National recovery plan for the white-bellied subspecies of the Crimson Finch *Neochmia phaeton evangelinae* and the northern subspecies of the Star Finch *Neochmia ruficauda clarescens*

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Australian Government

Queensland Government
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Title: National recovery plan for the white-bellied subspecies of the crimson finch *Neochmia phaeton evangelinae* and the northern subspecies of the star finch *Neochmia ruficauda clarescens*

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Cover photographs: top: crimson finch, bottom, star finch

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This state approved recovery plan has been adopted as a National Recovery Plan under the provisions of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). While it includes two species of finch, adoption as a National Recovery Plan under the EPBC Act refers only to the crimson finch (white-bellied).

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Contents

Executive Summary

Taxonomy of species

The white-bellied subspecies of the crimson finch *Neochmia phaeton evangelinae* d'Albertis and Salvadori, 1879, is one of two recognised subspecies of *Neochmia phaeton*.

The northern subspecies of the star finch *Neochmia ruficauda clarescens* (Hartert, 1899) is one of three subspecies of *Neochmia ruficauda* (Schodde & Mason 1999). Both species are granivorous grassfinches.

Current conservation status of species

The crimson finch *Neochmia phaeton* is listed as 'Vulnerable' in Queensland under the *Nature Conservation Act 1992* (NC Act). Under this legislation subspecies not listed separately have the same conservation status as the species. The crimson finch (white-bellied) is listed as 'Vulnerable' nationally under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The status of the northern subspecies of the star finch *Neochmia ruficauda clarescens* under the NC Act is 'Least concern'.

Habitat and distribution summary

Both *N. p. evangelinae* and *N. r. clarescens* are restricted to far north Queensland, where they occupy grassland habitats near water.

Crimson finches (white-bellied) were encountered during surveys only near Pormpuraaw, Kowanyama, Aurukun and in Lakefield National Park (Barrett et al. 2003).

Star finches (northern) have been recorded from northern Lakefield National Park and near Aurukun, Pormpuraaw, Kowanyama and Karumba (Barrett et al. 2003).

Threats summary

Threats include:

- invasion of grassland habitats by woody weeds, particularly broad-leaved tea-tree *Melaleuca viridiflora*, as a result of altered fire regimes and grazing by cattle;
- removal of tall grasses by pigs and stock congregating near fresh water during dry seasons; *and*
- invasion of riparian habitats by rubber vine *Cryptostegia grandis*.

Recovery objectives

The overall objectives are to:

- maintain all sub-populations of crimson finch (white-bellied) and star finch (northern) on Cape York Peninsula;
- develop and implement land management strategies that maintain and/or restore key finch habitat areas to the benefit of dependent fauna; *and*
- assist re-colonisation of known former crimson finch (white-bellied) and star finch (northern) habitat in Cape York Peninsula.

Evaluation and review

Annual reviews of this recovery plan will be undertaken to assess the success of the proposed recovery actions against the performance criteria. The plan's performance within five years of its adoption.

1 *General information*

Conservation status

Crimson finch (white-bellied) *Neochmia phaeton evangelinae*

The crimson finch *Neochmia phaeton* is listed as 'Vulnerable' under Schedule 3 of the *Nature Conservation (Wildlife) Regulation 1994*. Under this legislation subspecies that are not listed separately have the same conservation status as the species.

The crimson finch (white-bellied) is listed as 'Vulnerable' under the EPBC Act.

Star finch (northern) *Neochmia ruficauda clarescens*

The star finch (northern) is not listed as threatened under the NC Act or the EPBC Act.

International obligations

Neither species is listed under any international agreement. This recovery plan is consistent with Australia's international obligations.

Affected interests

The largest populations of crimson (white-bellied) and star (northern) finches in Cape York Peninsula occur on lands managed by the EPA/Queensland Parks and Wildlife Service (Lakefield National Park) and by Indigenous communities (Aurukun Shire Council, Pormpuraaw Council and Kowanyama Community Council).

Other community organisations with an interest in conservation of birds or conservation on Cape York Peninsula include Birds Australia; Cairns and Far North Environment Council (CAFNEC); and Cape York Natural Resource Management Group. Organisations with a scientific interest include Charles Darwin University and the Cooperative Research Centre for Sustainable Development of Tropical Savannas.

