganda, Malawi and Tanzania, where it is known from a single record from Dendene Forest, south of Dar-es-Salaam, although Larsen (2005) doubts the identity of this specimen. *Platylesches affinissima* is known from West Africa to Malawi, Mozambique and Zimbabwe. In Tanzania it is a western butterfly, with a possible record from the Uluguru Mountains in the east.

Figures 1-3, Plate 3 are from the Rondo Plateau, and this taxon is close to *affinissima*. Figures 4-6, Plate 3 come from the Kihansi Gorge, at the foot of the Udzungwa escarpment, at about 350 m. This taxon also agrees with *affinissima*, although it cannot possibly be the same species as in Figures 1-3, Plate 3. Again we only raised one specimen. Figures 1-3, Plate 4 also come from the Kihansi Gorge, and although yet again we only got one specimen it appears to be close to *iva*. Figures 4-6, Plate 4 are in the same group, and are also from the Kihansi Gorge.

Platylesches galesa is a tube maker, with very distinct headshield markings, well illustrated by Woodhall (1994); *picanini* and *neba* also make tubes.

Plate 5

On this plate we show larvae of **Type 2 chamber builders**, together with illustrations of both tubes and chambers. The chamber makers are characterised by very slow growth. A box containing a single tube species larva will contain more frass in the morning than a box of a dozen chamber species larvae.

Figures 1 and 2 show *Platylesches tina* Evans, 1937 from Mufindi. The egg is laid on a small plant or a branch near ground level. The larva cuts and folds a mature leaf downwards. It secures the cut portion to the underside of the leaf, and crimps the front of the chamber, narrowing the entrance. The chamber is completed by making a round hole at the front and lining it with silk. Like the tubes, this can be seen quite easily by looking at the underside of a branch, where the dark green folded portion stands out in contrast to the pale undersides of the leaves (Figure 2). Only very occasionally will a *tina* larva secure the chamber to a second, lower leaf. This species is unusual in having a green larva. The thoracic segments of the pupa are also greenish, and the pupa has a blackish head. The larval feeding pattern results in characteristically ragged edges to mature leaves. *Platylesches shona* makes a chamber similar to that of *tina* but larger (Figure 3).

Figure 4 shows *Platylesches robusta* Neave, 1910. This species makes its chamber by securing the cut section of a mature leaf to the leaf below, and then bringing a part of the cut leaf round to block off the front of the chamber. It then makes a circular silk-lined entrance hole, and creates an external tunnel of silk which curves round, blocking the line of sight to the inside of the chamber (Figure 5). The chamber is lined with a generous layer of tough brownish silk, making it waterproof. Chambers are found among mature foliage well above the ground. The fully fed larva enters diapause for several months in the chamber before pupating, and final instar larvae from Mutinondo in Zambia, collected in November, only began to pupate in May of the following year (Figure 2, Plate 2). This is a strategy which is also adopted by some *Capys* larvae (Lycaenidae). We assume that the larva is better able to defend itself against parasites, etc. than a pupa would be. The pupa of this species (Figure 6) is dark brown with paler bands on the abdominal segments. We found *robusta* at Mufindi, Mutinondo and Harare, and it appears to be quite common. At Kihansi we found a species which differs somewhat from *robusta* in the headshield, and whose chamber lacks the curved tunnel.

Figure 7 shows typical tube shelters. The left hand leaf has been folded margin to margin, and the margin of the right hand one has been folded over in the more usual pattern. Both leaves are soft, and are being eaten back towards the leaf bases. Chamber makers usually pupate within their chambers, weaving a thin screen of silk at the entrance before doing so. In the wild we have only once found a tube maker to pupate within its tube, but they regularly do so in captivity.

The two radically different shelter and feeding strategies in *Platylesches* suggest that there may be two clades within the genus. Very likely there are more species in the genus than are currently recognised. More field work is needed. Studies of the genitalia are indicated, and DNA analyses may be called for. Fortunately, Larsen has agreed to undertake this task.

Acknowledgements

We are grateful to the Tanzania Commission for Science and Technology for Research Clearance to work in Tanzania, and to Mike and Lari Merritt of the Mutinondo Wilderness Area for their most generous hospitality.

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A nine-day Wonder

Zululand April/May 2008

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This year, the public holidays at the end of April fell very conveniently. We only had to take two days leave to get a wonderful nine-day break! Amazingly many companies would not allow this, and we ended up with only four of us being able to take advantage. Jenny Norman and I set off on early Saturday 26th April for our first port of call, Louis Gunter's farm Dreadnaught near Entumeni Forest. As we got there, the clouds came up and it looked like we were in for a soaking. Brian Plowes and his new girlfriend Lizelle came up to meet us, and we set off for Entumeni itself.

As we got there, the weather appeared to clear a bit and warmed up, so we parked at the picnic site and walked back towards the entrance along the track. There was quite a bit of activity about, such as Spotted Sailer *Neptis saclava marpessa*, and to Jenny's joy Large Flat *Celaenorrhinus mokeezi mokeezi*. There were lots of Common Bush Brown *Bicyclus safitza*, and the picnic site clearing had lots of Blonde Glider *Cymothoe coranus*, both sexes. We hung a lot of banana traps around there and were

Female Blonde Glider, *Cymothoe coranus* on forest floor at Entumeni

rewarded with lots of *Charaxes* – White-barred *C. brutus natalensis*, Green-veined *C. candiope* and Pearl *C. varanes* being the commonest, but there was the occasional Forest-king *C. xiphares penningtoni* as well. These all got very drunk on Brian's Jungle Juice bait, so were easy to photograph. The Blonde Gliders sat more tamely with some of this on board, and we got some superb photos.

We had a long and fruitless walk on the forest's circular trail accompanied by lots of complaints from the ladies as there were some big hills in there. We ended up back at the picnic site! As we walked along the track again, I noticed some Silver-leafed Milkplum *Englerophytum natalense* leaves that had been eaten in a familiar fashion – only the midrib left, with some frass stuck to the uneaten portion of the leaf. The frass turned out to hide some baby *Pseudacraea* larvae, and then I found a final instar. It looked nothing like the two False Acraeas (Boisduval's *Pseudacraea boisduvali trimeni* and False Chief *P. lucretia tarquinia*) that I had reared in the past, so I guessed it was False Wanderer *P. eurytis imitator*. I immediately bagged the larva and took some leaves to store in an Eskie for the rest of the trip. He (I was correct in my ID and it turned out a male) survived bumpy roads and stale foodplant for the entire trip, and was dubbed 'Piggle'.

'Piggle' final instar False Wanderer *Pseudacraea eurytis imitator* larva

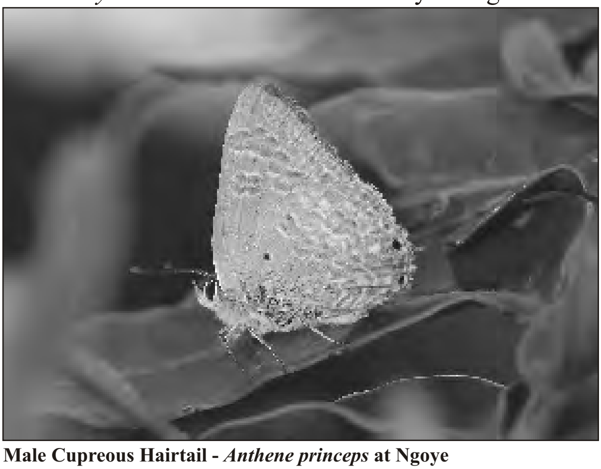
Dreadnaught proved to be very comfortable accommodation, as it rained cats and dogs outside. So on the 27th, Sunday morning, we set off in Brian's Hilux for Ngoye with high hopes of the Hilltop and Bicolored Skipper *Abantis bicolor*. We thought we'd get rained off again, but as we approached the hidden entrance to Ngoye the clouds lifted and it was lovely. We hung traps along the road in, and found a lot of butterflies on the strange white flowers that grow in profusion, including lots of Dusky-veined Acraea *Hyalites igola*, both sexes and both female colour morphs.

There were also lots of Albatros Whites *Appias sabina phoebe*, and eventually I got a shot of one of these as well. I wanted one of a female; I got one that was being pursued by a male, but part of her forewing was obscured by a grass leaf. But the reason we really wanted to go to Ngoye in April was the report of Ken Pennington's experience seeing dozens feeding on '*Scabious*' there in 1952. I have never seen this flower at Ngoye and wondered if it had been misidentified and was actually the species in the photo on page 167. We did see one Bicolored Skipper, at the top of the

Cream form female Dusky-veined Acraea - *Hyalites igola*

granite lookout koppie on a tall tree, which defeated even Brian's gigantic net extensions. It was unphotographable and had to be identified by binoculars!

That hilltop did provide a couple of thrills. A few Natal Opal *Chrysoritis natalensis* were flying around some *Diospyros* at the summit. We saw a female lay an egg, which is either a new foodplant record or more evidence that this butterfly is merely a form of Burnished Opal *C. chrysaor*. When one sees a fiery orange beastie whizzing around forest treetops, one's thoughts immediately turn to *phosphor*, but admittedly we were too low in altitude for this. We also found the first ever Cupreous Hairtail *Anthene princeps* Jenny had seen, in fact I'd never got close to one before – my only specimen was hooked off a tall tree at nearby Mandawe, and I had no idea what it was



Male Cupreous Hairtail - *Anthene princeps* at Ngoye

until I'd killed it. We got only a few shots of this nervous little insect. It only opened its wings for an instant before haring off into the canopy to keep the *bicolor* company!

As well as these, there was a real trouper of a Black-and-Orange Playboy *Deudorix dariaves*, who posed very nicely. The only reason he isn't here is that we found an even better one later on at Tembe. Brian trapped a female Forest Queen *Euxanthe wakefieldi* later on; this gave us hope that we'd see more later on, but we didn't. It was the first time Jenny had seen one close up.

Eventually the weather came in on us, and we had a long drive back to Dreadnaught in the back of the Hilux to look forward to. Brian's vehicle is massively capable off road but big people like me are not meant to sit on the rear seats!

Monday 28th April was our day for travelling to Tembe. Brian and Lizelle decided to go via home (Richards Bay), and Jenny and I went via Hluhluwe and Mbazwana. We had hopes of stopping off *en route* in the interesting bush along the new road, but no dice – it rained non-stop. We called Nick de Goede at Tembe and he said the sun was out! So Zaddachi the Subaru got thrashed a bit. A long time ago I adopted Kevin's trick of naming his vehicles after butterflies 'Zizula' Hilux for example and 'Brutus' the late unlamented black and white Landy. I was originally planning to call my Mica Red Scooby 'Sangaris', but then I realised she *is* a Forester = common name for *Euphaedra*; ergo Zaddachi, a red Forester! Anyway, the crap weather was faster than Zaddachi and we entered Tembe to spotting drizzle. Nick showed us the basic but very comfortable research camp, complete with flowering Dune Soapberry *Deinbollia oblongifolia* in the middle. We couldn't wait so despite the rain we went hunting for Pod Mahogany *Afzelia quanzensis*. This was after all a hunt for Flame-bordered Emperor *Charaxes protoclea azota.*

Common Buff - *Baliochila aslanga* feeding on scale insects (visible on the stem near his feet), at Tembe. He has flipped his wings open to show the orange-yellow upper side.

The next morning, the 29th, dawned with high overcast clearing from the south, so it was with high hopes that we set out. Every Red Ivory *Berchemia zeyheri* tree was searched for *Oncocalyx bolusii* to no avail. We went off to the eastern side of the reserve, butterflies very scarce to begin with, but the wetland scenery was sublime. As the weather warmed up we started to see the normal Zululand butterflies; there were a lot of pierids about, as well as many Dark-webbed Ringlets. We found a white-flowered bush that was attracting a lot of butterflies, as well as day-flying moths. One was a *Venilioides* cf. *inflammata*, a rare thing that Hermann tells me is the first record outside the Lebombos. Then we stopped for lunch at one of the safe stops. After we'd eaten I had a walk around the car park, eyes peeled for Elephant and Pussies With Attitude. I was enchanted to find a colony of Common Buff *Baliochila aslanga*, all feeding on immature scale insects. I took loads of photos, and found that, although normally they sat with wings closed, every so often one would momentarily open its wings. You have to be very fast with an SLR's shutter button to catch this, I write modestly (photo page 168).

As we drove back towards camp, we spotted a lycaenid playing around the forest edge. Closer examination showed it to be a Black-and-Orange Playboy *Deudorix dariaves*. Even more so than his relative at Ngoye, he sat happily on shiny leaves, wings akimbo, totally unfazed by all these photographers moving his perch around, flashing white light into his eyes, and even touching his antennae. Now all I need is a female to be so obliging!

