



MICALONG SWAMP FLORA RESERVE No.70

WORKING PLAN

Hume Region



Photo by Mark Butz 2003

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1. INTRODUCTION

This plan has been prepared in accordance with the terms of section 25A (5) of the Forestry Act 1916 with the objective of providing for the future management of that part of Bondo State Forest No. 967 and Micalong State Forest No. 593, set aside as Micalong Swamp Flora Reserve No. 70¹.

Micalong Swamp Flora Reserve forms part of the dedicated reserve system for the Southern Region Forest Agreement.

2. KEY VALUES OF THE RESERVE

The dominant feature of the Micalong Swamp Flora Reserve is Micalong Swamp. The key identified values of Micalong Swamp Flora Reserve are as follows (primarily from Butz 1981) –

- It is an unusual example of montane peatland and one of the largest remaining on the south –western slopes of NSW. Micalong Swamp has been identified as a wetland of national importance (Environment Australia, 2001. *A Directory of Important Wetlands in Australia*) and is registered on the National Estate (database number 013696).
- The swamp acts as a natural reservoir and filtration system to Micalong creek and the Goodradigbee River downstream.
- Indigenous values of National Estate significance. Whilst several sites have been identified on the Forests NSW and NPWS Sites Registers it is anticipated many more sites exist within the Flora Reserve. Topographic location and the potential for food sources and materials strongly supports the concept of the swamp being an intrinsic part of Indigenous cultural practices.
- The number and type of ecotones occurring within the Reserve.
- Wildlife habitat for the range of species, including threatened species the Northern Corroboree Frog *Pseudophryne pengilleyi*, the Broad-toothed Rat *Mastacomys fuscus* and the Yellow-bellied Glider *Petaurus australis*.
- Potential for future paleobotanical studies on the accumulating peat deposits.
- Cultural heritage sites relating to exploration, settlement and goldmining activities since the 1800's.

¹ Bondo and Micalong State Forests, together with Billapaloola, Red Hill and Wee Jasper State Forests are generally known collectively as Buccleuch State Forest No. 929 and will be referred to as such in this plan. Although it was intended that these State Forests be rededicated as Buccleuch SF, that has not taken place to date.

3. DESCRIPTION OF THE RESERVE

Refer to Appendices 1 –2 for locality, boundary and topographic maps.

3.1 Location

Micalong Swamp Flora Reserve is 25 kms east of Tumut and 57 kms west of Canberra. Road access is via Brindabella Road (Canberra – Tumut) or Lacmalac and Argalong Roads (Tumut). The Reserve is located within Buccleuch State Forest, part of the Hume Region of Forests NSW.

3.2 Geography

Micalong Swamp Flora Reserve includes an area of 526 ha, with elevations of about 950 - 980m ASL in the swamp, rising to around 1,050m ASL in the native forest on the southern side of the Reserve.

The Reserve has a predominantly northerly aspect.

The Reserve contains the Micalong wetland on Micalong Creek, and a section of Chinamans Creek. Micalong Creek is a major tributary to the Goodradigbee River, which flows into Burrinjuck Dam.

The southern end of the Reserve is approximately oval in shape, with the adjoining upper catchment being native forest sections of Buccleuch S.F. This area is adjacent to the northern end of Kosciuszko National Park, including the Goobarragandra Wilderness. The Reserve is approximately 1,500m wide and includes forested areas adjacent to the swamp and several internal roads.

The northern end of the Reserve is very narrow and elongated in shape, surrounded by road and then extensive areas of pine plantation. In most of this end the Reserve is only wide enough to contain the swamp area itself and a narrow adjoining margin.

3.3 Geology and Soils

The geology forming the basement of Micalong Swamp consists of volcanic rocks (the Goobarragandra Volcanics), shallow marine sediments as well as some basic intrusive rocks. These date to the Silurian Period – 430 to 410 million years ago. The tectonic setting at the time was one of colliding plates, where an ocean plate to the east was colliding with the continental mass to the west. This setting was characterised by widespread and strong earth movements, including folding at and near the collision margin, localised rifting, the formation of shallow seaways, faulting, explosive volcanism and intrusion of basic igneous rocks (Monica Yeung, pers. comm.) Present elevation in the region occurred through further uplift in the Tertiary period.

Most of the headwaters of Micalong Creek is comprised of the Micalong Swamp Basic Igneous Complex, a collection of stocks and dykes of gabbro and dolerite derived from melting in the uppermost mantle (FCNSW 1985).

Along the lower reaches of the swamp there are outcrops of the Broken Cart Granodiorite, particularly on the eastern side of the swamp.

The swamp lies within an elevated plateau called the Goobarragandra Block, with the swamps relatively large size thought to be a consequence of bedrock impeding drainage. Parts of the plateau have been deeply dissected by water, however around the swamp the degree of dissection by Micalong Creek has been low (Butz 1981).

Butz (1981) reports a considerable depth of Quaternary (ie. the past 120,000 years) alluvium within the swamp, and an extensive deposit of peat accumulated within the swamp, to depths of 2 – 3 metres in some locations.

3.4 Climate

Climatic figures are based on long term average weather records from Bondo Forestry Headquarters, located about 8km from the Reserve. The average annual rainfall for the area is 1,240mm. Mean daily temperature ranges from maximums of 31 degrees C in the summer months to a 1 degree C minimum in winter. Given the Reserve is 100 – 200m higher than Bondo Forestry Headquarters, it is expected that the mean minimum temperature is lower, and falls below zero in winter. Frosts and fogs are common during winter months, as are light to moderate falls of snow. Snow does not remain on the ground for long periods of time.

Night time inversion layers form over the swamp, apparently caused by the shallow saucer-shape of the valley. This “cold air lake” effect prevents the establishment of trees on or immediately around the swamp, resulting in an inverted treeline, with woodland fringing on the grasslands, and forest on the upper slopes (Forestry Commission, 1987).

3.5 Vegetation

Refer to Appendix 3 for the Micalong Swamp Flora Reserve flora species list. This list is not exhaustive and it is anticipated that more species would be added with further survey work.

There are three vegetation zones within the Flora Reserve – the swamp, the dryland/swamp fringe, and the surrounding woodland/open forest. Between each zone is an ecotone – described by Butz (1981) as a “tension zone” between the two communities, creating increased diversity and population size of some species. There are also some areas of planted and wildling pine (*Pinus radiata*) in the lower reaches of the swamp within the Reserve.

The swamp itself is dominated by sedges (*Carex spp.*) where very wet, and a tussock grassland of *Poa spp.* in drier areas. The edges and inlets of the swamp harbour a diverse flora, including *Sphagnum* bog, reeds (*Phragmites spp.*) and scrub and heath with tea tree (*Leptospermum spp.*) and native heaths (*Epacris spp.*) The occurrence of both *Carex* fen and *Sphagnum* bog in a montane swampland is an unusual and notable feature of the swamp.



Photo by Gabriel Wilks

Dryland/swamp fringe ecotone within Flora Reserve, pine plantation in background.

The dryland/swamp fringe contains a complexity of herbland flora. Introduced and noxious Blackberry (*Rubus fruticosus*) is found within this area on the northern boundaries of the swamp.

Above the swamp is Snow Gum (*Eucalyptus pauciflora*) and Black Sallee (*E. stellulata*) woodland, with the occasional Candlebark (*E. rubida*), Mountain Swamp Gum (*E. camphora*) or Mountain Gum (*E. dalrympleana*). The understorey includes a floor of Snow Grass (*Poa* spp.) and various herbs, and a shrublayer of tea tree (*Leptospermum* spp.), *Hakea* spp, blackberry (*Rubus fruticosus*), heaths (*Epacris* spp.) and wattles (*Acacia* spp.).

