National Recovery Plan for the Gouldian Finch (*Erythrura gouldiae*)

by Colleen O'Malley

in collaboration with the National Gouldian Finch Recovery Team

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The Australian Government, in partnership with the Northern Territory Department of Natural Resources, Environment and the Arts, Queensland Environmental Protection Agency/Queensland Parks and Wildlife Service and the Western Australia Department of Environment and Conservation, facilitates the publication of recovery plans to detail the actions needed for the conservation of threatened native wildlife.

The attainment of objectives and the provision of funds will be subject to budgetary and other constraints affecting the parties involved, and may also be constrained by the need to address other conservation priorities. Approved recovery actions may be subject to modification due to changes in knowledge and changes in conservation status.

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Introduction

The Gouldian Finch (*Erythrura gouldiae*) is listed as endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Under the EPBC Act any person proposing to undertake actions likely to have a significant impact on listed threatened species or habitat critical to their survival should refer the action to the federal Minister for the Environment and Water Resources for consideration. The Minister will then decide whether the action requires EPBC Act approval. Administrative guidelines are available from the Department of the Environment and Water Resources (DEW) to assist proponents in determining whether their action is likely to have a significant impact, and advice is also available on the DEW website: www.environment.gov.au/epbc

The species occurs in three states, the Northern Territory, Western Australia and Queensland. The conservation status of the Gouldian finch in each of these states/ territories is:

NT – Endangered (*Territory Parks and Wildlife Conservation Act 2000*)

WA – Rare (*Wildlife Conservation Act 1950*)

Qld – Endangered (*Nature Conservation Act 1992*)

This plan outlines the measures necessary to ensure recovery of the species and an improvement in its conservation status over the longer term.

General information on Gouldian Finch biology, distribution, population status and previous recovery effort can be found in the Appendix section to this plan.

This is the third successive Recovery Plan for this species although there is currently no nationally adopted recovery plan. The preparation of this plan has been substantially influenced by the successes, challenges and progress arising from the previously endorsed plan (Dostine 1998). An audit of the previous Recovery Plan is given in the Appendix section to this plan.

Objectives for recovery

The overall objective of this recovery program is to:

Improve the conservation status of the Gouldian Finch through population increases.

Specific objectives to achieve the overall objective include:

SO1) Specific fire regimes aimed at improving Gouldian Finch population trends are implemented at key sites and their effectiveness tested.
SO2) Improved grazing, feral herbivore and fire management systems are in place at key off-reserve sites within Gouldian Finch range.
SO3) Trends in population and health indices for Gouldian Finches are stable or improving at key sites.
SO4) Reintroduction methodology and factors limiting Gouldian Finch survival are refined through trial reintroductions at Queensland sites.
SO5) The national recovery program is operating with high levels of community participation.

Criteria to measure performance of the plan against specific objectives

Performance criteria used to measure the effectiveness of actions in achieving the specific objectives over a five-year timeframe include:

PC1) fire management programs implemented and showing measured improvement in Gouldian Finch population or health trends at key sites;
PC2) key off-reserve sites with improved grazing, feral herbivore and fire management implemented and showing measured improvement in Gouldian Finch population or health trends;

PC3) overall improvement or maintenance of measured trends in Gouldian Finch population and health indices at three or more geographically distinct sites;
PC4) demonstrated and substantive improved outcomes for any successive release of Gouldian Finches in trial reintroductions at Queensland sites;
PC5) landholder, pastoral or Aboriginal support organisations participating in the Gouldian Finch recovery effort.

Species information

Gouldian Finches are small, brightly coloured seed-eating birds restricted to the northern savannas of Australia. Formerly ranging from Cape York Peninsula in Queensland, through the northern half of the Northern Territory, to the Kimberley region in Western Australia, Gouldian Finches were once believed to be amongst the most common finches of the region.