Black-and-Orange Playboy - *Deudorix dariaves* perching at Tembe

Eventually we got back to camp and went to look at the traps. Alas, no Flame-bordered Emperors, but there *were* plenty of Giant Emperor *C. castor flavifasciatus* in them. These also feed on Pod Mahogany, so perhaps we were just a few weeks too early. The weather then came in, and it started to rain…

The next day, the 30th, started fairly clear if cool, so we went on another drive. We didn't find that much more than we had on the previous day, and Brian and Lizelle were feeling a little tired so we dropped them off at camp. Jenny and I went off to Makane's Drift to look for Sesbania Blue *Leptotes pulchra*. We found it but only just. All the marshlands full of reeds and River-bean *Sesbania sesban* have been drained and are either full of maize, or burdock. The place is a mess and we could really do with another Cyclone Demoina to clear it out! Then we went to the area just outside the western Tembe fence where we have found so many good butterflies in the past. This time there was nothing really to get excited about, just the usual Dark-webbed Ringlets and pierids. We found an *Acacia burkei* with twig galls and on them I found a few hatched eggs of Pennington's/Van Son's Playboy *Deudorix penningtoni/vansoni*. These are interchangeable as far as I'm concerned; they have the same foodplant, and the only difference in them is the red-ochre triangle in the forewing of Pennington's. The females are identical and that's what came out of these galls, alongside a couple of flies!

We found some of the ubiquitous Common Buffs as well, but then Jenny let out a yell 'Buff!!!' Looking around, I saw what looked like a small pierid fluttering around. A quick swipe of the net and there she was – Jenny's first Zulu Buff *Teriomima zuluana*. A concerted search found no more.

Granular Ringlet - *Ypthima granulosa* at Manguzi

We then went back to camp where we collected the traps and had a few beers in the luxury camp. Then I gave a slide show to a gathering of rangers, locals and tourists.

There was a lot of interest in SABCA and Lepsoc in general. But Brian had something to make us both envious – a perfect female Paradise Skipper *Abantis paradisea* sitting on the aforementioned Dune Soapberry flowers. He's still rubbing it in now. I have never got a shot of this that I'd even use for lining the bin – the ones in my book were taken by Rob Paré.

The 1st of May was another move day, so we decided to go to Manguzi and get to Ndumo that evening. We had high hopes to get some of the Manguzi specials – maybe Mottled-green Nymph *Euryphura achlys* or Ferrous Swift *Borbo ferruginea dondo*. The Dune Soapberries were out, but not fully so. There were a few butterflies on them, and one amazingly rare Dwarf Chamaeleon, but lifers were in short supply. We hung traps and Brian saw a Flame-bordered Emperor, and one Forest Queen had a look at my traps, but there was little else besides a perfect specimen of a female Satyr Emperor *Charaxes ethalion* f. *swynnertoni*. The best thing we got was Granular Ringlet *Ypthima granulosa* (photo page 170). This was found in the Chief's house garden and Jenny has a shot of a gaggle of children observing me full length on the ground, Nikon in action. I bet that shot will come back to haunt me.

We did get some nice shots of Gold-banded Forester *Euphaedra neophron*, which was not as common as it can be but easier to creep up on than usual.

Pennington's Buff - *Cnodontes penningtoni* feeding on scale insects at Ndumo

Eventually we got to Ndumo where Ferdy Myburgh put us up in the Croc Farm house. As we had our evening braai we could hear munching close by, but couldn't work out what it was. Eventually we spotted it – a huge hippo only about 6 m away. A bigger killer than a croc!

Over the next two days we combed Ndumo, looking at every Red Ivory tree we could see, for *Oncocalyx bolusii*. We even got hold of André Coetzer and had a good stab at finding the plant he and Rob Kyle found White-spotted Sapphire on. But no dice. This is a RARE plant!

Because the weather was a bit dull and cloudy, we didn't see many butterflies. There were a few pierids around including some nice winter form Bushveld Orange Tips *Colotis pallene*. It was also good to see an old friend – Bushveld Purple Tip *Colotis ione*. At Ndumo we found an interesting mix of bushveld and forest butterflies, because we also saw species like Brown Pansy *Junonia natalica*. I'd love to go back in good weather and have a look at the thick riverine forest near the Croc Farm. Ndumo is also seriously beautiful – the Fever Tree *Acacia xanthophloea* forests around Nyamithi Pan are one of the most glorious sights I've seen in Africa.

We also found the obligatory colonies of Common Buff, and Jenny showed her sharp eyes again by spotting Pennington's Buff *Cnodontes penningtoni* (photo page 171) feeding, as a lot of buffs seem to do, on scale insects…

The lure of the Eastern Cape

Bennie and André Coetzer

After many planning sessions, mostly consisting of staring in disbelief and with considerable salivation at other collections, André and I decided to spend some time in the Eastern Cape. Fortunately Douglas Kroon was at his brother's farm near Aberdeen and Ernest and Ann Pringle were also around to give us some pointers - so the planning got on the way.

We left early on a Saturday morning, planning to drive through to Cradock for the first day. We took the road past Parys to Kroonstad to avoid the cost of toll, but probably more to satisfy André's new love for reptiles. This proved to be a great decision, at least from André's perspective, as no sooner had we passed Vredefort when a giant mole snake crossed the road. Now the Pajero is a heavy vehicle, at least when the two Coetzers decide to go on a trip. In fact, it is probably the largest two seater in the world! Nevertheless, we had not yet come to a standstill when André flew out like a frightened chicken, chasing the snake and grabbing it by the tail after a few unsuccessful attempts. Now for anyone thinking that a mole snake is a docile animal, they have another thing coming. This animal was about one and a half meters long and being a constrictor, it is one and a half meters of pure muscle. It turned around baring vicious fangs and attempting to bite whenever it could. The snake handling course obviously paid off as André's skin remained intact. Fortunately the mole snake is not poisonous, but a bite would still be really painful. Meanwhile I tried to park the car, grab the homemade snake handling sticks (amazing what one can do with golf clubs!) and ran to render assistance. After fighting a bit with the sticks and me, trying to keep the snake still while André extracts his camera, we managed to get a few images on the memory card. By this time the snake decided that attacking was not going to work and tucked its head firmly into its coils (talk about ostrich behaviour). A few images later and we were on our way, André convinced this was going to be an incredible journey - and it did not take long before the first disaster struck. Between Kroonstad and Bloemfontein we decided to use the N1 and André was taking his turn at driving. Coming towards him was a large truck whose driver was clearly very casual and, as we approached, he tossed out a beer bottle onto our windscreen. Well, with both vehicles traveling around 100+ km/h, the maths clearly tell you that one should just be thankful for Shatterprufe windscreens! By the time we recovered from the shock, our driver being partially blinded with the shattered windscreen and bits of glass all over us, the truck was of course long gone. Bloemfontein said that they had no windows in stock and we finally arranged to pick one up in East London. Now we were all fired up.

The rest of the journey was rather uneventful but we did try to do some night cruising for snakes and photography of beautiful sunsets in the Cradock vicinity. The next morning we took the dirt road to Pearston and Jansenville. Along the road near Pearston we did pick up a few *Aloeides depicta* but the usual spot near Jansenville was very dry. We did have a chat with the farmer, a Mr Biggs, who seems to remember Ernest Pringle's father spending time there, probably discovering the spot. It is amazing how generations keep the same farms and when one travels in these areas, one can learn a lot about our history. The Biggs' and the Pringles all were from the 1820 Settlers and the land was divided between the English, the Scots and the Irish - Ernest later on explained some of this to us. Nevertheless, whether the drought played its part or not, this spot was almost without butterflies. We did manage to see most of what we collected on our previous visit to the spot but the abundance just was not there. A single *Chrysoritis beulah*, a single *Trimenia argyroplaga*, one solitary *Tylopaedia sardonyx* and a few *Aloeides damarensis* were the only butterflies about. Even our special flowering tree on which André took beautiful pictures before was without flowers. Disappointed, we decided to leave, but fortunately we decided to try the Coetzeesberg behind Pearston.

Here we discovered a pretty spot that just looked like satyrid country. It was quite windy on the slope of the hill but to our surprise we picked up a single tatty *Neita durbani*. Several *Stygionympha wichgrafi williami* and *Pseudonympha magoides* were also around. Walking down to a flatter area we were treated to several *T. argyroplaga*, males and females, a strong colony of *Lepidochrysops ketsi* and other lycaenids. We were most pleased with the *Crudaria* that we caught, hoping it would

***Lepidochrysops ketsi* ♂: A. Coetzer**

be *C. wykehami*. Sadly this bubble was later burst and it turned out to be good old *C. leroma*, but we still had a really pleasant time at this spot.

That evening we set off to the venerable Huntly Glen. Our first impressions were that the Pringles stay far out on this dirt road, but as we drove further into the Baviaans River Valley it grew more and more spectacular. While farming is undoubtedly hard work, the pleasure and serenity of the area must be at least some consolation. And finally we arrived. Ann put up a great meal and we chatted about this and that. Ernest promised to take us to some special spots and of course we couldn't wait.

The next morning we had a quick induction course in sheep counting, goat farming and many other interesting titbits and then we set off to explore new territories. While we understand the need to find new spots for species I think it is often quite underestimated how small these colonies are and how unique their little spots have to be. Having guides like the Pringles greatly helps, not only in finding them (and save some valuable time) but their intimate knowledge of the species' habitat and habits almost guarantees a find and an enormous learning experience. He took us about halfway up the Winterberg where he quickly saw the first butterfly. After us feasting a bit on *Aloeides pringlei* he took us further up to an *Aloeides dicksoni* spot - boy, are these farmers fit! One should inform them that us office boys can barely climb a hill, let alone a mountain - I hope you are reading this Ernest (and Ann) - yes, she was with him when he tortured us. Of course we had an enormously wonderful day and went back to the farm, exhausted but content. The weather was poor but we just took a walkabout around the farmhouse and caught several *C. wykehami* - much to our delight. All of a sudden *T. argyroplaga* were everywhere and a butterfly that was a sort of trophy for us became a very common insect.

The next day Ernest took us to a neighbour's farm where we hoped to catch *Lepidochrysops grahami*. This time he dropped us at the bottom and sent us up while he went back. Here we were treated to *Aloeides oreas* on the top of the ridge. They stayed on a flat grassy area and were quite plentiful. On the slope down we saw many *Kedestes barberae* and even a few *Orachrysops subravus*, but no *L. grahami*. Arriving home we were treated to an excellent meal and convinced Ann to join us for a good bottle of red wine - truly a nice way to end a wonderful visit.

***Orachrysops subravus* ♀: J. Dobson**

The next day we had to leave for East London to have the windscreen fixed and the weather was very cloudy - again the Coetzer luck was starting to catch up with us. Just before we left, Ernest suggested we investigate the little stream behind the house and we did find, as he predicted, a number of *Tsitsana uitenhaga*, which was a great way to finish our stay in the Baviaans River Valley.

***Tsitsana uitenhaga* ♂: A. Coetzer**

Of East London we could say very little. The windscreen was not available, and now we were taping the inside with duct tape (or Farm Tape (Boereband) as the box said) to keep the rain out as of course it was now raining hard. We did try and locate some *Iolaus aemulus* larvae but sadly the *Loranthus* in Queenspark seems to have been removed. We then headed off to Aberdeen to see Douglas Kroon, who said that he had caught a few *Thestor camdeboo* and seen many *Serradinga clarki clarki* - all of which would be very nice for us. Of course we were also looking forward to see an old friend again as Douglas has been spending many months on the farm. We arrived late in the afternoon and prepared for the next day. A nice braai on the stoep of the beautiful farmhouse was just the kind of introduction one needed. That night we slept peacefully.

But the next morning was a disaster. Overnight our weather jinx caught up with us and it was overcast and drizzling. Not only that, but André caught a stomach bug and was hardly able to walk. Douglas drove down to Graaff Reinet to pick up something and also got us some medication. We spent a few minutes close by with very occasional sunlight breakthroughs. While nothing spectacular was found we did catch some *Aloeides pierus* and the most beautiful *Lepidochrysops patricia* female I have ever seen. Driving up the valley later we were treated to some of the most slippery roads I have experienced in a long while. The poor Pajero slid sideways and every which way, following every rut in the road, but fortunately delivered us safely back home. When the rain stopped for a second I did get out to see if I could chase up something, we were there after all, but was only lucky enough to chase up another *L. ketsi*. Unfortunately no *Kedestes barberae bunta* were found. During that day the weather only became worse and that night water came down in torrents. Judging from the weather bureau this was not going to get better and indeed the Southern Cape was being washed away at the time. It was time for us to acknowledge defeat and we turned the nose North and drove back - mostly through rain. Thus came the end of the first half of the story.

The second half started already during the first phase when Ernest showed André the mountain bamboo up on the Winterberg, mentioning how common *Metisella syrinx* is during February. At the same time *Torynesis magna* should also be flying and so the seed was planted.