This fringing woodland grades upslope into an open sclerophyll forest dominated by Mountain Gum and Snow Gum, with the occasional Candlebark or Narrow-leaved Peppermint (*E. radiata* ssp. *robertsonii*). The understorey includes a fairly sparse shrub layer, with numbers of *Blackwood* (*Acacia melanoxyton*), *Creek Wattle* (*A. siculiformis*) and *Daviesia* spp. There are also patches of blackberry. The floor is made up of Snow Grass and various herbs.

Further upslope, the forest is dominated by Mountain Gum and Narrow-leaved Peppermint. Also present are Snow Gum, Candlebark, and Ribbon Gum (*E. viminalis*) (Forestry Commission of NSW 1987). The understorey varies from dense growth of shrubs from the Pea family to an open grassy understorey of *Poa* species.

In some elevated grassy areas within the swamp, a number of introduced grass species, particularly *Holcus lanatus* and *Hypercharis radiata*, are present and can be patchily abundant.

3.6 Fauna

Appendix 4 contains a list of fauna species known to occur in the Reserve. It is anticipated this list will increase as more survey work is conducted.

Butz (1981) describes ecotones within the Reserve as providing habitat for a wide range of faunal species – not only for those found in adjoining communities but also for species that would be found only in the ecotone. The long narrow shape of Micalong Swamp with many inlets leads to a high ratio of ecotone area.

The Northern Corroboree Frog (*Pseudophryne pengilleyi*) which is listed as Vulnerable (Schedule 2, Threatened Species Conservation Act 1995) has been recorded in Micalong Swamp Flora Reserve. This species utilises two distinct habitat types: a breeding season (summer) habitat associated with pools and seepages in Sphagnum bogs, wet heath, wet tussock grasslands and herbfield in low-lying depressions; and a terrestrial non-breeding (late summer – winter) habitat in adjacent forest, sub-alpine woodland and heath (NSW NPWS 2001). Populations of this species are found elsewhere in Buccleuch State Forest, such as Gass Creek, located to the east of the Reserve. Other locations of the Northern Corroboree Frog in the Australian Alps National Parks (for example Ginini Flats Wetlands in the ACT) were severely impacted by the expansive and severe bushfires in January 2003. Forests NSW is represented on the Recovery team for the Northern Corroboree Frog.

Another Vulnerable species recorded in the southern end of the Flora Reserve is the Yellow-bellied Glider (*Petaurus australis*). This arboreal mammal is found in tall moist eucalypt forest where sufficient tree hollows for nesting occur, foraging primarily on eucalypt nectar and sap (NPWS 2003).

Scats of the Broad-toothed Rat (*Mastacomys fuscus*) were identified within the Micalong Swamp Flora Reserve and at 14 other sites in surrounding State Forest - including 1 site within pine plantation (Belcher, in prep.). The Broad-toothed Rat is listed as Vulnerable (Schedule 2, Threatened Species Conservation Act 1995). Preferred habitat of the Broad-toothed Rat is characterised by a moderate to dense cover of grasses, sedges or shrubs, and all 15 scat sites were above 1000m and cold air drainage areas (Belcher, in prep.). Belcher suggests that the long term survival of the Broad-toothed Rat in Buccleuch S.F. may be dependant upon the control of introduced herbivores, particularly brumbies and by excluding cattle grazing in wetlands.

In a few localised areas rabbit populations may be restricting the development of native vegetation and the presence of native herbivores. The presence of rabbits may be impacting on the Broad-toothed Rat through competition of resources and by attracting predators to the locality (NPWS 2002).

Introduced predators, particularly foxes and feral cats are likely to occur within the Flora Reserve and predate on small mammal and bird species, including the Broad-toothed Rat and Yellow-bellied Glider. Brumbies are present in Buccleuch State Forest and may impact on the flora and fauna species within the Flora Reserve.

The Reserve is located on the northern edge of a vast area of relatively undisturbed natural environments, including the native forest sections of

Buccleuch State Forest and the northern end of Kosciuszko National Park (including the Goobarragandra Wilderness). These environments support a broad array of fauna.

4. HISTORY

4.1 Indigenous Cultural Heritage

Micalong Swamp Flora Reserve encompasses an area that was traditionally used and occupied by Aboriginal people / groups of the Wiradjuri and Wolgalu. These groups had cultural, spiritual and clan obligations with the high country which they maintained, respected and cared for over thousands of years.

Physical evidence of prior use and occupation of the area by Aboriginal clans before the advent of European settlement is found in the recording of occupation sites more commonly referred to as open camp sites in and around Micalong Swamp Flora Reserve.

Many of the stone tools found at these occupation sites are of material not available locally, which further evidences the trade and transportation of raw material from one location to another.

Oral accounts of the area from the traditional Aboriginal custodians talk of the preparations that took place before the clans progressed to the Bogong Mountain Ranges for a season of ceremonies and cultural exchange.

These preparations included the manufacture of stone tools for trading, the preparation of decorations for the many ceremonies that were to occur and the gathering of the available food resources for the term of their occupation in the area now called Micalong Swamp.

Ceremonies of a spiritual nature linked to traditional practices also occurred, engaging and encompassing both traditional mens and womens business before they made the journey to the Bogong Ranges. Knowledge is still retained by the local Aboriginal people of these special places.

Aboriginal cultural values of the area are still maintained today through cultural heritage education and employment programs and opportunities being developed in partnership with Forests NSW and the local Aboriginal people.

The Indigenous values of Micalong Swamp are recognised by the Australian Heritage Commission by inclusion on the National Estate Register.

This section of Micalong Swamp Flora Reserve Working Plan was written by Alice Williams, Forests NSW Aboriginal Co-ordinator, Tumut.

4.2 Non-Indigenous Heritage

Explorers Hume and Hovell are recorded as the first non-Indigenous people to enter the area in 1824. They encountered Micalong Swamp on 31st October 1824. Hovells journal records this as a “Swampey Valley”, and estimates the length of the swamp to be 3 – 4 miles. The swamp was used as a navigational target on Hume and Hovells return trip, which they reached again on the 13th January 1834. Their path is now retraceable on the Hume and Hovell Walking Track which was opened in 1988 and crosses Micalong Swamp.

In 1831 Dr William Bland published an account of Hume and Hovells 1824 expedition written from Hovells journal and notes. Bland (or possibly as edited by Hovell) described a wide wet swamp that was “covered with a species of moss” which suggests that *Sphagnum* populations may have declined with land management practices since that time. Also the swamp had “a considerable stream of water running along its centre” – not unlike today, so possibly not that significantly altered by mining and grazing activities.

The subsequent use of the Reserve is not well documented. However, the Tumut Valley has been settled since 1829, with an influx of settlers and miners from the late 1850’s onwards due to the discovery of gold at Adelong and Kiandra (1860).

A small section of the Micalong Creek headwaters was dedicated as a Water Reserve (No. 3801) in 1887 (CMA 1964). This may have been in connection with the water sluicing activities for gold mining, which would have also resulted in diversions/alterations to the natural water flow in the swamp and associated tributaries, or as a water source for domestic stock.

The 1899 Napier Parish Map shows the general area as being the Goodradigbee Gold Fields. Micalong Swamp and Creek is part of Nottingham Forest No. 1004, that was resumed on the 26th September 1882 and covered an area of 58 000 acres. Chinamans Creek is not named on this map, but there are 3 Mining Permits identified along Micalong Swamp. The headwaters of Micalong and Chinamans Creeks were the site of mining and sluicing operations to just before World War 1. The 1964 Parish Map for Napier locates a Gold lease on Chinamans Creek – the period of activity for this lease is unknown. Evidence of these operations can still be found in the area (Warwick Hull, pers comm.).

A bridle track to Tumut and Shaking Bog is marked on the 1899 Napier Parish Map, which probably became the Tumut to Kiandra Travelling Stock Route (T.S. & C.R. 57136) which crossed the head of the swamp. This route connected with the Broken Cart Track, which provided the main access to summer grazing leases in the Snowy Mountains. This map also marks Spicers Gap, an ‘old track’ that now may be part of Argalong Road.