Within the last one hundred years Gouldian Finch populations have undergone significant population declines and a contraction of their known range so that now the species is recorded reliably only at a small number of sites within six Northern Territory and Western Australia bioregions (Figure 1), while in Queensland Gouldians are now rarely seen in the wild.

The pattern of historical decline in Gouldian Finch populations is similar to that observed for a suite of other granivorous birds inhabiting the northern savannas, including seven endemic species (Franklin 1999), and three other threatened taxa: Star Finch populations in Queensland (Todd *et al*. 2003); Partridge Pigeon (eastern subspecies: Fraser 2000); and the Golden-shouldered Parrot (Garnett and Crowley 2003).

Habitats critical for Gouldian survival

Gouldian Finches currently utilise only a small percentage of the range formerly occupied (particularly in Queensland), and it is likely that most habitats currently used are not optimal. Until we understand more about Gouldian Finch habitat utilisation – including what drives populations not utilising some areas for several seasons, or turning up in places where they have not been recorded for decades and the interplay between rainfall, fire regimes and grazing impacts in shaping habitat suitability for Gouldian Finches, it is not possible to map habitat critical for the species' survival. Instead, this plan identifies key areas (Table 1) with significant populations of Gouldian Finches, where it is assumed the species is likely to persist if threatening processes can be minimised. These sites represent areas where populations of adults and juvenile birds (indicative of breeding events) have been recorded consistently over at least the past decade, either as part of on-going population monitoring programs or based on incidental sightings recorded on the Gouldian Finch national database.

Known breeding habitat for Gouldian Finches in the Northern Territory and Western Australia is characterised by rocky hills with hollow-bearing smooth-barked gums (*Eucalyptus brevifolia* or *E. tintinnans)* within two to four kilometres of small waterholes or springs that persist throughout the dry season. Dry season feeding habitat is dominated by annual spear grasses or native sorghum (*Sarga* species), and in the wet season birds shift to feeding from scattered patches of cockatoo grass (*Alloteropsis semialata*), golden beard grass (*Chysopogon fallax*) or spinifex-dominated communities (*Triodia bitextura; T. acutispicula; T. bynoei; T. schinzii*). Other important wet season grasses include giant spear grass (*Heteropogon triticeus*), white grass (*Sehima nervosum*), ricegrass (*Xerochloa laniflora*) and kangaroo grass (*Themeda triandra*).

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Figure 1 Current distribution of Gouldian Finches (1993-2005)