***Metisella syrinx* ♂: A. Coetzer**

Now February is a bad month - André's classes are in full swing, this is generally the time when at work we have to finalise projects, as the Goverment year-end rush is on and it is not easy to get away. We did push whatever luck we had and made arrangements to steal a weekend and a day. So late on a Friday we left for the Eastern Cape. After sleeping in Aliwal North we left early (one hour too early and had to sleep a little bit in Queenstown), arriving at the lower part of the Winterberg around eight o'clock. After getting all our gear together, we started to investigate the area around the car, and as it was quite cool, we did not expect much. But since we saw a

Dira clytus eurina on the way there, we were quite confident and quickly a *T. magna* made its way towards us. This was unfortunately a bad mistake on its part and in the half an hour that followed we collected our series. They were mostly worn but André did manage to get a few images on the camera.

Now we had to face the Winterberg and the weather was now fully overcast with a cool breeze. The wisdom of continuing was being challenged severely. But since we had nothing else to do I suggested we continue up for the exercise and we started climbing. On the way up more *T. magna* and a few *Aeropetes tulbaghia* flew around, keeping us company. As my breath was becoming faster and faster I was considering how I would sue Ernest for not informing me that this climb was strictly for under-25-year-olds and fit farmers. I struggled on, noting with some satisfaction that André was also breathing heavily - this kept me going. The good news was that the weather was clearing, certainly a strange sensation for the Coetzers. Higher up

***Aeropetes tulbaghia* ♂: J. Dobson**

the slope became steeper and the area was covered with thick *Festuca* grass. This caused us to trip several times but very slowly the mountain bamboo and upper cliffs of the Winterberg crept closer. Eventually we reached a rock where I just had to rest and while sitting down a small skipper flew right over my head. I joked that it must have been *M. syrinx* and strangely André said it could well have been. With a small measure of hope we moved on to where the first few scraggly bamboo shoots stood at the lower reaches of their spot and no sooner had we reached it, the first *M. syrinx* made its appearance. Not much emphasis was put on studying its habits though, its physical appearance as a reference specimen was far too important. The next hour or so saw us climbing boulders and grasses and further steep gullies to eventually end up with a nice series, some photos and some appreciation of their habits (and the height of the mountain). Their habit of investigating bamboo shoots was quite endearing, almost as though they were nitpicking on where to sit. Now we had to get down as we had been warned that the weather would turn foul later. Looking down towards the Pajero revealed only a minute dot, one that was not increasing in size rapidly. We struggled down, falling or sliding ever so often and more than once we were saved by the tough *Festuca* grass that we cursed on the way up. Not only did they make for a relatively soft landing but were also remarkably tough to grab on should you lose your balance. After two full hours of fighting towards the car we eventually reached it, only to find that it had been conquered by a whole flock of sheep. We hardly got into the car when the first drops of rain fell and slowly we made our way down towards Spring Valley and then Huntley Glen.

Arriving at Huntly Glen we found the Pringles in good form and spent the rest of the day and evening learning about various issues. The next morning Ernest took us high up on the ridges on his farm explaining that this would be an easy climb. After confirming this with Ann, who actually agreed, leaving me in a state of less anxiety we set off with me and André on the back of the bakkie with Dexter and Donna, the two labradors. While André kept a lookout for snakes (and hopefully butterflies as well) we moved out. A "tabakrolletjie" or slugeater put in an appearance and later on we found a beautiful rhombic skaapsteker. We saw several *D. clytus* on the way, and since Ernest claimed that these have a distinct appearance making them look more like *D. oxylus* we netted a few. But high up on the hill we were informed that Dexter and co were actually butterfly sniffers and in particular *Lepidochrysops victori* sniffers. We split up and I took the safer bet of staying with Ann while André wandered off with Ernest and the dogs. It turns out that Ann is a better *victori* spotter than Dexter and I soon had a few of these, while André had less luck. But a bit later on André also got some specimens as well a few nice photographs.

Ernest then took us to a spot where Alan Heath and an American student had an unfortunate experience - this is not my story to tell - and where they caught *Chrysoritis braueri*. Parking at the gate I was under the impression that Ernest was going to show us the spot which was down a particularly steep slope. Being the fit farmer that he is he decided that just watching the spot from the distance is not good enough, we needed to see it closer. We moved down the slope, I quite slowly since my body was still remembering the climb up the Winterberg the previous day, until we reached a point where a gully was going even further down to a small ridge much further down. Here I decided that if they wanted to crawl down there they could do this on their own as *Chrysoritis* season was supposedly gone. So I waited and no sooner had I sat down when André shouted "there's one!". Even this unexpected surprise did not make me get up but when he caught the second one I could not resist and slid further down, knowing full well I would have to get up again. Well, half an hour later we had a few males and some nice photos of *C.*

braueri a most unexpected find for the trip. On the way up Ernest went ahead and André, nice boy that he is, walked (or struggled) up with me. This was nice until Ernest shouted "female!" and André took off like a bullet - uphill. Out of breath he caught up with Ernest who graciously took his net and netted the female. André admitted he would not have been able to lift his net and was very grateful to Ernest. Well, eventually I made it up to the top, soothing my aching body with comforting words such as "the exercise will do you good".

Now the weather closed in again on us and we returned. Back at the farm we were just setting up Lepidops for Ernest when a message came that a milk cow had a very strange sickness called "loop, loop, val" and we all set off to investigate. While vet Pringle was attempting to administer medicine to the cow, which was not an easy task I might say, we went with Ann to investigate the shearing facilities, a most interesting opportunity. That evening we finished off with a great dinner and a nice bottle of Rose and packed all our stuff.

The next morning the weather was fortunately very cloudy so we did not mind the trip back too much . Late in the afternoon we arrived back home after having driven virtually the whole day in the rain. Ernest did call us to say that the sun was shining in Huntly Glen, but we could not be made jealous. We had a very successful and enjoyable weekend in the Eastern Cape and all we now needed was for our bodies to recuperate, for André to study for the tests and make up the time he lost and for me to catch up on work.

At the end we can just again say to Ernest, Ann and Douglas - thank you very much for a glorious time!

A contribution from Colin Congdon
Moths `n things #4

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In Moths 'n things #1 I invited readers to send in contributions to this series. The contribution following is hopefully the first of many. I am particularly chuffed that it came from Colin Congdon. We shared some memorable evening fires discussing things lepidopteran and beyond in iconic settings such as in the middle of the Kakamega rain forest at Rondo Inn; on top of a solid granite koppie rising above the seemingly endless plains of northern Zambia at Mutinondo and in the comfort of the Collins residence adjacent to the biggest collection of African Butterflies in Africa at Karen, Nairobi.
This brilliant piece epitomises Colin's humour and outlook in life – enjoy!

INSECTS RULE, OK!

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Flowering plants have two main requirements for reproduction –

- Pollination
- Seed dispersal

Most seeds are too heavy for insects to carry around, so insects' role in seed dispersal is relatively minor. Pollination is a different matter.

Just cast your mind back 130 million years or so*. Until then, pollination was achieved mainly by wind. For wind pollination to work effectively, the flowers to be pollinated must be near enough and numerous enough for random air movement to score a hit. If there are to be enough plants in the area for success, it is an advantage if they are tall and slim. Grasses. Or grow in areas where winds are strong and reliable, such as in the circum-polar pine forests of the northern hemisphere. But in either case, the need for numerous 'target' plants effectively limits the number of plant species in a given area. So the grasslands and forests would have been species poor, as the pine forests are today when compared with tropical rainforests. Another disadvantage of wind pollination is the cost of producing copious amounts of pollen, most of which goes to waste.

*Or thereabouts. Opinions vary. See Larsen (2005).

A few tens of millions of years ago, all this changed. Suddenly (by evolutionary standards) there was an explosion of flowering plants, the angiosperms. All manner of pollination strategies were developed, and all made possible by the arrival of flying insects: well, the plants would hardly have evolved in anticipation of their pollinators, would they?

The main advantage of insect pollination is that plants of a given species may exist at low densities and still achieve successful reproduction. Mechanisms to enhance success include synchronised flowering at different times of year or day from other plants, or appealing to a narrow range of pollinators (which can then be sure of a good meal when visiting).

The main consequence of having your pollen delivered by special messenger is, as we have said, an ability to exist at low densities. A direct result of this is the opportunity for much greater biodiversity. It is true that some groups of plants have retained wind pollination (Poaceae, Betulaceae, and the whole of the gymnosperms), others are bat (Bombacaceae) or bird (Loranthaceae) pollinated, but the vast majority of the flowering plants have evolved together with insects.

The evolution of plants and insects is often portrayed as some kind of arms race, with plants evolving poisons to deter defoliators including insects (Larsen, 1991: 10). In fact poisonous plants are at a great evolutionary disadvantage *vis-à-vis* their putative insect antagonists. Consider the Afrotropical swallowtail butterfly *Papilio pelodurus*. Its caterpillars feed on plants in the Lauraceae or laurel family (which are full of poisonous alkaloids) and particularly on *Cryptocarya* and *Ocotea* (African Camphorwood). An *Ocotea* can live for 500 years, during which time it is at an evolutionary standstill. On the other hand the butterfly in that time will have passed through a thousand generations, each affording opportunity to improve its ability to overcome its host plant's defences. No contest.

In fact it is likely that insects target toxic host plants in order to reduce predation by, particularly, vertebrate insectivores. While the herbivorous insect can specialise in resistance to a particular plant's toxins, more generalist predators of insects cannot, and do not relish insects with a gut full of poison. Thus the insects turn the tables on the plants, and by using the plants' toxins for their own defence, turn disadvantage to advantage: the more toxic the plant, the better the protection for the insect.

Ingesting the plant toxins is no defence against the insects' parasitoids, which are often just as host-specific as their herbivorous hosts. Thus in the case of the swallowtail *Papilio pelodurus*, the younger caterpillars are conspicuously coloured black and orange as a warning to predators, but are heavily parasitized by ichneumonid wasps and tachinid flies.

All of this is a digression, however. The real evolution of flowering plants in tandem with insects happened millions of years ago, and was greatly to the advantage of both plants and insects. It resulted in the vast array of flowering plants we have today.

Final instar *Papilio pelodurus* larva with parasitoid cocoons

Without the insects it could not have happened, or would not have happened in the same way. The world would be a very different place. No crisps, no peanuts, no after dinner mints. No brandy. No cigars.

So insects rule.

Ok?

In Moths 'n things #5 we will explore the impact the Kalahari basin may have had on recent speciation events in southern Africa.

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LEPIDOPS

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Why should we enter our data into LepiDops? This is a question that is often heard. In this article I will try to explain my personal viewpoint and elicit a debate on the matter - if necessary. For many years we, the members of Lepsoc, have been collecting data and Lepsoc has been extremely good at this over the last 25 years. I would think that of all insect taxa, Lepidoptera (and butterflies in particular) have been studied best because they attracted a reasonable number of amateurs interested in them.

Lepsoc members have collected data for many reasons - some just wanted to get out, others are interested in getting perfect examples of species, others like to compare regional differences, yet others would like to name a few after them, etc. Lepsoc members have also, because of their passion, become extremely good ambassadors for and conservationists of Lepidoptera, again a feat few other societies can claim. Personally our interest has always been the inter-relation between species and their environment. The problem with our interest was that one could learn very little of this aspect unless one was able to look at distribution holistically i.e. local distribution (the type of vegetation in which a species occurs) as well as global distribution (the larger distribution areas). The latter is probably better defined by meteorological and geological factors in addition to vegetation.

Nevertheless, the more intriguing the questions one asks, the more information one needs - and we just did not have this.

Who of us haven't asked the questions “What am I still looking for?”, Where could I find *Lepidochrysops praeterita*?”, “Where and when does *Euphaedra neophron* fly?”, “Does *Pseudonympha penningtoni* fly only at 1800 m above sea level?”

In the past such information was only available as broad (and I mean BROAD!) drawings of areas which were not actually useful, especially with species occurring only in small colonies.

The problem with many questions such as the above, is that reliable answers cannot be given unless the amount of data analysed is large and, of course, correct.

LepiDops was designed to collect such information and merge many collectors' information to be able to ask such and other questions.

In the past I did not want to promote LepiDops actively. One reason was that some considered it as a way of making money (for those that still think so: please multiply the number of programs sold (about 30) by R80 per copy. This comes to roughly a quarter tank of fuel). Another reason was that, unlike a commercial product there is no time to thoroughly test the product and ensure a high quality tool. Of course I do not have the resources to assist everyone with problems 24 hours per day.

I would like to thank those that came aboard early for their patience while many bugs were corrected. Some still occur but the support is now at a level where one can actually manage it and the product is quite stable.

Definitions

Lepibase is the name for the collated data submitted to Lepsoc. Lepsoc is the owner of the data. LepiDops is a computer based tool to assist with collection management and data referencing.

Main Screen of LEPIDOPS

Why LepiDops and not other automated tools?

A great many people have collected their information solely on the labels of the specimens. While this assists with maintaining the value of the specimen, the value in the greater scheme of things is minute as only the owner of the specimen knows about this. Worse, when he replaces that specimen with a better specimen, the original data is gone!.

