



FLORA &
FAUNA
GUARANTEE

FLORA AND FAUNA GUARANTEE - SCIENTIFIC ADVISORY COMMITTEE
FINAL RECOMMENDATION ON A NOMINATION FOR LISTING

'Reduction in biodiversity resulting from Noisy Miner (*Manorina melanocephala*) populations in Victoria' (Potentially Threatening Process)

Date of receipt of the nomination: 11 October 2010
Date of preliminary recommendation: 24 February 2011
Date of final recommendation: 5 May 2011

File No.: FF/54/3303

Validity: The nomination is for a valid item

Prescribed Information: The prescribed information was provided.

Name of the Nominator is adequately provided.

Name and Description of the process:

In the opinion of the SAC the process is adequately defined and described.

The nominated process is defined as the 'Reduction in biodiversity resulting from Noisy Miner (*Manorina melanocephala*) populations in Victoria'

The Noisy Miner is a medium to large (24-27 cm, 60-90 g), sedentary, hyper-aggressive Australian honeyeater, which forms large, complex colonies of up to 30 birds which breed communally (Higgins *et al.* 2001).

The Noisy Miner naturally favours open *Eucalyptus* woodlands and is endemic to eastern and south-eastern Australia (Higgins *et al.* 2001). At the time of Australia's colonisation the natural habitat of the Noisy Miner was thinly timbered eucalypt forests and woodlands of the plains and low hills, rather than dense bushland (Gould 1865, Emison *et al.* 1987). European settlement of Australia resulted in large-scale clearing and modification of the land (Hobbs and Hopkins 1990). Broad-scale clearing of forested and denser vegetation created the open areas and habitat edges favoured by noisy miners, and widespread grazing by introduced sheep and cattle modified the structure and composition of ground layer vegetation. These changes enable the Noisy Miner to dominate many of the grassy woodland remnants it occupies and expel nearly all other bird species. The species thus appears to have benefited from vegetation clearing because it can tolerate fragmentation (Ford *et al.* 1995).

In Victoria, noisy miners dominate woodland remnants in all but the most heavily vegetated areas, such as mountain forests. They are particularly prevalent throughout the following bioregions: Gippsland Plain, Goldfields, Northern Inland Slopes and Victorian Riverina.

Noisy miners impact local biodiversity in the following way. Their presence in woodland remnants has been shown to exacerbate the decline of small woodland birds already decimated by habitat loss. Sometimes referred to as a 'reverse keystone species' in fragmented regions (Piper and Catterall 2003), the Noisy Miner aggressively excludes many other bird species, particularly small woodland birds, from the remnants, remnant edges, and corridors it occupies (Dow 1977, Grey *et al.* 1997, 1998, Piper and Catterall 2003, Clarke and Oldland 2007).

In an experiment at five of seven experimental sites from which noisy miners were removed (Grey *et al.* 1997, 1998), an influx of small, insectivorous birds showed that, in the absence of the miners, small birds can, and do, use degraded woodland remnants as habitat. The removal of noisy miners was particularly beneficial for nomadic and migratory species.

Three endangered bird species (Regent Honeyeater *Anthochaera phrygia*, Swift Parrot *Lathamus discolor* and Grey-crowned Babbler *Pomatostomus temporalis temporalis*), along with all species of the Victorian Temperate Woodland Bird Community (SAC 2001), have habitat overlaps with noisy miners in Victorian woodland remnants from which they may as a consequence be excluded or face excessive competition for resources.

The destruction of temperate woodlands in south-eastern Australia, along with the land-use changes that have taken place over the past 200 years, have often resulted in ideal conditions for the Noisy Miner (Ford *et al.* 1995, Robinson and Traill 1996, Recher 1999, Ford *et al.* 2001, Olsen *et al.* 2005, Eyre *et al.* 2009) whilst at the same time leading to the demise of many woodland birds, and this situation has been exacerbated by the recent drought.

Habitat improvement efforts for woodland birds can also be compromised because well-established noisy miner colonies may exclude other birds up to 300m from a patch edge, even if the habitat structure is diverse; meaning that it is difficult to reduce the effect of noisy miners in remnants < 36ha in size (Clarke and Oldland 2007).

Results from a study undertaken in uncleared landscapes of large, continuous tracts of Brigalow and Spotted Gum (*Corymbia citriodora*) forest in Queensland by Eyre *et al.* (2009) also suggest there are negative effects on small birds by noisy miners even in relatively intact landscapes usually thought of as refuges for declining species. In the period between the publication of the first (Blakers *et al.* 1984) and second (Barrett *et al.* 2003) Australian bird atlases, the reporting rate of the Noisy Miner

increased by 10% Australia-wide, and in central Victoria by more than 20%, suggesting that noisy miner affects may be spreading into less fragmented woodland areas as well.