Consultation with Indigenous people

Implementation of recovery actions under this plan includes consideration of the role and interests of Indigenous communities in the region. The recovery plan makes provision for traditional owners to be represented through the community Land and Sea Management Centres, with the expressed purposes of involving traditional owners and other Indigenous people in planned actions. The Land and Sea Management Centres were consulted and provided with the draft plan during the recovery planning phase. Consultation and engagement will continue during the implementation process.

Benefits to other species or communities

Table 1. Regional ecosystems of conservation concern (Environmental Protection Agency 2003) that will be managed as part of the *Neochmia* species (Cape York) recovery process.

Regional ecosystem	Description	Status (*Vegetation Management Act 1999*)	Beneficial actions
3.2.3	*Melaleuca dealbata* ± *Acacia crassicarpa* open forest. Occurs in dune swales on the west coast	Of concern	A1.3
3.2.6	*Casuarina equisetifolia* woodland. Occurs on foredunes	Of concern	A1.3
3.3.59	*Sorghum plumosum, Themeda arguens* closed tussock grassland on erosional flood clay plains	Of concern	A1.2
3.3.62	Grassland/sedgeland with *Pandanus* spp.	Of concern	A1.2, A1.3

Table 2. Other threatened species that will benefit from recovery actions. Action plans: Birds: Garnett and Crowley 2000, EPBC Act and NC Act; E: 'Endangered'; V: 'Vulnerable'.

Common name	Scientific name	Status		Notes	Beneficial actions
		NC Act	EPBC Act		
buff-breasted button-quail	*Turnix olivii*	V	E	grassland specialist, distribution overlaps with crimson and star finches (CYP)	A1.2
golden-shouldered parrot	*Psephotus chrysopterygius*	E	E	Species of grassland and open woodland, distribution overlaps with crimson and star finches (CYP)	A1.2

Social and economic impact

The implementation of this recovery plan is unlikely to cause significant adverse social and economic impacts. Ongoing negotiations with land managers will seek to minimise any adverse impacts that may result from the implementation of recovery actions described.

2 *Biological information*

Species description

Crimson finch (white-bellied) *Neochmia phaeton evangelinae*

Neochmia phaeton is a small grass-finch with a long pointed tail. In the male the face, breast, rump, tail and white-spotted flanks are a crimson red with a red flush through the brown wings. The crown is grey, back brown, beak red with feet and legs a deep yellow. In the female the underparts are a pale fawn and crown and back all brown. There are two subspecies, which are distinguished primarily by tail length and belly colour. The crimson finch (white-bellied) has a white belly, and a shorter tail and narrower beak than the crimson finch (western), which also has a black belly. The crimson finch (white-bellied) also has paler feet and paler crimson face and breast (Schodde & Mason 1999, Todd et al. 2003).

Star finch (northern) *Neochmia ruficauda clarescens*

The star finch (northern) is a small grass-finch that has a bright red face and beak with numerous white spots on the head, breast and flanks. It has an olive green back, breast and flanks and cream to lemon belly. The most recent taxonomic revision (Schodde & Mason 1999) recognises three subspecies, distinguished by the size of the scarlet areas on the face and upper throat, and the size and number of white spots. The star finch (northern) is slightly smaller than the other subspecies and has larger and fewer spots, a darker belly and a smaller bill than the star finch (western) *N. r. subclarescens* and the *s*tar finch (eastern) *N. r. ruficauda.* It is more coarsely spotted, browner and has less scarlet on the face (Schodde & Mason 1999).

Life history and ecology

Crimson finch (white-bellied) *Neochmia phaeton evangelinae*

The crimson finch (white-bellied) inhabits rank grass and other vegetation close to fresh water, particularly in association with *Pandanus* or in dune swales. Availability of shelter is critical because the crimson finch (white-bellied) is ill-adapted to fly long distances due to its wedge-shaped tail and rounded wings (Todd, M, pers. comm., November 1999). Todd (unpub.) identified two key habitat components, pandanus and canegrass, which are crucial to the conservation of the crimson finch (white-bellied) on Cape York (Figure 3).

