

Draft Revision (2009)

Flora and Fauna Guarantee Action Statement No. 6

Butterfly Community No. 1

Description

Butterfly Community No. 1 is an assemblage of flora and fauna characterised by the presence of a large number of significant, rare and extremely rare invertebrate species. As many as 42 butterfly species (New 1998) and 10 diurnal moth species (Jelinek 2005) have been recorded, including the Large Ant-blue (*Acrodipsas brisbanensis cyrilus* Anderson and Spry) and Small Ant-blue (*Acrodipsas myrmecophila* Waterhouse and Lyell) butterflies, the Genoveva Azure Butterfly (*Ogyris genoveva genoveva* Hewitson), and Icilius Blue Butterfly (*Jalmenus icilius* Hewitson).

Mt. Piper is the only known site where the *Flora and Fauna Guarantee Act 1988* listed Large and Small Ant-blue butterflies co-occur. The community represents the southern-most occurrence of several northern butterfly species and includes interdependent relationships between some butterfly species and ants. It includes butterfly and moth species which exhibit hill-topping behaviour and also includes insectivorous birds, mammals and reptiles, butterfly food plants and other flora and fauna which are interdependent with the butterflies and ants (Jelinek 1992a). If a similar suite of butterflies were found at another locality, then this community would also be designated as Butterfly Community No. 1.

The rare, day-flying Golden Sun Moth (*Synemon plana* Walker), while present in this locality, was not discovered at Mt. Piper until after the listing of Butterfly Community No. 1. It is not included as part of the listed community as it occurs in grassland as opposed to the woodland habitat of the Butterfly Community, however its presence and 'Critically Endangered' status necessitates its consideration in the management of the Mt. Piper reserve.

Distribution

Mt. Piper, a steep and solitary mountain rising to 456 m above an undulating plain 230 m in elevation, located between the Tallarook and Mt William ranges in central Victoria, is currently the only known location of Butterfly Community No. 1. Surveys have been undertaken at other locations with similar geographical and habitat characteristics, such as The Paps and the Blue Range hill-top near Mansfield, Junction Hill near Yea and Mt. Samaria (Britton & New 1993) but the butterfly community is yet to be located at these or any of the other surveyed sites.

The Small Ant-blue Butterfly, while historically recorded from eight sites in Victoria, is believed to be extinct from all but the Mt. Piper location (Britton & New 1993). It is known from New South Wales, Queensland and the Northern Territory but is very rare throughout this range (Britton *et al.* 1995).

The Large Ant-blue Butterfly is confined to remnants of open forest and woodland in central Victoria, including near Broadford, Mansfield, Kangaroo Ground and Wedderburn, and unconfirmed reports from Plenty Gorge and Kinglake National Park (Jelinek & White 1996a). It is believed to be extinct at several former locations including Warrandyte North, the You Yangs, Springvale and Cranbourne. It also occurs in New South Wales, the Australian Capital Territory and Queensland (Jelinek & White 1996a).

The rare Genoveva Azure Butterfly has been recorded from eight locations in Victoria (Britton & New 1992) as well as New South Wales and Queensland where it is also uncommon, and is believed to be extinct from some Victorian localities (Britton *et al.* 1995).

The Icilius Blue Butterfly is considered to be rare in Victoria, and only a very small breeding colony has been found at Mt. Piper, where local conditions may not be optimal for this species (Britton *et al.* 1995).

Many of the other butterfly species recorded from Mt. Piper, while each being more widespread, have declined in range during recent decades, with their critical resources including native vegetation and host ant populations also declining (New 1998).

The Golden Sun Moth is found in about sixty sites in Victoria (Webster in prep.) but has been eliminated from much of its former range through habitat loss (O' Dwyer *et al.* 2000). It is known from New South Wales, the ACT and from South Australia although no populations have recently been found there.

Environment

Mt. Piper is an isolated volcanic quartz plug, surrounded by mostly cleared farmland, which forms an isolated refuge, or island, for a number of plant and animal species. It contains natural vegetation capable of supporting a variety of

animals and serves as a reservoir of biotic diversity in the region (New 1998). The area in and around the Mt. Piper Education Reserve provides habitat for a number of threatened vertebrates such as the Brush-tailed Phascogale (*Phascogale tapoatafa*), Common Bent-wing Bat (*Miniopterus schreibersii schreibersii*), Speckled Warbler (*Pyrrholaemus sagittatus*), Diamond Firetail (*Stagonopleura guttata*) and Black-eared Cuckoo (*Chrysococcyx osculans*) (Victorian Fauna Display 2007). Existing remnant vegetation along streams and road reserves provides important wildlife corridors linking Mt. Piper with other bushland remnants (Jelinek 1993a).

