

Mitt. Münch. Ent. Ges.	108	31-38	München, 1.11.2018	ISSN 0340-4943
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LUTZ KOBES and HETEROCERA SUMATRANA – an appreciation.¹

Jeremy D. HOLLOWAY

*In the present article, the scientific achievements of the lepidopterist
Lutz W. R. KOBES (* 26.08.1933 † 21.07.2016) are acknowledged.*

In his covering letter to me in his last *Heterocera Sumatrana* (HS) volume (14), Lutz wrote “Thank you for your advice and help to avoid pitfalls, also for your encouraging me to proceed, although a lot of initial HS-collaborants have vanished in the meanwhile”. I don’t see Lutz “vanishing”, as his memory will persist with his family, friends and university colleagues. It will also last in the legacy of the *Heterocera Sumatrana* series of publications. Although Edi Diehl provided the initial stimulus and collected most of the vast amount of material in the field, it was Lutz who received the boxes from Sumatra, ensured that the specimens were prepared and labelled for study, sorted them and then distributed them amongst members of the HS research team. He was also mainly responsible for seeing through the results of their labours to publication in the HS series, being editor in chief until 2008. His contribution to the series as a researcher and author is also predominant. Lutz described 170 of the 229 new taxa published in the series: well over half!

I think my own collaboration with Lutz dated from 1981 when we met in London and began to exchange information on Bornean and Sumatran noctuid moths; the faunas have much in common. We agreed that it would be sensible to tackle groups in a different order so as not to duplicate work on very similar faunas, so he had first bite at the groups he covered in HS4 and HS11, and I tackled the groups for *The Moths of Borneo* (MoB) that he treated later in HS12 and HS14. This was a policy that I applied more generally with colleagues in HS, who generously invited me to become an Honorary Member at an early stage.

Our correspondence quickly built up to a regular tempo, with eleven letters to me in that first year, accompanied by packets of photos of HS specimens in the Noctuoidea, carefully listed with code numbers and many with a possible identity included. I did my best to keep pace with this but, when an early letter asked “Perhaps on your Saturday ...”, I felt it necessary to reply, tongue in cheek, that my Saturdays were devoted to amateur dentistry! I knew of his professional position at the University of Göttingen, but his eminence in it was brought home to me when, short of notepaper, he used the only piece to hand that indicated him to be President of the European Prosthodontic Association. From then on the correspondence settled into a rhythm that was manageable.

It was obvious too that Lutz was under pressure from the regular arrival from Edi Diehl of boxes of densely packed specimens, pinned but not spread, that he had volunteered to get prepared for study and despatched around the members of HS. In this task he was able to enlist the services of Fred H. Brandt, an expert preparator of Lepidoptera, well versed in their taxonomy from his own studies, and who must have handled thousands of specimens for HS over the years.

From 1981 to 1992 his letters to me must have averaged about 12 per year, with peaks of 19 and 20 in 1983 and 1984 just prior to his production of HS4 (1985), and again with 14 in 1987 before his publication of a major part of HS2 (1992, 1994 – the Red Series for shorter papers) that described many of the *Chloephorinae* that he covered in HS11 (1997).

¹ Editorial foreword:

In 2010, the lepidopterist Lutz W. R. KOBES (* 26.08.1933 † 21.07.2016) was honoured by the RITTER-VON-SPIIX-Medaille of the Bavarian State Collection of Zoology, Munich (ZSM). His entire collection is deposited at the ZSM. An obituary with full bibliography has been published in STÜNING et al. (2017).

The editors and the staff of the ZSM are very pleased to see highlighted from the very personal view of Jeremy HOLLOWAY the fruits of a long-lasting, extensive cooperation between the two projects *MOTHS OF BORNEO* (MoB, groundbreaking in completeness, form and methods of modern taxonomy) and *HETEROCERA SUMATRANA* (HS). This contribution shows the high value of intensively investigated scientific collections for museums and biodiversity research.

Thereafter the correspondence dropped into low single figures with the diminishing returns in the proportion of novelties in the boxes of material from Sumatra. Also, the groups that he published on in HS12 (Euteliinae) and HS14 (Stictopterinae), together forming the family Euteliidae, were ones that I had covered in an early part (14; HOLLOWAY 1985) of the MoB series.