Others have collected their data in note books but we all know that, while better than simply the label, it is still hard to find anything and certainly not groups of things.

The other argument is of course, why not use spread sheets - these can be used like databases and indeed many have used them that way. The biggest disadvantage is that only if a standardised spreadsheet is used will one be able to collate information from many people. Furthermore, they lack the ability to merge several people's data and analyse it.

The last alternative would be to use another database such as Access or any other. Of course this has the same standardisation problem as above - unless everybody uses the same database structure and formats, collation is virtually impossible. LepiDops is based around Paradox, an inexpensive database with all the capabilities required for our needs.

Special features

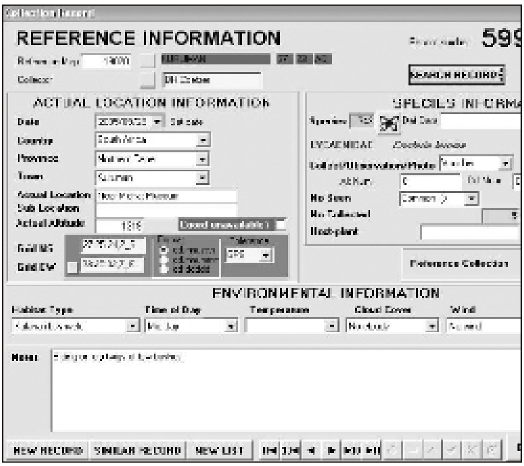
In order to encourage people to use the system one of the design goals was to make life easy for the data collector but also to assist on a broader scale to help with data analysis.

Why then LepiDops?

LepiDops has been designed to collect as much information as possible regarding every specimen. While all this information is not compulsory, it would still be useful as we progress into more sophisticated data analysis.

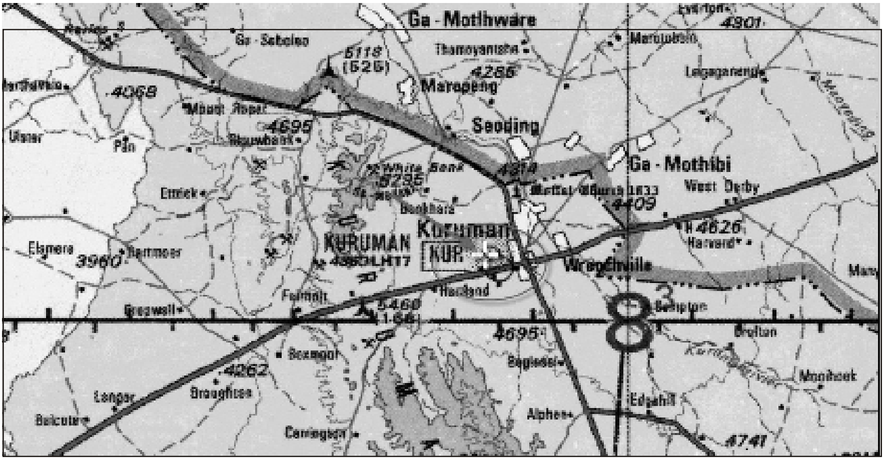
LepiDops is database based, meaning that its data can readily be analysed. The main benefits are:

Front End: The user front end of Lepibase was designed to rapidly enter data, by ensuring that the minimum required fields for proper scientific value is entered. Special tools assist with similar records to minimise keystrokes and there is even a tool to allow for simple ticking off of species observed. This makes the entry of records easy. More importantly, many of the fields are pre-populated requiring only selection of names rather than typing them in. These lists are



Collection Record Screen of LEPIDOPS

generally tree-based, limiting the choices. If additional information is given such as the country, only province names of the country are listed. This has a MAJOR benefit in that spelling errors are reduced. Like me, I am sure that users have provinces like: KwazuluNatal, Kwa-Zulu-Natal, KwaZulu Natal, KZN and many other variations.
Of course for a computer to group these together is very difficult. One need not even mention the spelling of scientific names - as we all know.

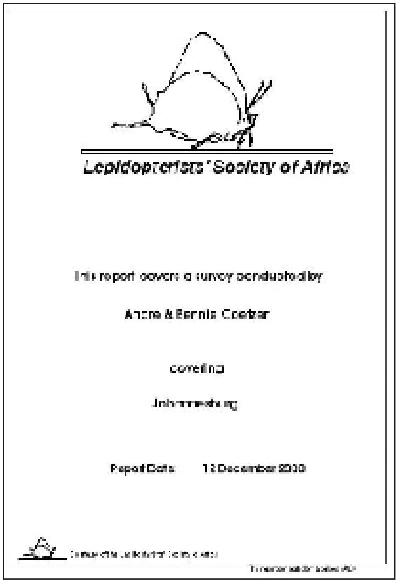


Map Feature of LEPIDOPS

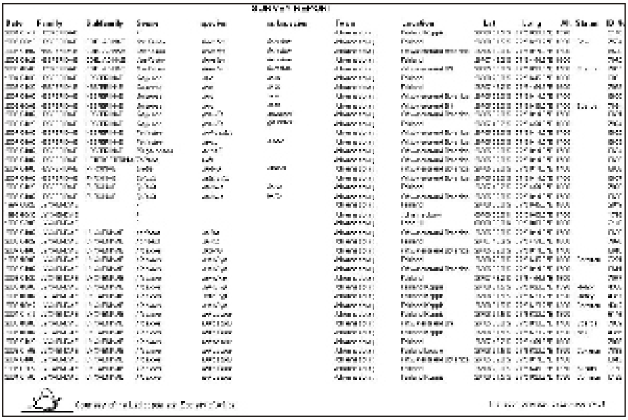
Entering location information without GPS is also easy. A map feature allows the user to simply select the map, and click on the actual location and voila! - the correct coordinates are entered correctly into the database.

A second advantage are some data analysis tools: Lepidops allows for the user to create reports for personal use as well as reports to authorities and land owners.

Reports: Lepidops can provide two types of reports. The first is a report listing all the records made at any particular location or area. This is useful for Nature Conservation reports. The second report is a list of species in an area. Such a list is useful for landowners. If one has purchased the full image-based version of LepiDops, this report can be augmented with images of the

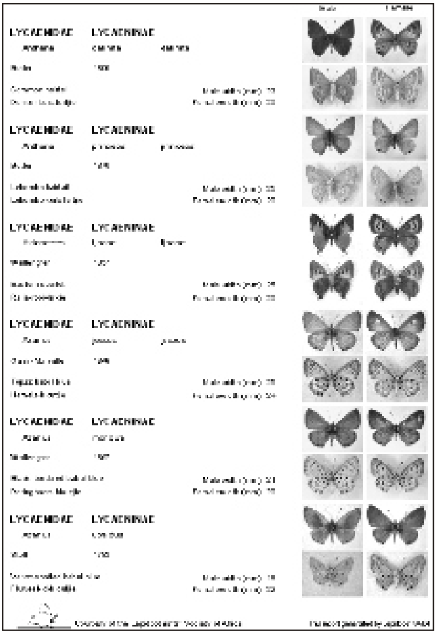


Front page of Survey Report



Report with all records for a particular location

species. If data is added to LepSoc's Lepibase then we can generate such reports for you. As part of the SABCA initiative it is envisaged that such reports will be created for every Nature Reserve in the country that was surveyed.

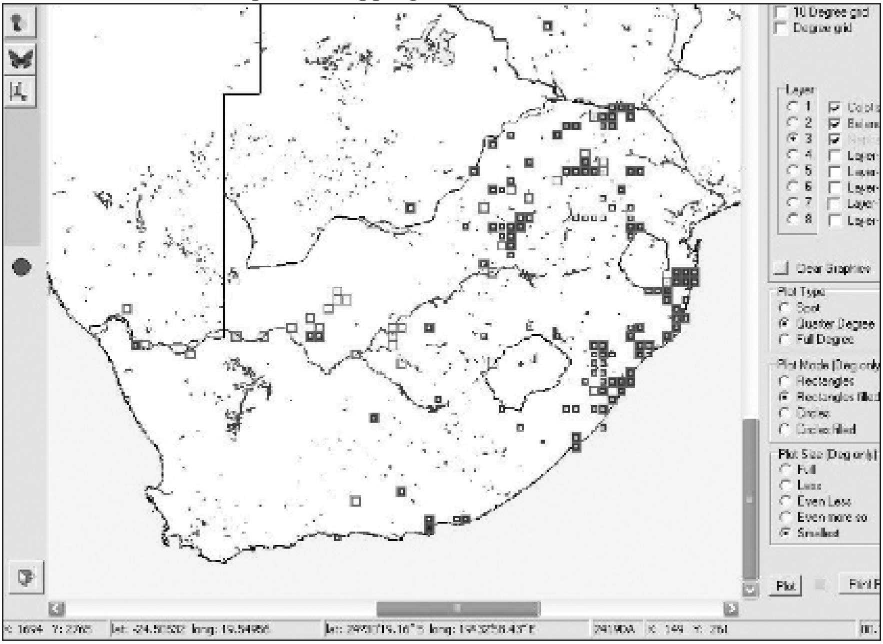


Report created with the full image- based version of LepiDops

Report with species recorded for a particular area

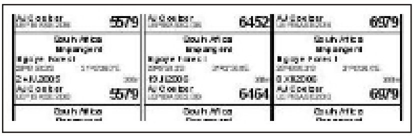
Distribution maps: LepiDops can create distribution maps from the entered data. Using these maps one can display locations of any record on a map in either spot accuracy or quarter degree accuracy or even full degree accuracy - depending on the need for the analysis. In addition to do this one can group together at family level, genus level or species level. Thus one can plot where *P. ophidicephalus entabeni* occurs, or *P. ophidicephalus* (all subspecies) or *Papilio* (all species) or

PAPILIONIDAE (all genera) etc. The new version even allows the overlaying of different selections to spot overlapping areas, etc.



Distribution map

Data analysis: Some people have asked for specific analysis such as listing the specimens caught by a specific donor to my collection, list (print) the areas where I have caught a specific genus, etc.



Labels printed using LepiDops

A third advantage of LepiDops is that it will manage your collection. It will assign accession numbers to records, print labels for your specimens, etc.

Benefits to individuals

Apart from the obvious benefit of collection management the users of Lepidops have a number of advantages. The major advantage is of course the ability to analyse their own data. This is a very interesting exercise in managing one's own experiences. A second advantage is the ability to perform analysis on all of Lepsoc's data. Such analysis is quite enlightening, not only in identifying where unvisited spots are but in recognising trends and distribution, assisting in individual sleuthing.

Last but not the least is Lepidops' ability to assist in monitoring SABCA progress. A provincial leader will be able to take all data and determine graphically which areas were covered during any particular period and in total, thereby recognising immediately whether the season's goals were achieved. Unfortunately only data entered into Lepidops will be usable immediately. Other data will be entered towards the end of the project only.

Future prospects

A great many opportunities are envisaged for the program. Many of those of course depend on the use of the program.

1. The GIS system will be enhanced to work smoother. In particular if data becomes available the overlay of data with different levels of vegetation, geographical and other layers.
2. Basic Lepidops reference information will become more complete with more high quality images.
3. GIS interface to directly interface with GPS units
4. GIS interface to directly link and display with programs such as Google-Earth

A major benefit is that, as those people who have used it extensively can attest to, the program can evolve. Thus, as users have new requirements such as pin-pointing locations on a map, adding new fields or modifying the way data is entered, these have been addressed and the program has improved. While this process sometimes takes a lot of time as my time is very restricted, many features have been added over the years and indeed shortcomings have been eliminated.

Conclusion

While the product may not be perfect, Lepidops provides a viable means of collecting data for personal use, for personal data analysis and for collection management. In addition it provides a format in which data can be distributed to Conservation authorities as well as creating reports and feedback to landowners. Last but not the least, Lepidops can be used by everyone, allowing for the collation of everyone's data to the benefit of all, helping us to learn and understand more of the Lepidoptera of the Afrotropical region.

Photographic Competition - Lepsoc Conference 2008

Steve Woodhall
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The competition is hotting up in the photo competition with more entries this year than we've had for a long time. The quality of entries was very high, with someone (can't remember who) commenting that any one of the entries would have won ‘Slide of the Year’ not so long ago.

The effect of the SABCA website and all the new members who are photographers first and foremost is being felt. The Slide of the Year was scooped by 'butterfliers' - new member Peter Webb winning with his superb study of the Scarce Ranger *Kedestes nerva*. Peter has found a colony of this rare butterfly and taken some memorable photos of them. Well done to him.

On our recent Phinda trip Jenny took the runner-up shot of Millar's Buff *Deloneura millari*. I think she's the only photographer who was calm enough not to have frenzied camera shake! A rarity like this would normally be in the Scientific section, but it was every bit good enough to go into the Slide of the Year.