Food

Crimson finches (white-bellied) feed primarily on immature and ripe seeds of grasses and herbaceous plants (Todd et al. 2003), including those of introduced species. Seed size is more important than the

plant species (Todd et al. 2003). Crimson finches (white-bellied) also consume small invertebrates such as spiders and termite alates, mainly during the breeding season, supplementing energy intake at times of low seed availability and protein requirements while breeding.

The early wet season when food resources are at their lowest, is the most critical time. Their wet season diet overlaps considerably with that of the star finch (northern). Differences in bill morphology enable crimson finches (white-bellied) to consume larger seeds and a wider variety of seed sizes than star finches. This species may therefore be less impacted upon by changes to seed availability than star finches (northern) (Todd et al. 2003).

Nesting, breeding and dispersal

Crimson finches (white-bellied) build their nests in trees with a palm-like structure, principally *Pandanus* in western Cape York or *Corypha* palms in the east (Todd 2002). Breeding coincides with the wet season. The birds fledge at three weeks (Immelman 1982) but remain nearby after leaving the nest. As crimson finches (white-bellied) are ill-adapted to fly long distances, they have limited dispersal ability.

Star finch (Cape York Peninsula) *Neochmia ruficauda clarescens*

Recent research suggests that the star finch (northern) mostly occurs in seasonally-flooded tussock grassland communities, usually near the coast. The presence of surface water is a common feature of its habitat, but long rank grass without a significant overstorey is probably the key habitat factor (Todd, M, pers. comm., November 1999). This type of habitat commonly occurs along alluvial floodplains of major river systems, and around swamps and waterholes. In coastal situations saltmarsh country can be used at particular times of the year (Garnett et al. 2005). While extent of habitat probably limits population size, it is quality of habitat that would seem to influence presence or absence of the star finch (northern) (Todd, M, pers. comm., November 1999). Suitable habitats on Cape York Peninsula are all restricted, although suitable habitats in the Gulf Plains region are widespread but unoccupied. Distribution of regional ecosystems in which star finches (northern) have been recorded are shown in Figure 4.

Food

Star finches (northern) feed primarily on grass seed. Food plants are listed in Holmes (1998) and Todd et al. (2003). Seed size is more important than the plant species (Todd et al. 2003). Native grass species are used as well as agricultural weeds when available. They also consume small invertebrates such as spiders and termite alates, especially during the breeding season (Immelman 1982), although insects make up only one percent of their dietary intake (Todd *et al*. 2003).

Due to their bill morphology, star finches (northern) on Cape York Peninsula are more dependent on smaller-seeded plants that are restricted in availability during the late dry season, than either the crimson finch or the more abundant *N. r. subclaresens*. Management must ensure that their habitat retains the full suite of grass species currently present. Particular emphasis must be given to those that have smaller seeds late in the dry season (Todd et al. 2003) as well as an adequate supply of species that carry seed in the early wet season (Garnett et al. 2005). Immature star finches (northern) attempt to consume much larger seeds than adults, as they learn feeding techniques. This may affect survival (Todd et al 2003).

The early wet season when food resources are at their lowest is the most critical time. Garnett et al. (2005) concluded that *Xerochloa imberbis* appears to be a critical food source for star finches (northern) during this time, particularly in the Lakefield area. On the west coast, birds feed during the wet season on *Casuarina equisetifolia,* which is relatively high in protein (Todd et al. 2003).

Nesting, breeding and dispersal

The star finch (northern) is a social bird, merging into large flocks during the dry season and breeding in colony situations (Immelman 1982, Todd, M, pers. comm., November 1999). Published information on the nesting biology of the star finch (northern) is scarce. Historical nesting records were

summarised by Holmes (1998) who concluded that nests may be built in rank grass, reeds or low in shrubs or trees adjacent to preferred grassland habitats. Various types of plant material are used for nestbuilding depending on the nest location, but all nests are lined with feathers (Immelman 1982).