Over the whole period from 1981 to 2014 I received over 200 letters from Lutz, most of them substantive and including packets of photographs. I wrote a similar number in return. Additionally, he frequently sent me drafts of intended publications for comment. The whole exercise was of great benefit to both our projects and enabled us to avoid crossed wires and duplication. The correspondence was initially formal (Dr Holloway/Dr Kobes), but moved onto first name terms when he found funds to bring me to Göttingen for an HS meeting and to view the immense amount of material that he had in Kreuzburger Straße where I enjoyed the hospitality of his family and cemented what became a lasting friendship. The enthusiasm of Lutz for moths was undiminished to the end; the legacy of his publications in HS and elsewhere (see STÜNING et al. 2017) will be testimony to his productivity, generosity and friendship.

Over the three decades of our correspondence, the higher classification of the Noctuoidea underwent major changes, mainly through the increasing availability of DNA sequencing methodology, both in sophistication and at a reasonable cost. At a species level, the CO1 sequence of the mitochondrial DNA has been shown to act effectively as a barcode that provides a unique identifier for a species. This has had an impact at all rank levels of classification, and latterly I participated in a major series of publications (ZAHIRI et al. 2011, 2012, 2013a, b) on the major part of the Noctuoidea, so I was able to keep Lutz up to speed with these developments.

His original plans to focus on selected subfamilies within the traditional “Hampsonian” concept of the Noctuidae ended up as major contributions to our understanding of all four of the major families newly defined by the sequencing: Erebiidae (a major part of the subfamily Erebiinae that constituted the traditional Catocalinae); Nolidae (the subfamilies Chloephorinae (excluding the Sarrothripini), Risobinae and Westermanniinae); Euteliidae (Euteliinae and Stictopterinae); a more restricted Noctuidae (the subfamilies Pantheinae, Agaristinae, Acronictinae, Heliiothinae, and several genera outside these).

Many of the batches of photographs contained unusual species that Lutz was unable to place to subfamily or even family. These he often referred to as “UFOs” (unidentified flying objects). A high proportion of these also occur in Borneo and, if he had described them in what might be termed a best guess “genus of convenience”, I would return to them and try to find a better placement, often without success. So some of these, including some of the genera he did describe, still have to find a really suitable resting place within the developing classification.

Before describing some of the more interesting of these “UFOs”, it should be recorded that on occasions Lutz described a potential new species in what proved to be the correct genus, but it later transpired that the actual species was not new but had originally been misclassified by the earlier author. Thus *Mecodina sumatrana* KOBES, 1984 turned out to be the junior synonym of *Thermesia poaphiloides* WALKER, 1864 later listed under the genus *Bocula* GUENÉE in the catalogue of POOLE (1989), as discussed in HOLLOWAY (2005: 322), but is now *Mecodina poaphiloides* (WALKER, 1864).

Two of the new genera he described in the Chloephorinae, *Didiguides* KOBES, 1997 (type species: *hutapadanga* KOBES, 1994) and *Reaca paradoxa* KOBES, 1997 proved to be typified by synonyms of previously described species, but both nevertheless remain in distinct small genera. The first proved to be a synonym of *Gadirtha ? semifervens* WALKER, 1863 and is now classified as *Didiguides semifervens* (HOLLOWAY 2003: 222), but this genus and species cannot be assigned with confidence to any particular chloephorine tribe. The second proved to be a generic and specific synonym of *Arrhapa frontalis* WALKER, 1862 (HOLLOWAY 2003: 128) in the Careini, and was found to have a congener, *robinsoni* SWINHOE, 1903, misplaced in the genus *Carea* WALKER. Both genera are restricted to Sundaland. In each case, these associations were only made possible by a survey and dissection of type material in London and OUMNH, Oxford, but originally collected by Alfred Russel Wallace in Sarawak. Such detailed study was not an option for Lutz.

Lutz also felt bound by the stipulation made by Edi Diehl that all new species should be illustrated by specimens that had not been dissected; Edi had an aversion to what he termed “genital cripples”. So the description of *Tortriciforma razowskii* KOBES, 1992 is not accompanied by an illustration or description of the male genitalia. The only two specimens are illustrated “intacta”, and probably remain in that condition. The genus is placed in the Chloephorini, but the species has also been found in Thailand and was included in the DNA sequencing sample for the Nolidae (ZAHIRI et al. 2013a). It was placed within the Careini, so *razowskii* would also appear to merit generic status.