The majority of the swamp was freehold or leased property and regularly grazed and probably regularly burnt. There are four Conditional Purchase blocks around the Swamp allocated to Patrick, Phillip and James Denning in 1884 and 1887. J. U. Webb had a Settlement Lease of 5698 acres on the eastern and southern sides of the swamp. Grassy areas and exotic plant species in some areas surrounding the swamp suggest the location of huts consistent with these land occupations, and ruins of huts, firehearths and stockyards are found within the Flora Reserve (Warwick Hull, pers comm.). Several old wooden fencelines traverse the swamp and are testimony to previous landuses on the swamp.

Forester G.A. Mc Arthur conducted extensive reconnaissance surveys on horseback in the Buccleuch/ Wee Jasper area in 1950, as part of assessment for potential pine plantation development. Portion 1 and 21, Parish Napier, County Buccleuch was identified as being owned (presumably this meant Settlement Lease) by the estate of J.U. Webb, which covered a large area of what is now the Flora Reserve.

Special and Conditional Leases still existed over and adjacent to the swamp. McArthur recorded vegetation / tree species and volumes of sawlogs present. With regards to the areas around Micalong Swamp that are now pine plantation, he noted the following - the eastern side of the swamp was clear grazing country but with *E. pauciflora*, *E. dalrympleana* and *E. stellulata* immediately adjacent to the swamp. The western side of the swamp was Nil (presumably no tree overstorey), *E. camphora*, *E. stellulata* and *E. pauciflora*. He also noted the newly constructed Brindabella Road was a “Jeep Track”, and the crossing on the southern edge of the swamp was “Bridle only” and a “bad crossing”.

4.3 Forest Management

The southern end of the Flora Reserve, including Chinamans Creek, was part of Micalong State Forest which was dedicated in 1917. The major component of what is now the Flora Reserve was dedicated as part of Bondo State Forest in 1961.

It is likely grazing continued through to 1972 although no permits were issued. Grazing permits were issued over the period 1972 – April 1983, ceasing in 1983 in view of the proposed establishment of a Flora Reserve.

Illegal grazing has occurred since that time, with periodic problems concerning straying stock.

The southern, native forest portion of the Reserve and the surrounding areas were logged for the ten year period prior to dedication as a Flora Reserve. Mountain Gum was the main species removed.



Photo by Gabriel Wilks

Micalong Swamp FR in foreground, adjacent *Pinus radiata* plantation in background

The northern lower stretch of the Reserve has *Pinus radiata* planted to its boundary, and in a few areas, within the boundary. The plantation adjacent to the eastern boundary was established in 1971 and 1974 as part of the Gass Creek Section. The plantation on the western boundary was established in 1969 as part of the Hallorans Section (Forestry Commission 1987), harvested in 2002 and replanted in 2003.

In 1979 applications were lodged for mining leases over Micalong Swamp, for the purpose of extracting peat and certain minerals. The applications served to focus attention on the swamp, leading to some studies by the National Parks and Wildlife Service of NSW. As a result of the findings of these studies (Butz 1981), the area now known as Micalong Swamp Flora Reserve was set aside, less formally as a Forest Preserve in 1983, with a view to its ultimate notification as a Flora Reserve. Micalong Swamp Flora Reserve was gazetted in June 1985.

A Micalong Swamp Flora Reserve Working Plan was finalised in 1985 (Forestry Commission of NSW 1985). This Plan identified the values and future aims of management for the Reserve, with emphasis on preserving the native flora and fauna and minimising artificial disturbance within the Reserve.

An area of 980 hectares, including all of the Flora Reserve plus additional areas of native forest was gazetted on the National Estate in 1986.

The Hume and Hovell walking track was established by the Department of Lands in 1988. Permission was granted to construct a boardwalk and footbridge across the swamp. The track is now managed by the Department of Lands, with the permission of State Forests of NSW for the sections within State Forest.

The Reserve was included as part of the dedicated Comprehensive, Adequate and Representative reserve system for the Southern Region Forest Agreement in 2002.

4.4 Fire

It is probable there was a history of deliberate and regular burning in spring or summer months at the swamp by the Wiradjuri and Wolgalu clans. Fires in the vicinity of Micalong Swamp were recorded by Hume and Hovell on 31st October 1824 – “Here we found some good grass, as the natives had burned the old grass some short time previously”(Hovell 1824).

Subsequent white settlement in the area would have seen regular burning by graziers in spring to encourage fresh grass growth for stock. With the saturated nature of the swamp base, it is believed that the peat deposits were not significantly affected by these fires. The percentage and distribution of *Sphagnum* and grass species within the swamp may have been altered from those regular burning and grazing practices.

Since the establishment of surrounding pine plantations, the natural fire regime in Buccleuch State forest has been considerably modified – that is, reduced to virtually nil. This is a deliberate consequence of rapid detection and response to any fire outbreak (predominantly lightning strikes) by Forests NSW personnel.

The 1985 Micalong Swamp Flora Reserve Working Plan reports only two fires between 1965 – 1985 within the Reserve. Both were small fires, each covering an area less than 1 ha. Butz (1981) recorded the impact of regular fire (presumably of low intensity) on the understorey plant species in the Narrow-leaved Peppermint - Mountain Gum open forest within the Reserve. The presence of timber fenceposts of considerable age within the centre of the swamp indicates fire has not occurred there for an extensive period of time.

Since 1985 there is one record of a small fire (<0.5ha) being attended by Forests NSW personnel within the Reserve.

5. CURRENT USAGE

Current usage of the Reserve by people is low. There is evidence of the occasional recreational camp, fishing and bushwalkers using the Hume and Hovell Track. Micalong Swamp is one of the most significant landscape features along the Hume and Hovell Walking Track (Warwick Hull, Hume and Hovell Walking Track Co-Ordinator, Dept of Lands). There are no facilities provided within the Reserve boundaries.

There is potential for increased Aboriginal cultural and educational activities within and adjacent to the Flora Reserve. This includes future employment opportunities to implement the actions identified in this working plan.

6. MANAGEMENT

6.1 Objectives of Management

- To protect the Micalong Swamp ecosystem.
- To protect native flora and fauna species in the Reserve.
- To protect examples of forest ecosystems in the area.
- To protect the Aboriginal cultural and archaeological values of the Reserve.
- To include the local community, particularly the Indigenous community, in the management of the Reserve.
- To provide for the continued protection of the Reserve and neighbouring areas from damaging wildfire and other agents.
- To maintain reference stands and provide for scientific study consistent with the protection of the area, including the development of an understanding of successional growth processes within the natural forest and as a reference for assessing the effects of alternative land use in surrounding areas.

6.2 Management Issues

The following issues will influence future management priorities. Over time these issues will change and require review. Many of the works program priorities identified in Appendix 5 are in response to these issues.

6.2.1 Available archaeological and scientific data

There is a limited amount of data available on flora and fauna species occurring within the Reserve. The potential for palaeobotanical (plant fossil and ancient vegetation) studies has been identified as being significant. Analysis of the peat may reveal important information on Aboriginal culture and the impact of changing fire regimes and grazing on the swamp.

Of the known threatened species within or in close proximity to the Reserve, future research outcomes may alter management practices. For example, with the Northern Corroboree frog, proactive practices such as creating or cleaning out breeding pools within forest areas to assist population recruitment may be adopted (Frank Lemckert, Research Officer FNSW). The impact of hazard reduction burning in forest on this species is unclear, and impact may vary significantly between seasons. Further research may result in better guidelines regarding appropriate fire management prescriptions.

There is considerable potential for additional 'at risk' plant and fauna species to be located within the Reserve following further investigations.

Several archaeological sites of ruins from the mid 1800's on have been located within the Reserve, and further surveying is required to assess significance and appropriate management prescriptions.

