

## Appendix 4-B

### Gouldian Finch Independent Review







**REVIEW OF THE  
GOULDIAN FINCH FOR  
THE SOUTH OF EMBLEY  
PROJECT**

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FINAL REPORT  
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REPORT TO ECOTONE ENVIRONMENTAL  
SERVICES

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## SUMMARY

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The Gouldian Finch *Erythrura gouldiae* is a savanna woodland granivorous bird that was once widespread across northern Australia. From the 1950s, and possibly earlier, it declined catastrophically. The initial declines began in Queensland and spread west, reaching the Kimberley in the 1970s. In the last decade there has been evidence of recovery, particularly in the west. The species is highly mobile, being long-winged for its size than other finch species, so can turn up anywhere in northern Australia, and has been recorded well inland as a vagrant.

Gouldian Finches were recorded in the study area in 1914/15, and never again. Also they are largely absent from the wetter taller forests characteristic of the study area, even in areas where they are still relatively abundant in the Northern Territory and Western Australia. It is highly unlikely that any Gouldian Finches occur in the area of concern.

It is not recommended that the site be managed to enhance particularly conservation of the Gouldian Finch.

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## INTRODUCTION

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This report was commissioned by Ecotone Environmental Services acting on behalf of Rio Tinto Alcan to understand the possible environmental impacts of extending bauxite extraction to areas south of the Embley River on north-western Cape York Peninsula, Queensland.

### TERMS OF REFERENCE FOR THIS REPORT

This report undertakes to do the following:

- review historic and recent records of Gouldian Finch on Cape York Peninsula;
- prepare a synopsis of the ecology of the species;
- summarise trends in its abundance and distribution;
- undertake an assessment of the potential presence of the Gouldian Finch in the Project area given the vegetation/RE types present; and,
- prepare recommendations on how it should best be managed at the site, if the review suggests that such management is necessary.

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## RECORDS OF GOULDIAN FINCH FROM CAPE YORK PENINSULA

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### Records from the study area

The Birds Australia Historical Atlas lists two records from the area of concern, one listed as 1913 at -13.58° S, 141.72° E, the other 1914 at -13.27°, 141.88° E. In fact these can be traced to a collecting expedition by William McLennan in 1914-15. He camped beside the Archer River in July and August 1914 and April 1915 (MacGillivray 1917). His employer, William MacGillivray, states that the “Gouldian Grass-Finches were common on the Archer River in both phases of plumage” (McLennan 1918). Reading the original text it is likely that these records were much closer together than suggested in the Historical Atlas reinterpretation, and may have been a single record, more likely the northern one as that corresponds more closely to the historical descriptions. A search of McLennan’s diaries from that expedition has failed to find any original reference to the sightings.

### Records from Cape York Peninsula

Of the 9 other records from Cape York Peninsula, the next closest record is listed in the Historical Atlas as coming from Silver Plains/Port Stewart area on the east coast. It is dated 1968 but this may be an error. The same William McLennan, then working as an egg collector for H.L.White, recorded a sighting of Gouldian Finches once in his diary of 1922 which he saw from the bullock cart as he crossed the plains on his way to Coen. This was published by White (1922) as “several birds noted”.

All other records of Gouldian Finch on Cape York Peninsula, but north of 16°S, are from further south. The closest and most recent record is of two small groups (<12) seen in 2005 by separate reliable observers on Violetvale Station east of Musgrave. These are consistent with infrequent but repeated anecdotal records from Marina Plains, Lakefield National Park, Artemis Station and Koolburra Station in the 1990s and 2000s which suggest that a small population persists in this area, probably breeding. These records have been made available to the report’s author through correspondence and are not on national databases. This population is over 200 km from the area of potential impact.

On the west coast trappers used to catch Gouldian Finches near Kowanyama in the 1960s before the rapid decline began (A.Little pers.comm 1995), and one was collected (Domrow 1966), but there are no recent records, or any records closer to the area of potential impact.

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## SYNOPSIS OF THE ECOLOGY OF THE SPECIES

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Gouldian Finches feed almost exclusively on grass seed. They feed on different species of grass depending on the timing and availability of grass seed (Dostine and Franklin 2002; O’Malley et al. 2006). They nest in tree hollows, lay an average clutch of five eggs,



and may raise several clutches in a season, but productivity averages 1.5 fledglings per pair (Tidemann et al. 1999). When breeding, they use small patches of suitable open woodland areas usually on ridges dominated by cavity bearing trees. In the Northern Territory and Western Australia they feed on seeding grasses such as sorghum *Sarga* spp. and spinifex *Triodia* spp. within 2-4 km of perennial water (Dostine et al. 2001; O'Malley 2006). Where studied in the Northern Territory and Western Australia they move to areas with different seeding grasses after breeding, forming flocks and moving widely across the broader landscape (O'Malley 2006).