In the east Kimberley two thirds of star finch (northern) nests were between 50cm and 100cm above ground level, with none being higher than two metres (Todd, M, pers. comm., November 1999). Favoured nest sites were in *Acacia farnesiana*, although these nests were subject to high rates of predation. The most successful nests were those in *Sorghum plumosum*. Star finches (northern) in Todd's study nested in mixed colonies with the chestnut-breasted mannikin *Lonchura castaneothorax*.

Breeding coincides with the wet season (Holmes 1998, Todd et al. 2003). Immelman (1982) reported that star finches (northern) in the Northern Territory and the Kimberley sometimes continued to breed until August. The clutch consists of three to six eggs. Incubation and care for the young were described in detail by Immelman (1982), based on observations of star finches (northern) in northern and north-western Australia.

The star finch is largely sedentary (Holmes 1998). Regional populations seldom interact although regular formation of large flocks indicates some localised mobility. Birds fledge at three weeks (Immelman 1982). At Lakefield large groups of juveniles were observed in August 1996 (Holmes 1998). Mortality rates of fledgling birds are high during their first year (Todd et al 2003).

Distribution

Crimson finch (white-bellied) *Neochmia phaeton evangelinae*

Neochmia phaeton has an unusual distribution with disjunct populations between and within forms (Schodde & Mason 1999, Barrett et al. 2003). Four separate populations of the white-bellied subspecies occur on Cape York Peninsula, with one on the east coast and three along the west coast. This subspecies has declined in range since 1900, and has experienced local extinctions. Previously there were five populations known from Cape York, but the crimson finch (white-bellied) seems to have disappeared from the Iron Range area (Claudie River) on the north-east coast. A separate population occurs in southern New Guinea, where the Fly River seems to be central to their distribution (Schodde & Mason 1999).

The area of occupancy for the crimson finch (white-bellied) is estimated at 138.7 km^2 and is shown in Figure 1. This is slightly less than the 200 km^2 estimated by Garnett and Crowley (2000). The current area of occupancy was calculated by combining recent records provided by Birds Australia and unpublished records from M. Todd and S. Garnett into a GIS point layer. All points were buffered by 500 m, and those within a 10 km radius were combined to create polygons.

In Lakefield National Park, eastern Cape York the subspecies has been recorded along the Normanby River and surrounding areas in the north and along the Laura River in the south. On the west coast there are substantial populations near Pormpuraaw and Magnificent Creek near Kowanyama. These appear to be separate sub-populations as there have been no records in between, despite searching (Todd, M, pers. comm., November 1999). Crimson finches (white-bellied) were recently rediscovered at Aurukun after a 90 year gap in records and there is a single record half-way between Aurukun and Pormpuraaw. The species was last recorded at Iron Range in 1913 (MacGillivray 1918) and has not been recorded since.

The population size was estimated at 2000 by Garnett and Crowley (2000) but with a low level of reliability. On the basis of frequency of observation this is nominally divided between the populations as Lakefield 1000 individuals, Pormpuraaw 500, Kowanyama 500, and Aurukun 50. These figures will vary seasonally and may never be measured accurately.

Star finch (northern) *Neochmia ruficauda clarescens*

Star finches (northern) are distributed throughout northern Australia, although some subspecies have declined in abundance since the introduction of pastoralism (Franklin 1999). They were previously

found over most of Queensland (Holmes 1998), with the Cape York form intergrading with star finch (western) across the Gulf of Carpentaria and with the eastern form across the Burdekin–Lynd divide (Garnett & Crowley 2000). The star finch (eastern) has suffered the most serious decline and is now critically 'Endangered' (Garnett & Crowley 2000) and may even be extinct (Holmes 1998). The northern subspecies is still numerous locally (Holmes 1998) but its distribution is limited and populations are disjunct (Barret et al. 2003).

The area of occupancy for the star finch (northern) is estimated at 536 km^2 and is shown in Figure 2. This is slightly more than the 400 km^2 estimated by Garnett and Crowley (2000). The current area of occupancy was calculated by combining recent records provided by Birds Australia and unpublished records from M. Todd and S. Garnett into a GIS point layer. All points were buffered by 500m, and those within a 10 km radius were combined to create polygons.