6.2.2 Human impact

Whilst current and past land management practices have impacted the Flora Reserve, and specifically the swamp, generally the area is considered reasonably intact (Australian Heritage Commission, undated). The removal of native vegetation and replacement with pine plantation would have had an (unmeasured) impact on flora and fauna species diversity and populations and hydrology of the area. Past fire, grazing, mining and sluicing may have also impacted on the peat.

Rubbish tends to accumulate on an old gravel storage area near the corner of Micalong Swamp Road and Brindabella Road from camping activities and there is evidence of recreational 4WD vehicles leaving established tracks and entering the swamp, impacting on the swamp vegetation and drainage patterns. There is anecdotal evidence of illegal harvesting of peat for domestic garden use.

Recreational use of the Reserve is likely to remain static unless Brindabella Road from Tumut to Canberra is upgraded. Future development of low level educational/recreational facilities may occur in association with the Hume and Hovell Track, following appropriate environmental assessment. Recreational access to the Flora Reserve is not guaranteed and could be relocated to skirting the boundary of the Reserve if required.

The level of usage for educational and cultural purposes may increase in the future with increasing community liaison and employment opportunities with the local Aboriginal community.

6.2.3 Road access and adjacent land management

The roads and tracks bounding and within the reserve are of varying condition. Access is important for quick fire suppression, and improved drainage will reduce the potential for erosion. Adequate roading reduces the likelihood of vehicles traversing off road and impacting on native vegetation. Satisfactory access for harvesting vehicles to other areas of the forest is also required.

There is no identified need to develop further access tracks, however the condition of existing roads should be improved. Past assessment has indicated some tracks within the Flora Reserve could be closed and rehabilitated. A review of internal roads should be conducted. Rehabilitation of compacted loading sites and gravel storage areas should occur.

Management of the adjacent pine plantation by Hume Region must recognise the Forest Management Zone 1 values of the Flora Reserve. Operations in adjacent areas will be performed in a manner not to cause damage or disturbance to the Reserve. Logs must not be stockpiled or loading sites constructed within Flora Reserve boundaries, and if possible placed on the opposite side of the boundary roads.

Native forest and Micalong Creek immediately downstream of Micalong Swamp Flora Reserve to the north of Brindabella Road are outside the boundaries of the Flora Reserve, however management of these areas should be consistent with the values within the Flora Reserve.

6.2.4 Weeds

Noxious weeds such as St Johns Wort (*Hypericum perforatum*) and Blackberry occur within the Flora Reserve. Infestation by pine (*Pinus radiata*) wildlings is predominantly on the northern edges of the Reserve. Surrounding pine plantation and native forest provide evidence of the aggressively invasive nature of blackberry, which requires active and constant management to prevent a major threat to the swamp ecosystem developing.

Blackberries can be sprayed as per best management practice. Removal of planted and wildling pine within Reserve boundaries will require a range of techniques, which will be determined by size of tree, safety and potential impact on surrounding vegetation. Where possible, removal by cutting and lifting with mechanical harvesting machinery will occur. This may require harvesting machinery to enter the boundaries of the Flora Reserve for this one-off operation. Chainsaw felling or stem injection of some small to large trees will be required. Small trees may also be removed with a brushcutter, and seedlings pulled by hand.

Several Black Willows (*Salix nigra*) have been removed from the Flora Reserve by Hume and Hovell Track workers in the past. The reintroduction of this noxious species will require immediate action.

The distribution and rate of spread of St Johns Wort and other introduced species should be monitored prior to commencing any eradication program.

6.2.5 Feral animals

Predation by the european red fox (*Vulpes vulpes*) and feral cat (*Felis catus*) are key threatening processes (Threatened Species Conservation Act 1995), having a major impact on many small mammal and bird species populations including threatened species such as the Broad-toothed Rat. Fox and cat populations should be monitored and baiting or trapping programs conducted. To be effective, any fox or cat baiting program will need to be done in association with programs on adjacent land.

There is potential for wild pigs (*Sus scrofa*) to damage the swamp ecosystem, and therefore also impact on the Northern Corroboree Frog. Any indication of their presence should initiate a trapping/shooting program.

Rabbits are present on some areas within the Reserve and may be having an impact on threatened species through habitat competition and the inhibition of understorey development.

Brumbies have the potential to impact native flora and fauna within the Reserve. Impact should be monitored and a trapping program instigated if required.

6.2.6 Fire

The impact of uncontrolled wildfire on the wildlife in the Flora Reserve would be severe, with alternative habitat sources (particularly for those species found within the transitional ecotones) either low in availability or non-existent. There would be high exposure to invasion by weeds and feral animals. There is also responsibility for preventing wildfire from escaping from the Flora Reserve and spreading to adjacent resources, including pine plantation.

An unfavourable fire regime has been identified as having considerable impact on the Yellow-bellied Glider, through reduction of available food resources and increased vulnerability to regionally catastrophic events. Prescribed burning regimes need to “ensure the enhancement and maintenance of floristic and structural diversity of the vegetation within known or potential habitat” (NPWS 2003) for protection of this species.

Both wildfire and prescribed burning have the potential to impact on the Northern Corroboree frog. Prescribed burning in open forest areas will be excluded from areas within 500 m of recorded sites of the Northern Corroboree Frog.

Within the swamp and in the transitional ecotone, there is greater potential for significant impact on flora and fauna species. In these areas all fire is to be prevented or extinguished unless it is part of a *bone fide* research study conducted in a very limited manner until potential impacts can be fully assessed.

In the surrounding native forest within and adjacent to the Reserve, hazard reduction burning is to occur as an essential strategy for wildfire prevention. Burning is to be on a block basis to ensure adjacent areas of unburnt forest. Long term burning practices will need to be developed in conjunction with analysis of the peat and flora and fauna studies.

6.2.7 Grazing

Whilst no grazing has been authorised in the Reserve since dedication as a Flora Preserve in 1983, intermittent illegal grazing by straying stock does still occur.

6.3 Future Management

Micalong Swamp Flora Reserve will be managed by Hume Region of Forests NSW in consultation with the local Indigenous community.

The following management priorities will be adopted:

- Maintenance of the current forest condition in the Reserve to protect key values, consistent with the dynamic nature of forest ecosystems.
- Maintenance of existing roads and trails as required consistent with the objectives of the Reserve. Boundary roads to be graded and gravelled as required to maintain access for firefighting and other management purposes as well as visitor use.
- Occupation and Special Purpose Permits will only be issued for activities consistent with the objectives of the Reserve. Hunting is permitted within the Reserve by holders of a Game Licence issued under the *Game and Feral Control Act 2002*.
- The boundary of the reserve must be checked and if necessary its location confirmed in the field, prior to commencement of any forestry operations in the vicinity of the Reserve.

Under the Forest Management Zoning (FMZ) system Micalong Swamp Flora Reserve is zoned FMZ 1 and therefore contributes to the dedicated (formal) CAR reserve system in the Southern Region (Tumut subregion). Management is to meet the requirements of JANIS dedicated (formal) reserves (refer to the Southern Region Forest Agreement 2002 for details).

- Minister for Forestry approval by notice in the Gazette is required for new declarations, revocations or boundary amendment.

6.3.1 Activities not permitted

The following activities are not permitted within Micalong Swamp Flora Reserve:

- Timber harvesting *
- Removal of forest products and materials
- Grazing by domestic stock
- Gravel or hard rock quarrying
- Mineral and petroleum exploration and mining

*Section 27F of the Forestry Act 1916 No. 55 authorises issuing of a timber licence where the conditions and limitations of the licence are in accordance with the working plan for the flora reserve. This working plan for Micalong Swamp Flora Reserve includes a once-only harvesting of *Pinus radiata* from the Reserve.