The summit and main slopes of Mt. Piper are Heathy Dry Forest, while the lower slopes are Box-Ironbark Forest.

The summit consists of scattered clumps of eucalypts and acacias and is important habitat for a number of hill-topping butterflies and moths, attracted to the top of the mountain for shelter, food and as part of their breeding behaviour. Broad-leaved peppermint (*Eucalyptus dives*), long-leaved box (*E. goniocalyx*), Red Stringybark (*E. macrorhyncha*) and Red Box (*E. polyanthemos*) are widespread and occur with Messmate Stringybark (*E. obliqua*) and lightwood (*Acacia implexa*). Box Mistletoe (*Amyema miquelli*) is common. Some of the summit appears to have been naturally tree-less. The trig point is the only man-made structure remaining on the summit (Britton & New 1992).

The main slopes of Mt. Piper are predominantly naturally vegetated open forest and woodland which show evidence of past habitat disturbance including tree clearing or trimming and road access construction for a trig station, fire tower and telecommunications tower. The cooler and moister south and southeast slopes have the richest variety of shrubs and herbs including the Golden and Spreading Wattles (*Acacia pycnantha* and *A. genistifolia*), Heath Tea-tree (*Leptospermum myrsinoides*), Silver Banksia (*Banksia marginate*), Common Correa (*Correa reflexa*), Common Heath (*Epacris impressa*), Cat's Claw Grevillea (*Grevillea alpina*), Golden Bush-pea (*Pultenaea gunnii*), several species of orchids and native grasses (Register of the National Estate 1995).

Red Ironbark (*E. tricarpa* subsp. *tricarpa*) and Yellow Box (*E. melliodora*) grow on the lower slopes as part of a mosaic of grassy and woody vegetation (Costin 2007). High quality *Austrodanthonia* grassland habitat of the Golden Sun Moth is present on these lower slopes (Amos 1998). Native forest and grassland remnants on the lower slopes provide essential territorial, food, breeding and shelter plants and sites for the butterflies, moths and ants. The old trees, dead stems and fallen, decaying timber are important habitats for the many species of terrestrial and arboreal ants.

Selective timber cutting and wood collecting, bush-walking, horse and trail bike riding, vehicle access, invasion of introduced and weedy plants, and the presence of livestock, feral goats and rabbits (Jelinek *et al.* 1994) have all impacted on the Mt. Piper habitat.

Ecology

Butterfly activity is seasonal, especially for migratory species and is dependant on prevailing weather. Optimum climatic conditions are clear, warm to hot sunny days (temperatures above 20 degrees C) and little wind (Britton & New 1992, Register of the National Estate 1995) making November to March the best time for observing butterflies.

Many butterfly species have strong inter-relationships with various ant species. The type of relationship varies according to the species of butterfly, and only one or two species of ants are associated with a particular butterfly species (Britton & New 1992). Caterpillars of the co-dependant species secrete a honey-like fluid which attracts specific species of ants that then carry the caterpillars to their nest, providing them with food while protecting them from disease, parasites and predators (Jelinek *et al.* 1994). Other butterfly larvae feed on acacia seedlings or mistletoe, with the attendant ants guiding the larvae to fresh leaves and protecting them from predatory birds. Acacias and mistletoe-bearing eucalypts mainly occur on the lower slopes around Mt. Piper and on the linking roadside reserves and these are likely breeding areas for butterflies (Jelinek 1993b).

The Small Ant-blue Butterfly is believed to associate with the Coconut Ant (*Papyrius 'nitidus'*). The ants attend both eggs and larvae of the butterfly, and the caterpillars develop within the ants' nest, feeding by sucking fluids from ant larvae and pupae (Jelinek & White 1996a). Acacia and small eucalypt species thought to be crucial to the ants' foraging are found alongside high quality grassland habitat of the Golden Sun Moth in the Reserve (Jelinek & White 1996a, New 1998).

The Large Ant-blue is believed to also associate with the Coconut Ant, with at least part of the larval butterfly stage spent inside the ants' nest feeding by sucking on ant larvae and pupae, although confirmation of this association is needed (Jelinek & White 1996b).

The Genoveva Azure caterpillars are found in close association with the Sugar Ant (*Camponotus 'consobrinus'*) sheltering in the ants' nest at the base of a mistletoe host tree, or under bark on the tree, and emerging at night to feed on the mistletoe (Britton & New 1992). The Icilius Blue larvae are tended by *Iridomyrmex 'vicina'* ants, with a small breeding colony discovered on Golden Wattle at Mt. Piper (Britton *et al.* 1995).

