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SKAPHION
The Weekly Newsletter of the Platygastroidea Planetary Biodiversity Inventory

Maintaining the integrity of Malaise traps running long term under harsh environmental conditions

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Conducting long term inventory surveys exposes insect traps to various environmental hazards, not least the wild, or not so wild, local fauna. I have had cows trample Malaise traps into the ground (fig. 1), and I believe bears can be a major problem in North America, however, in Central Africa I have had no problem with elephants even when the trap has been erected across an elephant path in deep jungle. They seem to have an inherent suspicion (more intelligent?) of anything man made and carefully circumvent the trap. Other wildlife such as small antelope and rabbits run through the middle partition on a fairly regular basis leaving gaping holes and a trap running less than efficiently.

Traps surviving the attention of the local wildlife are subjected to a depleted ozone layer (UV plays havoc with the long term integrity of Malaise trap netting and plastic collecting heads), as well as stormy weather with gale force winds, which is a real problem as experienced recently by Elijah Talamas in California (Skaphion Volume 3 No 34-36). Commercially available Malaise traps last a maximum of six months with continual operation in the field in South Africa. Even after four months the netting strength has deteriorated due to UV radiation and if the trap is exposed to high winds it readily tears. By the end of six months it has literally fallen apart (fig. 2). Collecting heads last longer, but the plastic bottles also become brittle and break when battered around by unfavorable weather, spewing their valuable contents all over the ground.

Keeping a Malaise trap in place through storms and high winds is a challenge. My solution is to literally stake the trap to the ground using 1.4 meter long, hard steel “fence droppers” that are hammered vertically into the substrate at each corner of the trap. Further fence droppers are then hammered in to a depth of over a meter, at an obtuse angle pointing away from the trap, at each corner and at each end of the trap. The corner stakes and collecting head poles are securely tied to these. The main support pole comprises two aluminum poles sleeved over fence droppers that have been hammered straight into the ground. Two poles stabilize the collecting head significantly more than if only a single pole is used. The trap is secured to the corner poles with at least 1.5mm thick fencing wire. The material loops that come standard with commercially available traps are no good as they quickly fray through. It takes me a good two hours to install a new Malaise trap securely, but in the long run it is time well invested.

Staking addresses the problem with fly away traps, but does not solve the relatively rapid degradation of the trap itself. Replacing Malaise traps every six months becomes a costly exercise. I am currently running 20 traps on a permanent basis and the expense adds up quickly. After import duty is slapped onto the retailer's price, each trap (netting alone) costs me US$200. To address this untenable state of affairs I am now constructing Malaise traps from black and white shade cloth manufactured by a South African company ALNET (http://www.alnet.co.za), which is UV resistant and guaranteed for 10 years (fig. 3).

This reduces the price tag to around US$35 for the netting part of the trap if I make them myself. The shade cloth is also extremely strong and highly tear resistant and hence withstands wildlife trying to run through the panels. There are, however, a number of problems associated with using shade cloth. The trap is very heavy and bulky due to the thickness of the material and is not suitable for taking along on expeditions to other countries where air travel is involved. The shade cloth is nowhere near as transparent as curtain netting and not as fine meshed. The lack of transparency of the roof means the trap is far less efficient. Insects perceive the opening (that they have flown into the trap through) as a higher light intensity source than the top end of the trap itself and then simply fly out again. I have identified this as a major problem and plan to hopefully alleviate this by cutting out window panels around the collecting head and replacing the shade cloth with strong clear plastic or Perspex. If these sections deteriorate they can easily be replaced. It may even be worth making the top final section (last 30-40cm) of the ALNET trap leading to the collecting head completely from a clear, robust material to provide light at the end of the tunnel so to speak. I am now experimenting with covering the collecting head with a sleeve of shade cloth to protect the plastic bottles from UV exposure. However, this also diminishes the light intensity at the top end of the trap and may not be a wise move. It may be better to simply replace the bottles on a regular basis rather than to compromise on efficiency of return.

I am also experimenting with making the roof of the Malaise trap out of yellow shade cloth (figs. 4-10) rather than white and have recently installed six traps with this design. We shall see. The rigidity of the shade cloth makes for a very different sewing experience, but with a thick needle and strong cotton the material behaves and holds the stitching. I can whip up a complete trap within an hour from previously cut out panels; something a seamstress would no doubt do far more efficiently and with far less cursing, but then there is a certain sense of satisfaction in deploying your very own home made trap and watching it stand up to the wrath of the African wilds.