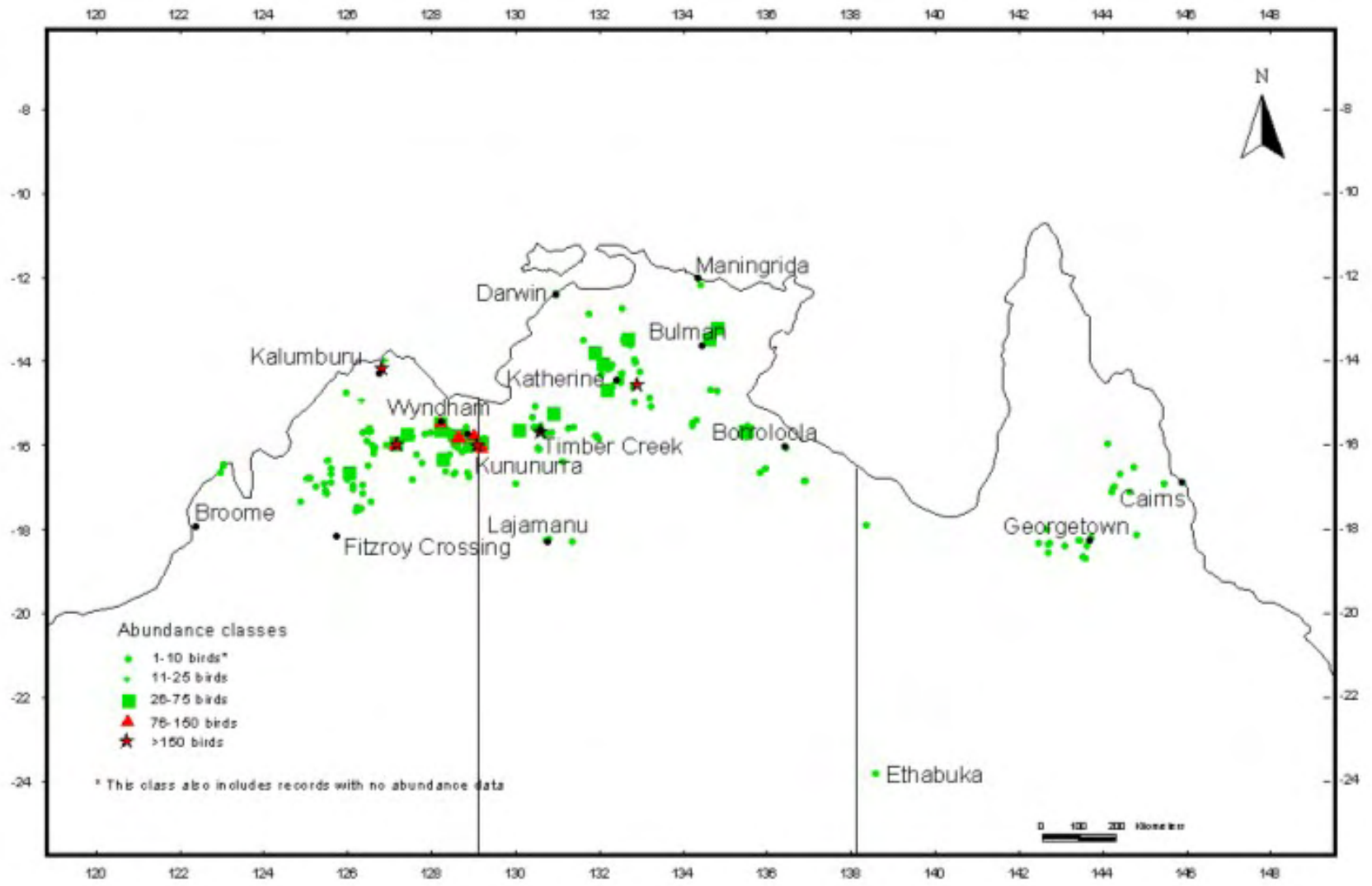

Table 1. Key Gouldian Finch sites in the Northern Territory and Western Australia

Location	Tenure	Estimated population size[1]	Major current threats[2]	Existing conservation measures
NT: Yinberrie Hills + surrounds	Aboriginal freehold, with peripheral area within Nitmiluk NP.	150 – 250 adults	• Inappropriate fire regimes • Feral pigs	• Fire management • Intermittent feral pig control • Population monitoring
NT: Limmen Gate NP	NT government	< 100 adults	• Inappropriate fire regimes • Buffalo/cattle impacts	• Population monitoring • Fire management
NT: Kakadu National Park and surrounds	Joint Aboriginal-Commonwealth NP	50 -150 adults	• Inappropriate fire regimes	• Fire management
NT: Bradshaw Field Training Area	Commonwealth land: Defence Dept.[3]	< 100 adults	• Inappropriate fire regimes • Feral grazing impacts (including cattle from neighbouring properties)	• Fire management • Feral herbivore control • Monitoring
NT: Newry Station and Keep River NP	Pastoral lease + NT government	50 -100 adults	• Inappropriate fire regimes • Grazing impacts	• Population monitoring
WA: Kununurra surrounds (Thompson Falls + Pumpkin Springs)	Pastoral + mining leasehold	50 -100 adults	• Inappropriate fire regimes • Grazing impacts	None known
WA: Wyndham + surrounds (King R crossing, Moochalaba Dam Rd)	Crown + freehold land + pastoral lease	50 -100 adults	• Inappropriate fire regimes	• Artificial billabong established
WA: Gibb River Rd locations (includes Drysdale, Durack and Gibb R tributaries)	Pastoral lease and Aboriginal Trust Land	100 - 200 adults	• Inappropriate fire regimes • Grazing impacts	None known
WA: Kalumburu Rd + surrounds	Pastoral and Aboriginal freehold	50 -100 adults	• Inappropriate fire regimes • Grazing impacts	None known
WA: Mornington Wildlife Sanctuary (AWC)	Pastoral lease managed for conservation purposes	100 - 200 adults	• Inappropriate fire regimes • Grazing impacts	• Research and recovery program in place • Fire management program • De-stocking of 50,000ha • Feral herbivore control • Fire management program