In Queensland there is almost no knowledge of the ecology of the finches. The diet must be different from further west because there is no annual sorghum and spinifex is absent from most sites where the finches have been recorded. An unpublished study of a small flock near Chillagoe in 1994 found that the birds were feeding on the fallen seeds of fire grass *Schizachyrium* spp., the most abundant annual grass on Cape York Peninsula. They are also likely to take seed of the perennial sorghum *Sarga plumosum* when available at the end of the wet season, though this appears to produce less seed than the annual sorghum, and seed sweeps failed to find fallen seed that could provide a staple food through the dry season. Nesting habitat, however, is unlikely to be limiting given the abundance of hollow-bearing trees in the Queensland savannas.

Regular fires extending over large areas, such as those that occur regularly in the project area (Russell-Smith et al. 2007), are known to reduce body condition and other health indices and heavy grazing by cattle is known to reduce seed yields in grasses important to the finches (Crowley and Garnett 2001). Fire can also affect hollow availability, although this has not been recorded as reducing productivity (Tidemann et al. 1999; Brazill-Boast et al. 2010, 2011). The air-sac mite *Sternostoma tracheacolum* (Tidemann et al. 1992b; Bell 1996) also appeared to increase mortality in the wild and may have been a proximal cause of decline in a population already stressed by environmental change. Trapping for aviculture was substantial in the past but is not considered a major threat (Garnett et al. 2011).

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## TRENDS IN ABUNDANCE AND DISTRIBUTION OF GOULDIAN FINCH

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The Gouldian Finch was once widespread across northern Australia but declined catastrophically from the 1950s onwards, possibly earlier. The decline began in Queensland and had spread west to Western Australia by the 1970s. They were then known from just a few sites until around 2004. At that time they began to be seen at more sites and in larger numbers. It was recently recommended that the IUCN Red List status be changed from Endangered to Near Threatened on the basis that, although well below historical levels, the population appears to have stopped declining. However it may still contract to near 1,000 mature individuals at the end of the dry season (Garnett et al. 2011).

Their current range is across northern Australia from Cape York Peninsula through north-west Queensland and the northern Northern Territory to the Kimberley Region of Western Australia (Higgins et al. 2006; O'Malley et al. 2006). Non-breeding birds disperse widely: juveniles have moved over 200km in a few weeks birds have been recorded on

the Georgina River in the Simpson Desert. The lack of population structuring across the species range suggests substantial population mixing. In Queensland there are no recent breeding records but since 2005 birds have been sighted at least three sites on southern Cape York Peninsula, on the Atherton Tablelands, and at several sites in and around Boodjamulla National Park. In the Northern Territory and the Kimberley in Western Australia they are known from numerous sites between the Dampier Peninsula and the Queensland border (Garnett *et al.* 2011).

The global population size of the Gouldian Finch is essentially unknown, and in any case varies greatly each year. Since 2004 flocks of 100+ birds have been seen by birdwatchers at multiple, well-separated sites during the dry season from western Queensland through the Northern Territory, including near Darwin (400+) and Maningrida in Arnhem Land (1,000+), to the Kimberley (700+ at Mornington Sanctuary; Garnett *et al.* 2011). Most of these are juveniles and most are males suggesting an effective population size that is much smaller than would appear from counting dry season flocks. Trend data from annual counts in the Yinberrie Hills for 1996-2004 suggest that, while numbers fluctuate, they have not declined and the population at Mornington Wildlife Sanctuary in the central Kimberley was essentially stable from 2004 to 2007 (Garnett *et al.* 2011).

The population on Cape York Peninsula is likely to be a very small proportion of the global population. The most birds seen at any one time is a flock of about 40 anecdotally reported from Koolburra Station north of Laura in about 2006. But again these were mostly juveniles, so the number of breeding adults would have been small. Given the low intensity of searching in the region, there is still a possibility of a few hundred Gouldian Finches in the Laura River basin. Occasionally some individuals may disperse to other sites, such as those in the Simpson Desert, but such birds are unlikely to be biologically significant. Their very presence suggests a population that is increasing and with a surplus.

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## **POTENTIAL PRESENCE OF THE GOULDIAN FINCH IN THE PROJECT AREA GIVEN THE VEGETATION/REGIONAL ECOSYSTEM TYPES PRESENT**

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It is highly unlikely that a biologically significant population of Gouldian Finch currently occurs in the area of concern.

Table 1. presents an assessment of the possible suitability of each vegetation unit and selected regional ecosystems for Gouldian Finches. Some vegetation types and regional ecosystems have a grassy understorey that probably contains grass species on which the finches have been recorded feeding elsewhere in their range. There are also likely to be hollows available for nesting. Thus there is the potential for Gouldian Finches to occur in this habitat, as there is across the whole of the tropical savannas. However the rainfall in the study area is much high than elsewhere in the majority of the finch's range, which

is on the southern, drier, edge of the savanna woodland zone across northern Australia. In particular the wet season tends to start later on Cape York Peninsula than further west (Garnett and Williamson 2010), which would extend the period at the end of the dry season when seed sources are likely to be depleted. Thus, while the grasses may be present, it is deemed unlikely that the finches would ever have occupied the area often, if at all. The only records of the finches in the area, in 1914/15, were in areas with access to extensive grassland near the Archer or Watson Rivers (it is unclear which), but certainly in habitat unlike that occurring in the area of possible impact.

