

Assessment of Vegetation

At the Bendigo Airport

**For the presence of Golden Sun Moth
(*Synemon plana*)**

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1 INTRODUCTION

1.1. *Project Background*

Garry and Brenda Cheers, Flora & Fauna Consultants, were commissioned by City of Greater Bendigo, PO Box 733, Bendigo, Vic 3552, to assess areas of Degraded Treeless Vegetation/Derived Grassland (GW6) and treeless BoxIronbark Forest (GW5). These areas known as GW5 and GW6 were described as Grassy Woodland suitable for Golden Sun Moth by Atlas Ecology in their report titled 'Final Report, Flora and Fauna Assessment - Bendigo Aerodrome and surrounds (February 2010)'. The study area can be seen in Map 1 for site location.

1.2. *Objectives*

The objectives of this assessment were to:

- assess the areas that were considered likely habitat for Golden Sun Moth; and
- undertake targeted surveys for Golden Sun Moth in zones GW5 and GW6 to determine presence within these areas as recommended in Atlas Ecology's 'Final Report Flora and Fauna Assessment - Bendigo Aerodrome and surrounds (February 2010).

1.3. *Study Area*

The study area was in the municipality of City of Greater Bendigo and within the Goldfields Bioregion. The main study area was on the north end and east side of the main runway at the Bendigo Airport. There were also three small areas on the west side of the main runway. See map 1.

2 DESCRIPTION OF METHODS

The Victorian Fauna Database was checked for species found within a 5km radius of the study area. The Australian Government's Environment Protection and Biodiversity Conservation Act (EPBC) on line Environmental Reporting Tool was also checked for possible occurrence of threatened species within a 5km radius of the area.

2.1 *Field Survey*

Searches for Golden Sun Moth were undertaken using the following EPBC guidelines:

Survey guidelines for detecting the Golden Sun Moth (DEWHA a, DEWHA b)

Aim To detect flying males, but also to detect laying females/eggs and/or pupal cases to confirm that reproduction is taking place on the site.

Timing During the local flying season (late October to early January)*.

Effort. Surveys need to be undertaken over at least four suitable days, at approximately weekly intervals. Once presence is established, surveys should focus on determining the relative distribution of the species on the site.

Conditions • Warm to hot day (above 20 degrees Celsius by 1000 hrs)

- Warmest part the day (that is, 1000 to 1400 hrs)
- Clear or mostly cloudless sky
- Still or relatively still wind conditions during the survey period, and
- At least two days since rain.

*As the timing of the flight season varies annually and geographically, the best indicator of key survey period is the presence of flying males at known local sites. Reference sites should be monitored during the expected flying period and used to guide survey timing at the target site.

2.2 Special Considerations

The survey was during the time that Golden Sun Moth were expected to be on the wing. Weather during the time that the males should have been in flight was very variable with hot sunny days and periods of rain. Surveys were done using the weather conditions in the guidelines but were extended over a longer period of time to cover any late emergent's caused by weather conditions. Surveys were conducted over the whole flight season.

2.3 Previous Study

The Atlas Ecology Report (February 2010) stated that '*areas of Zones GW5 and GW6 where there had been significant soil disturbance had a low likelihood that Golden Sun Moth would be present*'. It also stated that '*if there were areas where the soil had not been significantly disturbed there was a moderate likelihood that Golden Sun Moth was present within these areas*'. The report recommended targeted surveys would need to be undertaken by suitable qualified and experienced persons, during the spring-summer flight season and in accordance with the Australian Government Department of Sustainability, Environment, Water, Population and Communities (DSEWPC, formally DEWHA) recommended survey methods.

If Golden Sun Moth was found during targeted surveys, a referral to the Commonwealth Minister under the EPBC Act would be required for any proposed removal of zones GW5 and GW6.

3 STUDY OUTCOMES

3.1 Victorian Fauna Database

The Atlas of Victorian Wildlife has one undated record of a Golden Sun Moth in the vicinity of Flora Hill.

3.2 Environment Protection and Biodiversity Conservation Act Listed species

The EPBC report tool indicates there could be habitat suitable for Golden Sun Moth within a 5km radius of the Bendigo Airport.

3.3 Survey effort and results

Sites were searched on eight occasions under ideal conditions with no Golden Sun Moth being found. Species found in the Order Lepidoptera are listed below.

Species of the Order Lepidoptera found during the survey

Common Name	Scientific Name	Comments
Common Grass Blue	<i>Zinina labradus labradus</i>	Fairly common
Common Brown	<i>Heteronympha merope merope</i>	Only 2 seen
Australian Admiral	<i>Vanessa itea</i>	One seen flying across site
Australian Painted Lady	<i>Vanessa kershawi</i>	Few mainly feeding on Ice Plant
Cabbage White	<i>Pieris rapae rapae</i>	Few seen

3.4 Site condition

The condition of the study sites varied in quality (refer to map 1). Areas in the lower landscape were very weedy and there were large areas of scalding where vegetation was absent. The soil in all areas had been compacted by continual slashing since the airport was constructed. In parts of the site both Wallaby and Spear Grass persisted. Photo 1 and 3 show native grasses before slashing in early spring. A breakdown in slashing equipment prevented slashing of these areas in early spring - normally the sites are slashed well before grasses reach this stage.

