SCARLET ROBIN

PETROICA BOODANG
ACTION PLAN

BACKGROUND

The Scarlet Robin (*Petroica multicolor*) was declared a vulnerable species on 20 May 2015 (Instrument No. DI2015-88) under the former *Nature Conservation Act 1980* (NC Act 1980). The declaration followed a recommendation by the Flora and Fauna Committee, guided by criteria formerly set out in Instrument No. DI2008-170 (Table 1). On 3 June 2015 the Committee recommended the scientific name for the Scarlet Robin be changed to *P. boodang* following a molecular study (Kearns et al 2015) and a revision of the taxonomy of Australian passerine bird species (Dickinson and Christidis 2014).

The NC Act 1980 was repealed and replaced with the current *Nature Conservation Act 2014* (NC Act 2014) on 11 June 2015. Part 2.4 of the NC Act 2014 established the Scientific Committee to replace the Flora and Fauna Committee. On 29 July 2015 (Instrument No.NI2015-438) listings of threatened species as declared under the NC Act 1980, including the formerly declared vulnerable species, the Scarlet Robin, were listed under the NC Act 2014. The scientific name of the Scarlet Robin was updated to *P. boodang* on 30 May 2016.

CRITERIA SATISFIED

Species is observed, estimated, inferred or suspected to be at risk of premature extinction in the ACT region in the medium term future, as demonstrated by:

2.2 Current serious decline in population or distribution from evidence based on direct observation, including comparison of historic and current records.

2.2.1 Subsection 100(a)(i) of the NC Act 2014 outlines requirements for action plans.

Measures proposed in this action plan complement those proposed in the action plan for Yellow Box/Red Gum Grassy Woodland (ACT Government 2004) and for listed threatened woodland bird species such as the Hooded Robin (*Melanodryas cucullata*), Brown Treecreeper (Climateris picumnus), White-winged Triller (*Lalage sueurii*), Varied Sittella (*Daphoenositta chrysoptera*), Painted Honeyeater (Grantiella picta), Regent Honeyeater (*Anthochaera phrygia*), Superb Parrot (*Polytelis swainsonii*) and Swift Parrot (*Lathamus discolor*).

DESCRIPTION

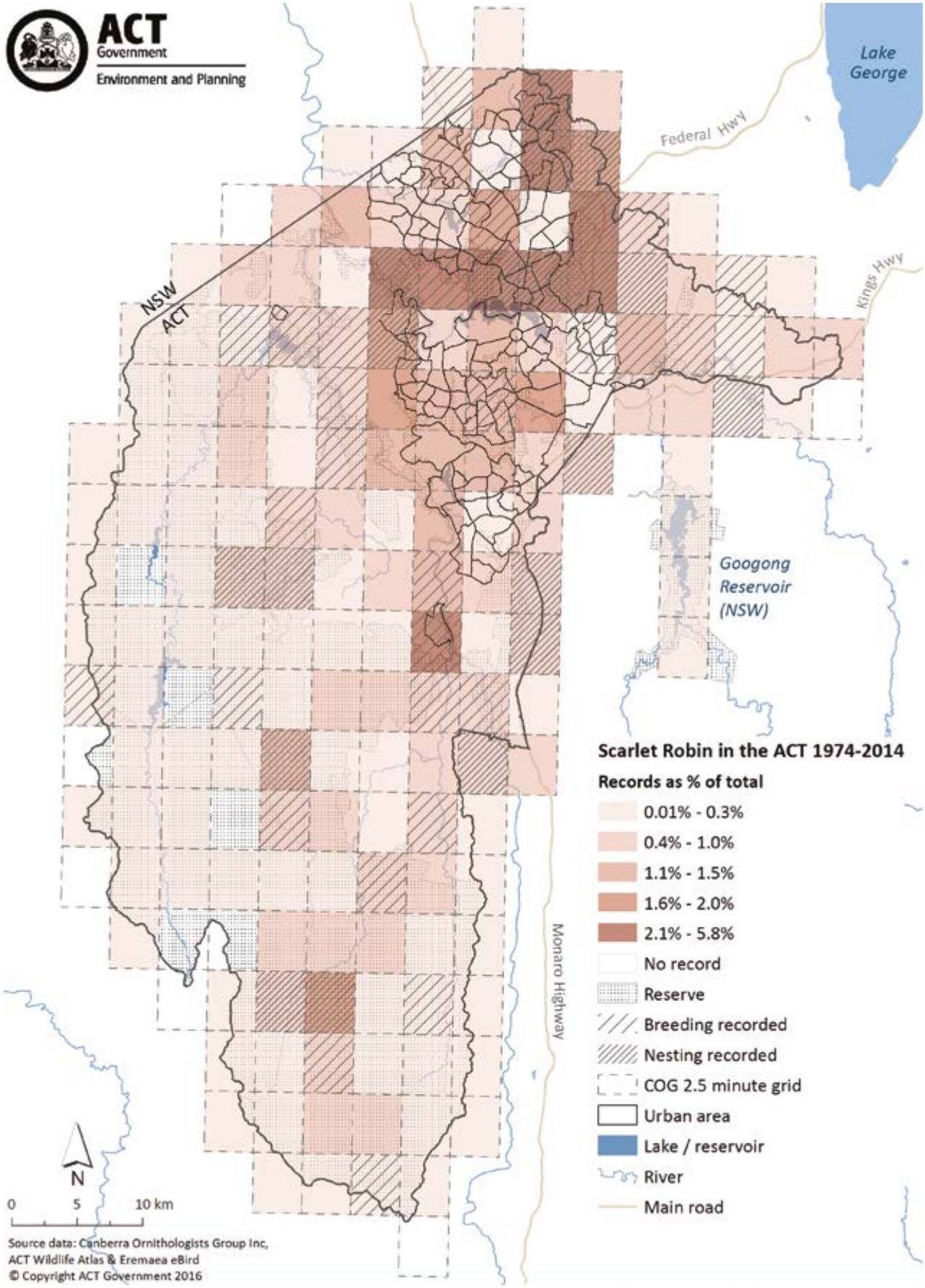
The Scarlet Robin is 12–14 centimetres in length and averages 13 grams in weight. Adult male birds have bold red, black and white plumage and females are brownish with a red/orange wash on the breast (Pizzey and Knight 2012) (**Figures 1a** and **1b**). Young birds resemble the adult female.

