NSW SCIENTIFIC COMMITTEE

Sooty Owl *Tyto tenebricos*

Review of Current Information in NSW

September 2008

Current status:

The Sooty Owl *Tyto tenebricosa* is listed as Rare in Queensland under the *Nature Conservation Act* 1992 (NC Act) and Threatened in Victoria under the *Flora and Fauna Guarantee Act* 1988 (FFG Act; Vulnerable on Advisory List), but not listed under Commonwealth legislation. The NSW Scientific Committee recently determined that the Sooty Owl meets criteria for listing as Vulnerable in NSW under the *Threatened Species Conservation Act* 1995 (TSC Act), based on information contained in this report and other information available for the species.

Species description:

The Sooty Owl is a medium-sized (33-43 cm in length) dark owl with a prominent, heavily rimmed facial disc having a rounded heart shape. It is dark sooty grey with large black eyes in a grey face, fine white spotting on the upperparts and breast, and fine grey barring on the pale belly and legs. The feet are large and powerful, with fully feathered legs down to the toes. It is much greyer than the dark form of the Masked Owl *T. novaehollandiae*. The typical call of the Sooty Owl is a long descending scream or whistle, shriller than the scream of the Barking Owl *Ninox connivens* The Sooty Owl also has a harsh screech, very similar to that of the Masked Owl, and prolonged grating and rattling trills.

Taxonomy:

Tyto tenebricosa (Gould 1845) (Tytonidae) is an endemic Australasian species. The taxon in NSW is the nominate southern subspecies *T. t. tenebricosa*, occurring from mid-east Queensland to Victoria. The taxon *multipunctata* Mathews 1912 in north Queensland is now considered a subspecies of the Sooty Owl (Norman *et al.* 2002; Christidis & Boles 2008). Subspecies *T. t. arfaki* occurs in New Guinea.

Distribution and number of populations:

In NSW the Sooty Owl occurs from the coast to the forested eastern edge of the tablelands (Barrett *et al.* 2003). There is an apparent break in its distribution at the dry and cleared Hunter Valley. At the species' southern and northern distributions within NSW, populations appear contiguous with Victorian and Queensland populations respectively.

Ecology:

The level of knowledge of the Sooty Owl is considered good on general biology and ecology (Higgins 1999; Cann *et al.* 2002; Kavanagh 2002a,b; Kavanagh & Stanton 2002; Loyn *et al.* 2001, 2002; Milledge 2004; Bilney *et al.* 2006, 2007; Bilney 2009; Hollands 2008).

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Key habitat requirements

The Sooty Owl inhabits subtropical and warm temperate rainforest, and moist eucalypt forest with a well-developed mid-storey of trees or shrubs. Roost and nest sites for the species occur in gullies. Roost sites include tree hollows, caves, cliff ledges or crevices, rock overhangs, or dense vegetation (*e.g.* tree ferns or vine tangles). The Sooty Owl nests in hollow trees (typically smooth gums) or caves. Some of its prey species are also hollow dependent.

Breeding biology

Sooty Owls nest in large hollows more than 30 cm wide and up to 10 m deep in big, old trees (usually alive but sometimes dead). The breeding season of the Sooty Owl is variable, with a clutch of one or two eggs laid in autumn to winter or spring. A single brood per year is raised in the wild. The incubation period is five to six weeks, the nestling period three months, and the post-fledging dependence period lasts up to five months.

Diet

The Sooty Owl feeds on a variety of arboreal and terrestrial mammals, especially rodents, antechinuses, small possums and gliders, up to potoroo or rabbit size prey, and on some birds and large insects. Most of the prey biomass for the species is from mammals (Higgins 1999; Kavanagh 2002a; Bilney *et al.* 2006, 2007). Many of the native terrestrial prey species of the Sooty Owl have declined, leading to increased prey overlap and possible competition with the Powerful Owl (*Ninox strenua*, Bilney *et al.* 2006; Bilney 2008, 2009).

Social biology

The Sooty Owl occurs solitarily, in pairs, or in family groups of parents and offspring.

Territoriality/home range

Resident breeding pairs of Sooty Owls defend exclusive nesting territories within larger, defended home ranges of 400-3 000 ha, depending on habitat quality and prey densities.

Generation length

Generation length is estimated as five years, with low reliability (Garnett & Crowley 2000), presumably on the basis that smaller *Tyto* owls (*e.g.* Barn Owl *Tyto alba*) are highly fecund and can breed at one year old, and the Sooty Owl appears similarly fecund in captivity on unlimited food. The smaller *Tyto* owls seem more r-selected than the k-selected *Ninox* owls, which have an estimated generation length of 10 years (Garnett & Crowley 2000).

Ability to disperse/susceptibility to population fragmentation

Sooty Owls are known to disperse up to 50 km, including across partly cleared areas (Higgins 1999), so population fragmentation is unlikely except where forest is broadly dissected by heavily cleared areas (*e.g.* the cleared Hunter Valley appears to have broken the connectivity between the northern and southern distribution of the species in NSW).