[1]These are estimates and adjacent areas may include counts of overlapping populations. [2]Threat posed by infection with the air sac mite parasite is not listed as it is assumed to be constant across different areas. [3]Gouldians are also known to occur in Yampi Sound, another Defence property. Limited survey effort and restricted access to birdwatchers precludes an estimate of the population at this time.

Key threats

The restricted diet of Gouldian Finches, combined with their essential annual lifecycle, makes them particularly vulnerable to the seed shortages that can occur at the onset of the wet season (November - January). Reduced availability of critical wet season grass seed resources due to changes in land use and consequent changes in grazing and fire regimes, combined with natural fluctuations in seasonal rainfall may have driven historical declines in Gouldian Finches. In some cases, however, the rate of population declines is not consistent with gradual environmental change occurring as a result of pastoral settlement.

The iconic nature of the Gouldian Finch provides an opportunity to highlight the general decline of granivorous birds occurring as a consequence of current land management practices.

Current threats

Vegetation change through inappropriate fire regimes and grazing impacts of stock and feral herbivores is the factor most likely to be contributing to ongoing declines, or absence of recovery, in Gouldian Finch populations.

1. Inappropriate fire regimes

The contemporary fire regime in northern Australia is dominated by frequent, extensive, hot, late dry season wildfires, with large tracts of the region burning every year. This regime is believed to differ markedly from that practiced by Aboriginal people prior to European settlement. Fire was used to manage country so that a more patchy mosaic of smaller burns existed, and individual fires were less likely to travel hundreds of kilometres as they do today. The current fire regime is believed to be detrimental to a range of species, including granivorous birds, fire-sensitive plant communities, and a suite of medium-sized mammals. This threat operates at a landscape-scale and is ideally managed at that level, rather than at a site-specific local scale. Localised components of the landscape such as the Gouldian Finch could then be used as a monitoring tool with subsequent localised intervention if broadscale efforts are apparently ineffective.

Fire is known to affect seed productivity in key wet season grasses that Gouldian Finches rely on to tide them over the period of food scarcity that occurs early in the year. Both cockatoo grass and curly spinifex seed production is reduced in areas burnt in successive years. Fires can also affect the availability of tree hollows for nesting, and Gouldian Finches tend to avoid hollows that have been burnt.

There is some evidence supporting a link between Gouldian Finch population persistence and the maintenance of heterogeneous fire patterns in landscapes – either due to management intervention or due to topographic features that restrict the spread of wildfires.

2. Grazing impacts

Grazing intensity has been shown to be correlated with granivorous bird decline across the northern savannas, and data suggest that the negative impacts of grazing may be worse where pastoral settlement occurred earlier, as in Queensland (Franklin *et al*. 2005).

Key Gouldian Finch wet season grasses - cockatoo grass and golden beard grass - are selectively grazed by cattle and horses leading to their incidence and extent being reduced. Grazing can also dramatically reduce seed production in residual populations of these species. Feral pigs have also caused significant damage to patches of cockatoo grass in the Yinberrie Hills, and both cattle and buffalo can reduce or degrade waterholes used by Gouldian Finches in the dry season by trampling and eating surrounding vegetation.