Hill-topping, as a behaviour for mate-finding, occurs with males establishing and defending territories around selected trees on hill-tops. Females of hill-topping species are rarely found on hill-tops, proceeding to the summit only to mate then leaving immediately after mating occurs (Britton & New 1992).

Mt. Piper is an extension of the natural distribution or migratory routes of a number of butterfly species including the Glasswing (*Acraea andromacha andromacha* Fabricius), Lesser Wanderer (*Danaus cyrysippus petilia* Stoll), Northern Dusky Blue (*Candalides hyacinthinus simplex* Tepper) and Common Albatross (*Appias paulina ega* Boisduval) (Jelinek 2005). The Golden Sun Moth is believed to feed on the roots of native *Austrodanthonia* grasses (O'Dwyer & Attiwill 2000). Competition from other vegetation such as acacias and Kangaroo grass reduce the suitability of grasslands for this moth species (O'Dwyer & Attiwill 2000). A Grazing Management Plan has been developed for the Golden Sun Moth at Mt. Piper (Costin 2007) with prescriptive grazing required to maintain the 40% or greater *Austrodanthonia* spp. cover required by the Golden Sun Moth (O'Dwyer & Attiwill 2000). Without grazing, the woody vegetation and Kangaroo Grass (*Themeda triandra*) have a tendency to colonise areas of *Austrodanthonia*. In conjunction with this grazing of woody vegetation, maintenance of acacia and eucalypt species crucial to the attendant Coconut Ant, and therefore some of the butterfly species, is also critical.

Conservation status

Victorian conservation status

Butterfly Community No. 1 has been listed as “threatened” under the *Flora and Fauna Guarantee Act 1988*.

Threats

High intensity wildfire poses the most likely threat to habitat on Mt Piper, but climate change, vegetation clearance and competition by environmental weeds also threaten the habitat with the potential to result in habitat damage, loss or fragmentation.

<i>Standard threat</i>	<i>Source Of Threat</i>	<i>Explanation</i>
Habitat damage or loss.	Fire – wildfire.	High intensity wildfire may have major negative effect on habitat and component species in the community such as ants.

Important occurrences

<i>Location name</i>	<i>Land manager</i>	<i>Catchment</i>	<i>Bioregion</i>
Mount Piper Nature Conservation Reserve (NCR)	Parks Victoria	Goulburn Broken	Central Victorian Uplands

Past management actions

<i>Action</i>	<i>Result explanation</i>
Control introduced animals.	Co-operation between landholders and Parks Victoria in implementing feral goat control resulted in the removal of goats from the education reserve.
Develop or amend planning scheme overlays and schedules.	Vegetation Protection and Environmental Significance Overlays (VPO and ESO) have been applied to Mt. Piper and roadsides around Mt. Piper.
Undertake research into management requirements.	The need for rabbit fencing was assessed and deemed unnecessary.
Develop or amend legislation.	Mt. Piper was Heritage listed with the Register of National Estates (May 1995) and regulations for the Mt. Piper Education Reserve were gazetted (Nov 2004) under sec. 13 of the <i>Crown Land Reserves Act 1978</i> .
Involve community groups and volunteers in recovery activities.	Broadford Environmental Action Movement (BEAM) Group, and subsequently the Friends of Mt. Piper, have been instrumental in the ongoing management and protection of Mt. Piper through voluntary activities in conjunction with Parks Victoria.
Erect/maintain fence to exclude domestic stock.	Fencing was erected to restrict domestic stock and was checked and maintained by Parks Victoria.
Prevent habitat loss.	Restricting access to the reserve by fencing, and removal of disused structures around the summit have protected against habitat loss. Legislating for Vegetation Protection has also helped protect against habitat loss on adjacent private property and roadsides.

Develop, publish and distribute educational, technical or publicity material and/or displays.	A range of methods to disseminate information and educate the community have been used including: <ul style="list-style-type: none"> • An interpretation display and brochure (Jelinek 1992c). • A wildlife guide for landholders (Goulburn Broken Catchment Management Authority 2004). • An education and management field day. • A technical report on the ecological significance and management of the Mt. Piper Nature Reserve (Jelinek 2005). • Media articles published about the management and significance of the area.
Identify research priorities and facilitate their implementation.	A Five Year Recovery Plan was implemented through La Trobe University (1991-1996) and a draft national recovery plan was produced (New 1998). Critical habitat characteristics for significant species of the Butterfly Community were identified (Jelinek 1992b).
Erect/maintain structures to restrict or control access.	Fencing has restricted vehicle, horse and trail bike access to Mt. Piper. Fencing is checked and maintained by Parks Victoria.