I would like to extend my appreciation to the many private landowners and managers who have willingly granted permission for me to install insect traps as part of the **PBI Platygastroidea** project on their properties, including Sieb and Hannetjie Sieberhagen of Vredehoek farm, David and Tossie Muller of Sterboom farm, both situated near Sutherland in the Northern

Cape; Marlene McCay, Richard and Kitty Viljoen of Asante Sana Private Game Reserve near Graaff Reinet in the Eastern Cape; Angus Tanner and Johan Delange of the Wilderness Foundation Plains of Camdeboo Nature Reserve (and thanks to conservation student Andrew Jackson for his help) near Pearston in the Eastern Cape; David and Barbara Scott of The Hoek farm on the Winterberg in the Eastern Cape; Tom and Lizel Barry of Gamkaberg Nature Reserve near Calitzdorp in the Western Cape; Chris Willis and Eugene Marinus of SANBI Hantam National Botanical Gardens, and Onno Huyser of WWF TMF Avontuur Farm both near Nieuwoudtville in the Northern Cape.

Figure legends

Figure 1. Malaise trap trashed by dairy cows.

Figure 2. MT trashed by strong winds after material disintegration due to UV exposure, Hantam Botanical Gardens.

Figure 3. MT made from ALNET shade cloth, Hantam Botanical Gardens.

Figures 4 & 5. Malaise trap made from ALNET shade cloth, top of Sneeuberg, 2200m in Asante Sana.

Figure 6. MT with protective sleeve around collecting head, Swaarweerberg (translates to bad weather mountain!) near Sutherland.

Figure 7. MT in marshy area in the arid Karoo on the farm Sterboom.

Figure 8. MT in arid bushveld in Asante Sana game reserve where elephants and buffalo abound.

Figure 9. ALNET trap in arid bushveld, Plains of Camdeboo Nature Reserve.

Figure 10. MT on The Hoek farm (Winterberg).

Calendar of Events for 2009-2010:

- **3rd International Barcode of Life Conference, 07-12 November, 2009, Mexico City, Mexico**
  www.dnabarcodes2009.org
- **TDWG Conference 2009, 09-13 November, 2009, Montpellier, France**
- **Annual Meeting of the Entomological Collections Network, 12-13 December, 2009, Indianapolis, Indiana.**
- **Annual Meeting of the Entomological Society of America, 13-16 December, 2009, Indianapolis, Indiana.**
- **7th International Congress of Hymenopterists, 20-26 June, 2010, Köszeg, Hungary**
  http://www.hymenopterists.org/hungary.html
- **Society for Systematic Biologists, 25-29 June, 2010, Portland State University Portland,Oregon**

Global Biodiversity Calendar of Events – list of upcoming Biodiversity-related meetings
http://www.cbd.int/events/

Skaphion is the weekly newsletter of the **Platygastroidea Planetary Biodiversity Inventory Project (*PlatyPBI*)**. The term ***skaphion*** *[Gr. skaphion: a small bowl or basin; a bowl shaped like a boat; a hemispherical vase*], refers to an anterior subdivision of the mesoscutum which is unique to the Scelionidae.

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The 3 broad objectives of the project are:

- **species description**,
- **collecting** in areas where fauna of Platygastroidea is poorly known,
- and **phylogenetic analysis** of a monophiletic group.

PlatyPBI Collaborators, Students, Associates & Staff:

AUSTRALIA - Andrew Austin, John Jennings, Sally Thompson (*University of Adelaide*); Marc Dowton (*The University of Wollongong*); **BRAZIL -** Alexandre Aguiar (*UFES*); Beatriz Coelho (*INPA*); **CANADA -** Lubomir Masner (*Canadian National Collection of Insects*); Chris Darling, Antonia Guidotti (*Royal Ontario Museum*); **ENGLAND -** Andrew Polaszek (*Natural History Museum London*); **HUNGARY -** István Mikó (now at North Carolina State University); **INDIA -** Rajmohana K. (*Zoological Survey of India*); **ITALY -** Ferdinando Bin, Eric Conti, Roberto Romani, Giancarlo Salerno (*University of Perugia*); **NEW ZEALAND -** John Early (*Auckland Museum*); **SOUTH AFRICA -** Simon van Noort, Aisha Mayekiso, Beryl Goci (*Iziko Museums of Cape Town*); **USA -** Norman Johnson, Hans Klompen, Luciana Musetti, Alejandro Valerio, Matt Yoder, Elijah Talamas, Charuwat Taekul, Joe Cora, Sara Hemly, Alpana Chaudhuri, Thomas Silver, Marietta Belfanti, Brian Crenshaw, Kyle Kendall, Matt Schneider (*The Ohio State University*); Jerry Hoke (*Columbus Alternative High School, Student Intern at Ohio State University*); Matt Buffington (*Systematic Entomology Laboratory, USDA*); Hans Clebsch (*Cleveland Museum*).

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