Figure 1: Male (top) and female (bottom) Scarlet Robin. G. Dabb.

Scarlet Robins are one of three red breasted robins in Australia, the others being the Flame Robin (*P. phoenicea*) and the Red Capped Robin (*P. goodenovii*). Scarlet Robins are distinguishable from the other red breasted robins by the obvious white forehead and red wash on the breast in females.

Unlike the Flame Robin, the red breast plumage colour of Scarlet Robins does not continue up the throat to the bill. Male Scarlet Robins also lack a scarlet cap and females lack a dull reddish wash on the forehead, which distinguishes them from the Red Capped Robin (Pizzey and Knight 2012).

Figure 2: Distribution of Scarlet Robin in the ACT



DISTRIBUTION

Scarlet Robins are found in south-eastern Australia (extreme south-east Queensland to Tasmania, western Victoria and south-east South Australia) and south-west Western Australia. In NSW the species occupies open forests and woodlands from the coast to the inland slopes (Higgins and Peter 2002), with dispersing birds sometimes appearing in autumn or winter on the eastern fringe of the inland plains (NSW Scientific Committee 2010).

Scarlet Robins are distributed widely across the ACT in eucalypt woodlands and dry, open forest, particularly where shrubs, logs, coarse woody debris and native grasses are present (they are generally absent from open areas where no trees remain) (Taylor and COG 1992). **Figure 2** shows a distribution map of Scarlet Robins in the ACT, summarised for 1 July 1982 to 30 June 2014 and based on records of observations submitted to Canberra Ornithologists Group (COG) and eBird Australia (COG 2015a).

In the warmer months, Scarlet Robins are found mainly at higher altitude in the foothills of the ranges in open forest and shrubby habitats. Occupancy rates decline significantly at higher elevations over the cooler months; birds are more often seen in lowland woodland, peri-urban woodland, grazed paddocks with scattered trees, gardens and parklands at lower altitude during autumn and winter (Taws et al 2012). The current COG Annotated Checklist describes the Scarlet Robin as an 'Uncommon breeding resident/ altitudinal migrant' in the ACT (COG 2015b).