André Coetzer took a brilliant shot of a male Ragged Skipper *Caprona pillaana* showing his 'underarm' hair pencils. This shows the close relationship this skipper has to the White-cloaked Skipper *Leucochitonea levubu*, which could also learn to use an underarm razor. And he was runner up with a great shot of a *Deudorix* showing its false head mimicry to good effect.

Finally, the Fun category produced some good belly laughs. My shot of a Demon Emperor *Charaxes phaeus* inspecting the inside of Kevin Cockburn's nostril was well appreciated, and only just beat André Coetzer's hilarious Giraffe-in-a-pothole ('Darn Potholes').

The judging was as usual done by show of hands, after an initial run through of the photos in each category. We split them across the two days so people didn't get 'photo'ed out' in one session.

Two things - will you all please give some thought to prizes? We used to give film in the good old days but the donors no longer exist, and hardly anyone uses film anyway. Also, we need to take on board the issue of photo manipulation. Fun category aside, where anything goes (and frequently does!) we need to decide where the rules stand. Do we allow the basics (levels and curves, cropping and sharpening) only? What about cloning irritating twigs out of the background? And where to stop? I like focus stacking and it produces stunning images, but I didn't enter any this year because as far as I know no-one else was using the technique and I felt it would be unfair to take advantage - the depth of field approaches that of a scanning electron microscope and in colour as well! But at least one other butterfly photographer is now getting into it. Do we have a special category for composite images? Again where do we stop - it would be for example possible nowadays to use pasting and warping to take wing images from a dead Morant's Blue *Lepidochrysops hypopolia* and put them onto a live Highveld Blue *L. praeterita*. I was tempted to do this and put it into the 'fun' category just to see who noticed...

Seriously, we do need to decide where to go with this. Either write a letter to *Metamorphosis* or e-mail me on steve.woodhall@sos.co.za with your thoughts.

All the best
Steve

An annotated report on further host-plant associations for African Loopers (Lepidoptera: Geometridae)

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Abstract

115 natural host-plant associations for African Geometridae, 61 new to science, are reported. First-time host-plant associations are recorded for the following seven genera: *Acrostatheusis* Prout, *Chlorissa* Stephens, *Ereunetea* Warren, *Heterostegane* Hampson, *Chrysocraspeda* Swinhoe, *Paraptychodes* Warren, *Mimoclystia* Warren and for the following 31 species: *Acrostatheusis atomaria* (Warren), *Aphilopota* sp.4, *Argyrophora variabilis* Krüger, *Callioratis grandis* Prout, *Callioratis* sp.1, *Cartaletis natalensis* Prout, *Chrysocraspeda zombensis* (Prout), *Chiasmia kirbyi* (Wallengren), *Chiasmia inaequilinea* (Warren), *Chiasmia multistrigata* (Warren), *Chiasmia subcurvaria* (Mabille), *Chlorissa albistrigulata* (Warren), *Cyclophora* sp.1, *Drepanogynis olivescens* (Warren), *Drepanogynis commutata* (Prout), *Ereunetea reussi* (Gaede), *Epigynopteryx* sp.7, *Heterostegane rectistriga* Prout, *Isturgia arizela* (Fletcher), *Ligdia batesii* (Wallengren), *Neromia cohaerens* Prout, *Mimoclystia pudicata quaggaria* (Wallengren), *Mauna ardescens* Prout, *Mauna perquisita reprobata* Prout, *Paraptychodes* sp.1, *Paraptychodes tenuis* (Butler), *Paraptychodes costimaculata* Prout, *Scopula internataria* (Walker), *Scopula r. rufisalsa* (Warren), *Xanthisthisa tarsispina* (Warren), and *Zamarada* cf. *episema* Fletcher. Comments are made on emerging host-plant spectrums for various groups as well as general comments on specific species and associations.

Introduction

The years 1998 and 1999 saw a plethora of publications dealing with geometrid host-plant associations for Africa: A list of geometrid host-plant associations established from many years of diligent fieldwork by Arthur and Neville Duke was published posthumously (Duke & Duke, 1998) and still remains the largest single contribution to new host-plant associations for southern African Geometridae; Staude (1999) reported on further new host-plant associations for South African Geometridae; Kroon (1999) listed all the known larval associations of southern African Lepidoptera, a work that remains the standard reference text on the subject today; and Scoble *et al.* (1999), in presenting a complete catalogue of the world Geometridae, included a range of further new geometrid host-plants. To the author's knowledge, since 1999 no contributions appeared dealing specifically with African geometrid host-plant associations. Staude, 2001a, Krüger, 2001, 2002, 2007 and Karisch, 2005 are taxonomic papers which also report some further new host-plant associations for the respective groups of African Geometridae being revised.

Searching for geometrid larvae in the field on their host-plants and rearing them to adulthood is a reliable way of establishing host-plant preferences. This article reports on the results of this practice exercised by the author over the past nine years, excluding associations reported by Staude, 2001a, b. In addition, geometrid host-plant association data was extracted from the labels of specimens donated to the Staude collection by H. Geertsema, S. C. Collins, I. Bampton and J. G. Joannou. Further associations were established using information sent via e-mail by S. E. Woodhall, K. Cockburn, S. C. Collins, D. M. Kroon and A. J. M. Claassens.

In Europe, where much more work has been done in establishing geometrid host-plant associations, many geometrid species are oligophagous (feeding on a few species of plants only) but with particular preferred host-plants (Hausmann, 2001, 2004). These types of patterns have not yet been well established for African geometrids, therefore duplicate host-plant associations are also reported here in cases where larvae were found in different areas or habitats.

Comments as indicated in the Table are made in the discussion section on various aspects. The emergence of preferential host-plant patterns for some African geometrid taxa resulting from this work is discussed.

Materials and methods

The author collected geometrid larvae in the field either by beating branches of potential host-plants and collecting the drop-off on white netting material or by direct inspection of plants. It was found that the beating method worked well in the case of trees and shrubs with an open foliage but that direct inspection produced better results for herbaceous, fragile and dense vegetation.

Individual larvae collected in this fashion were allocated a unique breeding number and kept singly in semi-transparent screw type plastic containers 75mm ø x 75mm high. On a one- or two-day cycle (depending on the type of host-plant) larvae were transferred to clean containers, host-plant was replaced, notes were made, and larvae were photographed. After pupation, pupae were removed from any cocoons, photographed and placed in clear zip-lock plastic bags measuring 180x200 mm. Plastic bags were inflated regularly (at least once a week) by mouth to prevent desiccation and to provide a mild fungicide said to be present in human breath to prevent the formation of mould. Adults were frozen one day after emergence, set, identified and are placed in the Staude collection, Magaliesburg, South Africa.

Plants were identified making use of standard field guides, consulting experts and confirmed where possible by comparison with specimens on the ALUKA website of SANBI (http://www.aluka.org).

Some specimens received from J. G. Joannou and S. C. Collins were accidental by-products from sleeving non-geometrid larvae outdoors on trees. Geometrid pupae found in the sleeve bag were assumed to be from larvae inadvertently sleeved with the target larvae and the host-plant association was thus established. Adults were set, identified by the author and are also housed in the Staude collection, Magaliesburg, South Africa.

Kühne *et al.* (2008) distinguish between the terms host-plant and foodplant by regarding host-plants as being those that were freely chosen in the wild and foodplants as those which a Lepidoptera species will accept under artificial conditions. This concept is followed here.

The results are presented in tabular form with the newly reported associations highlighted in bold for ease of reference. The date of association column in the table may be the date on which the larva was collected in the field or the date of the emergence of the adult, where the date on which the larva was collected is unknown. In cases where the date of emergence of the adult is cited it is preceded by the abbreviation *em.* (for Latin *emersit*, has emerged).

Discussion

#1- *Paraptychodes tenuis*: The larva was found on the trunk of a boabab tree. Larvae of *Paraptychodes* are expected to feed on cycads in their early instars (see Staude, 1994; 2001b). No cycads could, however, be found on the tiny Mesali Island (off Pemba Island) where the moth was very common. It therefore seems that this population of *Paraptychodes tenuis* may have lost its dependence on cycads. On the mainland in Kenya and Tanzania this species is usually found in areas where cycads are occur. A larva found by S.C. Collins on *Encephalartos hildebrandtii* at Arabuko Sokoke Forest Reserve, Kenya and subsequently preserved in liquid, compares well with the larva from this record.

#2- *Zerenopsis lepida*: There are no naturally occurring cycads close to the town of Tzaneen, Limpopo Province, South Africa. Both exotic (*Cycas* spp.) and indigenous (*Encephalartos* spp.) cycads are extensively planted in gardens and along the roadside, in and around the town. *Zerenopsis lepida* seems to have established itself here, and larvae, feeding damage and adults were widely observed on cultivated cycads in the area during a visit by the author in February 2007. The nearest population of naturally occurring cycads is Ga-Modjadji about 30 km away, where no signs of the presence of *Z. lepida* could be detected. The nearest known colony of *Z. lepida* occurring on natural cycad populations is found at Mphaphuli Cycad Reserve some 160 km away. It seems unlikely that the moth would have colonised the cultivated cycad populations of Tzaneen from Mphaphuli since the Modjadji colony, from which the species appears to be absent, is located between the two localities. The moths were probably introduced inadvertently by a cycad collector who could have brought in plants, collected in the wild somewhere else, together with easily overlooked pupae of *Z. lepida*.

#3- *Argyrophora variabilis*: Larvae were commonly found on the host plant *Athrixia elata* on the farms Golden Valley and Steenkoppies, Magaliesburg, on which they are perfectly camouflaged. An early season grey larval morph is found from October to November and a late season green larval morph is found on the plant during February and March. This matches perfectly with the plants, which tend to be greyish before the rains and turn much greener later in the rainy season.

#4- *Chiasmia* spp.: The larvae of the majority of African *Chiasmia* species seem to be monophagous on Fabaceae (Kroon, 1999; Krüger, 2001; this article). Most associations are with *Acacia* spp. and a number of *Chiasmia* species seem to be oligophagous, with particular preferences for certain species when available. Some species may even be monophagous (see comments 5-10 below).

#5- *Chiasmia brongusaria*:This oligophagous species has a particular preference for *Acacia karroo* but in its absence will also feed on *Acacia sieberiana.* Adults are commonly disturbed in glades of *A. karroo* trees by day. In the Magaliesburg area larvae have never been found on other *Acacia* species, which occur sympatrically with *A. karroo*, despite extensive sampling over many years.

#6- *Chiasmia confuscata*:Adults of this species are invariably found commonly only in the vicinity of stands of *Acacia ataxacantha* in the western drier areas of South Africa, where both species occur locally. *Chiasmia confuscata* is absent from the extensive drier savannah plains from which *A. ataxacantha* is also absent. In the wetter eastern parts of the country *C. confuscata* is more widespread in dense woodland and forest habitats, where *A. ataxacantha* is also common. Duke & Duke (1998) found larvae of this species on *Acacia nilotica*, which, however mainly inhabits the dry savannah plains where the moth is absent. It is suspected therefore that this oligophagous moth may well prefer *A. ataxacantha* as its primary host-plant. More sampling is needed to settle this question.

#7- *Chiasmia kirbyi*:This species is locally common in the Magaliesburg area and is also localised but widespread in general. Larvae have so far only been found on *Acacia caffra* and not on other sympatrically occurring *Acacia* spp., despite extensive searches.

#8- *Chiasmia multistrigata*: In the Magaliesburg area this species also prefers *Acacia caffra* as its host-plant, on which it is commonly found, and where it has not been found on any of the other *Acacia* spp. It clearly prefers to use this tree as host in the Magaliesburg area. *Chiasmia multistrigata* does, however, occur widely and can be found in areas where *A. caffra* is absent. More searches in areas where the moth is found and *A. caffra* is absent need to be conducted to shed more light on the host preferences of this species.

#9- *Chiasmia simplicilinea*: This species has only been found on exotic Australian wattles (*Acacia dealbata* and *Acacia mearnsii*) by the author. Again larvae have not been found on other indigenous sympatrically occuring *Acacia* spp., despite extensive sampling. Kroon (1999) lists two host plant records for this species, both of *Acacia mearnsii.* Adults of *C. simplicilinea* are easily disturbed by day and are commonly found under the tree canopy of exotic wattle plantations. This species' original indigenous host-plant is unknown. *Chiasmia simplicilinea* seems to be expanding its range together with that of its alien invasive host as it occurs in wattle thickets growing in grasslands and fynbos where no indigenous *Acacia* spp. occur.

#10- *Chiasmia turbulentata*: There are a number of larval colour morphs of this species, ranging from plain light green to plain dark brown with various mottled varieties of these two basic colours. Larvae of this species have so far been found only on *Acacia karroo* (Kroon, 1999; this study).