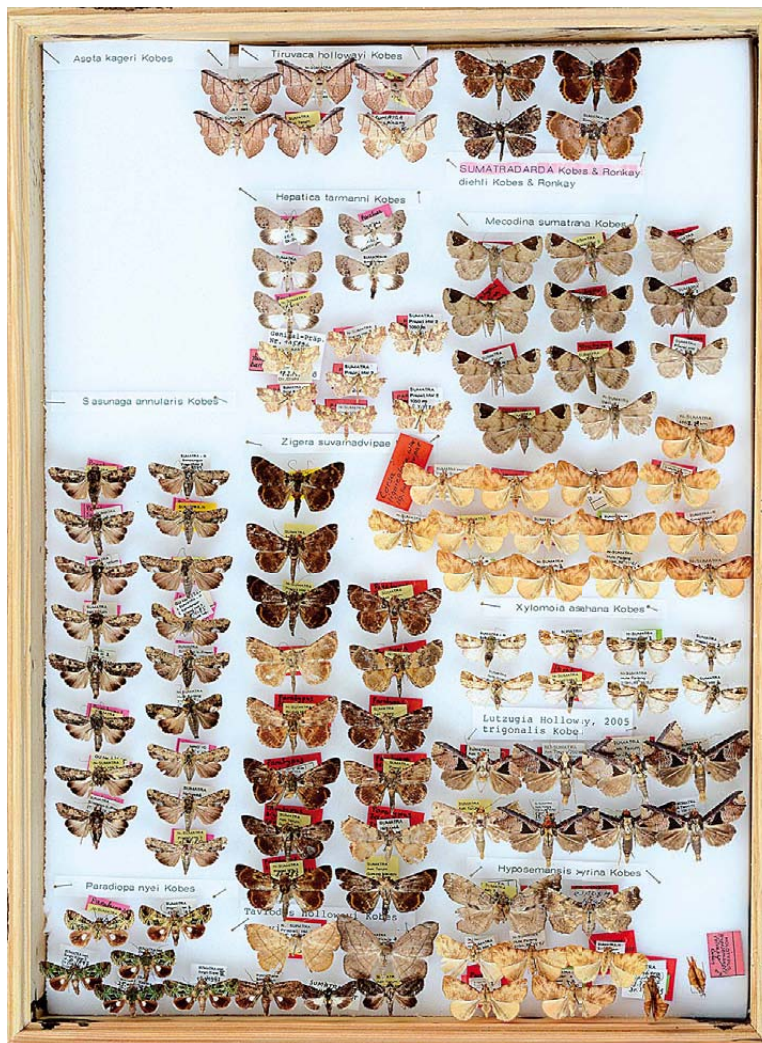


Fig. 1: Coll. KOBES, Box

Two “UFOs” probably belong to the *Mecistoptera* group of genera reviewed in HOLLOWAY (2008: 160-171), with a further note in HOLLOWAY (2009: 195-196). The first, *Prometopus emmiae* KOBES, 2000 moved tentatively to *Mecistoptera* HAMPSON in HOLLOWAY (2008: 162) and related to a few species already placed in that genus. The second is *Hepatica tarmanni* KOBES, 1988. *Hepatica* is another genus in the *Mecistoptera* group, but the habitus of *tarmanni* is striking, and the valve of the male genitalia has a ventrally directed central spur that is unique within the group. The Sumatran *Lophomilia kobesi* KONONENKO & BEHOUNEK, 2009 and *L. diehli* KONONENKO & BEHOUNEK, 2009 also belong to a genus within the group that has been revised by KONONENKO & BEHOUNEK (2009). The group is currently associated with the Hypeninae in Erebidae, but its position should be assessed by DNA sequencing as it is possible that the Hypeninae should be restricted to a small group of genera related to *Hypena* SCHRANK itself.

“UFOs” still in need of further assessment in terms of generic and perhaps higher placement are *Egnasia sundana* KOBES, 1983 and *Hyposemansis volvapex* KOBES, 1992. Both are in the Erebidae and discussed in HOLLOWAY (2005: 302, 323).