The records of Scarlet Robin (**Figure 2**) were supplied by Canberra Ornithologists Group (COG Database), including from eBird Australia (eBird Australia 2016) and excluding the Garden Bird Survey data (COG 2014). The distribution of Scarlet Robins has been summarised for 187x2.5 minute grids covering the ACT and the Googong Reservoir in NSW, currently managed by the ACT. The mapping classes recognise natural breaks inherent in the data to best group similar values using Jenk's Natural Breaks algorithm (Jenks 1967).

POPULATION TRENDS

Analysis of data from COG's Woodland Bird Survey (Bounds et al 2010) found strong evidence of decline in Scarlet Robin abundance in the ACT. More recent research has confirmed the species as one of five woodland-dependent species showing a long term decline in abundance over 14 years (Rayner 2015 PhD thesis *unpubl.*). The study analysed 56 species, with the Grey Shrike-thrush, Mistletoebird, Striated Thornbill and Tree Martin also being found to be in decline.

Scarlet Robins have been classified as one of three 'urban avoider' bird species (i.e. native birds that show a long-term declining population in the ACT), in addition to the Striated Thornbill and Rufous Whistler. Urban avoider species are: more likely to be observed at sites at an increasing distance from the urban fringe (0–3 kilometres), are likely to be migratory or dispersive species, and are likely to be smaller-bodied, woodland-dependent species that rely on mid to upper canopy structures for nesting (Rayner et al 2015).

CONSERVATION STATUS

The listed conservation status of the Scarlet Robins is as follows:

- **Australian Capital Territory:** Vulnerable, Section 91 *Nature Conservation Act 2014*; Special Protection Status species, Section 109 *Nature Conservation Act 2014*.
- **New South Wales:** Vulnerable, listed in Part 1 of Schedule 2 and *Threatened Species Conservation Act 1995*.
- **South Australia:** Rare, listed as '*P. m. boodang* (eastern subspecies)' in Schedule 9 National Parks and Wildlife Act 1972.

HABITAT AND ECOLOGY

Appendix 1(a) describes the habitat and ecology of Scarlet Robins in detail.

THREATS

Following a detailed literature review of the habitat and ecology of Scarlet Robins in eastern Australia, four key threats to maintaining a viable, stable and breeding population in the ACT have been identified. The four key threats, in decreasing order of significance, are:

- Habitat loss and degradation
- Predation
- Climate change
- Competition

Appendix 1(b) documents the four key threats in detail, citing sources from the scientific literature

OBJECTIVES AND INTENDED MANAGEMENT ACTIONS

Five management objectives have been identified, each to be achieved by management actions, to address the risk of premature extinction of Scarlet Robin.

OBJECTIVES

1. Identify, protect and restore Scarlet Robin breeding and foraging habitat.
2. Manage habitat to conserve Scarlet Robin.
3. Undertake and support survey, monitoring and research.
4. Co-operate with state and local government agencies.
5. Increase community awareness of, and engagement in, managing Scarlet Robin as a vulnerable species.

ACTIONS

Table 1 identifies the proposed management actions and indicators against each of the objectives

Table 1: Key objectives, actions and indicators

OBJECTIVE	ACTION	INDICATOR
PROTECT		
1. Identify, protect and restore Scarlet Robin breeding and foraging habitat.	1a. Map the location and extent of breeding and foraging habitat of Scarlet Robin in the ACT.	Maps of breeding sites and the current extent of foraging habitat occupied by Scarlet Robin are prepared.
	1b. Protect Scarlet Robin populations from unintended impacts (unintended impacts are those not already considered through an environmental assessment or other statutory process).	Scarlet Robin populations are considered in the development approval process.
	1c. Improve degraded breeding and foraging habitat by replacing missing structural layers and increasing the size of habitat patches by planting locally indigenous trees and shrubs.	The area of currently occupied breeding and foraging habitat for Scarlet Robin is stable or increasing. Restoration activities have created more structurally diverse habitat for Scarlet Robin.
	1d. Undertake restoration activities to connect isolated habitat for Scarlet Robin.	Targeted restoration activities have improved habitat connectivity for Scarlet Robin.
MAINTAIN		
2. Manage habitat to conserve Scarlet Robin.	2a. Distribute coarse woody debris (or similar ground layer enhancement treatments) in known (or potential) breeding or foraging habitat for Scarlet Robin.	Area of breeding or foraging habitat enhanced by placement of coarse woody debris (or similar ground layer enhancement treatments) has increased.
	2b. Continue to expand cat containment areas in new suburbs where they coincide with known Scarlet Robin breeding sites or potential breeding habitat	Cat containment policy is implemented in all new suburbs that coincide with Scarlet Robin habitat.
	2c. In areas of known Scarlet Robin habitat, replace woody (berry-bearing) invasive plants with locally indigenous species (e.g. *Acacia dealbata*, *Bursaria* sp., and *Allocasuarina verticillata*)	Area of exotic trees or shrubs cleared and replaced with locally indigenous species has increased.