#11- *Coenina poecilaria*: Staude (1999) reported this species as feeding on *Sphenostylis angustifolia* (Fabaceae). This study reports a further four host-plant associations for this species, all from the same area. It is now known to feed on three different families of plants. This indicates that the species is probably polyphagous. This is unusual in aposematic moths, where a single or group of related toxic host-plant/s usually provide/s the catalyst for the development of aposematism. The aposematic nature of the species is discussed in Staude (2008b). It is unlikely that all these host-plants harbour similar toxins or that the species is able to sequester a large range of toxins. The species displays aposematic colours in both larval and adult stages, but the patterns do not closely resemble any known toxic species in its habitat. It may be possible that the species simply exploits the 'general avoidance of aposematic insects', which is found in predators living in areas of seasonal abundance (see Staude & Curle, 1997). The catalyst for the aposematic development in this species is therefore not apparent. This phenomenon is worth further study, which could lead to a better understanding of the mechanisms driving aposematism in moths.

#12- *Drepanogynis commutata*: What were probably second instar larvae, were found on the host-plant on 16 September 2007 and pupation only took place at the end of November. Larval development was very slow initially, with larvae seemingly preferring wilted plant material. This is similar to the case in many *Idaea* spp. (Hausmann, 2004). Larval growth was rapid during the last three weeks in the final instar when fresh plant material was preferred. Adults of this univoltine moth emerge in winter, normally soon after the first cold front. The females of the species seem not to be attracted to light. All four known female specimens were either bred or were found in the open veld away from artificial light sources. Males are actively attracted to light.

#13- *Isturgia supergressa*: This species seems to be monophagous on *Mundulea sericea.* Duke & Duke (1998) first found it on this plant and larvae have subsequently been discovered several times only on this plant by the author. The plant is always found in the vicinity wherever adults are collected in light traps.

#14- *Ligdia batesii*: This species has repeatedly been found only on *Acacia caffra* in spite of more extensive searches on other *Acacia* spp. It seems therefore that it may possibly be monophagous on this plant or that it at least shows a strong preference for *A. caffra*.

#15- *Mauna perquisita reprobata*: A single larva was found and reared to the adult stage. *Mauna* spp. have only been found on *Protea* spp. and *Faurea* spp. (Duke & Duke, 1998; Kroon, 1999; this study). It therefore seems likely that moths of the genus may be oligophagous within the Proteaceae. *Mauna perquisita reprobata* was described by Prout (1938) based on a few specimens from Johannesburg. The taxon had not been seen again until the above specimen was bred from a larva from Magaliesburg. That no more specimens were found, with the moth occurring in what probably is one of the best-sampled areas in Africa, is a mystery. The larva was found on the farm adjacent to that of the author, where regular light trapping over 24 years had not produced this species. It seems possible that adults of this subspecies are not attracted to light. The nominate subspecies, if indeed the two taxa are conspecific, described from Zimbabwe, was recently found in Zambia, Kenya and Malaŵi at light traps. (See Staude, 2008a).

#16- *Menophra jansei*: Herbulot (1997) separated our southern representative of what was previously known as *Menophra obtusata* (Warren, 1902) (type locality: Kenya) as a distinct species based on differences in the genitalia and antennal pectination, naming it *M. jansei*. For illustrations of both taxa see Staude (2008a). Kroon (1999) lists seven species of plants belonging to five families as host-plants for this species (as *M. obtusata*). This study adds another two families of plants to the list. It is therefore concluded that this species is polyphagous. *Menophra jansei* is widespread but seems to prefer areas where there is a closed canopy as larvae were found only on less exposed softer leaves of plants under the tree canopy. The species is often found in suburban gardens away from natural vegetation (for distribution details see Staude, 2008a).

#17- *Chlorissa albistrigulata*: This is the first host-plant record for the genus *Chlorissa* in southern Africa. This is also the first record for a South African geometrid species feeding on Poaceae. The larva was found by A. van Wyk feeding on the 'beard' of the maize cob and not on the leaves of the plant. It is suspected that this moth is another of the generalist flower feeders, common in this group of geometrines, and that it is probably not specifically associated with Poaceae.

#18- *Microloxia ruficornis*: This species was first reported to feed on *Helichrysum* flowers by Staude (1999). It has been found during this study in the Magaliesburg area to prefer the flowers of *Helichrysum aureonitens* during the summer and autumn months, but that it will use other flowers during those months when *H. aureonitens* flowers are not available. There are two distinct larval forms. The one is green with a yellowish dorsal area and the other is blue green with whitish broken lines and pink dorsal dots between segments (see Staude, 2008a for illustrations).

#19- *Neromia cohaerens* and *N. rubripunctilla*: These two *Neromia* species occur sympatrically in the Magaliesburg area. The larvae of both are perfectly matched to blend in with their respective host plants. The larva of *N. cohaerens* is smooth and blue-green, blending in perfectly with the petiole of its host plant *Elephantorrhiza elephantina,* whereas the larvae of *Neromia rubripunctilla* are red-green and are covered in short setae, matching the new shoots of their host plant *A. caffra* perfectly. The amount of reddish intrusion on the predominantly green larvae is variable as is the case on the plant. There can be little doubt that these two species are host-plant specific, at least in the Magaliesburg area.

#20- *Cartaletis monteironis* & *Cartaletis natalensis*: the genus *Cartaletis* is in need of taxonomic revision. The various taxa described within this genus have not been properly studied and therefore their taxonomic status is in some doubt.

Both *C. monteironis* and *C. natalensis* show distinctive characters in habitus, have unique distributions, distinct host-plants and show distinctive larval characters. The treatment of these taxa as species in the context of this article is therefore the best solution.

#21- *Palaeaspilates inoffensa*: This species has repeatedly been found only on *Plumbago auriculata*(Duke & Duke, 1998; this study). It, however, also occurs in the wild in areas where *P. auriculata* does not occur naturally. *Plumbago auriculata* is planted widely in South Africa as an ornamental garden plant. Both records in this study are from larvae found on the plant in gardens. In my own garden, the plant had been growing for some years before the moth made its appearance. The nearest garden where *P. auriculata* occurs is in the village of Magaliesburg, four kilometers away. This is probably an oligophagous species with a particular preference for *P. auriculata.*

#22- ***Rhodometra sacraria*:**This species is an almost cosmopolitan migrant and in Europe it is oligophagous with a strong preference for Polygonaceae (Hausmann, 2004). It is therefore not surprising that this first South African host-plant association is on a plant belonging to that family.

#23- ***Scopula internataria*:**This species feeds on the fresh foliage of its host-plant. The long and slender larva, when disturbed, adopts a rigid 'loop' shape mimicking the twisted tendril of a climbing creeper. It will stay in this rigid position even after dropping to the ground, where it is virtually impossible to see amongst the debris. Some European *Scopula* spp. adopt a similar strategy (*vide* Hausmann, 2004).

Conclusion

This article is a further contribution to ongoing research into the larval host-plant preferences of African Geometridae. Some 20% of the host-plant associations reported in this article originated from people who were not specifically looking for geometrid larvae in the wild, but who had the good foresight to record enough information at the time of encountering such larvae that a positive association could later be established. This resulted in 20 associations new to science. This is a significant contribution and readers are urged to inform the author should they have reared to adulthood any African geometrid larvae found in the wild. It is important to keep both the adult and a voucher of the host-plant if these could not be positively identified. It is also of importance to record which part of the plant is preferred by the larva.

Steve Collins sleeved whole branches of trees growing in the ABRI garden in Nairobi, which produced all sorts of new lepidopteran host-plant associations, including four contributions to this article. This is a method which, if used more widely, would be an easy way of rapidly expanding our knowledge of Lepidoptera host-plant associations.

This study shows that the host-plant spectrum for many African geometrids varies significantly between species and that it can be quite complex with specific preferred host-plants emerging within such a spectrum. Indications are that strictly monophagous or completely polyphagous feeders are probably in the minority. The situation is not unlike that for European Geometridae where many species are oligophagous. Monophagy has often been erroneously assumed for geometrid species in the past because of data deficiency. This study shows that it is dangerous to assume monophagy based on only one or two actual host-plant records.

It is suspected that this is probably also the case for many other Lepidoptera families. In well-studied groups such as butterflies where a known host-plant is often used as foodplant in repetitive laboratory-based breeding experiments, the false impression of monophagy can easily be created. In many cases assumed monophagy is actually based on only one established host-plant association and in some cases no actual host-plant association may have been established.

The interaction of Lepidoptera with their host-plants is an important factor in understanding the biology of these insects. It is clear that many more Lepidoptera host-plant associations need to be established in order to better understand the complexities of host-plant spectrums.

Acknowledgements

Thanks to Steve Collins, John Joannou, Henk Geertsema, Andre Claassens, Steve Woodhall, Doug Kroon, Ivan Bampton, Kevin Cockburn, Colin Congdon, Alf Curle, Martin Krüger, Ray Murphy, Richard Bennet and Annemie van Wyk for contributing to this article as indicated in the text. I thank Doug Kroon for reviewing the article prior to submission and for checking plant names. Thanks also to Axel Hausmann for assistance with references and for checking information on European host-plant associations.

Gazetteer

Arabuko	Kenya, Gedi, Arabuko Sokoke Forest Reserve, 03°20´S 39°57´E
Beckedan	South Africa, Gauteng, Krugersdorp, Beckedan, 26°26´S 27°41´50″E, *Acacia savannah*
Bellville	South Africa, Western Cape, Bellville, 33°54´49″S 18°38´33″E suburban garden
Buffelspoort	South Africa, North West Province, Buffelspoort, 25°46´S 27°29´E, 1400 m thorn savannah.
Chaos, Mkuze	South Africa, Natal, Mkuze, Chaos, 220 m, 27°40´ 09″S 32°00´19″E, 200 m, Acacia savannah / riverine bush
Constantia	South Africa, Western Cape, Constantia, 34°03´S 18°23´E suburban garden
Delporton	South Africa, Gauteng, Krugersdorp, Delporton, 26°04´54″S 27°44´12″E, wooded kloof
Gatamayu Forest	Kenya, Aberdares, Gatamayu Forest, 00°58´10.3″S 36°41´40.9″E, 2276 m, Afromontane forest
Gloster	South Africa, Gauteng, Hekpoort, Gloster farm, 1400-1674 m, 25°56´S 27°38´E, Wooded kloof
Golden Valley	South Africa, Gauteng, Magaliesburg, Golden Valley, 1540 m, 26°01´37.6″S 27°32´33.6″E, grassland

Goudkoppies	South Africa, Magaliesburg, Goudkoppies, 26°00´51″S 27°29´51.6″E
Herolds Bay	South Africa, Western Cape, Herolds Bay, 34°03´ 04.2″S 22°22´54.6″E, coastal bush
Hluhluwe GR	South Africa, KwaZulu-Natal, Hluhluwe Game Reserve, Hilltop Camp area, 28°03´S 32°18.9´E, grassland
Injasuti	South Africa, KwaZulu-Natal, Drakensberg, Injasuti area, 29°05´55″S 29°23´16″E, 2000 m, montane grassland
Isandlwana	South Africa, KwaZulu-Natal, Isandlwana, 28°22´15″S 30°37´29″E
Jay's Beach Lodge	Mozambique, Maraquene, Jay's Beach Lodge, 25°43´S 32°44´E, 30 m, coastal dune scrub
Kakamega FR	Kenya, Kakamega Forest Reserve, Rondo section, 00°13´37.7″N 34°53´04.9″E, 1560 m, Afromontane forest
Karen, Nairobi	Kenya, Nairobi, Karen, 1800 m, 01°20´S 36°42´E, suburban garden
Lupatana	South Africa, Eastern Cape, Lupatana, 31°25´19.6″2S 29°50´55.11″E, <50 m
Maloney's Eye	South Africa, Gauteng, Magaliesburg, Maloney's Eye, 1480 m, 26°01´23″S 27°33´50″E, wooded kloof
Manguzi	South Africa, KwaZulu-Natal, Manguzi forest, 80 m, 26°59´S 32°44´E, Sandveld forest
Mariepskop	South Africa, Mpumalanga, Mariepskop, 24°34´46″S 30°53´17″E, 1400 m, montane forest
Mkwaja	Tanzania, Mkwaja, 05°42´27.7″S 38°53´37.5″E
Mulanje	Malaŵi, Mt Mulanje, Likhubula mission, 15°56´26″S 35°30´09″E, 840 m, miombo/riverine forest.
Ophati	South Africa, KwaZulu-Natal, Ophati Reserve, 28°25´45″S 31°24´21″E, grassland/kloof
Palmiet	South Africa, KwaZulu-Natal, Durban Westville, Palmiet Nature Reserve, 29°49´20″S 30°55´53″E, 160 m
Pemba Island	Tanzania, Pemba, Mesali island, 05°14´16″S 39°36´20″E, mixed coral rag forest
Pretoria	South Africa, Pretoria, Meyerspark, 25°44´S 28°19´E, suburban garden
Protea Ridge	South Africa, Krugersdorp, Protea Ridge, 26°02´S 27°47´E, 1600 m, grassland
Richard's Bay	South Africa, Richard's Bay, 28°46´58″S 32°07´07″E, dune forest
Rondo	Tanzania, Rondo Plateau, 10°02´S 39°19´E
Sasolburg	South Africa, Free State, Sasolburg, Elysium, 26°46´51″S 27°46´13″E
Sedgefield	South Africa, Western Cape, Sedgefield, 34°04´S 22°50´E, 80 m, coastal fynbos/forest mix
Seekoeihoek	South Africa, Magaliesburg, Seekoeihoek, 1500 m, 25°58´S 27°30´E, *Burkea*, *Ochna* veld
Steenkoppies	South Africa, Gauteng, Magaliesburg, Steenkoppies, 26°01´25″S 27°32´36″E, 1580 m
Tankwa Karoo	South Africa, Northern Cape, Tankwa Karoo National Park, 32°10´29.7″S 19°58´36″E, 585 m
Tzaneen	South Africa, Tzaneen, farm Paardeplaats, 23°55´03″S 27°30´02″E, 1000 m
Van Reenen	South Africa, Van Reenen, Sandspruit, 28°27´14.3″S 29°27´55.1″E, 1200 m
Venda	?
Vergenoeg	South Africa, North-West, farm Vergenoeg, 25°45´33″S 27°45´32″E, dry forest
Westlake	South Africa, North-West, Westlake Country Estate, 25°46´07.6″S 27°48´31″E, 1160 m, dry forest
Worlds View	South Africa, Krugersdorp, Worlds View, 26°03´S 27°48´E, 1660 m, *Protea* grassland