All bird species in the Victorian temperate woodland bird community (SAC 2001, Table 1), especially small insectivorous species, are prone to exclusion by noisy miners. For example the removal of noisy miners from seven small (<10 ha) box-ironbark woodland remnants in north-eastern Victoria (Grey *et al.* 1997, 1998) resulted in a major influx of small insectivorous and nectivorous birds, including the endangered Regent Honeyeater (DSE 1993) and numerous members of the threatened woodland-dependent bird community such as the Black-chinned Honeyeater *Melithreptus gularis*, Fuscous Honeyeater *Lichenostomus fuscus*, Dusky Woodswallow *Artamus cyanopterus*, Southern Whiteface *Aphelocephala leucopsis* and Varied Sittella *Daphoenositta chrysoptera* (SAC 2001, DSE 2010).

The range of flora or fauna affected or potentially affected was adequately stated in the nomination.

Significance of the threat which the potentially threatening process poses or has the potential to pose was adequately stated in the nomination.

Eligibility for listing as a potentially threatening process under the Flora and Fauna Guarantee

The nominated item satisfies at least one criterion of the set of criteria prepared and maintained under Section 11 of the *Flora and Fauna Guarantee Act 1988*, and stated in Schedule 1 of the Flora and Fauna Guarantee Regulations 2001.

Evidence that criteria are satisfied:

Criterion 5.1 *the potentially threatening process poses or has the potential to pose a significant threat to the survival of a range of flora or fauna.*

Evidence:

A wide range of bird species have been identified in the literature as being negatively affected by noisy miners. Many studies have revealed that the presence of noisy miners substantially reduces the number of co-occurring bird species, often resulting in their exclusion (Hannah *et al.* 2007). 20 affected bird species are so identified in just two references. Maron (2007) reported several species never recorded in sites where noisy miners were present, including the Varied Sittella *Daphoenositta chrysoptera*, Yellow Thornbill *Acanthiza nana*, Southern Whiteface *Aphelocephala leucopsis* and Red-capped Robin *Petroica goodenovii* while several others, including the Yellow-rumped Thornbill *Acanthiza chrysorrhoa*, Yellow Thornbill *Acanthiza nana*, Hooded Robin *Melanodryas cucullata* (listed under the FFG Act), Crested Pigeon *Ocyphaps lophotes*, Striated Pardalote *Pardalotus striatus* and Brown Treecreeper *Climacteris picumnus*, were in low abundance. Major *et al.* (2001) found that remnants from which noisy miners were absent were significantly more likely to contain the Weebill *Smicrorhynchus brevirostris*, Brown Thornbill *Acanthiza pusilla*, Red-capped Robin, Rufous Whistler *Pachycephala rufiventris*, Grey Fantail *Rhipidura fuliginosa*, Spiny-cheeked Honeyeater *Acanthagenys rufogularis*, Yellow Thornbill, Western Gerygone *Gerygone fusca*, Yellow-rumped Thornbill, Eastern Yellow Robin *Eopsaltria australis*, White-eared Honeyeater *Lichenostomus leucotis* and Singing Honeyeater *Lichenostomus virescens*.

The significant threat posed by noisy miners to a range of bird species also has implications for the survival of some remnant eucalypt woodlands (Clarke *et al.* 1995). Many researchers have noticed an association between the presence of noisy miners and insect-induced eucalypt dieback (eg Ford and Bell 1981; Ford 1985; Loyn 1987 and many others). The exclusion of other insectivorous birds from remnant woodlots by noisy miners may result in increased insect abundance and rural tree decline; and defoliation by insects is the most frequently cited factor in reports of rural dieback (Old *et al.* 1981). The decline of other insectivorous bird species is an important factor in this insect defoliation (Ford 1985). Ford and Bell (1982), Ford (1985, 1986). Landsberg *et al.* 1990) provide strong evidence that, where noisy miners are present in small degraded woodlots, small insectivorous birds are absent. The removal of noisy miners or even a reduction in their abundance can result in a 'major influx of honeyeaters and other insectivorous birds' and significantly decrease the level of leaf damage caused by herbivorous insects in grey box remnants (Grey 2008).

Sub-criterion 5.1.1 *the potentially threatening process poses or has the potential to pose a significant threat to the survival of two or more taxa.*

Evidence:

At least three endangered species (Regent Honeyeater *Anthochaera phrygia*, Swift Parrot *Lathamus discolor* and Grey-crowned Babbler *Pomatostomus temporalis temporalis*) are negatively affected by noisy miners along with a number of other threatened and near-threatened woodland bird species.

Sub-criterion 5.1.2 *the potentially threatening process poses or has the potential to pose a threat to the survival of a community of flora or fauna.*

Evidence:

All birds in the Victorian temperate woodland bird community (SAC 2001 [Table 1]), especially the small insectivores Dusky Woodswallow *Artamus cyanopterus*, Southern Whiteface *Aphelocephala leucopsis*, Varied Sittella *Daphoenositta chrysoptera* (Grey *et al.* 2010), are prone to exclusion by noisy miners. Noisy miners aggressively exclude nearly all other bird species, particularly small woodland birds, from the remnants, remnant edges, and corridors it occupies (Dow 1977; Grey *et al.* 1997, 1998; Piper and Catterall 2003; Clarke and Oldland 2007).

Sub-criterion 5.2.2 the potentially threatening process poses or has the potential to pose a significant threat to the evolutionary development of a community of flora or fauna.