Conservation objectives

Long term objective

To ensure that the Butterfly Community No. 1 can survive, flourish and the component species retain its potential for evolutionary development in the wild.

Objectives of this Action Statement

- To increase knowledge of biology, ecology or management requirements.
- To maintain or increase community awareness and support.
- To maintain or improve the condition of the community.
- To maintain or improve the extent of the community.
- To maintain or improve the physical environment.
- To secure the community or its environment from potentially incompatible land use or catastrophic loss.

Intended management actions

The intended management actions listed below are further elaborated in DSE's Actions for Biodiversity Conservation (ABC) system. Detailed information about the actions and locations, including priorities, is held in this system and will be provided annually to land managers and other authorities.

<i>Standard objective</i>	<i>Targets</i>	
To increase knowledge of biology, ecology or management requirements.	<ul style="list-style-type: none"> • Knowledge of the community, the biology of rare and uncommon individuals within it and its habitat increased, specifically an understanding of appropriate fire regimes to identify and prioritise management actions. • On-going monitoring of the butterfly community and the habitat in and around the Mt. Piper area undertaken to continuously adapt management to new knowledge as it becomes available. 	
<i>Action</i>	<i>Details</i>	<i>Responsible agents</i>
Identify research priorities and facilitate their implementation.	Liaise with entomologists and university researchers to encourage research on the habitat requirements and biology of the rare and uncommon butterfly species and the community at Mt. Piper.	DSE Biodiversity & Ecosystem Services (DSE BES)
Undertake detailed population monitoring and collect demographic.	Liaise with entomologists and university researchers to encourage intensive, systematic monitoring of butterfly species and populations.	DSE BES DSE Statewide Services - North East (DSE SwS - NE)

Undertake research into management requirements.	Conduct risk analysis of wildfire and controlled burning and develop fire management guidelines for the Mt. Piper Reserve. Assess appropriate fire regimes to maintain optimum habitat.	DSE SwS - NE
--	---	--------------

<i>Standard objective</i>	<i>Targets</i>	
To maintain or increase community awareness and support.	<ul style="list-style-type: none"> • Opportunities to involve BEAM and Friends of Mt. Piper in ongoing activities provided. • A range of measures have been used to communicate to local groups, council and public authorities the importance of the area for the Butterfly Community No. 1. 	
<i>Action</i>	<i>Details</i>	<i>Responsible agents</i>
Develop, publish and distribute educational, technical or publicity material and/or displays.	Continue an awareness, education and information program for the owners of adjoining land, the local community, council, visitors and public authorities about the significance of the butterfly community and Mt. Piper and encourage the sympathetic use and management of land adjoining the community.	DSE SwS – NE
Involve community groups and volunteers in recovery activities.	Involve groups such as BEAM (Broadford Environmental Action Movement) and Friends of Mt. Piper in on-ground works as appropriate.	Parks Victoria

<i>Standard objective</i>	<i>Targets</i>	
To maintain or improve the condition of the community.	<ul style="list-style-type: none"> • Feasibility of the establishment options of a community at a new location determined. 	
<i>Action</i>	<i>Details</i>	<i>Responsible agents</i>
Identify potential sites for reintroduction / translocation.	Conduct a feasibility study into establishment options for the community at another suitable site, if a suitable site is found elsewhere.	DSE SwS – NE

<i>Standard objective</i>	<i>Targets</i>	
To maintain or improve the extent of the community.	<ul style="list-style-type: none"> • Liaison undertaken with adjoining landholders to restrict stock access, resulting in existing habitat being at least maintained or preferably enhanced. 	
<i>Action</i>	<i>Details</i>	<i>Responsible agents</i>
Erect/maintain fence to exclude domestic stock	Liaise with owners of adjoining land to ensure adequate fencing around the perimeter of the Mt. Piper Education Reserve. Encourage, and where possible assist, landholders to fence around the community on freehold land.	Parks Victoria