OBJECTIVE	ACTION	INDICATOR
IMPROVE		
3. Undertake and support survey, monitoring and research.	3a. Undertake and/or support monitoring initiatives that track changes in population abundance and distribution.	Data on population abundance and distribution are collected and mapped
.	3b. Undertake and/or support research initiatives to fill gaps in knowledge of Scarlet Robin, including: → responses to climate change (e.g. timing of breeding and arrival/departure) → vulnerability to predators → critical habitat parameters (i.e. canopy cover, shrub cover, ground cover, logs, fallen branches and litter) → seasonal migration/movements and habitat corridors.	At least one research project is initiated within the first five years of the action plan's commencement.
COLLABORATE		
4. Co-operate with state and local government agencies.	4a. Support cross-jurisdictional conservation research and monitoring activities.	At least one cross-jurisdictional research or monitoring initiative is undertaken.
5. Increase community awareness of, and engagement in, managing Scarlet Robin as a vulnerable species.	5a. Collaborate with community groups and citizen science groups to promote incidental and systematic data collection of Scarlet Robin sightings.	Community group activities are actively supported and records are collected.
	5b. Undertake community engagement and awareness raising activities to disseminate research and monitoring findings to inform the conservation of Scarlet Robin.	Engagement activities are undertaken.
	5c. Encourage landowners to manage areas to improve habitat for Scarlet Robin (e.g. rotational grazing, promote shrub and tree regeneration).	Increased awareness and participation by rural landholders to improve habitat that is suitable for Scarlet Robin.

BOX 1 - ADAPTIVE RESOURCE MANAGEMENT

The Adaptive Resource Management (ARM) approach was conceived as a technical–ecological model to deal with uncertainty (Walters and Holling 1990, Allan 2007). Consequently ARM involves learning from implementation; learning opportunities need to be identified, hypotheses stated and different management treatments tested. Of necessity, ARM also focuses on the problem of using such new knowledge in policy and planning (e.g. Stankey et al 2003).

The ACT Nature Conservation Strategy 2013–23 (ACT Government 2013) signals a shift away from reliance on static planning documents towards more flexible tools designed for adaptive management and feedback into implementation cycles.

Interactive mapping tools may be able to be used to support ARM in the context of this action plan. Mapping of habitat and setting baselines is an essential first step in adaptive management. Statistical or mathematical models could be developed using spatially referenced and/or time- series data based on the occurrence of Scarlet Robin to predict or trade-off future management scenarios (e.g. use of prescribed fire). In most cases, in order to be readily understood, such modelled output would need to be mapped.

Monitoring is crucial if learning by conservation managers is to occur and to assist in review of this action plan. Under s.108 of the NC Act 2014 the Conservator of Flora and Fauna must monitor the effectiveness of an action plan and make the findings publicly accessible.

IMPLEMENTATION AND REVIEW OF THIS ACTION PLAN

Implementation of this action plan will result in new knowledge about the habitat and ecology of the Scarlet Robin. This knowledge should inform implementation of relevant actions in this action plan. To emphasise the importance of new knowledge in implementing this action plan, specific benchmarks have been included for three actions to highlight the need to implement these actions as a high priority. These actions are numbered 1a, 1b and 3c (see Table 1).

New knowledge will also inform review of the action plan. Under s.108 of the NC Act 2014 the Conservator of Flora and Fauna must report to the Minister about each action plan at least once every five years and make the report publicly accessible within 30 days. The Scientific Committee must review an action plan every 10 years, or at any other time at the Conservator's request.

ACKNOWLEDGMENTS

This action plan was prepared by the Conservator of Flora and Fauna situated in the Environment and Planning Directorate, ACT Government. Use of the bird database held by the Canberra Ornithologists Group is gratefully acknowledged.

