

# NSW SCIENTIFIC COMMITTEE

## Final Determination

The Scientific Committee, established by the *Threatened Species Conservation Act 1995* (the Act), has made a Final Determination to list a population of the Greater Glider *Petauroides volans* (Kerr, 1792) in the Seven Mile Beach National Park 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. There are currently two populations of Greater Gliders listed as Endangered; a population in the Eurobodalla local government area and a population in the Mt Gibraltar Reserve area. The species is listed as a Vulnerable species under the *Environment Protection and Biodiversity Conservation Act 1999*.
2. The Greater Glider is a large gliding marsupial. *Petauroides volans volans*, the only subspecies which occurs in New South Wales (NSW), is described by McKay (2008) as: “head and body length 350–460 mm, tail length 450–600 mm, weight between 900 and 1,700 g; dark grey, cream or mottled cream and grey above; whitish below. Long, furry tail, pale below on basal half. Short snout; very large furry ears. Tail not prehensile.”
3. Greater Gliders are solitary, usually monogamous except in high density populations, and have a low reproductive rate relative to other arboreal mammals such as the Common Brushtail Possum (*Trichosurus vulpecula*) or Common Ringtail Possum (*Pseudocheirus peregrinus*) (Kerle 2001; Kavanagh and Wheeler 2004). A single young is born in late autumn to early winter and is independent at nine months. Age to first reproduction is two years (Kerle 2001). Individuals can live up to 15 years (Lindenmayer 1997) however average longevity is five years (R. Kavanagh pers. comm. August 2013).
4. Greater Gliders shelter during the day in hollows that are usually high in old trees. Individual animals utilise between one and seven den trees, ranging from 71 to 193 cm diameter at breast height (Kavanagh and 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. August 2013). On the ground, Greater Gliders have an awkward loping gait, making them easy prey (McKay 2008). Individuals appear to use the same routes repeatedly 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).
5. The distribution of the Greater Glider covers the ranges and coastal plains of eastern Australia (from Central Victoria to around Cairns, Queensland). The Greater Glider inhabits a variety of eucalypt forests and woodlands (Kavanagh 2004). The preferred habitat in the southern part of its range is montane forests containing *Eucalyptus radiata* (Narrow-leaved Peppermint), *E. viminalis* (Manna Gum) and *E. fastigata* (Brown Barrel). Other species may include *E. obliqua* (Messmate), *E. ovata* (Swamp Gum), *E. cypellocarpa* (Mountain Grey Gum) and *E. pilularis* (Blackbutt) (Kavanagh and Lambert 1990; R. Kavanagh pers. comm. August 2013). Greater Gliders are folivores, feeding almost

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exclusively on the young leaves and flower buds of select eucalypt species, in particular *E. radiata* and *E. viminalis* (Kavanagh and Lambert 1990).