Reasons why the available habitat was not considered suitable for Golden Sun Moth at the Bendigo airport are as follows:

1. Golden Sun Moth habitat is Grasslands and Grassy Woodlands. The areas that were considered in the Atlas Report as potentially being suitable for Golden Sun Moth were never Grassy Woodland. They were historically BoxIronbark Forest.
2. Any areas on or close to the airport that were once Grassy Woodlands have been cleared many years ago and their modified habitat would not have been suitable for Golden Sun Moth for many decades.
3. The limited dispersal ability of the Golden Sun Moth means that they would not have been able to colonise the potential habitat available when the BoxIronbark Forests were cleared. Habitat areas separated by >200 m are effectively isolated and according to DSEWPC are considered as separate habitat areas (DEWHA 2009c).
4. Construction of the runways in the early 1970s would have disturbed soil in the vicinity of both runways.
5. Slashing over many years has compacted the soil. Soil compaction is one of the principle threats to Golden Sun Moth habitat (DEWHAa).
6. Slashing has occurred for years during the flight season of the Golden Sun Moth. It will continue to occur during the flight season and at other times of the year to meet CASA regulations. To maintain Golden Sun moth populations DEWHA recommends that slashing occurs outside the Golden Sun Moths flight period (DEWHAa).

4 POLICY AND LEGISLATIVE IMPLICATIONS

4.1 Commonwealth

In areas GW5 and GW6 from the Atlas Ecology Report, where there had been significant soil disturbance, there was a low likelihood that Golden Sun Moth would be present.

However, if there were areas within GW5 and GW6 where soil had not been significantly disturbed, there was a moderate likelihood that Golden Sun Moth may be present within these areas. Sites GW5 and GW6 have been surveyed for Golden Sun Moth during the male Golden Sun Moth flight season. Searches over 8 days failed to locate any Golden Sun Moth in these sites.

The appropriate actions have been taken to determine if Golden Sun Moth was present on site.

There is no requirement for the City of Greater Bendigo to undertake a referral to the Commonwealth Minister under the EPBC Act.

5 APPENDICES –

5.1 Incidental Flora recorded on site

Scientific name	Common Name	Origin	AROTS	VROTS
<i>Austrodanthonia setacea</i>	Bristly Wallaby-grass			
<i>Austrodanthonia duttoniana</i>	Brown-backed Wallaby-grass			
<i>Austrostipa mollis</i>	Supple Spear-grass			
<i>Austrostipa scabra</i>	Rough Spear-grass			
<i>Avena fatua</i>	Wild Oat	*		
<i>Briza maxima</i>	Large Quaking-grass	*		
<i>Bromus diandrus</i>	Great Brome	*		
<i>Ehrharta longiflora</i>	Annual Veldt-grass	*		
<i>Hordeum marinum</i>	Barley grass	*		
<i>Paspalum dilatatum</i>	Paspalum	*		
<i>Vulpia ssp</i>	Fescue	*		
<i>Romulea rosea</i>	Onion Grass	*		
<i>Juncus acutus ssp. acutus</i>	Sharp Rush	*		
<i>Lomandra filiformis</i>	Wattle Mat-rush			
<i>Lomandra multiflora</i>	Many-flowered Mat-rush			
<i>Arthropodium spp. (s.s.)</i>	Vanilla Lily			
<i>Dianella admixta</i>	Black-anther Flax-lily			
<i>Arctotheca calendula</i>	Cape Weed	*		
<i>Xerochrysum viscosum</i>	Shiny Everlasting			
<i>Lepidium africanum</i>	Common Peppercross	*		
<i>Astroloma humifusum</i>	Cranberry Heath			
<i>Glischrocaryon behrii</i>	Golden Pennants			
<i>Gonocarpus tetragynus</i>	Common Raspwort			
<i>Acacia genistifolia</i>	Spreading Wattle			
<i>Acacia pycnantha</i>	Golden Wattle			
<i>Acacia acinacea s.s.</i>	Gold-dust Wattle			
<i>Melaleuca decussata</i>	Totem-poles			
<i>Pultenaea largiflorens</i>	Twiggy Bush-pea			
<i>Pultenaea pedunculata</i>	Matted Bush-pea			
<i>Plantago lanceolata</i>	Ribwort	*		
<i>Plantago coronopus</i>	Buck's Horn Plantain	*		

* = Introduced species

6 REFERENCES

Atlas Ecology (2010). Flora and fauna Assessment – Bendigo Aerodrome and surrounds.

DEWHA(a). EPBC Act Policy Statement 3.2 – Significant Impact Guidelines for the Critically Endangered Golden Sun Moth (*Synemon plana*).