The star finch (northern) is known from four separate areas on Cape York Peninsula (Figure 2). The largest known population is in the Princess Charlotte Bay region on the east coast. On the west coast of the Peninsula there are records from south of Aurukun, at Pormpuraaw and at Karumba (Barrett et al. 2003). There has been no historical decline in range of the star finch (northern) (Garnett & Crowley 2000).

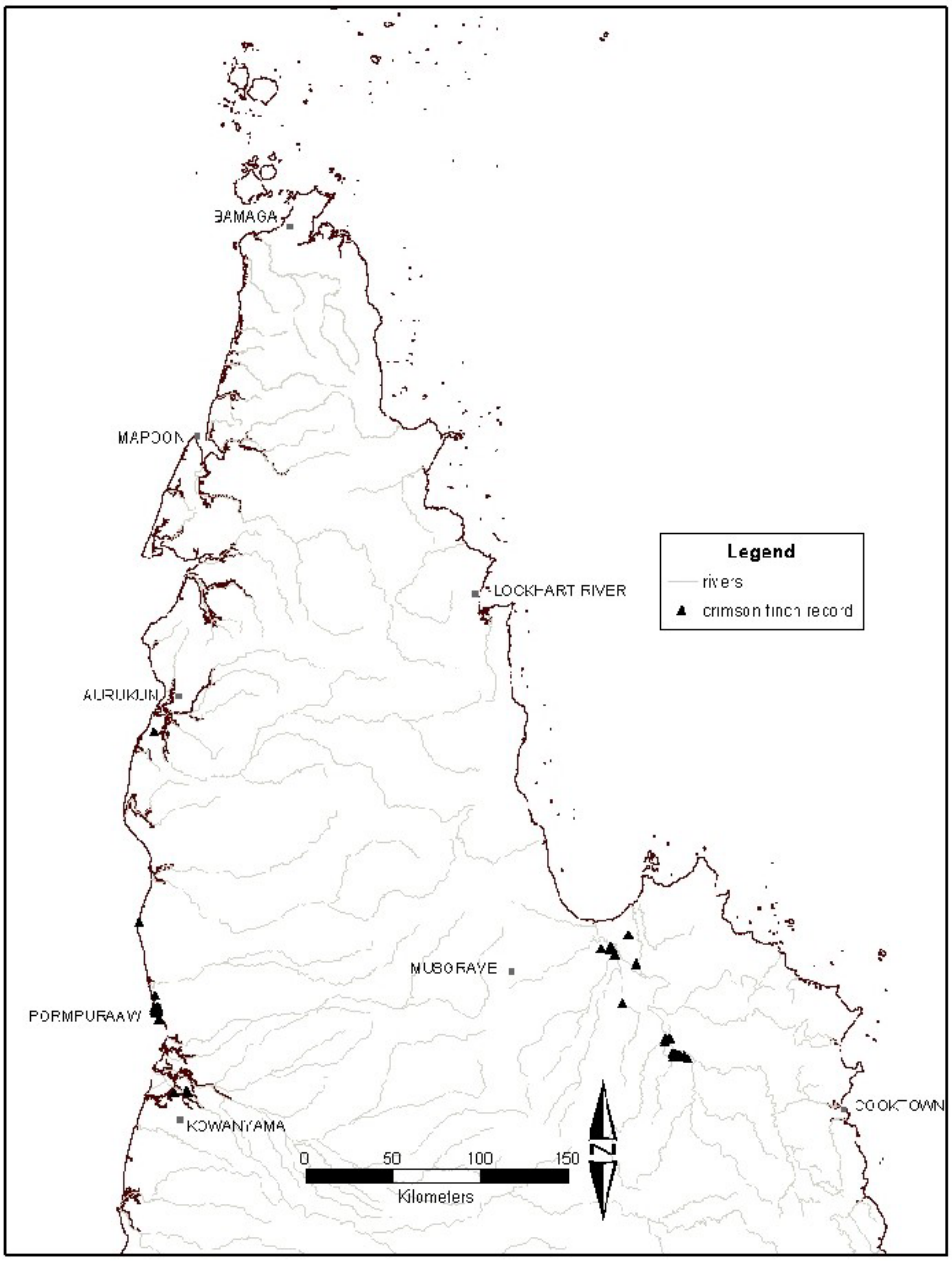

Figure 1. Distribution of the white-bellied subspecies of the crimson finch on Cape York Peninsula.