GLOSSARY

Altitudinal migrant: A species that breeds at higher altitude in summer and migrates to lower altitude areas in winter.

Breeding record: A breeding record for *P. boodang*, including any of the following activities: carrying food ('cf'), copulation ('co'), display ('di') or dependent young ('dy').

Critical habitat: Habitat that is critical to the survival of a species or ecological community (Dictionary, s.3 of the *Nature Conservation Act 2014*.)

Congeneric: A species which is a member of the same genus as another species.

Dependent: A bird fed by its parents.

Dispersing: A species spreading to other areas, often after breeding has ceased.

Migrant: A bird that moves between locations in a regular annual cycle, usually breeding in one and wintering in another.

Nesting recorded: A breeding record for *P. boodang* including any of the following nesting activities: sitting on ('on'), building a nest ('nb), a nest with eggs ('ne') or a nest with young ('ny').

Passerine: A member of the order Passeriformes, a perching song- bird with three forward-pointing toes and one rear- pointing toe.

APPENDIX 1(A)

HABITAT AND ECOLOGY

Scarlet Robins live in dry eucalypt forest and woodlands, usually with trees and shrubs present and an open or grassy understorey. The species lives in both mature and regrowth vegetation. It occasionally occurs in wet forest or near wetlands. Shrub cover, native grasses, a healthy eucalypt canopy, abundant logs and fallen timber are important components of its habitat (Taws et al 2012).

Scarlet Robins are quiet and unobtrusive foragers found on or near the ground and on branches and the trunks of shrubs and trees (Frith 1984, Higgins and Peter 2002). They forage from low perches, fence-posts, tree trunks, logs or the ground, pouncing on small insects and other invertebrates. They sometimes forage in the shrub or canopy layer.

Birds usually occur singly or in pairs, occasionally in small family parties. Pairs stay together all year round. In autumn and winter they join mixed flocks of other small insectivorous birds that forage through dry forests and woodlands.

Scarlet Robins breed on ridges, hills and foothills of the western slopes, the Great Dividing Range and eastern coastal regions of NSW; and occasionally breeds up to 1000 metres in altitude. A similar pattern of breeding occurs in the ACT.

Scarlet Robins form breeding pairs that defend a breeding territory. They mainly breed between July and January although in recent years earliest breeding dates in the ACT have tended to be later in August or early September (COG 2014, 2015a).

Scarlet Robins may raise two or three broods a season. The nest, an open cup made of plant fibres and cobwebs, is often built in the fork of a tree that is usually more than two metres above the ground. Nests are often found in a dead branch on a live tree or in a dead tree or shrub. Eggs are pale greenish-, bluish- or brownish-white, with brown spots; clutch size ranges from one to four. The generation time of the species has been estimated at five years based on the congeneric Flame Robin (Garnett and Crowley 2000).

CRITICAL HABITAT

For the purposes of this action plan, the critical habitat of the Scarlet Robin is defined as its breeding habitat in open forest and woodland areas.

APPENDIX 1(B)

THREATS

HABITAT LOSS AND DEGRADATION

The main threat to the Scarlet Robin is the loss of its open forest or woodland breeding and foraging habitat (NSW Scientific Committee 2010) and habitat degradation (Radford and Bennett 2007). In comparing surveyed woodland sites stratified by habitat and land use category, the species was found to be less common in habitat patches less than:

- 30 hectares in area with no tree cover within
- 200 metres and less than 2% cover within 1 kilometre
- less common at sites surrounded by cattle grazing
- absent from sites surrounded by cereal cropping (Barrett et al 2003).

Nest sites, food sources and foraging substrates (i.e. standing dead timber, log and coarse woody debris) are susceptible to depletion by firewood collection and 'tidying up' of rough pasture (e.g. mowing, slashing) and overgrazing (Recher et al 2002, Olsen et al 2005).

However, the occurrence (presence/absence) of Scarlet Robins can be positively associated with habitat patch size and components of habitat complexity such as increasing tree canopy cover, shrub cover, ground cover, logs, fallen branches and litter (Watson et al 2003).

Habitat for Scarlet Robins may become unsuitable if dense regeneration (e.g. wattles) occurs after bushfires in forest or woodland. Research into bird and animal responses to fire in dry forests and woodlands has identified Scarlet Robins as a 'Response C' species. Response C species show a long-term decline post-fire with or without a short-term increase in numbers. Although the response may be favourable to these species in the short term, regeneration of the shrub layer renders the habitat unsuitable after a few years. Eventual species recovery is expected as the shrub layer thins out over time. However, there is insufficient knowledge about when this would happen (MacHunter et al 2009).