6. A population of Greater Gliders is located in and around Seven Mile Beach National Park on the south coast of NSW and it is this population which is the subject of this determination. The population is situated between Crooked River (Gerroa) to the north and Shoalhaven Heads Road in the town of Shoalhaven to the south. The eastern boundary is the Pacific Ocean. To the west the landscape has been cleared extensively and the boundary of the population is defined by the extent of suitable extant native vegetation contiguous with Seven Mile Beach National Park. Contiguous vegetation is defined as the typical distance the Gliders can travel on a day to day basis where canopy gaps are 50 m or less. The population encompasses Seven Mile Beach National Park, as well as parts of Shoalhaven Heads Golf Course and reserves, waste transfer stations under the control of Shoalhaven City Council and Kiama Municipal Council and surrounding areas of freehold land with suitably vegetated areas. Gerroa Road and Crooked River Road run through the population. The population's distribution does not include Coomonderry Swamp.
7. In the Seven Mile Beach National Park area, Greater Gliders have been located mostly within Coastal Sand Forest, a component of which forms part of the Bangalay Sand Forest of the Sydney Basin and South East Corner Bioregions Endangered Ecological Community (EEC). On the basis of available vegetation mapping (Kevin Mills and Associates 2006; Tozer *et al.* 2010), it is estimated that approximately 1,120 ha within the population boundary contains suitable habitat for Greater Gliders, 66% of which occurs within the National Park.
8. The area surrounding the Greater Glider population in the Seven Mile Beach National Park area is largely cleared agricultural land or residential development with limited habitat connectivity to other large suitably vegetated areas. The closest large blocks of forest are 6.5 km to the west and the NSW Wildlife Atlas shows no records of Greater Glider in these areas. The nearest records of the species are from Barren Grounds Nature Reserve and Budderoo National Park, over 10 km from the population. Surveys conducted in early 2014 in nearby remnant forest resulted in only a single Greater Glider being observed on "freehold land west of Berry along the escarpment, some 10 km from Seven Mile Beach NP" (G. Daly *in litt.* March 2014). Since Greater Gliders prefer continuous canopy and are known to avoid open areas and urban backyards (Kerle 2001), they are considered unlikely to move between these blocks of vegetation and the population is therefore considered to be disjunct.
9. The Greater Glider population in the Seven Mile Beach National Park area occupies no more than 1,240 ha (comprising 813 ha within Seven Mile Beach National Park and 427 ha of non-reserved land). The extent of occurrence and area of occupancy (AOO) for the population are calculated at 20 km<sup>2</sup>, based on five 2 x 2 km grid cells, the scale recommended for assessing AOO by IUCN (2014). The geographic distribution of the population is therefore considered to be highly restricted.
10. The number of mature individuals in the Seven Mile Beach National Park area Greater Glider population is not known but can be inferred from the limited surveys undertaken in Seven Mile Beach National Park, vegetation mapping and population density studies of the species from elsewhere. In suitable habitat, population densities of Greater Gliders can vary from 0.5–3.8 animals per ha (Henry 1984; Kehl and Borsboom 1984; Comport *et al.* 1996; Pope *et al.* 2004). Based on recent survey results there is an estimated density of 1–2 Greater Gliders per ha in the Seven Mile Beach National Park area population (R. Goldingay *in litt.* September 2014). If all areas of suitable habitat are occupied there could be a maximum of 2,230 animals present. This is likely to be an overestimate, since not all areas are likely to be occupied or occupied at the higher density. Past disturbances, including recent storms that caused significant canopy damage, would also have reduced the

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population size. The number of mature individuals within the Seven Mile Beach National Park area population is therefore estimated to be low.

11. The Greater Glider population in the Seven Mile Beach National Park area is facing a number of threats including habitat loss, fragmentation and degradation. The population has undergone loss and fragmentation of habitat over the last decade as a result of clearing associated with agriculture, golf course expansion, sand mining, sewage treatment plant construction and roadside clearing, resulting in loss of hollow-bearing trees (G. Daly *in litt.* March 2014, D Moore *in litt.* August 2016). The Greater Glider has specific requirements for tree hollows for shelter and breeding and particular tree species assemblages to provide foliage for food (Kavanagh and Lambert 1990). In addition, the species has relatively poor dispersal ability, high site fidelity and a low reproductive rate compared to other possums and gliders (Henry 1984). Hence the species is particularly vulnerable to habitat alteration (Tyndale-Biscoe and Smith 1969; Kavanagh and Wheeler 2004). Continued urban development of the Shoalhaven and Berry areas and extension of the sand mine are likely to lead to further habitat loss and fragmentation of the species habitat, reducing the potential habitat patches and the possibility of Greater Gliders dispersing and colonising these patches (G. Daly *in litt.* March 2014). Small isolated populations of Greater Gliders may be significantly suppressed by predation (Kavanagh 1988) and Powerful Owls (*Ninox strenua*) are known to occur in the Seven Mile Beach National Park. 'Clearing of native vegetation' and 'Loss of hollow-bearing trees' are listed as Key Threatening Processes under the Act.
12. Wildfire and other stochastic events are likely to adversely affect the Greater Glider population in the Seven Mile Beach National Park area given its small size and isolation. Fire return intervals are currently lower than the recommended seven years between fires for the dominant vegetation type in the Seven Mile Beach National Park (NSW NPWS 1998; 2006) and several fires have started as a result of arson. Cyclonic force winds in February 2013 removed a swathe from the canopy some 200 m wide through the Seven Mile Beach National Park (G. Daly *in litt.* March 2014). 'High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition' is listed as a Key Threatening Process under the Act.
13. The population of the Greater Glider *Petauroides volans* (Kerr, 1792) in the Seven Mile Beach National Park area is eligible to be listed as an Endangered population 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 the following clause:

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

## Clause 13

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

- (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.

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## Clause 14

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

- (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.

Dr Mark Eldridge  
Chairperson  
Scientific Committee

Exhibition period: 16/12/16 – 10/02/17

Proposed Gazettal date: 16/12/16

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