6.3.2 Activities permitted under standard conditions

The following activities will be permitted subject to standard conditions approved by the Regional Manager and consistent with the Integrated Forestry Operation Approval, Codes of Practice, Operational Circulars, protocols, Licenses and Management/Recovery Plans:

- Scientific studies (eg, fauna surveys including trapping)
- Maintenance of existing roads and fire trails
- Limited tree removal for safety reasons or weed control only.
- Feral animal and noxious weed control
- General access for activities such as bush walking and photography
- Suppression of wildfire

6.3.3 Activities permitted under special conditions

The following activities will be permitted subject to special conditions approved by the Regional Manager and consistent with the Integrated Forestry Operation Approval, Codes of Practice, Operational Circulars, protocols, Licenses and Management/Recovery Plans:

- **Prescribed Burning**

Prescribed burning can be conducted in open forest areas except within 500m of a recorded site of the Northern Corroboree Frog.

In areas within or immediately adjacent to the swamp, burning may only take place with the following conditions –

1. Assessment of timing and potential impact on Northern Corroboree frog habitat. No area within 500m of a recorded site is to be burnt.
2. A once only burning of residual pine logs will occur on the northern edges of the swamp between the swamp and the road following cutting of pine trees. Where possible (ie. minimal soil disturbance and physically possible), pine waste will be removed and burnt or mulched outside the Flora Reserve boundary.
3. Within the swamp and adjacent ecotone zone, a *bone fide* research program is required for burning to occur. Impact on flora and fauna plant species and peat will require close assessment.

- **Development of educational and recreational facilities**

Development of low level recreational facilities in conjunction with Department of Lands on the Hume and Hovell Track may be permitted following appropriate environmental impact assessment and community stakeholder consultation.

- **Construction of new roads and fire trails**

It is very unlikely that new construction in the Reserve will be required, as existing roads adequately access the area. Construction will only be permitted in exceptional instances and consistent with the following principles:

- No practical alternative is available;
- The values of the Reserve will not be significantly affected by the road or fire trail;
- Opportunity is provided for public comment on the proposal; and
- Ministerial approval is given for the proposal.

7. MONITORING, REPORTING AND REVIEW

Forests NSW will monitor:

- The output of scientific and archaeological research and incorporate the results, where relevant into future management of the Reserve.
- The condition of the roads and fire trails and fuel accumulation in the Reserve.

The provisions of this Working Plan will be amended if necessary in light of the results of the monitoring program.

8. ACKNOWLEDGEMENTS

This Working Plan was prepared by Gabriel Wilks, Forester, Forests NSW. The following people contributed data, knowledge and expertise in the development of this document.

David Leslie, Ecologist, Riverina Region Forests NSW (fauna)
Doug Binns, Ecologist, Forests NSW (flora)
Duncan Watt, Planning Manager, Hume Region, Forests NSW
Alice Williams, Forests NSW Aboriginal Co-ordinator, Tumut (indigenous culture)
Mark Butz, Futures By Design (environmental management consultant, plan review)
Warwick Hull, Hume and Hovell Track Co-ordinator, Dept. of Lands
Monica Yeung, Gondwana Dreaming Pty. Ltd (geology)
Margaret Ning, Friends of Grasslands Society (flora)

9. REFERENCES

1. Andrews, A.E.J., editor (1981) "Hume and Hovell 1824" Blands Account, Hovells Journal and notes., published by Blubber Head Press
2. Australian Heritage Commission "Register of the National Estate – Micalong Swamp Area Tumut NSW". (www.ahc.gov.au/cgi-bin/register/site.pl?013696)
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5. Butz, M. (1981) "Conservation of Micalong Swamp: a submission by the NPWS (NSW) to the Councils of the shires of Yarrawluma and Tumut". NPWS (NSW)
6. Dept. of Lands, Land and Property Information NSW: Historical Parish Maps for Napier and Nottingham Forest, County of Buccleuch 1899 and 1964
www.lpi.nsw.gov.au/maps/pmap
7. Environment Australia "A Directory of Important Wetlands in Australia – Database Reports: Micalong Swamp". (www.ea.gov.au/cgi-bin/wetlands/reportwets.pl)
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9. Flood, J. M. (1980) "The Moth Hunters: Aboriginal Prehistory of the Australian Alps" A.I.A.S.Canberra
10. Hiscock, P. (undated) "A preliminary archaeological investigation of Peat Bog areas in the Southern Tablelands, NSW" A report to NPWS
11. CMA (1964) *Parish Map of Napier, County of Buccleuch, Land District of Yass, Yarrawluma Shire*
12. NSW Government (2002) "Southern Region Forest Agreement"
13. Hovell, W.H. (1824 – 1825) Journal kept on the journey from Lake George to Port Phillip 1824 – 1825. *R.Aust.hist.Soc.J.Proc.* 1921 7(6):307 – 78
14. McAndrew, G. A. (unpublished): "Wee Jasper Reconnaissance Surveys, 1950". Wagga District, Forestry Commission of NSW.
15. NSW Government (1995) "Threatened Species Conservation Act – Schedule 2"
16. NPWS (2002): "Recovery Plan for the Broad-toothed Rat (*Mastacomys fuscus*) - Draft for Public Comment" December 2002
17. NPWS (2001): "Recovery Plan for the Northern Corroboree Frog (*Pseudophryne pengilleyi*) – Draft for Public Comment" December 2001
18. NPWS (2003): www.nationalparks.nsw.gov.au/PDFs/tsprofile_yellowbellied_glider.pdf