There is one final “UFO” that may represent one of the most important discoveries by Edi Diehl, and that is *Sumatratarda diehli* KOBES & RONKAY, 1990, represented by two males. It is one of two instances where Lutz studied material from outside the Macroheterocera, the other being his account of the Sumatran

Callidulidae in HS 6. *Sumatratarda* KOBES & RONKAY belongs to the cossoid family Ratardidae. The discovery was the first record of the male sex in this family of disputed placement, and its features, particularly of the genitalia, tended to support the hypothesis that it was sister-group to the Metarbelidae, indicated earlier by the structure of the female genitalia (HOLLOWAY 1986: 41-42). The family is rare and restricted to the Oriental tropics, with the three species in Borneo being the highest total anywhere. There is only one other specimen known from Sumatra, an undescribed female currently attributed to the genus *Callosiope* HERING. It is much larger than *diehli* and patterned with black blotches on a white ground. It was not considered to be the female of *Sumatratarda* by KOBES & RONKAY (1990), though the association of vein M1 with the radial sector branching system of the forewing is seen in both, being well separate in other ratardids. Since the publication on *Sumatratarda*, it was realised that *Shisa excellens* STRAND, 1917 from Taiwan, originally placed in Lymantriinae, was in fact the male of *Ratarda tertia* STRAND, 1917, also described from Taiwan (OWADA 1993). Further support for a placement in association with the Metarbelidae came from the discovery of the larva in Taiwan that had a similar bark-boring habit (HOLLOWAY 2011: 285). A catalogue of the family Ratardidae has been published by YAKOVLEV (2018), with description of the Sumatran *Callosiope* as *C. elenae*. It also occurs in mainland S. E. Asia.

I was reminded, when refreshing my memory of our correspondence, of another unusual discovery that still remains a mystery. Our letters went as follows, with slight paraphrasing:

Lutz on 8th April 1982. "This picture shows a forewing [black with an emerald-green band] of a species which up to now is unique to the material. It was taken beside a brook at Dairi East, at 1800 m on the northern side of Lake Samosir [Samosir is the island that fills the centre of Lake Toba], North Sumatra. It seems to be the remnant of a bird's or bat's meal, but there has been no other report of such a species. It really is a great impertinence to ask this question. I think it is a uraniid forewing."

My reply on 12th April 1982. "Mr Sommerer is here [in London], and we have both concluded that the "uraniid" forewing belongs to an ennomine geometrid of the genus *Milionia* WALKER. The only species that resembles it, as far as one can tell from a forewing, is *Milionia everetti* ROTHSCCHILD, 1896, a species from S. Sulawesi."

Nothing like this has been recorded from west of Sulawesi, where several green-banded species occur, with others further east, particularly in New Guinea, as noted in the catalogue for *Milionia* and relatives by INOUE (2005) and in several later papers by Inoue on the species to the west of Sulawesi. No further material has been collected in Sumatra from that area around the Dairi mountains, though frequently visited by Edi Diehl for light-trapping.

The forewing is currently in the care of Manfred Sommerer and bears the label: "Left forewing of a *Milionia* sp. found by Dr Edi Diehl in the bed of a stream in Dairi Mountains, 30km E. of Sidikalang, 1200m, North Sumatra, 26.IV.1981. In Coll M S[ommerer]."

There were several occasions where Lutz suspected from his dissections that certain recognised taxa were in fact complexes of two or more species, but was not able to make the necessary critical survey of type material for the taxon concerned, including that for all names placed in synonymy. This would certainly involve dissection, and that of types obviously requires a high standard for the sake of posterity. I was not always able to undertake such work in a timely manner for Lutz, but would do this when dealing with the complex myself. In some instances I could confirm the conclusions of Lutz, but then discovered that he had attached the wrong names when I came to dissect the relevant types. We came to different conclusions in other instances, and for some of these it will be necessary to sample the material widely to obtain DNA barcode sequences to assess what entities may be involved, particularly where genital features may be variable or differences therein minor. It is now possible (HAUSMANN et al. 2016) to obtain a full CO1 barcode sequence from much older material than previously, so the material collected by Edi Diehl may still be very useful for this. I provide a review of some more interesting instances of this that came to light during my correspondence with Lutz.

Erebidae: Erebininae, Sympnini.

Lutz, in HS 4, came to the conclusion that *Daddala lucilla* (BUTLER, 1881) was part of a complex of three species in Sumatra distinguished by differences in a row of spines on the aedeagus of the male genitalia. He described what he considered to be the two additional species as *lucia* KOBES, 1995 and *lucillina* KOBES, 1995 (Fig. 2). I found variability in this feature but no clear distinction of the species in Borneo, and also examined dissections of some material from mainland Asia, including the holotype of *obscurata* BUTLER, 1881 placed as a synonym of *lucilla*. The situation is further complicated by a potentially older name in *Lacera sublineata* WALKER, 1865 from Cambodia. I outlined the situation in (HOLLOWAY 2005: 180).