3. Air sac mites

During the 1980s there was evidence of high rates of air sac mite (*Sternostoma tracheacolum*) in wild Gouldian Finch populations. From this, it has been suggested that a disease agent may have

been responsible for historical declines of populations, although the extent of impact from disease remains unclear.

Potential threats

1. Climate change

It is now widely accepted that global warming caused by human activity is occurring. The exact implications of these changes are unknown, but it is predicted that there will be temperature increases and alterations in rainfall patterns across northern Australia.

Climate change is predicted to affect the timing and amount of wet season rainfall, potentially impacting on Gouldian Finch populations by increasing the frequency or intensity of wildfires or by favouring some grass species over others that may not be palatable to Gouldian Finches. Potential changes in the availability of surface water in the dry season would also affect persistence of populations in some areas.

Actions to achieve specific objectives

SO1 Specific fire regimes aimed at improving Gouldian Finch population trends implemented at key sites and their effectiveness tested.

Action 1.1 Reduce the frequency, extent and/or intensity of late dry season fires at key sites in the Kimberley and Northern Territory.

Action 1.2 Test ideal parameters (timing, frequency, or scale) for patch-burning regimes at key sites in the NT and Kimberley, and assess Gouldian Finch population response annually (see Action 3.3).

Action 1.3 Incorporate adaptive burning strategies (based on data from Action 1.2) for Gouldian Finch habitat into management plans/strategies for Nitmiluk, Kakadu, Keep River, Gregory, and Limmen Gate National Parks, appropriate Western Australian parks and reserves.

SO2 Improved grazing, feral herbivore and fire management systems in place at key off-reserve sites within Gouldian Finch range.

Action 2.1 Develop indicators for optimal Gouldian Finch habitat health based on an assessment of grazing and fire impacts on wet season habitat in the Kimberley and the northern half of the Northern Territory.

Action 2.2 Incorporate grazing, feral herbivore and fire management actions (based on data from Actions 1.1 and 2.1) and Gouldian Finch population monitoring programs (based on Action 3.3) into existing land management projects on key sites on pastoral and Aboriginal lands in the Kimberley and Northern Territory.

Action 2.3 Incorporate strategies for improved grazing, feral herbivore and fire management, and population monitoring into management plans being developed by Australian Wildlife Conservancy for Mornington Wildlife Sanctuary.

Action 2.4 Develop and disseminate best practice guidelines (based on data from Actions 1.1 and 2.1) for fire and grazing management of preferred Gouldian Finch wet season habitat for pastoral properties in the Kimberley and the northern half of the Northern Territory.

Action 2.5 Calculate costs to landholders of any management activities and/or reduced productivity associated with management to promote Gouldian Finches, and then develop, trial and evaluate an incentives package to encourage pastoralists and Aboriginal landowners at key Gouldian Finch

sites to participate in burning, grazing management, feral herbivore control and Gouldian Finch population monitoring actions.

Action 2.6 Work collaboratively with Jawoyn Aboriginal Corporation to get greater participation in burning and feral herbivore control actions on Jawoyn lands, particularly those lands holding key Gouldian Finch populations.

SO3 Demonstrated stability or improvement in population and health indices trends for the Gouldian Finch at key sites.

Action 3.1 Refine techniques to develop a standardised population monitoring method for assessing trends at key sites.

Action 3.2 Develop and standardise an effective set of methods for rapid assessment of Gouldian Finch population health.

Action 3.3 Establish a network of monitoring sites in key habitat areas in the Northern Territory and Kimberley and implement annual population and/or health indicator monitoring at these sites.

Action 3.4 Regularly review and report on the monitoring results (from Action 3.3), and if necessary, revise management programs based on these trends.

Action 3.5 Integrate population trend and health monitoring actions into management plans for Nitmiluk and Limmen Gate National Parks, Mornington Wildlife Sanctuary and Bradshaw Field Training Area.

Action 3.6 Maintain the national Gouldian Finch database and solicit information on sightings from all stakeholder groups.