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Results

Geometrid species	Geometrid subfamily	Plant species	Plant family	Locality	Date of association	Collector	More info
Callioratis abraxas	Diptychinae	*Encephalartos natalensis*	Zamiaceae	Ophati	26-04-2004	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Callioratis grandis	Diptychinae	*Encephalartos gratus*	Zamiaceae	Mulanje	10-04-2005	R. J. Murphy & H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Callioratis sp.1	Diptychinae	*Encephalartos ghellinckii*	Zamiaceae	Injasuti	15-05-2004	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Paraptychodes costimaculata	Diptychinae	*Encephalartos hildebrandtii*	Zamiaceae	Arabuko	21-09-2002	R. Bennet	Adult illustrated in Staude (2008a)
Paraptychodes sp.1	Diptychinae	*Encephalartos ferox*	Zamiaceae	Jay's Beach Lodge	16-09-2000	H. S. Staude & A. I. Curle	Adult, larva & pupa illustrated in Staude (2008a)
Paraptychodes tenuis	Diptychinae	*Adansonia digitata* (larva did not feed)	Bombacaceae	Pemba Island	05-01-2007	H. S. Staude	# 1 Adult, larva & pupa illustrated in Staude (2008a)
Zerenopsis lepida	Diptychinae	*Stangeria eriopus*	Stangeriaceae	Hluhluwe GR	27-05-2007	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Zerenopsis lepida	Diptychinae	*Cycas revoluta*	Zamiaceae	Tzaneen	17-02-2007	H. S. Staude	#2 Adult, larva & pupa illustrated in Staude (2008a)
Acrostatheusis atomaria	Ennominae	*Albizia* sp.	Fabaceae	Karen, Nairobi	03-2007	S. C. Collins	Adults illustrated in Staude (2008a)
Aphilopota patulata	Ennominae	*Gymnosporia buxifolia*	Celastraceae	Maloney's Eye	10-02-2007	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Aphilopota patulata	Ennominae	*Gymnosporia buxifolia*	Celastraceae	Goudkoppies	14-10-2006	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Aphilopota patulata	Ennominae	*Gymnosporia polyacantha*	Celastraceae	Maloney's Eye	10-02-2008	H. S. Staude	#2 Adult, larva & pupa illustrated in Staude (2008a)
Aphilopota sp.4	Ennominae	*Pavetta gardeniifolia*	Rubiaceae	Maloney's Eye	10-02-2008	H. S. Staude	#2 Adult, larva & pupa illustrated in Staude (2008a)
Argyrophora variabilis	Ennominae	*Athrixia elata*	Asteraceae	Golden Valley	22-10-2006	H. S. Staude	#3 Adult, larva & pupa illustrated in Staude (2008a)
Cabera strigata	Ennominae	*Ziziphus mucronata*	Rhamnaceae	Golden Valley	October 2003	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Cabera strigata	Ennominae	*Olea europaea*	Oleaceae	Buffelspoort	28-10-2006	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)

Chiasmia brongusaria	Ennominae	*Acacia sieberiana*	Fabaceae	Protea Ridge	Em. 23-12-2006	J.G. Joannou	#4 Adult, larva & pupa illustrated in Staude (2008a)
Chiasmia brongusaria	Ennominae	*Acacia karroo*	Fabaceae	Beckedan	12-12-2006	H. S. Staude	#4, 5
Chiasmia brongusaria	Ennominae	*Acacia karroo*	Fabaceae	Golden Valley	25-11-2006	H. S. Staude	#4
Chiasmia brongusaria	Ennominae	*Acacia karroo*	Fabaceae	Goudkoppies	14-10-2006	H. S. Staude	#4
Chiasmia brongusaria	Ennominae	*Acacia sieberiana*	Fabaceae	Van Reenen	11-11-2006	H. S. Staude	#4 Adult, larva & pupa illustrated in Staude (2008a)
Chiasmia confuscata	Ennominae	*Acacia ataxacantha*	Fabaceae	Gloster	October 2002	H. S. Staude	# 4, 6 Adults illustrated in Staude (2008a)
Chiasmia confuscata	Ennominae	*Acacia ataxacantha*	Fabaceae	Tzaneen	25-02-2007	H. S. Staude	# 4, 6 Adults illustrated in Staude (2008a)
Chiasmia inaequilinea	Ennominae	*Acacia karroo*	Fabaceae	Tankwa Karoo	07-03-2008	H. S. Staude	#4 Adult, larva & pupa illustrated in Staude (2008a)
Chiasmia inconspicua	Ennominae	*Acacia sieberiana*	Fabaceae	Van Reenen	11-11-2006	H. S. Staude	#4 Adult, larva & pupa illustrated in Staude (2008a)
Chiasmia interrupta	Ennominae	*Acacia karroo*	Fabaceae	Richard's Bay	19-10-2004	H. S. Staude	#4 Adult, larva & pupa illustrated in Staude (2008a)
Chiasmia kirbyi	Ennominae	*Acacia caffra*	Fabaceae	Steenkoppies	04-12-2006	H. S. Staude	#4, 7 Adult, larva & pupa illustrated in Staude (2008a)
Chiasmia kirbyi	Ennominae	*Acacia caffra*	Fabaceae	Golden Valley	04-02-2007	H. S. Staude	#4 Adult, larva & pupa illustrated in Staude (2008a)
Chiasmia multistrigata	Ennominae	*Acacia caffra*	Fabaceae	Golden Valley	28-10-2006	H. S. Staude	#4, 8 Adult, larva & pupa illustrated in Staude (2008a)
Chiasmia multistrigata	Ennominae	*Acacia caffra*	Fabaceae	Buffelspoort	28-10-2006	H. S. Staude	
Chiasmia multistrigata	Ennominae	*Acacia caffra*	Fabaceae	Steenkoppies	05-11-2006	H. S. Staude	#4 Adult, larva & pupa illustrated in Staude (2008a)
Chiasmia multistrigata	Ennominae	*Acacia caffra*	Fabaceae	Golden Valley	21-10-2006	H. S. Staude	#4 Adult, larva & pupa illustrated in Staude (2008a)
Chiasmia procidata semispurcata	Ennominae	*Acacia karroo*	Fabaceae	Golden Valley	05-10-2008	H. S. Staude	#4 Adult, larva & pupa illustrated in Staude (2008a)
Chiasmia simplicilinea	Ennominae	*Albizia lophantha*	Fabaceae	Constantia	2005	A. Claassens	#4 Adult, larva & pupa illustrated in Staude (2008a)
Chiasmia simplicilinea	Ennominae	*Acacia dealbata*	Fabaceae	Steenkoppies	13-01-2007	H. S. Staude	#4,9 Adult, larva & pupa illustrated in Staude (2008a)
Chiasmia simplicilinea	Ennominae	*Acacia mearnsii*	Fabaceae	Golden Valley	10-02-2007	H. S. Staude	#4

Chiasmia subcurvaria	Ennominae	*Acacia robusta*	Fabaceae			J.G. Joannou	#4 Pupa illustrated in Staude,2008
Chiasmia turbulentata	Ennominae	*Acacia karroo*	Fabaceae	Beckedan	05-12-2006	H. S. Staude	#4,10 Adult, larva & pupa illustrated in Staude (2008a)
Chiasmia turbulentata	Ennominae	*Acacia karroo*	Fabaceae	Golden Valley	04-11-2006	H. S. Staude	#4 Adult, larva & pupa illustrated in Staude (2008a)
Chiasmia turbulentata	Ennominae	*Acacia karroo*	Fabaceae	Goudkoppies	11-11-2006	H. S. Staude	#4 Adult, larva & pupa illustrated in Staude (2008a)
Chiasmia turbulentata	Ennominae	*Acacia karroo*	Fabaceae	Maloney's Eye	12-12-2006	H. S. Staude	#4 Adult, larva & pupa illustrated in Staude (2008a)
Chiasmia umbrata	Ennominae	*Acacia ataxacantha*	Fabaceae	Tzaneen	17-02-2007	H. S. Staude	#4 Adult, larva & pupa illustrated in Staude (2008a)
Cleora betularia	Ennominae	*Virgilia oroboides*	Fabaceae	Constantia	2005	A. Claassens	Adult, larva & pupa illustrated in Staude (2008a)
Cleora flavivenata	Ennominae	*Citrus* sp.	Rutaceae	Newlands	Em. 05-09-1990	H. Geertsema	Adults illustrated in Staude (2008a)
Cleora flavivenata	Ennominae	*Pinus radiata*	Pinaceae	Simodium Block 1	Em. 23-06-1981	H. Geertsema	
Cleora munda	Ennominae	*Erianthemum dregei*	Loranthaceae	Palmiet	June 2007	S. E. Woodhall	Adult, larva & pupa illustrated in Staude (2008a)
Cleora tulbaghata	Ennominae	*Acacia mearnsii*	Fabaceae	Herolds Bay	22-02-2007	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Coenina poecilaria	Ennominae	*Indigofera* sp.	Fabaceae	Golden Valley	March 2005	H. S. Staude	#11 Adult, larva & pupa illustrated in Staude (2008a)
Coenina poecilaria	Ennominae	*Thesium pallidum*	Santalaceae	Golden Valley	16-09-2007	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Coenina poecilaria	Ennominae	*Seriphium plumosum*	Asteraceae	Steenkoppies	02-10-2004	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Coenina poecilaria	Ennominae	*Elephantorrhiza elephantina*	Fabaceae	Steenkoppies	21-10-2007	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Drepanogynis commutata	Ennominae	*Thesium pallidum*	Santalaceae	Golden Valley	16-09-2007	H. S. Staude	#12 Adult, larva & pupa illustrated in Staude (2008a)
Drepanogynis olivescens	Ennominae	*Gymnosporia buxifolia*	Celastraceae	Westlake	13-10-2007	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Drepanogynis olivescens	Ennominae	*Gymnosporia buxifolia*	Celastraceae	Goudkoppies	14-10-2006	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)

Epigynopteryx sp.7	Ennominae	*Piper capense*	Piperaceae	Gatamayu forest	09-11-2007	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Ereunetea reussi nesiotes	Ennominae	*Polysphaeria parvifolia*	Rubiaceae	Pemba Island	04-01-2007	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Eulycia accentuata	Ennominae	*Gymnosporia buxifolia*	Celastraceae	Chaos, Mkuze	03-01-2001	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Eulycia grisea grisea	Ennominae	*Combretum molle*	Combretaceae	Vergenoeg	17-12-2006	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Heterostegane rectistriga	Ennominae	*Elephantorrhiza elephantina*	Fabaceae	Steenkoppies	11-12-2006	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Heterostegane rectistriga	Ennominae	*Elephantorrhiza elephantina*	Fabaceae	Golden Valley	28-01-2007	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Isturgia arizela	Ennominae	*Acacia zanzibarica*	Fabaceae	Mkwaja	Em. 29-11-1998	I. Bampton	Adult illustrated in Staude (2008a)
Isturgia deerraria	Ennominae	*Acacia sieberiana*	Fabaceae	Protea Ridge	Em. 06-01-2007	J.G. Joannou	
Isturgia deerraria	Ennominae	*Acacia hereroensis*	Fabaceae	Golden Valley	16-09-2007	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Isturgia spissata	Ennominae	*Acacia karroo*	Fabaceae	Richard's Bay	19-10-2004	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Isturgia supergressa	Ennominae	*Mundulea sericea*	Fabaceae	Seekoeihoek	13-01-2008	H. S. Staude	#13 Adult, larva & pupa illustrated in Staude (2008a)
Isturgia supergressa	Ennominae	*Mundulea sericea*	Fabaceae	Delporton	12-11-2001	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Ligdia batesii	Ennominae	*Acacia caffra*	Fabaceae	Buffelspoort	28-10-2006	H. S. Staude	#14
Ligdia batesii	Ennominae	*Acacia caffra*	Fabaceae	Golden Valley	21-01-2007	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Ligdia batesii	Ennominae	*Acacia caffra*	Fabaceae	Steenkoppies	13-02-2007	H. S. Staude	
Ligdia batesii	Ennominae	*Acacia caffra*	Fabaceae	Buffelspoort	21-10-2006	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Mauna ardescens	Ennominae	*Protea caffra*	Proteaceae	Golden Valley	03-11-2008	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Mauna ava ava	Ennominae	*Protea caffra*	Proteaceae	Golden Valley	03-10-2002	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Mauna perquisita reprobata	Ennominae	*Protea welwitschii*	Proteaceae	Golden Valley	16-10-2006	H. S. Staude	#15 Adult, larva & pupa illustrated in Staude (2008a)

