

NSW SCIENTIFIC COMMITTEE

Preliminary Determination

The Scientific Committee, established by the Threatened Species Conservation Act, has made a Preliminary Determination to support a proposal to list a population of the Greater Glider *Petauroides volans* (Kerr 1792) in the Mount Gibraltar Reserve area as an ENDANGERED POPULATION in Part 2 of Schedule 1 of the Act. Listing of endangered populations is provided for by Part 2 of the Act.

The Scientific Committee has found that:

1. The Greater Glider *Petauroides volans* (Kerr 1792) (family Pseudocheiridae) is not currently listed as an Endangered species in Part 1 of Schedule 1 or a Critically Endangered species in Part 1 of Schedule 1A and as a consequence populations of this species are eligible to be listed as Endangered populations. A population of the Greater Glider in the Eurobodalla Local Government Area (LGA) is currently listed as Endangered. The species is not listed under the *Environment Protection and Biodiversity Conservation Act 1999*.
2. A population of Greater Gliders is located in the Mount Gibraltar Reserve area, on the northern edge of Bowral, in the Southern Highlands of NSW and covers a total area of around 227 ha. It encompasses Mount Gibraltar Reserve (120 ha), a bushland reserve under the control of Wingecarribee Shire Council, and surrounding areas of forested, freehold land. The boundaries to the population are the township of Bowral to the south, a railway line, Bowral Road and the township of Mittagong to the north, urban backyards and semi-cleared farmland to the east and the urban backyards, the Highlands Way and Bowral Road to the north and northwest.
3. The Greater Glider is a large gliding marsupial with body length 350-450 mm, tail length 450-600 mm and weighing between 900 and 1700 g (Strahan 1995). The species is further described as “dark grey, cream, mottled cream and grey or dusky brown above; whitish below. Long, furry tail, pale below and basal half. Snout short; very large ears. Tail not prehensile.” (Strahan 1995).
4. Greater Gliders are solitary, usually monogamous, except in high density populations, and have a low reproductive rate relative to other arboreal mammals, for example the Common Brushtail Possum (*Trichosurus vulpecula*) or Common Ringtail Possum (*Pseudocheirus peregrinus*) (Kerle 2001; Kavanagh & Wheeler 2004). A single young is born in late autumn to early winter and is independent at nine months of age. Age to first reproduction is two years (Kerle 2001). Individuals can live up to 15 years (Lindemayer 1997), however average longevity is five years of age (R. Kavanagh pers. comm. Aug 2013).
5. The distribution of the Greater Glider covers the ranges and coastal plains of eastern Australia (from Central Victoria to around Cairns, Queensland), where it inhabits a variety of eucalypt forests and woodlands (Kavanagh 2004). Preferred habitat for the species is montane forests containing *Eucalyptus radiata* (Narrow-leaved Peppermint), *E. viminalis* (Manna Gum), and *E. fastigata* (Brown Barrel). Other species may include *E. obliqua* (Stringybark), *E. ovata* (Swamp Gum) and *E. cypellocarpa* (Mountain Grey Gum)

NSW SCIENTIFIC COMMITTEE

(Kavanagh & Lambert 1990; R. Kavanagh pers comm. Aug 2013). Greater Gliders are folivores, feeding almost exclusively on the young leaves and flower buds of select eucalypt species, in particular *E. radiata*, *E. viminalis*, and *E. acmenoides* (White Mahogany) (Kavanagh & Lambert 1990).

6. Greater Gliders shelter during the day in hollows that are usually positioned high in old trees. Individual animals utilise between one and seven den trees, ranging from 71-193 cm diameter at breast height (Kavanagh & Wheeler 2004). During the night, movements are primarily restricted to gliding between trees. When gliding, they can cover distances up to 100 m (Kerle 2001), but usually tend not to glide further than 30 m and have a steeper trajectory than other species of glider (R. Kavanagh pers. comm. Aug 2013). Greater Gliders are not known to venture to the ground as their gait is awkward and clumsy, making them easy prey (Strahan 1995). Individuals appear to repeatedly use the same routes as they move from hollows to feeding areas (Kerle 2001), and occupy relatively small home ranges (average 1 to 3 ha) from which they rarely disperse (Kavanagh and Wheeler 2004). Males tend to occupy larger home ranges than females, and home range size appears to increase in smaller patches and at lower population densities (Pope *et al.* 2004).
7. Within Mount Gibraltar Reserve, Greater Gliders have been located in Brown Barrel Tall Forest; a large component of which forms part of the Mount Gibraltar Forest in the Sydney Basin Bioregion Endangered Ecological Community (EEC). The glider is also found in River Peppermint Tall Forest (*Eucalyptus elata*, *E. smithii*) in the northeast and Manna Gum Tall Forest on the lower western edge. Most of the western section of the reserve contains large outcrops of syenite rock including some tall cliffs, and is unlikely to contain suitable habitat for Greater Gliders (KMA 2004; BES 2008). On the basis of available vegetation mapping (KMA 2004) and fauna survey results (BES 2008), it is estimated that approximately 60% of Mount Gibraltar Reserve contains habitat suitable for Greater Gliders.
8. Mount Gibraltar Reserve is largely surrounded by residential development, with limited connectivity to other areas of suitable Greater Glider habitat. A potential corridor exists to the adjacent Gibbergunyah Reserve (approximately 1 km to the west), where a small number of tall trees (< 50) line either side of a 10-15 m section of the Highlands Way. Gibbergunyah Reserve is known to support Greater Gliders (KMA 2004), however in order to pass between the two reserves Greater Gliders would have to travel through less suitable habitat in the western section of Mount Gibraltar Reserve (see paragraph 7), including utilising trees in urban backyards, before gliding across The Highlands Way. Given the species prefers continuous canopy and is known to avoid open areas and urban back yards (Kerle 2001), gliders are considered unlikely to move between the reserves and the population is therefore considered disjunct.
9. The population occupies an isolated area of no more than 227 ha (i.e. 120 ha within Mount Gibraltar Reserve and 107 ha of non-reserved land). The extent of occurrence and area of occupancy for the population are calculated at 8 km², equivalent to 2 (2x2) km grid cells, the measure recommended by IUCN (2011). The geographic distribution of the population is therefore considered to be highly restricted.