Evidence:

Clearly, if the presence of noisy miners alters the community of birds present, it also alters the evolutionary development of that community that would take place without that additional selection pressure. Because noisy miners are a key threat to small passerines, by aggressively excluding the smaller passerines they substantially change the composition of bird communities in areas where miners defend their own territories (Dow 1977, Loyn 1987, Grey et al. 1998, Maron 2007). Furthermore, the area affected by noisy miners is increasing: in the period between publication of the first (Blakers et al. 1984) and the second (Barrett et al. 2003) Australian bird atlases, the reporting rate of the Noisy Miner increased by 10% Australia wide and in central Victoria by more than 20%.

Additional Information

- There is a large literature related to the impact Noisy Miners have on woodland bird species in Australia (see references).

Table 1: Victorian woodland-dependent bird species and their status (after SAC 2001) thought to be threatened by Noisy Miners.

Common name	Scientific name	Conservation status DSE (2007)	FFG status
Apostlebird	<i>Struthidea cinerea</i>	V	L
Barking Owl	<i>Ninox connivens</i>	E	L
Black-chinned Honeyeater	<i>Melithreptus gularis</i>	NT	-
Brown Treecreeper (sub-species <i>victoriae</i>)	<i>Climacteris picumnus victoriae</i>	NT	-
Brown-headed Honeyeater	<i>Melithreptus brevirostris pallidiceps</i>	-	-
Bush Stone-curlew	<i>Burhinus grallarius</i>	E	L
Diamond Firetail	<i>Stagonopleura guttata</i>	V	L
Fuscous Honeyeater	<i>Lichenostomus fuscus</i>	-	-
Grey-crowned Babbler	<i>Pomatostomus temporalis</i>	E	L
Ground Cuckoo-shrike	<i>Coracina maxima</i>	V	L
Hooded Robin	<i>Melanodryas cucullata</i>	NT	L
Jacky Winter	<i>Microeca fascinans</i>	-	-
Little Lorikeet	<i>Glossopsitta pusilla</i>	-	-
Painted Button-quail	<i>Turnix varia</i>	-	-
Painted Honeyeater	<i>Grantiella picta</i>	V	L
Red-capped Robin	<i>Petroica goodenovii</i>	-	-
Red-tailed Black-cockatoo	<i>Calyptorhynchus banksii</i>	E	L
Speckled Warbler	<i>Chthonicola sagittata</i>	V	L
Superb Parrot	<i>Polytelis swainsonii</i>	E	L
Swift Parrot	<i>Lathamus discolor</i>	E	L
Turquoise Parrot	<i>Neophema splendida</i>	NT	L
Regent Honeyeater	<i>Anthochaera phrygia</i>	CE	L
Western Gerygone	<i>Gerygone fusca</i>	-	-
Yellow-tufted Honeyeater sub-species <i>meltoni</i>	<i>Lichenostomus melanops meltoni</i>	-	-

- FFG status: L = FFG-listed species, - = not nominated/assessed (as at May 2011).
- Conservation status [as per DSE (2007)]: CE = critically endangered, E = endangered, V = vulnerable, NT = near threatened

Documentation

The published information and research data provided to the Scientific Advisory Committee (SAC) have been assessed. Based on the available information, the SAC believes that the data presented are not the subject of scientific dispute and the inferences drawn are reasonable and well supported.

Advertisement for public comment

In accordance with the requirements of Section 14 of the *Flora and Fauna Guarantee Act 1988*, the preliminary recommendation was advertised for a period of at least 30 days.

The preliminary recommendation was advertised in:

- 'The Herald Sun' - on 9 March 2011
- 'The Weekly Times' - on 9 March 2011
- Government Gazette* - on 10 March 2011

Submissions closed on 22 April 2011.

Further evidence provided:

Two submissions were received on this item, both supported the recommendation to list the potentially threatening process.

Final Recommendation of the Scientific Advisory Committee

The Scientific Advisory Committee concludes that on the evidence available the nominated item is eligible for listing in accordance with Section 11 of the Act because primary criterion 5.1 and sub-criteria 5.1.1, 5.1.2 and 5.2.2 have been satisfied. The SAC also concludes that no evidence exists to suggest that primary criterion 5.2 cannot be satisfied as a consequence of sub-criterion 5.2.2 being satisfied

The Scientific Advisory Committee makes a final recommendation that the nominated item be supported for listing on Schedule 3 of the *Flora and Fauna Guarantee Act 1988*.

Selected references:

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Relevant websites:

Birds behaving badly (the Noisy Miner): <http://birdsinyard.net/feature/birds-behaving-badly-miner.cfm>

Debus (2008): <http://www.une.edu.au/ers/staff-profile-doc-folders/steve-debus/debus-n-miner.pdf>

Maximising woodland bird diversity in Brigalow Belt Forests (Qld):

http://eprints.usq.edu.au/8274/1/Howes_Maron_USQ12_PV.pdf

Endorsement by the Convenor of the Scientific Advisory Committee

Date


 Assoc. Prof David Morgan
 Convenor

16.5.8