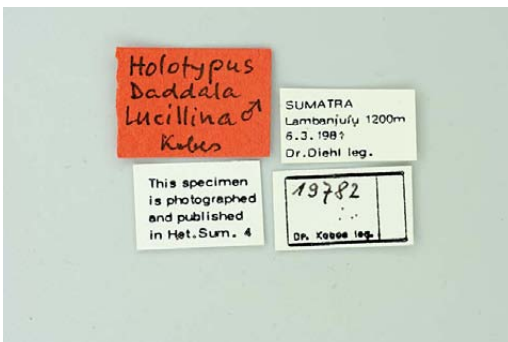


Fig. 2: *Daddala lucillina* KOBES, Holotype

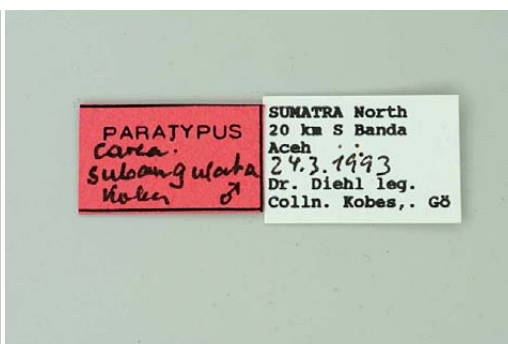


Fig. 3: *Carea subangulata* KOBES, Paratype

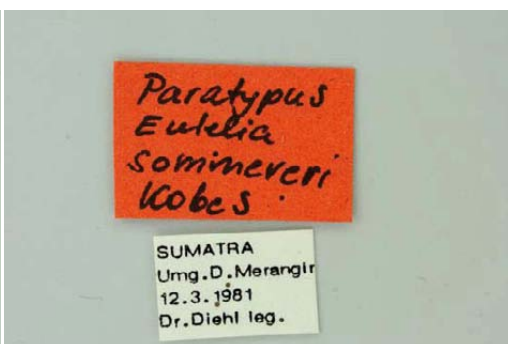


Fig. 4: *Eutelia sommereri* KOBES, Paratype

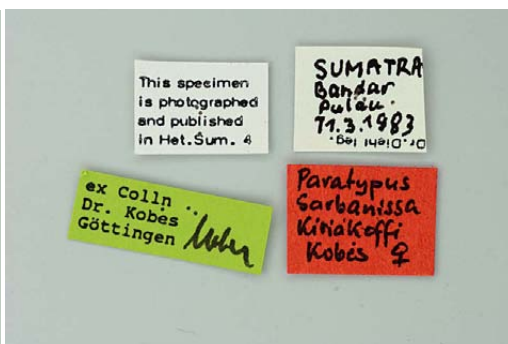


Fig. 5: *Sarbanissa kiriakoffi* KOBES, Paratype

Nolidae: Chloephorinae, Careini.

Lutz recognised two complexes in the genus *Carea* WALKER, describing *diversipes* KOBES, 1997 as distinct from *varipes* WALKER, 1856 and *parangulata* KOBES, 1988 and *subangulata* KOBES, 1997 (Fig. 3) as distinct from *angulata* FABRICIUS, 1793. For both complexes, further dissection suggested that the situation is still far from clear (HOLLOWAY 2003: 104), and more work needs to be done.

Another careine genus, *Maurilia* MÖSCHLER, is even more complex, the type species, *iconica* WALKER, 1858, having numerous synonyms. Lutz recognised two species in Sumatra, naming the less frequent one *subiconica* KOBES, 1997. An extensive survey by dissection of the type material confirmed the presence of two species, but *subiconica* proved to be *iconica*, and the species identified as *iconica* by Lutz matched the species *undaira* SWINHOE, 1918 (HOLLOWAY 2003: 139-141).

Euteliidae: Stictopterinae.