PREDATION

Open nesting, small, passerine birds (e.g. robins, flycatchers, whistlers and honeyeaters) experience poor nesting success in fragmented and degraded eucalypt woodlands (Woinarski 1985, Robinson 1990, Ford et al 2001, Higgins and Peter 2002). The Pied Currawong *Strepera graculina* is a nest predator whose population has increased significantly in eastern Australia to become a common breeding bird in urban and peri-urban areas (NSW Scientific Committee 2010). A Pied Currawong population increase is also evident in urban Canberra (COG 2009, COG 2015c). Debus (2006 a,b) investigated whether the Pied Currawong has become a threat to the breeding productivity of the Scarlet Robin and Yellow Robin (*Eopsaltria australis*) by testing whether culling of currawongs during the robins' breeding season led to increased breeding success in remnant woodland at Imbota, near Armidale, northern NSW. Debus found that culling led to a twofold increase in nest success, higher fledgling rates and increased nest survival rates for both robin species. The study confirmed that predation by the Pied Currawong was a major cause of nest failure together with a wide range of other nest predators (e.g. mammals and reptiles) in the cull area (Debus 2006a,b).

Barratt (1997) studied predation by house cats on wildlife in Canberra. Information on the composition of vertebrate prey caught by cats was collected by recording prey deposited at cat owners' residences over 12 months. A total of 1961 prey items comprising 67 species were collected or reported. Birds comprised 27% of the total (14% native, 10% introduced, 3% unidentified). Of the 47 bird species identified as prey, 41 were native bird species.

On Norfolk Island the Scarlet Robin (*P. multicolor*, formerly *P. b. multicolor*) is thought to be affected by cat (*Felis catus*) and black rat (*Rattus rattus*) predation and cat and rat control measures were recommended (Director of National Parks 2010; Garnett and Franklin 2014). Predation by feral cats (*F. catus*) and robbing of nests and predation of fledgling by rats (*Rattus sp.*) are recognised as threats to the Scarlet Robin in NSW (NSW Office of Environment and Heritage 2016a).

CLIMATE CHANGE

An assessment of the likely response of the Scarlet Robin to climate change has been undertaken as part of the Climate Change Adaptation Plan for Australian Birds (Garnett and Franklin 2014). The comparison of climate suitability for the Scarlet Robin showed the suitability as mapped for 1985 contracting southwards by about 50% in total area by 2085, but remaining relatively extensive and including the entire ACT within the modelled species distribution. The two Australian mainland subspecies *P. b. boodang* (eastern Australia) and *P. b. campbelli* (south-western Australia) were assessed as being of 'medium' sensitivity to climate change (Garnett and Franklin 2014).

COMPETITION

The Australian Government (March 2013) and the NSW Government (September 2013) have listed the 'Aggressive exclusion of birds from forest or woodland habitat by abundant Noisy Miners' (*Manorina melanocephala*) as a Key Threatening Process under legislation (Department of Environment 2014). In making the declaration, the NSW Scientific Committee recognised Scarlet Robins as one species of a range of listed threatened species which may be adversely affected by aggressive exclusion by abundant Noisy Miners (NSW Scientific Committee 2013). The Noisy Miner has benefited from the large-scale vegetation changes, such as fragmentation, that accompanied European settlement of Australia (Higgins et al 2001; Grey et al 2010, Maron et al 2011) and, as a result, has increased in abundance (Szabo et al 2010). In the ACT, since 1991 the reporting rate for the Noisy Miner in COG's Annual Bird Report increased from 4.3% to 21% in 2010–11 (COG 2015d). Data analysis from across south-eastern Australia has shown Noisy Miner densities of 0.8/hectare or larger are strongly negatively correlated with small to medium sized native birds (Mac Nally et al 2012). The experimental removal of Noisy Miners from habitat patches results in the re-colonisation of small to medium sized birds (Grey et al 1997, 1998; Debus 2008) even in the absence of restoration of habitat structure.

FURTHER INFORMATION

Further information on this action plan or other threatened species and ecological communities can be obtained from:

Environment and Planning Directorate, ACT Government
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