SO4 Reintroduction methodology and factors limiting Gouldian Finch survival refined through trial reintroductions at Queensland sites.

Action 4.1. Undertake, evaluate and report on a strategic sequence of trials to define limiting factors affecting Gouldian Finch reintroduction success at Mareeba Wetlands Reserve. Release of captive bred Gouldian Finches to the wild would only be undertaken from approved programs for breeding and rehabilitation.

Action 4.2. Undertake Gouldian Finch habitat restoration at Mareeba Wetland Reserve, informed by habitat management needs determined from Action 4.1.

Action 4.3. If Action 4.1 meets agreed performance criteria, develop more generic reintroduction guidelines, and habitat suitability assessments and assess additional sites for potential reintroduction trials.

SO5 National recovery program operating with high levels of community participation.

Action 5.1 Develop and disseminate a range of stakeholder-targeted information on the Gouldian Finch recovery program.

Action 5.2 Report regularly and widely on the Gouldian Finch recovery effort.

Action 5.3 Develop linkages with other species recovery programs or landscape-scale projects in the tropical savannas, especially those focused on improved fire and pastoral management.

Action 5.4. Review the effectiveness of this Plan, and the extent to which all Actions have been adequately implemented.

Action 5.5 Administer the recovery team effectively. Seek involvement from the Western Australian Department of Environment and Conservation on the recovery team.

Benefits to other threatened species and ecological communities

Improvements in fire regimes and reduction in grazing pressure are likely to benefit a wide range of animal and plant species across the northern savannas. Declining granivorous birds and a suite of medium-sized mammals are likely to be the major beneficiaries if fire and grazing regimes are improved at the landscape level. Threatened species are listed in Table 2, along with the Arnhem Plateau sandstone heath ecological community, are also threatened by inappropriate fire regimes.

Table 2 Other threatened species and ecological communities likely to benefit from recovery actions

Species	Status		Notes	Beneficial actions
	Action plan	EPBC		
Chestnut-backed button-quail	NT	-	Declining granivore species with distribution overlap with the Gouldian Finch in the northern half of the Northern Territory and Kimberley.	Fire management Grazing reduction
Flock bronzewing	NT	-	Declining granivore species with distribution overlap with the Gouldian Finch across their range.	Fire management Grazing reduction
Partridge pigeon (western)	V	V	Declining granivore taxon with distribution overlap with the Gouldian Finch in the western Kimberley.	Fire management Grazing reduction Feral herbivore control
Partridge pigeon (eastern)	NT	V	Listed as V under NT legislation. Declining granivore taxon with distribution overlap with the Gouldian Finch in the Northern Territory. Feeds on cockatoo grass.	Fire management Grazing reduction Feral herbivore control
Pictorella mannikin	NT	-	Declining granivore species with distribution overlap with the Gouldian Finch across their range.	Fire management
Purple-crowned fairy wren (western)	NT	V	Listed as V under NT legislation. Utilises canegrass (*Mnesithea* spp.) along watercourses. Riparian habitat is fire-threatened.	Fire management Grazing reduction Feral herbivore control
Northern quoll		E	Listed as CE under NT legislation. Range overlap in the Northern Territory and Kimberley.	Fire management Grazing reduction
Golden bandicoot		V	Listed as E under NT legislation. Range overlap in northern Kimberley.	Fire management
Butler's dunnart		V	Listed as V under NT legislation. Range overlap in northern Kimberley.	Fire management
Brush-tailed tree-rat		-	Listed as V under NT legislation. Range overlap in the Northern Territory.	Fire management
Northern brush-tailed phascogale		-	Listed as V under NT legislation. Range overlap in the Northern Territory.	Fire management
Arnhem plateau heath community		N	Range overlap with the Gouldian Finch.	Fire management

1. Status: CE Critically Endangered; E Endangered; V Vulnerable; NT Near Threatened; N Nominated

Duration and cost of the recovery process

It is anticipated that the recovery process will take longer than the five-year life of this plan. The Gouldian Finch populations in the Northern Territory and Western Australia will need to show increased numbers, maintained over several successive seasons, before the species could be considered to have recovered sufficiently to be considered for a change in listing status. The implementation actions are to be reviewed and the performance of the plan formally evaluated by NT Department of Natural Resources, Environment and the Arts, in conjunction with Queensland Environmental Protection Agency/Parks and Wildlife Service and WA Department of Environment and Conservation, five years from the date of its publication.