<i>Standard objective</i>	<i>Targets</i>	
To maintain or improve the physical environment.	<ul style="list-style-type: none"> • Introduced animals and environmental weeds prevented from impacting on the habitat of the Butterfly Community. • Extent of suitable habitat increased by 10% to include areas outside the existing reserve. 	
<i>Action</i>	<i>Details</i>	<i>Responsible agents</i>
Control introduced animals.	Liaise with owners of adjoining land in implementing controls on rabbits and goats.	Parks Victoria
Manage environmental weeds.	Control environmental weeds in Mt. Piper Reserve and liaise with adjoining land managers in implementing	Parks Victoria

	controls on weeds, e.g. South African Fireweed, phalaris and thistles.	
Prevent habitat loss.	Ensure management of hilltop infrastructure is sympathetic with maintaining and or enhancing key habitat components.	Parks Victoria
Restore habitat.	Investigate need for further conservation and enhancement of native vegetation corridors linking Mt. Piper with other areas of natural vegetation, to mitigate the long-term 'island' effects on the community at Mt. Piper, and elsewhere if found.	DSE SwS – NE

References

- Amos, N. 1998 *Major Project Review, Project No. 392: Recovery Plan, Research Phase, for a threatened butterfly community at Mt. Piper in central Victoria*. Unpublished report to the Department of Natural Resources and Environment, Victoria.
- Britton, D.R. & New, T.R. 1993 *Communities of diurnal Lepidoptera in central Victoria, with emphasis on the Mt. Piper region, Broadford*. Department of Conservation & Environment: Melbourne, Australia. Unpublished.
- Britton, D.R. & New, T.R. 1992 *Ecology of the butterfly and ant community at Mt. Piper, Victoria*. Department of Conservation & Environment: Melbourne, Australia. Unpublished.
- Britton, D.R., New, T.R. and Jelinek, A. 1995 Rare lepidoptera at Mt. Piper, Victoria - the role of a threatened butterfly community in advancing and understanding of insect conservation. *Journal of Lepidopterists' Society* **49**(2): 97 -113.
- Costin, B. 2007 *Golden Sun Moth grazing management plan, Mt. Piper*. Unpublished report to the Department of Sustainability and Environment, Victoria.
- Goulburn Broken Catchment Management Authority 2004 *A Wildlife Guide for Landholders in the Upper Goulburn and Broken Catchments*. GBCMA, Shepparton.
- Jelinek, A. 1992a *Recovery Plan, Research Phase, for a threatened butterfly community at Mt. Piper in central Victoria*. Unpublished report to the Australian Nature Conservation Agency, Canberra.
- Jelinek, A. 1992b *Draft critical habitat determination for Butterfly Community No. 1*. Department of Conservation and Environment, Victoria.
- Jelinek, A. 1992c *Mt. Piper Education Reserve*. Department of Conservation and Environment, Victoria.
- Jelinek, A. 1993a *Nomination of the Mt. Piper Butterfly Habitat for the the Register of the National Estate*. Unpublished report to the Australian Heritage Commission, Canberra.
- Jelinek, A. 1993b *Conservation significance of the Mt. Piper habitat. Submission to the Independent Panel re Broadford Planning Scheme, L8*. Unpublished report to Broadford Shire Council.
- Jelinek, A. 2005 *Ecological significance and management of Mt. Piper Nature Conservation Reserve*. Unpublished report to the Department of Sustainability and Environment, Victoria.
- Jelinek, A., Britton, D.R. and New, T.R. 1994 Conservation of a threatened butterfly community at Mt. Piper, Victoria. *Memoirs of the Queensland Museum* **36**(1):115-120.
- Jelinek, A. and White, M. 1996a *Action Statement No. 70, Large Ant-blue Butterfly, Acrodipsas brisbanensis*. Department of Natural Resources and Environment, Victoria.
- Jelinek, A. and White, M. 1996b *Action Statement No. 71, Small Ant-blue Butterfly, Acrodipsas myrmecophila*. Department of Natural Resources and Environment, Victoria.
- New, T.R. 1998 *Recovery Plan for a threatened butterfly community at Mt. Piper in central Victoria* (final draft). Department of Natural Resources and Environment, Victoria.
- O'Dwyer, C. and Attiwill, P.M. 2000 Restoration of a native grassland as habitat for the Golden Sun Moth *Synemon plana* Walker (Lepidoptera; Castniidae) at Mt. Piper, Australia. *Restoration Ecology*, **8**(2): 170-174.
- Register of the National Estate 1995 Aussie Heritage Website:
<http://www.aussieheritage.com.au/listings/vic/Broadford/MountPiperButterflyHabitat/17360>
- Webster, A. (in prep) *Draft Flora and Fauna Guarantee Action Statement No. 106 Golden Sun Moth Synemon plana*. July 2009. Department of Sustainability and Environment., Victoria