Members of the genus *Stictoptera* GUENÉE are notable for their polymorphism, many exhibiting a wide variety of forms. To add to the confusion, some of these forms can occur across many different species, and a few are transgeneric and even occur in members of both the two tribes: Stictopterini and Odontodini. Thus there are areas of the taxonomy of *Stictoptera* that are not fully resolved and perhaps only will be with the assistance of DNA barcoding. Lutz and I had different views of a couple of situations, perhaps partly due to the fact that it is important to mount the main capsule of the male genitalia in a consistent way, particularly the uncus which is sigmoid to Z-shaped and can look very different in different orientations. It is also useful to evert the aedeagus vesical so as to better appreciate its internal spinning. Lutz treated the taxa *grisea* MOORE, 1868 and *variegata* HAMPSON, 1912 as distinct, rather than conspecific, and also saw more species than one in *S. signifera* (WALKER, 1857) in his treatment of them in HS 14.

The Odontodini genus *Lophoptera* GUENÉE also contains very many rather similar species but is more blessed, for the taxonomist, with less polymorphism and more distinct differences in the genitalia of both sexes, so Lutz in HS 14 mostly followed my (HOLLOWAY 1985) system, though it was often the focus of our final correspondence. We did not entirely resolve the situation with regard to *L. astriata* HOLLOWAY, 1976 because Plate VIII of HS 14 has figs 28-30 indicated to be the males of *astriata*, whereas in the text Lutz suggested that *astriata* could be conspecific with *atribasalis* HAMPSON, 1912 (figs 32-34), whilst keeping the former as a distinct entry. I had looked into that conspecificity with Sumatran females in London that were a good match for the type of *atribasalis*, and consider that the detailed markings at the base of the forewing and at its tornus are quite distinct in the two species, so would tend towards the possibility that the males illustrated by Lutz as *astriata* are that species and that *atribasalis* is unrelated (dissection of one of the females in London also supports this).

Noctuidae: Heliothinae.

Lutz dealt with the Sumatran members of the Heliothinae in HS 8, describing a new species of the Australasian genus *Australothis* MATTHEWS as *A. hackeri* KOBES, 1995, distinguishing it from *A. tertia* ROEPKE, 1941 that occurs in Sumatra, Java, Bali and Sulawesi (HOLLOWAY 1989: 74), and has been recorded from Queensland in Australia (MATTHEWS 1999). The assignment of the name *tertia* to the smaller of the two species (forewing length 12 mm) had been based on the original description of ROEPKE (1941), without reference to type material (apparently lost). The larger of the two species (forewing length 14 mm) became *hackeri*. The genitalia of males of both species were illustrated, but those for *hackeri* were of the paratype, rather than the moth illustrated as holotype, as required by Edi Diehl.

MATTHEWS (1999), in his monograph on the Australian Heliothinae, appeared to have been unaware of the paper by Lutz, but made an exhaustive effort to locate material that could have been studied by Roepke in his study of the identity of *tertia*. He gave reasons why the Java holotype of *tertia* could have been lost, and based his interpretation on a series of paratypes from Sumatra. He illustrated the genitalia of males and females from Australia, Bali and Java, and two moths of each sex were illustrated life-size in his colour plate 11. Two specimens of *tertia* have been recorded from northern Queensland. The forewing length of the illustrated specimens is approximately 13-14 mm.

The male genitalia illustrated by Matthews for *tertia*, and those for both *tertia* and *hackeri* by Lutz have valve length and tegumen to vinculum length in similar proportions, but the shape of the valves illustrated for *tertia* by Matthews is closer to that of *hackeri*, generally wider and with the cucullus more extensive than in the genitalia illustrated by Lutz for his *tertia*. Unfortunately the aedeagus vesicas were not everted for the HS illustrations; their structures can often also provide useful diagnostic features in this very difficult

group of moths. All this raises a question over the identity of the two Sumatran species as, on balance, *hackeri* would appear to be a synonym of *tertia*, with the other species then undescribed.

The situation may be clarified by evidence from DNA barcoding of the Australian heliothines (MITCHELL & GOPURENKO 2016). This includes sequences from all known Australian *Australothis*. It shows that the commonest species, *rubescens* WALKER, 1858, splits into four barcode groups, three being most closely related, but the fourth associating with *tertia*. This work provides a context within which the Sumatran situation, and that in Indonesia more generally, could be assessed.

Acknowledgement

Many thanks to Mei-Yu Chen and Ulf Buchsbaum (both Zoologische Staatssammlung München, ZSM) for producing the photographs of a box and some types from the collection of Lutz Kobes in ZSM.

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