The cost of this plan will be met through various direct and indirect funding activities undertaken by State and Territory governments, researchers, Aboriginal organisations, pastoral and mining industry organisations, conservation groups, and the wider community.

Total annual costs across all actions are estimated as follows:

Year	2007	2008	2009	2010	2011	Total
Cost	$257,000	$292,000	$187,000	$112,000	$122,000	**$970,000**

Role and interest of Indigenous groups

Gouldian Finch distribution extends over lands of many different Traditional Owner groups in Queensland, the Northern Territory and Western Australia represented by various Land Trusts and Aboriginal corporations. The Carpentarian Land Council, Balkanu Aboriginal Corporation, Northern Land Council and Kimberley Land Council are the major organisations representing the rights and interests of Aboriginal traditional landowners in northern Australia, while the Northern Australian Indigenous Land and Sea Managers Alliance (NAILSMA) is actively increasing Aboriginal people's involvement in land and sea management research and implementation. The Indigenous Land Corporation owns title to several pastoral leases within current Gouldian Finch range, and in some cases is in the process of handing ownership and management responsibility over to traditional owner groups.

Jawoyn Aboriginal Corporation has been engaged in the Gouldian Finch recovery effort through involvement on past recovery teams and in collaborative fire management and feral pig control programs with Parks and Wildlife in the Yinberrie Hills. The recovery team has identified the need to broaden the interest and involvement of Aboriginal land managers and Traditional Owners in the next phase of the recovery program.

Affected interests

Gouldian Finch populations occur on lands of several different tenures and the stakeholders likely to be affected by the recovery program are given below. These groups and individuals will influence the plan's success through direct involvement in implementing actions listed in this plan, or through influencing the implementation of these actions.

<u>Australian Government</u>
Department of Defence
Department of the Environment and Water Resources
Department of Agriculture, Fisheries and Forestry
Indigenous Land Corporation

<u>Industry organisations</u>
Ag Force (Qld)
Pastoralists and Graziers Association (WA)
Northern Territory Cattleman's Association
Rio Tinto (Argyle Diamond Mine)

State government organisations
Department of Natural Resources, Environment And the Arts (NT)
Parks and Wildlife and Bushfires Council
Department of Primary Industries and Fisheries (NT)
Department of Environment and Conservation (WA)
Fire and Emergency Services Authority (WA)
Environmental Protection Agency/ Queensland Parks and Wildlife Service

Non-government organisations
Australian Wildlife Conservancy
North Queensland Wildlife Conservancy
Victoria District Conservation Association
Roper River Landcare Group
Save Endangered East Kimberly Species
Threatened Bird Network
WWF-Australia

Local government
Town and Shire Councils representing Mareeba
Katherine, Pine Creek and Timber Creek (NT)
Kununurra, Kalumburu and Wyndham (WA)

NRM regional bodies
Northern Gulf Group (Qld)
Landcare Council (NT)
WA Rangelands NRM Coordinating Group and Kimberly sub-region NRM Group

Social and economic impacts

While it is not anticipated that there will be any significant social or economic impacts from this plan, there may be opportunities for Aboriginal people and pastoralists to benefit from management actions linked to this plan. Gouldian Finch-related tourism may be applicable due to the interest in this species internationally.

It is expected there may be some economic costs to pastoralists and Aboriginal land managers in converting to more beneficial fire and grazing management regimes, but in some cases it is also likely that improved fire regimes will reduce productivity losses due to large wildfires destroying infrastructure and pasture resources.

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