DEWHA (b). Background Paper to EPBC Act Policy Statement 3.2 – Significant Impact Guidelines for the Critically Endangered Golden Sun Moth (*Synemon plana*).

DEWHA (c). Protected Matters Search Tool.

DSE (2003). (b). Advisory List of the Threatened Vertebrate Fauna of Victoria-2007. Department of Sustainability & Environment, Melbourne.

Walsh, N.G. and Entwisle, T.J. (1994). Flora of Victoria. Volume 2, Ferns and allied plants, conifers and monocotyledons. Inkata Press, Melbourne.

Walsh, N.G. and Entwisle, T.J. (1996). Flora of Victoria Vol 2 (1994). Edited by N. G. Walsh and T. J. Entwisle.

7 MAPS AND PHOTOS

Map 1 Study area locations

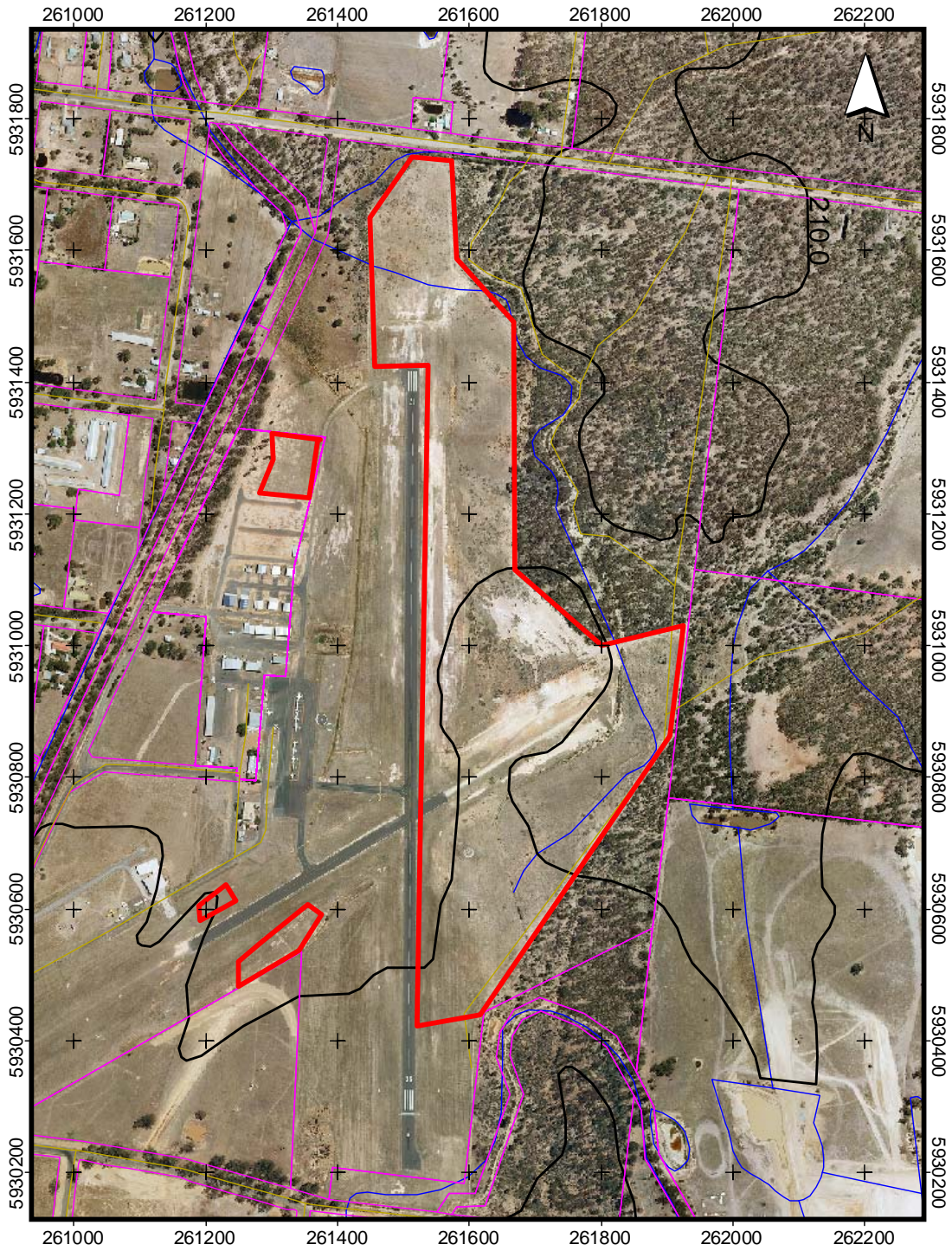


Photo 1 Part of GW6 north of east runway before slashing



Photo 2 Part of GW6 north of east runway after slashing



Photo 3 Part of GW6 south of east-west runway before slashing



Photo 4 Part of GW6 south of east-west runway after slashing



Photo 5 GW6 scolded area



Photo 6 GW6 looking north from east-west runway



Photo 7 Part of GW5 looking south



Photo 8 Part of GW6 looking south

