



Golden Sun Moths and citizen science: outcomes from a survey of lowland grasslands in the ACT region, 2008–09

Sarah Hnatiuk and Annet Richter

Friends of Mt Painter and (formerly) University of Canberra

The Golden Sun Moth (*Synemon plana*) is one of the specialist species found in south-eastern Australia's lowland Natural Temperate Grasslands. With 95% of these grasslands having been destroyed or modified, the moths are now a nationally critically endangered species. Over the summer of 2008–09, members of the University of Canberra's Institute for Applied Ecology and Friends of Grasslands organised a volunteer survey of 28 grasslands in the ACT region. We found that, with training, naive volunteers could reliably count flying moths and collect pupal cases. The data they collected showed that:

- moths were present in 71% of the grasslands surveyed, most frequently in low–moderate abundance;
- they occurred in native grasslands dominated by wallaby grasses (*Rhynchospora* spp.) and spear grasses (*Austrostipa* spp.), as well as in grasslands dominated by the exotic Chilean Needlegrass (*Nassella neesiana*). Two of the six most abundant populations were in Chilean Needlegrass-dominated grasslands.
- 60% of the pupal cases examined were male when the ratio of male:female expected was 50:50.



Golden Sun Moth (*Synemon plana*) Community involvement for the conservation of one of the most iconic threatened insect species in the ACT Natural Temperate Grasslands

Anett Richter¹, Will Osborne¹, Geoff Robertson², Sarah Hnatiuk² and Bernadette O'Leary²

¹Institute for Applied Ecology at the University of Canberra, ²Friends of Grassland (FOG)



Natural Temperate Grasslands are one of the most highly-fragmented and therefore threatened ecosystems in Australia. More than 95% of these grasslands in South Eastern Australia have been lost, altered and isolated due to agriculture and urbanisation.

As a result of this, many species associated with these grasslands face rapid extinction. In particular, specialist species like the Grassland Earless Dragon (*Tympanocryptis pinguicolla*) or the Golden Sun Moth (*Synemon plana*) that have exceptional biology and habitat requirements, are at a much higher risk.

This poster presents information about the unique biology of the Golden Sun Moth that occurs in native grasslands remnants – the same grasslands where the Grassland Earless Dragon can be found. The poster also describes the pilot monitoring study that was conducted by community volunteers in summer 2008 in the ACT.

The Golden Sun Moth

The Golden Sun Moth is a day-active moth that can be found flying in the ACT region from October to mid January between 11 am and 3 pm on warm to hot, cloudless and slightly windy days. Male and female moths have a very distinctive color pattern (see Photo 1+2) and a unique flying behavior. This makes the moths relatively easy to identify and ideal for monitoring.

Native Wallaby Grass (*Austrodanthonia* spp.) is assumed to be the main food source. Adults lack mouthparts and do not feed; the larvae are thought to feed extensively on the roots of Wallaby Grasses. Recent observation on Golden Sun Moth adults in areas dominated by the introduced Chilean Needle Grass indicates that this seriously invasive weed may also be eaten by the moth larvae. Potential relationships between this weed and the moths are under investigation.

Golden Sun Moth Monitoring

Since October 2008 Friends of Grassland and researchers from the Institute for Applied Ecology at the University of Canberra have been running a pilot monitoring program for the endangered Golden Sun Moth.

The aim of this project is to develop standardised monitoring protocols for use by community groups and professionals to detect early changes in the distribution and abundance of Golden Sun Moth populations.

For the first time, standardised monitoring protocols are being trialled in grassland remnants by more than 30 volunteers. Once evaluated, these methods will guide future monitoring of Golden Sun Moths, an important step in the conservation of this iconic species.

How the community can contribute to long term threatened species and habitat conservation

We believe that community based monitoring projects facilitate long term conservation of flagship species such as the Golden Sun Moth and threatened ecological communities like the Natural Temperate Grasslands. Our pilot monitoring study has discovered new sites with Golden Sun Moth populations in the ACT and identified major threats to the species such as weed invasion.

Results can be used to suggest management actions for the conservation of Golden Sun Moth and native grasslands by private landholders and governmental agencies.

The ongoing strong community interest in annual monitoring programs for the Golden Sun Moth in natural and urban environments in the ACT can lead to increased public awareness of the threats to our local insect diversity and grasslands.

Interested? For more information see: www.aeg.canberra.edu.au/teams/osborne/moth-count



Photo 3: FOG members conducting Golden Sun Moth pupae and vegetation surveys in Chilean Needle Grass. © D. Weir/ibid



Photo 4: Golden Sun Moth in native Wallaby Grass tussocks



Photo 5: Dunlop Nature Reserve, one of the large Natural Temperate Grasslands in the ACT. © D. Weir/ibid



Photo 6: Members of the community at training session. © D. Weir/ibid

We would like to express our great thanks to the World Wide Fund for Nature (WWF) Australia and to ACT Parks, Conservation and Lands for funding the Pilot Monitoring Study on the Golden Sun Moth in the ACT. Also our great thanks to all the participants of this survey and supporters.



Sarah Hnatiuk is now retired after a varied research career involving work with normal and Downs Syndrome babies, Central Australian Aborigines, elderly women, the wildlife of Aldabra Atoll in the western Indian Ocean, and more recently assisting with inquiries by members of the House of Representatives committees, principally on environmental and rural topics. She is now engaged in a number of ACT citizen science projects, including Frogwatch, Vegwatch and monitoring the success of Greening Australia's community plantings.

Anett Richter obtained a PhD from University of Canberra with a thesis entitled 'What makes species vulnerable to extinction following habitat fragmentation and degradation? A test using the insect fauna in native temperate grasslands in south-eastern Australia'. She is now at the German Centre for Integrative Biodiversity Research working on a citizen science strategy for Germany and an analysis of the current citizen science activities in Germany.