10. APPENDICES

Appendix 1 Locality Map

Appendix 2 Area and Topographic Map

Appendix 3 Flora Species List

Appendix 4 Fauna Species List

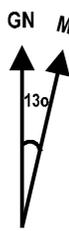
APPENDIX 2

Micalong Swamp Flora Reserve Topographical Map

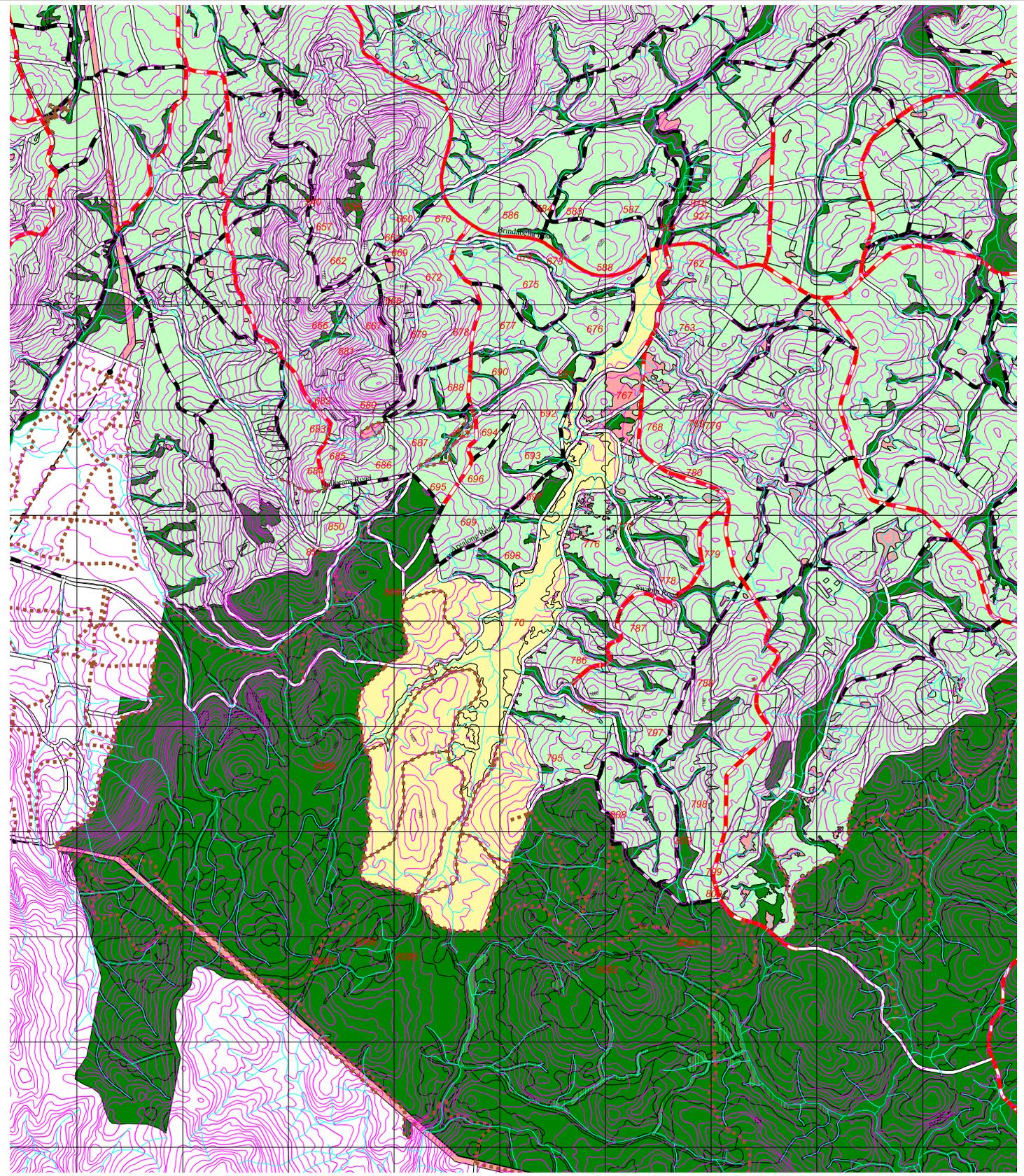
Micalong State Forest No 593

Hume Region
Forests NSW

	Flora Reserve		Other Non-plantation area	(Contour Interval 10 M)
	FNSW Plantation		Environmental Exclusion or Native Forest	
	Powerline - 11-33kv; 66-132kv; 330-500kv		Major Contour	
	Gas Pipeline		Minor Contour	
	Drainage Line			
	Closed Road			
	Sealed Road			
	Major Gravel Road			
	Minor Gravel Road			
	Natural Surface Road			
	Minor Track			




1:50000



APPENDIX 3 MICALONG SWAMP FR FLORA SPECIES LIST**SOURCES:**

1. Butz, M. (1981): Conservation of Micalong Swamp- A submission by the National Parks & Wildlife Service (NSW) to the Councils of the Shires of Yarrowlumla and Tumut.
2. Forestry Commission of NSW 1991: Micalong Swamp Flora Reserve No. 70 Establishment of Permanent Growth Plots and Permanent Photo Points
3. Margaret Ning (pers.comm): Friends of Grasslands Society field trip to Micalong Swamp, December 2003

NOTES:

Abbreviations for occurrence as taken from Butz (1981) -

S = Micalong Swamp and Chinamans Creek

FW = fringe woodland

OF = open forest

* indicates introduced species

FAMILY	SPECIES	SOURCE	NOTES
BRYOPHYTA	Sphagnum cristatum	1	S
PTERIDOPHYTA			
Aspidiaceae	Polystichum proliferum	1,2	FW, OF
Blechnaceae	Blechnum nudum	1	S, FW
Blechnaceae	Blechnum penna-marina	1	S
Dennstaedtiaceae	Pteridium esculentum	1	FW, OF
Dicksoniaceae	Dicksonia antarctica	1	OF
Adiantaceae	Adiantum aethiopicum	1	S, FW, OF
Ophioglossaceae	Botrychium australe	1	FW
Gleicheniaceae	Gleichenia (dicarpa ?)	1	OF
ANGIOSPERMAE			
MONOCOTYLEDONEAE			
Poaceae	Phragmites australis	1,3	S
Poaceae	Themeda triandra	3	
Poaceae	Microlaena stipoides	3	
Poaceae	Poa sp.	1,3	S, FW, OF
Poaceae	Holcus lanatus	1	S
Poaceae	Agrostis sp.	1	S
Cyperaceae	Carex gaudichaudiana	1	S
Cyperaceae	Carex apressa	1	S
Cyperaceae	Gahnia subaequiglumis	1	FW
Cyperaceae	Eleocharis sphacelata	1	S
Cyperaceae	Eleocharis acuta	1	S
Cyperaceae	Scirpus polystachyus	1	S
Juncaceae	Juncus articulatus	1	S
Juncaceae	Juncus sarophorus	1	S
Juncaceae	Juncus falcatus	1	S
Juncaceae	Luzula australasica	1	S
Restionaceae	Calorophus minor	1	S
Restionaceae	Restio australis	1	S
Restionaceae	Empodisma minus	3	
Potamogetonaceae	Potamogeton tricarinatus	1	S
Sparganiaceae	Sparganium subglobosum	1	S
Liliaceae	Thysanotus tuberosus	1	FW
Liliaceae	Dichopogon fimbriatus	1	S
Liliaceae	Arthropodium milleflorum	1,2	FW
Liliaceae	Wurmbea dioica	3	

Liliaceae	Bulbine bulbosa	3	
Orchidaceae	Dipodium punctatum	1,2	FW, OF
Orchidaceae	Spiranthes sinensis	1	S, FW
Orchidaceae	Pterostylis (falcata ?)	1,2	FW
Orchidaceae	Chiloglottis sp	3	
Orchidaceae	Diuris behrii	3	
Orchidaceae	Gastrodia sp	3	
Hypoxidae	Hypoxis hygrometrica	1	S
Xanthorrhoeaceae	Lomandra leucocephala	2	
DICOTYLEDONEAE			
Apiaceae	Hydrocotyle tripartite	3	
Apiaceae	Lilaeopsis polyantha	3	
Apiaceae	Oreomyrrhis ciliata	3	
Apiaceae	Oreomyrrhis eriopoda	3	
Clusiaceae	Hypericum gramineum	3	
Urticaceae	Urtica incisa	1	FW
Proteaceae	Hakea microcarpa	1,2,3	S, FW
Proteaceae	Lomatia mtricoides	1,2	FW, OF
Santalaceae	Exocarpus cupressiformis	1	OF
Santalaceae	Omphacomeria acerba	1	OF
Loranthaceae	Amyema pendulum	1	OF
Caryophyllaceae	Stellaria pungens	1,2,3	S, FW, OF
Caryophyllaceae	Scleranthus fascicularis	3	
Caryophyllaceae	Stellaria augustifolia	3	
Portulacaceae	Neopaxia australasica	1	S
Ranunculaceae	Ranunculus lappaceus	1,2	S, FW
Ranunculaceae	Ranunculus pimpinellifolius	3	
Ranunculaceae	Ranunculus scapiger	2	
Ranunculaceae	Clematis aristata	1,2	OF, FW
Pittosporaceae	Bursaria spinosa	1	S, FW, OF
Rosaceae	Rosa rubiginosa *	1,2	FW, OF, introduced weed
Rosaceae	Rubus fruticosus *	1,2	S, FW, OF, noxious weed
Rosaceae	Rubus triphyllus	1,2	FW, OF
Rosaceae	Acaena anserinifolia	1,2	FW, OF
Rosaceae	Acaena ovina	2	
Mimosaceae	Acacia melanoxyton	1,2	OF
Mimosaceae	Acacia siculiformis	1,2	OF
Mimosaceae	Acacia dealbata	1,2	FW, OF
Mimosaceae	Glycine clandestina	2	
Fabaceae	Daviesia mimosoides	1,2	OF
Fabaceae	Daviesia latifolia	1,2	OF
Fabaceae	Daviesia alicifolia	2	FW
Fabaceae	Trifolium sp.	1	S, introduced
Fabaceae	Platylobium formosum	1	OF
Fabaceae	Bossiaea foliosa	1	OF
Fabaceae	Hardenbergia violacea	1	OF
Fabaceae	Gompholobium huegelii	1	OF
Compositae	Cymbonotus sp.	2	
Compositae	Craspedia unifolia	2	
Geraniaceae	Pelargonium australe	1	FW
Geraniaceae	Geranium solanderi	1	FW, OF
Geraniaceae	Geranium antrorsum	3	
Geraniaceae	Erodium sp.	1	S
Geraniaceae	Oxalis corniculata *	2	S
Linaceae	Linum marginale	1	S
Stackhousiaceae	Stackhousia monogyna	1	FW, OF
Sapindaceae	Dodonea viscosa	1	OF
Guttiferae	Hypericum japonicum	1,2	S, FW, noxious weed
Violaceae	Viola betonicifolia	1,2	S, FW