NSW SCIENTIFIC COMMITTEE

10. The number of mature individuals in the population is not known. Based on an average home range for the species of 1 to 3 ha (Kavanagh & Wheeler 2004), there could be no more than 75-227 individual Greater Gliders in the population. In optimal conditions Kavanagh & Wheeler (2004) found that Greater Gliders can achieve population densities of 0.5-2.3 animals per ha, which would give a maximum, theoretical population size of between 114 and 522 mature individuals in the population. In addition, given that only 60% of Mount Gibraltar Reserve is regarded as suitable habitat for Greater Gliders, the number of mature individuals is likely to be very low. Surveys conducted in 2008 found fewer than 15 adult Greater Gliders in Mount Gibraltar Reserve (BES 2008).
11. Greater Gliders in the Mount Gibraltar Reserve are impacted by declining habitat quality. Past disturbances include quarrying of the Mount Gibraltar syenite and clearing of vegetation (BES 2008). Current impacts in the Reserve include exotic weed invasion. For example, the Mount Gibraltar Forest EEC is threatened by species such as *Hedera helix* (Common Ivy), *Lonicera japonica* (Japanese Honeysuckle), *Ilex aquifolium* (Holly), *Berberis thunbergii* (Japanese Barberry), *Pyracantha angustifolia* (Orange Firethorn) and *Genista monspessulana* (Cape Broom) (NSW Scientific Committee 2001). Disturbances associated with infrastructure (e.g. maintenance of a communication tower and water storage facilities), localised clearing, movement of machinery, and dumping of rubbish further impact habitat quality within the area occupied by the population. Mount Gibraltar Reserve itself is transversed by a tourist road (Oxley Drive) and several walking and management (vehicle) trails which are regularly used for passive recreational activities (BES 2008). A continued decline in habitat quality may therefore be inferred.
12. Direct impacts on populations of this species include predation by Powerful Owls (*Ninox strenua*) (Kavanagh 1988), which may significantly suppress Greater Gliders in the Mount Gibraltar Reserve area (BES 2008). Pressure from adjacent urban development, including predation and/or disturbance from domestic dogs and cats, rubbish dumping and noise are also likely to affect the population (BES 2008). Wildfires and other stochastic events are also likely to impact the population, given its small size and limited capacity to disperse.
13. In view of the above, the Scientific Committee is of the opinion that the population of the Greater Glider *Petauroides volans* (Kerr 1792) in the Mount Gibraltar Reserve area is eligible to be listed as an Endangered population in Part 2 of Schedule 1 of the Act, as in the opinion of the Scientific Committee, it is facing a very high risk of extinction in New South Wales in the near future as determined in accordance with the following criteria as prescribed by the *Threatened Species Conservation Regulation 2010*:

Clause 11

The population is facing a very high risk of extinction in New South Wales in the near future as, in the opinion of the Scientific Committee, it satisfies any one or more of the following paragraphs and also meets the criteria specified in one or more of the following clauses:

- (a) it is disjunct or near the limit of its geographic range.

NSW SCIENTIFIC COMMITTEE

Clause 13

The geographic distribution of the population is estimated or inferred to be highly restricted and either:

- (a) a projected or continuing decline is observed, estimated or inferred in either of the key indicators:
 - (a) an index of abundance appropriate to the taxon, or
 - (b) the geographic distribution, habitat quality or diversity, or genetic diversity of the population.

Clause 14

The estimated total number of mature individuals in the population is low and either:

- (a) a projected or continuing decline is observed, estimated or inferred in either of the key indicators:
 - (i) an index of abundance appropriate to the taxon, or
 - (ii) the geographic distribution, habitat quality or diversity, or genetic diversity of the population.

Clause 15 Very low numbers of mature individuals in population

The estimated total number of mature individuals of the population is observed, estimated or inferred to be very low.

Professor Michelle Leishman
Chairperson
Scientific Committee

Exhibition period: 30/05/04 – 25/07/14

Proposed Gazettal date: 30/05/14

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NSW SCIENTIFIC COMMITTEE

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