**Table 1: Vegetation units and selected Regional Ecosystems in the area of potential impact and assessment of suitability for Gouldian Finches**

<b>Vegetation Unit</b>	<b>Suitability assessment for Gouldian Finches</b>
2a Tall woodland with Molloy red box on plains – massive sandy loams	Very low: Unlike any habitat occupied elsewhere by Gouldian Finches but could have grasses in understorey on which finches could feed
2b Tall Darwin Stringybark woodland on lateritic red earths	Very low: Unlike any habitat occupied elsewhere by Gouldian Finches but could have grasses in understorey on which finches could feed
2c Tall Darwin Stringybark woodland on yellow earths/eroding slopes	Very low: Unlike any habitat occupied elsewhere by Gouldian Finches but could have grasses in understorey on which finches could feed
3a Semi-evergreen notophyll vine forest or thicket on coastal dunes	Nil: no suitable food or nesting habitat
3b Melaleuca swamp	Nil: no suitable food or nesting habitat
3c Notophyll vine forest on lateritic or bauxite	Nil: no suitable food or nesting habitat
4a Riparian gallery forest along permanent and semi-permanent watercourses	Nil: no suitable food or nesting habitat
4b Swamp forest / woodland and palm forest on gleyed podzolics close to water table	Nil: no suitable food or nesting habitat
4b Swamp forest / woodland and palm forest on gleyed podzolics close to water table	Nil: no suitable food or nesting habitat
4c Sclerophyll fern forest on low lying alluvial terraces, humic gleys	Nil: no suitable food or nesting habitat
5a Layered woodland on plains – massive sandy loams	Low: possible nesting and feeding habitat
5b Grassy woodland on undulating plains and erosional slopes	Possible feeding and nesting habitat
5c Woodland on low beach dunes with horse-tail she oak	Nil: no suitable food or nesting habitat

**Table 1: Vegetation units and selected Regional Ecosystems in the area of potential impact and assessment of suitability for Gouldian Finches**

<b>Vegetation Unit</b>	<b>Suitability assessment for Gouldian Finches</b>
5d Paperbark woodland fringing sandy swales	Nil: no suitable food or nesting habitat
5e <i>C. polycarpa</i> / <i>E. brassiana</i> Woodland on colluvial upper reaches of broad drainage basins	Low: possible nesting and feeding habitat
5f Grassy woodland on eroding slopes on colluvium – yellow and gleyed podzolics	Low: possible nesting and feeding habitat
5j Bloodwood–Banksia in upper parts of broad basins	Low: possible nesting and feeding habitat
6a Semi-evergreen vine thicket on calcareous sand	Nil: no suitable food or nesting habitat
7a Mixed shrubby woodland (Sclerophyll vine woodland) on dunefields	Nil: no suitable food or nesting habitat
7b Melaleuca / Swamp mahogany on the outer margins of drainage depressions	Nil: no suitable food or nesting habitat
7c Woodland with Paperbark on sandy swales	Nil: no suitable food or nesting habitat
7d Seepage zone along footslopes or outer margins of drainage lines with grassy ground cover and scattered low paperbark	Nil: no suitable food or nesting habitat
12a Sedgeland in the drainage lines of permanent swamps	Nil: no suitable food or nesting habitat
12b Sedgeland in basins of seasonally flooded swamps and drainage depressions	Nil: no suitable food or nesting habitat
12c Grassland/herbland on dunefield	Very low: Unlike any habitat occupied elsewhere by Gouldian Finches but could have grasses in understorey on which finches could feed
<b>Regional Ecosystem (only those considered at all suitable listed)</b>	
3.2.10c <i>Eucalyptus tetradonta</i> , <i>Corymbia clarksoniana</i> ± <i>E. brassiana</i> woodland on stabilised dunes.	Very low: Unlike any habitat occupied elsewhere by Gouldian Finches but could have grasses in understorey on which finches could feed
3.5.11 <i>Eucalyptus tetradonta</i> , <i>Corymbia nesophila</i> woodland on lower slopes of plains and rises.	Very low: Unlike any habitat occupied elsewhere by Gouldian Finches but could have grasses in understorey on which finches could feed

**Table 1: Vegetation units and selected Regional Ecosystems in the area of potential impact and assessment of suitability for Gouldian Finches**

Vegetation Unit	Suitability assessment for Gouldian Finches
3.5.2 <i>Eucalyptus tetradonta</i> , <i>Corymbia nesophila</i> tall woodland on deeply weathered plateaus and remnants.	Very low: Unlike any habitat occupied elsewhere by Gouldian Finches but could have grasses in understorey on which finches could feed

## RECOMMENDATIONS ON HOW THE GOULDIAN FINCH SHOULD BEST BE MANAGED AT THE SITE, IF THE REVIEW SUGGESTS THAT SUCH MANAGEMENT IS NECESSARY.

There is no merit in managing the potential impact area for Gouldian Finches. The finches appear to have been in the region a century ago but have probably been absent for at least half that time. Even when in the area, their ecology suggests that they are unlikely to have used the vegetation types available. There are many high value conservation assets present in the area for which it could be managed should the mine development go ahead: the Gouldian Finch is not among them.

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