Thymeleaceae	<i>Pimelea bracteata</i>	3	
Thymeleaceae	<i>Pimelia ligustrina</i> var. <i>scabra</i>	1,2	S
Thymeleaceae	<i>Pimelia</i> (<i>linifolia</i> ? <i>treybaudii</i> ?)	2	
Lythraceae	<i>Lythrum salicaria</i>	1	S
Myrtaceae	<i>Leptospermum lanigerum</i>	1	S
Myrtaceae	<i>Eucalyptus pauciflora</i>	1,2	FW, OF
Myrtaceae	<i>Eucalyptus stellulata</i>	1,2	FW
Myrtaceae	<i>Eucalyptus dalrympleana</i>	1,2	FW, OF
Myrtaceae	<i>Eucalyptus rubida</i>	1,2	FW, OF
Myrtaceae	<i>Eucalyptus camphora</i>	1,2	FW
Myrtaceae	<i>Eucalyptus radiata</i>	1,2	OF
Myrtaceae	<i>Eucalyptus fastigata</i>	2	OF
Myrtaceae	<i>Baeckea gunniana</i>	1,2	S
Myrtaceae	<i>Baeckea utilis</i>	1,2	S
Onagraceae	<i>Epilobium billardierianum</i>	2	
Onagraceae	<i>Epilobium gunnianum</i>	1,2	S
Onagraceae	<i>Epilobium</i> (<i>sarmentaceum</i> ?)	1,2	S
Araliaceae	<i>Polyscias sambuccifolius</i>	1	FW
Epacridaceae	<i>Epacris breviflora</i>	1	S, FW
Gentianaceae	<i>Centaurium erythraea</i> ? <i>Minus</i> ?	1,2	S, FW, introduced
Boraginaceae	<i>Myosotis australis</i>	1	S
Boraginaceae	<i>Myosotis discolor</i>	1	S
Boraginaceae	<i>Cynoglossum australe</i>	1,2	S
Lamiaceae	<i>Prostanthera lasianthos</i>	1	FW
Lamiaceae	<i>Prunella vulgaris</i>	1,2	S
Lamiaceae	<i>Lycopus australis</i>	3	
Lamiaceae	<i>Mentha</i> (<i>laxiflora</i> ?)	1,2	S, FW
Lamiaceae	<i>Mentha spicata</i>	1,2	S, FW
Scrophulariaceae	<i>Parahebe derwentiana</i>	1,2	FW, OF
Scrophulariaceae	<i>Mimulus moschatus</i> *	1	S
Scrophulariaceae	<i>Veronica gracilis</i>	1	S
Scrophulariaceae	<i>Gratiola latifolia</i>	1	S
Rubiaceae	<i>Coprosma hirtella</i>	1,2	OF
Rubiaceae	<i>Asperula gunnii</i>	3	
Rubiaceae	<i>Asperula scoparia</i>	3	
Rubiaceae	<i>Asperula conferta</i>	3	
Campanulaceae	<i>Wahlenbergia stricta</i>	1,2	FW, OF
Campanulaceae	<i>Pratia purpurascens</i>	2	
Stylidiaceae	<i>Stylidium graminifolium</i>	1,2	S, FW, OF
Menyanthaceae	<i>Nymphoides crenatum</i>	1	S
Convolvulaceae	<i>Dichondra repens</i>	1,2	S
Asteraceae	<i>Brachyscome decipens</i>	1,2	OF
Asteraceae	<i>Olearia</i> sp.	1,2	S
Asteraceae	<i>Olearia argophylla</i>	2	
Asteraceae	<i>Helichrysum semipapposum</i>	1,2	OF
Asteraceae	<i>Cassinia aculeata</i>	1,2	FW, OF
Asteraceae	<i>Hypochoeris radicata</i> *	1,2	S
Asteraceae	<i>Cirsium vulgare</i> *	2	introduced
Asteraceae	<i>Solenogyne gunnii</i>	3	
Asteraceae	<i>Leptinella filicula</i>	3	
Haloragaceae	<i>Gonocarpus micranthus</i> (probably spp <i>micranthus</i>)	3	
Polgonaceae	<i>Rumex acetosella</i> *	2	introduced
Polgonaceae	<i>Rumex brownii</i>	2	
Verbenaceae	<i>Verbena rigida</i> *	2	Introduced
Winteraceae	<i>Tasmania lanceolata</i>	2	

Appendix 4 Micalong Swamp FR Fauna Species List

Status:

C - common

E – endangered (as per Schedule 1, NSW Threatened Species Conservation Act 1995)

V – vulnerable (as per Schedule 2, NSW Threatened Species Conservation Act 1995)

I - introduced

Sources:

1. Chris Mac Gregor ANU (1996 –2002 surveys)
2. State Forests of NSW (David Leslie, Ecologist Riverina Region pers.comm.)
3. Mark Butz (1981): “Conservation of Micalong Swamp: a submission by the NPWS (NSW) to the Councils of the shires of Yarrowlumla and Tumut”.NPWS
4. NPWS Wildlife Atlas: npws.nsw.gov.au/wildlifeatlas
5. Canberra Ornithologists Group visit to Micalong Swamp on 4 March 2001.

BIRDS

FAMILY	SPECIES	COMMON NAME	STATUS	SOURCE
Accipitridae	<i>Aquila audex</i>	Wedge-tailed Eagle		3,5
Accipitridae	<i>Haliastur sphenurus</i>	Whistling Kite		3
Accipitridae	<i>Accipiter fasciatus</i>	Brown Goshawk		1,5
Acanthizidae	<i>Sericornis frontalis</i>	White-browed Scrubwren		1,5
Acanthizidae	<i>Acanthiza lineata</i>	Striated Thornbill		1
Acanthizidae	<i>Pycnoptilus floccosus</i>	Pilotbird		1
Acanthizidae	<i>Acanthiza pusilla</i>	Brown Thornbill		1,5
Acanthizidae	<i>Acanthiza reguloides</i>	Buff-rumped Thornbill		1
Aegothelidae	<i>Aegotheles cristatus</i>	Australian Owlet –Nightjar		3
Alcedinidae	<i>Dacelo novaeguineae</i>	Laughing Kookaburra		1, 3,5
Alcedinidae	<i>Todiramphus sanctus</i>	Sacred Kingfisher		1, 3
Ardeidae	<i>Ardea novaehollandiae</i>	White-faced Heron		3
Artamidae	<i>Artamus cyanopterus</i>	Dusky Woodswallow		5
Cacuatuidae	<i>Cacatua roseicapilla</i>	Galah		3
Cacuatuidae	<i>Callocephalon fimbriatum</i>	Gang-gang cockatoo		1