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Number of mature individuals:

The number of individual Sooty Owls has been estimated as 10 000 globally for the southern subspecies (Garnett & Crowley 2000), of which over half would occur in NSW on the basis of geographic range; or more than 5 000 birds. This estimate is assigned a low level of reliability (Garnett & Crowley 2000). The NSW population was estimated as a minimum of 2 000 pairs or 10 000 birds (DEC 2006).

Threats:

The main threats to the Sooty Owl are inferred to be clearing and fragmentation of habitat, including loss of hollow-bearing trees (e.g. Higgins 1999; DEC 2006). Over 50% of forest and woodland in NSW has been cleared and the process is continuing (Lunney 2004; Johnson *et al.* 2007). Moreover, prime habitat for the Sooty Owl, on richer soils and gentle terrain, has been particularly targeted for agricultural clearing, logging, conversion to pine plantations, firewood harvesting, and urbanisation. Loss of old-growth elements is inferred to affect the native prey of the species, some of which require hollows. Bioregions in the NSW range of the Sooty Owl (i.e. NSW North Coast, New England Tableland, Sydney Basin, South East Corner, South Eastern Highlands) are between 16-56% cleared (Barrett *et al.* 2007). 'Clearing of native vegetation', and 'Loss of hollow-bearing trees', are listed as Key Threatening Processes under the TSC Act in NSW. The Sooty Owl persists throughout the logging mosaic in state forests and populations appear to recover after logging and wildfire, provided that gully reserves and other harvesting protocols protect nest trees and prey habitat trees. Some of the key prey species for Sooty Owls, (*e.g.* Common Ringtail Possum *Pseudocheirus peregrinus*) are abundant in regrowth forests (Cann *et al.* 2002; Kavanagh 2002b). Other threats to the species include too-frequent fire in coastal forests ('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 TSC Act in NSW).

Extreme fluctuations:

There is no evidence of extreme fluctuations in the population size or habitat of this species.

Population reduction and continuing declines:

The Sooty Owl is inferred to have declined as a result of clearing of forest (Higgins 1999; DEC 2006). However, there is no evidence that the species is continuing to decline in public forest lands (DEC 2006), and it is believed, albeit with medium reliability (Garnett & Crowley 2000), that Sooty Owl populations in NSW may now be stable. The distribution of the species in NSW has remained essentially unchanged over the 20 years between 1977-1981 and 1998-2002, although too few records are available to identify any state or national trend in reporting rate (Barrett *et al.* 2003, 2007). Population viability analysis predicts a low probability of extinction

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in 200 years (DEC 2006). Most of the NSW populations of Sooty Owls now exist in state forests and NSW National Park Estate, and the baseline for its historical decline is uncertain. The Sooty Owl is regarded as data deficient for the purpose of assessing population recovery (if any), and it is also conservation dependent with respect to security of nest sites and nesting patches, notably protocols that protect roost sites, nest sites and prey habitat in state forests.

Extent of Occurrence (EOO) & Area of Occupancy (AOO):

The Sooty Owl's estimated global EOO is 230 000 km^2, with high reliability, and its estimated global AOO is 50 000 km^2, with low reliability (Garnett & Crowley 2000). As over half of the distribution of the species falls in NSW, EOO is thus more than 115 000 km^2 and AOO is more than 25 000 km^2.

Severe fragmentation:

There is little evidence of population fragmentation in this species (except for a possible break at the Hunter Valley), although forest habitat is increasingly fragmented on the coast and tablelands. For example, coastal bioregions have been cleared by 16-39%, and tablelands by 53-58% (Barrett *et al.* 2007). The Sooty Owl prefers large forest or woodland blocks of more than 200 ha and avoids small patches and strips (Kavanagh & Stanton 2002), and is thus inferred to be adversely affected by habitat fragmentation.

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Explanatory note

Between 2007 and 2009 the NSW Scientific Committee undertook a systematic review of the conservation status of a selection of plant and animal species listed under the Threatened Species Conservation Act. This species summary report provides a review of the information gathered on this species at the time the Review was undertaken.

The Scientific Committee's report on the Review of Schedules project and final determinations relating to species that were either delisted or had a change in conservation status can be found on the following website: www.environment.nsw.gov.au.

The Committee gratefully acknowledges the past and present Committee members and project officers who ably assisted the Committee in undertaking the Review of Schedules Project. Information on the people involved in the project can be found in the Acknowledgement section of the project report entitled "Review of the Schedules of the Threatened Species Conservation Act 1995. A summary report on the review of selected species" which is available on the abovementioned website.

This species summary report may be cited as:

NSW Scientific Committee (2008) Sooty Owl *Tyto tenebricos*. Review of current information in NSW. September 2008. Unpublished report arising from the Review of the Schedules of the Threatened Species Conservation Act 1995. NSW Scientific Committee, Hurstville.

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