Menophra jansei	Ennominae	*Pavetta gardeniifolia*	Rubiaceae	Maloney's Eye	27-01-2008	H. S. Staude	#16 Adult, larva & pupa illustrated in Staude (2008a)
Menophra jansei	Ennominae	*Ziziphus mucronata*	Rhamnaceae	Vergenoeg	17-12-2006	H. S. Staude	
Oedicentra albipennis	Ennominae	*Ligustrum lucidum*	Oleaceae	Maloney's Eye	11-10-2004	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Omphalucha maturnaria	Ennominae	*Rhus pyroides*	Anacardiaceae	Maloney's Eye	30-10-2007	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Platypepla spurcata	Ennominae	*Loranthus* sp. (now in other genera)	Loranthaceae	Worlds View	Em. 11-1974	I. Bampton	Adult illustrated in Staude (2008a)
Xanthisthisa tarsispina	Ennominae	*Loranthus* sp. (now in other genera)	Loranthaceae	Kakamega FR	Em. 25-09-1997	S. C. Collins	Adult illustrated in Staude (2008a)
Zamarada cf. *episema*	Ennominae	*Albizia* sp.	Fabaceae	Karen, Nairobi	Em. 28-09-2006	S. C. Collins	Adults illustrated in Staude (2008a)
Zamarada erugata	Ennominae	*Acacia karroo*	Fabaceae	Richard's Bay	19-10-2004	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Zamarada metallicata	Ennominae	*Acacia robusta*	Fabaceae	Vergenoeg	16-12-2006	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Zamarada pulverosa	Ennominae	*Acacia karroo*	Fabaceae	Beckedan	12-12-2006	H. S. Staude	
Zamarada pulverosa	Ennominae	*Acacia karroo*	Fabaceae	Golden Valley	11-11-2006	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Chlorissa albistrigulata	Geometrinae	*Zea mays*	Poaceae	Venda	?	A. Van Wyk	#17 Adult, larva & pupa illustrated in Staude (2008a)
Lophostola atridisca	Geometrinae	*Acacia karroo*	Fabaceae	Richard's Bay	19-10-2004	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Microloxia ruficornis	Geometrinae	*Helichrysum aureonitens* flowers	Asteraceae	Steenkoppies	18-02-2008	H. S. Staude	#18
Microloxia ruficornis	Geometrinae	*Helichrysum aureonitens* flowers	Asteraceae	Golden Valley	16-01-2008	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Microloxia ruficornis	Geometrinae	*Phymaspermum athanasioides* flowers	Asteraceae	Golden Valley	16-09-2007	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Microloxia ruficornis	Geometrinae	Flowers	Asteraceae	Sasolburg	?	D. M. Kroon	Adult, larva & pupa illustrated in Staude (2008a)
Microloxia ruficornis	Geometrinae	*Athrixia elata* flowers	Asteraceae	Golden Valley	07-10-2007	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Neromia cohaerens	Geometrinae	*Elephantorrhiza elephantina*	Fabaceae	Golden Valley	13-01-2007	H. S. Staude	#19 Adult, larva & pupa illustrated in Staude (2008a)

Neromia cohaerens	Geometrinae	*Elephantorrhiza elephantina*	Fabaceae	Steenkoppies	27-11-2006	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Neromia rubripunctilla	Geometrinae	*Acacia caffra*	Fabaceae	Steenkoppies	11-03-2007	H. S. Staude	#19 Adult, larva & pupa illustrated in Staude (2008a)
Omphax idonea	Geometrinae	*Vangueria infausta*	Rubiaceae	Golden Valley	19-11-2007	H. S. Staude	
Omphax idonea	Geometrinae	*Vangueria infausta*	Rubiaceae	Steenkoppies	06-11-2006	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Omphax plantaria	Geometrinae	*Vangueria cyanescens*	Rubiaceae	Mariepskop	?	J. G. Joannou	Adult, larva & pupa illustrated in Staude (2008a)
Petovia marginata marginata	Geometrinae	*Vangueria infausta*	Rubiaceae	Isandlwana	11-2004	S. C. Collins	Adult, larva & pupa illustrated in Staude (2008a)
Prasinocyma immaculata	Geometrinae	*Rhus pyroides*	Rubiaceae	Beckedan	12-12-2006	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Collix foraminata	Larentiinae	*Maesa lanceolata*	Myrsinaceae	Mariepskop	29-03-2008	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Eupithecia infelix	Larentiinae	*Rhus lancea* flowers	Rubiaceae	Sasolburg	Em. 08-09-2000	D. M. Kroon	Adult illustrated in Staude (2008a)
Mesocolpia lita	Larentiinae	*Helichrysum aureonitens* flowers	Asteraceae	Golden Valley	18-01-2007	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Mimoclystia pudicata quaggaria	Larentiinae	*Elephantorrhiza elephantina*	Fabaceae	Steenkoppies	29-12-2007	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Xanthorhoe poseata	Larentiinae	*Prunus domestica*	Rosaceae	Bellville	Em. 14-09-1985	H. Geertsema	Adult illustrated in Staude (2008a)
Cartaletis monteironis	Sterrhinae	*Oxyanthus latifolius*	Rubiaceae	Manguzi	17-12-2003	H. S. Staude	#20 Adult, larva & pupa illustrated in Staude (2008a)
Cartaletis natalensis	Sterrhinae	*Oxyanthus pyriformis*	Rubiaceae	Lupatana	07-07-2006	K. Cockburn	#20 Larva illustrated in Staude (2008a)
Chlorerythra r. rubriplaga	Sterrhinae	*Acacia karroo*	Fabaceae	Richard's Bay	19-10-2004	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Chrysocraspeda zombensis	Sterrhinae	*Syzygium guineense afromontanum*	Myrtaceae	Karen, Nairobi	10-09-2006	S. C. Collins	Adult, larva & pupa illustrated in Staude (2008a)
Cyclophora sp.1	Sterrhinae	*Rhus glauca*	Anacardiaceae	Sedgefield	22-01-2008	H. S. Staude	Larva, pupa, adult illustrated in Staude (2008a)
Palaeaspilates inoffensa	Sterrhinae	*Plumbago auriculata*	Plumbaginaceae	Pretoria	?	M. Krüger	#21 Adult, larva & pupa illustrated in Staude (2008a)

Palaeaspilates inoffensa	Sterrhinae	*Plumbago auriculata*	Plumbaginaceae	Golden Valley	10-02-2007	H. S. Staude	Adult, larva & pupa illustrated in Staude (2008a)
Rhodometra sacraria	Sterrhinae	*Polygonum pulchrum*	Polygonaceae	Golden Valley	14-03-2006	H. S. Staude	#22 Adult, larva & pupa illustrated in Staude (2008a)
Scopula internataria	Sterrhinae	*Acalypha glabrata*	Euphorbiaceae	Maloney's Eye	10-02-2007	H. S. Staude	#23 Adult, larva & pupa illustrated in Staude (2008a)
Scopula r. rufisalsa	Sterrhinae	*Acacia nilotica*	Fabaceae	Gloster	22-02-1996	D. M. Kroon	Adult illustrated in Staude (2008a)
Traminda obversata	Sterrhinae	*Dalbergia armata*	Fabaceae	Rondo, Tanzania	Em. 23-02-2007	I. Bampton	Adult illustrated in Staude (2008a)

Sponsor Members of LEPSOC

The following members, apart from their significant contributions to the Society as individuals, have also chosen to be sponsor members for 2008 and have through their generosity provided significant financial support which is much appreciated:

Dr. Jonathan Ball
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Any member can volunteer to become a sponsor member on an annual basis and make a contribution of R600. As the Society does need all the financial support it can get it is hoped that more members will select to become sponsor members in the future. Donations to the Society will also be most welcome.

PLATE NO. 1


Fig. 1: Rondo


Fig. 2: Harare

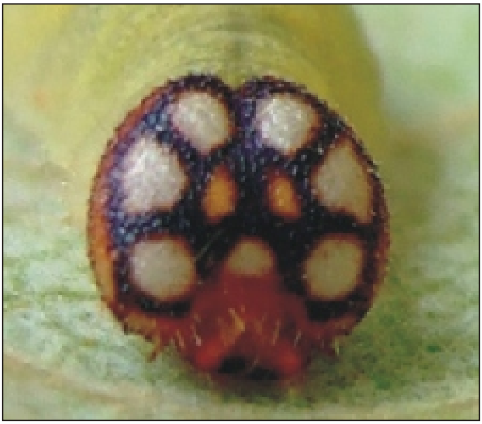
Fig. 3: Mufindi


Fig. 4: Mutinondo

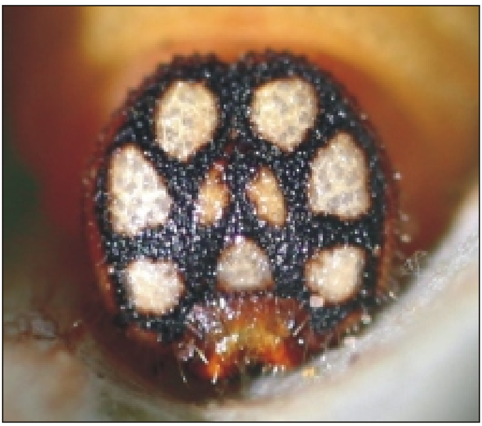
Fig. 5: Hwange


Fig. 6: Rondo

PLATE NO. 2

Fig. 1: Mutinondo

Fig. 2: Mufindi

Fig. 3: Mutinondo

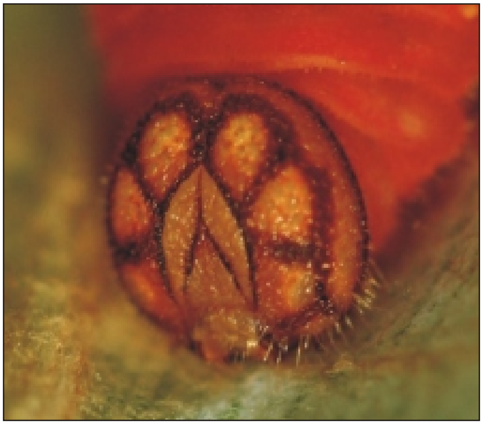

Fig. 4: Hwange

Fig. 5: Bagged - out larvae of Platylesches robusta and other chamber makers at Mufindi, Tanzania. Note the grease ring on the tree trunk. (Photo: Ivan Bampton)

Fig. 1: Rondo Plateau

Fig. 4: Kihansi Gorge

Fig. 2: Rondo Plateau

Fig. 5: Kihansi Gorge

Fig. 3: Rondo Plateau

Fig. 6: Kihansi Gorge

Fig. 1: Kihansi Gorge

Fig. 4: Kihansi Gorge

Fig. 2: Kihansi Gorge

Fig. 5: Kihansi Gorge

Fig. 3: Kihansi Gorge

Fig. 6: Kihansi Gorge

PLATE NO. 5

Fig. 1: *Platylesches tina* larva

Fig. 2: *Platylesches tina* larval shelter

Fig. 3: *Platylesches shona* larval shelter

Fig. 4: *Platylesches robustus* larva

Fig. 5: *Platylesches robusta* larval shelter

Fig. 6: *Platylesches robusta* pupa

Fig. 7: typical tube shelters

Fig. 1: Pictorial category (Slide of the Year) first prize, *Kedestes nerva*- Peter Webb

Fig. 2: Pictorial category (Slide of the Year) second prize, *Deloneura millari*- Jenny Norman

Fig. 1: Scientific category first prize, *Caprona pillaana*- André Coetzer

Fig. 2: Scientific category second prize, *Deudorix* showing false head mimicry - André Coetzer

Fig. 1: Fun category first prize, “Charaxes the Bogeyman” - Steve Woodhall

Fig. 2: Fun category second prize, ‘Damn Potholes’ - André Coetzer