Cacuatuidae	<i>Cacatua galerita</i>	Sulphur -crested Cockatoo		1, 3
Cacuatuidae	<i>Calyptrohynchus funereus</i>	Yellow-tailed Black-Cockatoo		1,5
Campephagidae	<i>Coracina novaehollandiae</i>	Black-faced Cuckoo-shrike		1
Charadriidae	<i>Vanellus miles</i>	Masked Lapwing		3
Climacteridae	<i>Climacteris erythroptis</i>	Red-browed Treecreeper		1
Climacteridae	<i>Cormobates leucophaeus</i>	White-throated Treecreeper		1, 3,5
Corcoracidae	<i>Corcorax melanorhamphos</i>	White-winged Chough		3
Corvidae	<i>Corvus coronoides</i>	Australian Raven		1, 3,5
Cracticidae	<i>Strepera graculina</i>	Pied Currawong		1, 3
Cracticidae	<i>Gymnorhina tibicen</i>	Australian Magpie		1, 3,5
Cracticidae	<i>Cracticus torquatus</i>	Grey Butcherbird		1
Cracticidae	<i>Strepera versicolor</i>	Grey Currawong		1,5
Cuculidae	<i>Cuculus pyrrhophanus</i>	Fan-tailed Cuckoo		1, 3
Cuculidae	<i>Chrysococcyx basalis</i>	Horsefields Bronze-Cuckoo		3
Cuculidae	<i>Cuculus pallidus</i>	Pallid Cuckoo		1
Cuculidae	<i>Chrysococcyx lucidus</i>	Shining Bronze-Cuckoo		1
Fringillidae	<i>Carduelis carduelis</i>	European Goldfinch	I	1
Maluridae	<i>Malurus cyaneus</i>	Superb Fairy-wren		1, 3,5
Meliphagidae	<i>Melithreptus brevirostris</i>	Brown-headed Honeyeater		1
Meliphagidae	<i>Anthochaera carunculata</i>	Red Wattlebird		1
Meliphagidae	<i>Lichenostomus leucotis</i>	White-eared Honeyeater		1,5
Meliphagidae	<i>Melithreptus lunatus</i>	White-naped Honeyeater		1
Meliphagidae	<i>Acanthorhynchus tenuirostris</i>	Eastern Spinebill		1
Meliphagidae	<i>Phylidonyris pyrrhoptera</i>	Crescent Honeyeater		1
Meliphagidae	<i>Lichenostomus chrysops</i>	Yellow-faced Honeyeater		1, 2,5
Menuridae	<i>Menura novaehollandiae</i>	Superb Lyrebird		3
Muscicapidae	<i>Turdus merula</i>	Blackbird	I	1, 3
Muscicapidae	<i>Falcunculus frontatus</i>	Crested Shrike-tit		1
Muscicapidae	<i>Eopsaltria australis</i>	Eastern Yellow Robin		1,5
Muscicapidae	<i>Petroica phoenicea</i>	Flame Robin		1, 3,5
Muscicapidae	<i>Pachycephala pectoralis</i>	Golden Whistler		1,5
Muscicapidae	<i>Rhipidura fuliginosa</i>	Grey Fantail		1, 2, 3,5
Muscicapidae	<i>Colluricincla harmonica</i>	Grey Shrike-thrush		1, 3,5
Muscicapidae	<i>Pachycephala olivacea</i>	Olive Whistler	V	1
Muscicapidae	<i>Petroica rosea</i>	Rose Robin		1,5

Muscicapidae	<i>Rhipidura rufifrons</i>	Rufous Fantail		1,5
Muscicapidae	<i>Pachycephala rufiventris</i>	Rufous Whistler		1,5
Muscicapidae	<i>Zoothera dauma</i>	Australian Ground Thrush		1
Muscicapidae	<i>Rhipidura leucophrys</i>	Willie Wagtail		3
Muscicapidae	<i>Myiagra rubecula</i>	Leaden Flycatcher		1,5
Muscicapidae	<i>Petrioca goodenovii</i>	Red-capped Robin		5
Muscicapidae	<i>Petrioca multicolor</i>	Scarlet Robin		1,5
Orthonychidae	<i>Psophodes olivaceus</i>	Eastern Whipbird		1
Paradisaeidae	<i>Ptilinorhynchus violaceus</i>	Satin Bowerbird		1
Pardalotidae	<i>Pardalotus punctatus</i>	Spotted Pardalote		1, 2,5
Pardalotidae	<i>Pardalotus striatus</i>	Striated Pardalote		1,5
Phasianidae	<i>Coturnix ypsilophora</i>	Brown Quail		3
Platycercidae	<i>Platycercus elegans</i>	Crimson Rosella		1, 3,5
Platycercidae	<i>Platycercus eximius</i>	Eastern Rosella		1
Ploceidae	<i>Neochmia temporalis</i>	Red-browed Firetail		1, 3
Polytelitidae	<i>Alisterus scapularis</i>	King Parrot		1, 3
Sturnidae	<i>Sturnus vulgaris</i>	Common Starling	I	3
Sylviidae	<i>Acrocephalus stentoreus</i>	Clamorous reed warbler		5
Zosteropidae	<i>Zosterops lateralis</i>	Silvereeye		1, 2, 3,5

MAMMALS

FAMILY	SPECIES	COMMON NAME	STATUS	SOURCE
Phalangeridae	<i>Trichosurus spp.</i>	Brushtail Possum spp.	c	1
Phalangeridae	<i>Trichosurus cunninghamii</i>	Mountain Brushtail Possum		1
Petauridae	<i>Pseudocheirus peregrinus</i>	Common Ringtail Possum	c	1, 3
Petauridae	<i>Petauroides volans</i>	Greater Glider		1, 3
Petauridae	<i>Petaurus australis</i>	Yellow-bellied Glider	V	4
Petauridae	<i>Petaurus breviceps</i>	Sugar Glider		1
Dasyuridae	<i>Antechinus agilis</i>	Agile Antechinus		1
Dasyuridae	<i>Antechinus stuartii</i>	Brown Antechinus		3
Macropodidae	<i>Macropus giganteus</i>	Eastern Grey Kangaroo	c	3
Macropodidae	<i>Macropus rufogriseus</i>	Red-necked Wallaby		3
Macropodidae	<i>Wallabia bicolor</i>	Swamp Wallaby	c	1
Muridae	<i>Mastacomys fuscus</i>	Broad-toothed Rat	V	2
Muridae	<i>Rattus fuscipes</i>	Southern Bush Rat	c	1, 3

Muridae	<i>Mus musculus</i>	Mouse		3
Vombatidae	<i>Vombatus ursinus</i>	Common Wombat	C	1
Tachyglossidae	<i>Tachyglossus aculeatus</i>	Echidna	c	3
Vespertilionidae	<i>Chalinolobus gouldii</i>	Gould's Wattled Bat		3
Vespertilionidae	<i>Chalinolobus morio</i>	Chocolate Wattled Bat		3
Vespertilionidae	<i>Eptesicus regulus</i>	Kings River Eptesicus		3
Vespertilionidae	<i>Eptesicus sagittula</i>	Large Forest Eptesicus		3
Vespertilionidae	<i>Nyctophilus gouldi</i>	Gould's Long-Eared Bat		3
Canidae	<i>Canis familiaris</i>	Dingo		3
Canidae	<i>Canis familiaris</i>	Dog	I	3
Canidae	<i>Vulpes vulpes</i>	Fox	I	3
Suidae	<i>Sus scrofa</i>	Pig	I	3
Bovidae	<i>Bos taurus</i>	Cow	I	3
Leporidae	<i>Oryctolagus cuniculus</i>	Rabbit	I	3

REPTILES (note: many more species would occur but have not been surveyed)

FAMILY	SPECIES	COMMON NAME	STATUS	SOURCE
Scinidae	<i>Tiliqua scincoides</i>	Blue-tongue Lizard	c	3
Elapidae	<i>Pseudechis porphyriacus</i>	Red-bellied Black Snake	c	3

AMPHIBIANS (note: many more species would occur but have not been surveyed)

FAMILY	SPECIES	COMMON NAME	STATUS	SOURCE
Leptodactylidae	<i>Pseudophyrne pengillyi</i>	Northern Corroboree Frog	V	4

FISH (note: many more species would occur but have not been surveyed)

FAMILY	SPECIES	COMMON NAME	STATUS	SOURCE
Galaxiidae	<i>Galaxias bongbong</i>	Inland Galaxia	c	3