Lepidopterists' Society of Africa NPC

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The last week has seen swarms of white butterflies flying across the northern parts of South Africa. With the public noticing the butterflies, social media and news sites have been abuzz with stories of these butterflies. Unfortunately, over the years many myths and inaccurate information has been becomes public. In this regard, the Lepidopterists' Society of Africa (LepSoc Africa) has created this question and answer statement with regards to the dispersing butterflies.

Supplementary information is included from research done by Reinier Terblanche on these butterflies as part of his Phd

1 What are the white butterflies that are we seeing?

Most of the butterflies being seen in Johannesburg and surrounding areas at the moment are Pioneer Caper Whites (*Belenois aurota*). This butterfly is also known as the Brown-veined White in South Africa, but the Lepidopterists' Society of Africa (LepSoc Africa) is currently trying to standardise the English names of all butterflies found in Africa. *Belenois aurota* occurs in southern Asia as far east as India and the Himalayas, in southern Arabia and throughout most of sub-Saharan Africa.

2 Where do the butterflies come from and where are they heading and why?

The phenomena we are seeing at present is not a true migration (the butterflies will not return) but is a dispersal event. Butterflies are largely flying from the drier southwestern areas to the wetter northeast areas. All the butterflies are flying in a generally north-easterly direction. The core population of *Belenois aurota* in South Africa is the Kalahari region, where the larvae feed on Shepherd's trees (*Boscia albitrunca*). The current "migration" – at least in the Johannesburg area – appears to be the largest since 1966.

3 How long will the migration last?

The dispersal is due to a population explosion and will probably last for a few weeks.

4 Is climate-change responsible?

Climate is definitely a factor, although we don't think there is adequate data to suggest that climate change is responsible for the current wave of Pioneer Caper Whites / Brown-veined Whites. The triggers are twofold: Successive years of drought leading to drastic reductions of the predators that feed on *Belenois aurota*, primarily the eggs, larva and caterpillars. These predators may be viruses, parasitic wasps (parasitoids), robber-flies, spiders, birds etc. Usually about 99% of butterfly early-stages are eaten!
Good rainfall, as we've experienced recently, leads to favourable conditions and a population explosion of *Belenois aurota* and a subsequent "migration".

5 How far do the butterflies fly and how often do they need to feed? Do they sleep or lay eggs on this journey?

We don't really know how far individual butterflies fly in South Africa, but it seems likely that those that are high-flying and caught in favourable winds, can travel in excess of 1000 km. Those bobbing along near the ground (and feeding in Johannesburg gardens along the way), probably have a range of a few hundred kilometres - they will sleep at night, on a plant or grass stem. Note that not all the butterflies that we are seeing come from the Kalahari; local Pioneer Caper Whites / Brown-veined Whites will be emerging and joining in

the "migration". Female *Belenois aurota* will lay eggs on suitable larval food plants (members of the Caper family) during their journey.

6 Is it known how many butterflies form part of this annual migration?
We don't have accurate numbers and the amount varies from year to year, but we currently estimate that the number of butterflies currently on the wing extends into the billions.

7 What are the biggest threats to the butterflies during this migration?
There are few significant threats to adult Pioneer Caper Whites / Brown-veined Whites, as we believe they are distasteful to birds and are generally left alone. A few will be caught by robber-flies or trapped in spider webs (or killed by spiders while they are sleeping) and several will be killed by cars and trucks! Steve Collins recalls, several years ago in Kenya, his father having to clear the car radiator-grill of dead butterflies, to prevent the engine overheating…

8 Do other species migrate?
Generally Pioneer Caper Whites / Brown-veined Whites are the biggest contributors to the "migration", but other species also disperse. One of these is the African Migrant (*Catopsilia florella*), which we believe migrates for similar reasons – occasionally, numbers of *Catopsilia florella* exceed those of *Belenois aurota*. A few species of moth also "migrate" in large numbers, but this generally occurs at night and at high altitude, so is not often reported. It is even less well understood than the *Belenois aurota* migration! For interest, LepSoc Africa are trying to introduce "Butterflies" as a general term for all Lepidoptera; "Moths", which is used for a diverse range of Lepidoptera outside of the Papilionoidea superfamily, will fall away.

9 Misconceptions
A recent news article stated that the butterfly-migration originates on the West Coast and that they are flying to Madagascar. As noted above, in South Africa the start of the dispersal-relay is the Kalahari and, while it's not impossible that one or two adults may reach Madagascar, this is definitely not their intended destination. Despite conflicting reports, *Belenois aurota* caterpillars feed only on plants of the Caper family; they are not an agricultural pest and will do no damage to suburban gardens; their caterpillars are not army worms or lily borers, nor will they cause African Horse Sickness

10 Further research
One of our LepSoc Africa members, Reinier Terblanche, is currently busy with research on *Belenois aurota*. One of the amazing things that he's discovered is that butterflies are genetically pre-programmed to disperse; individuals coded for dispersal have different coloured pupae.

For more information on the Lepidopterists' Society of Africa please see http://www.lepsocafrica.org/?h=about