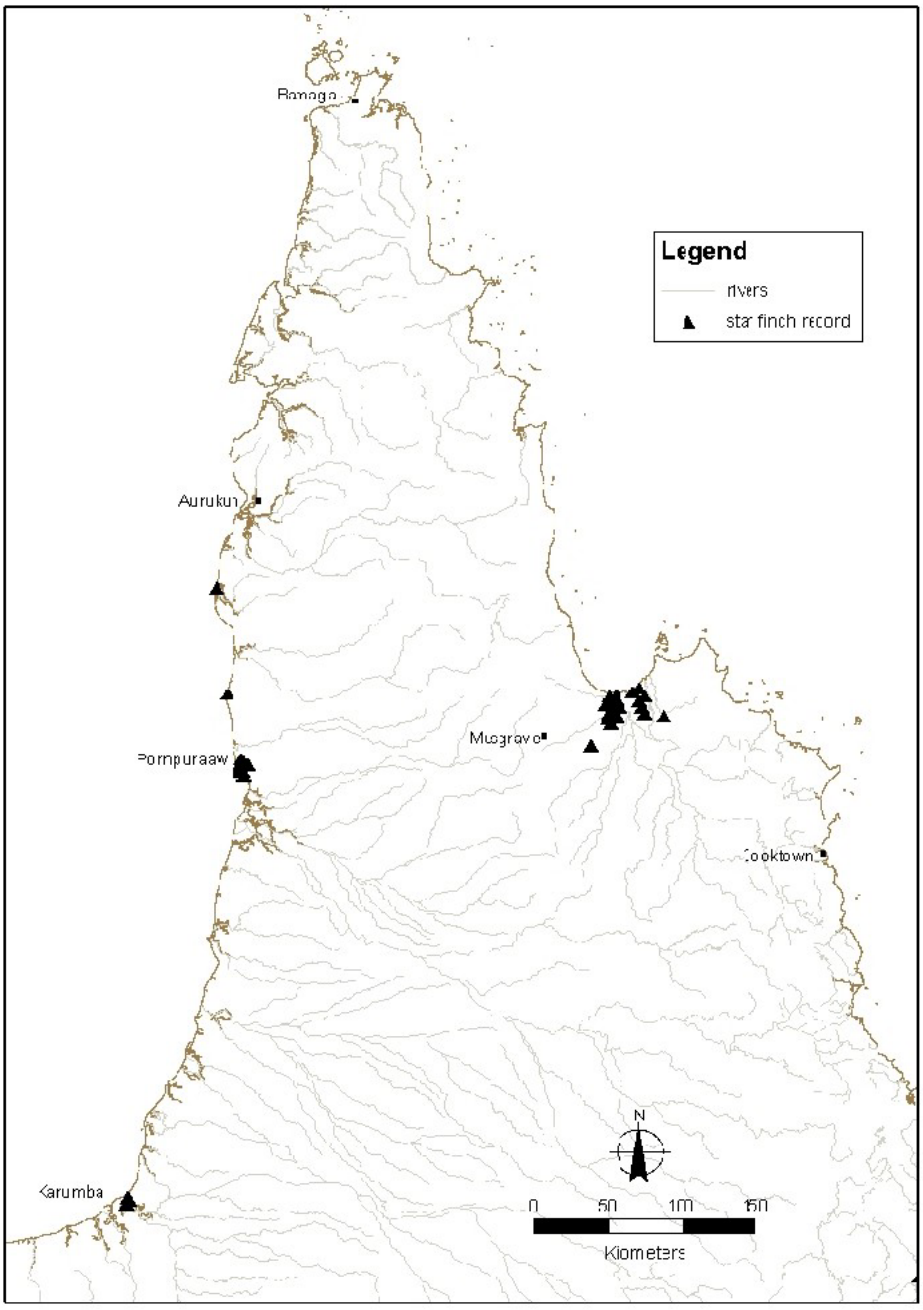

Figure 2. Distribution of the star finch (northern) on the Cape York Peninsula.

Habitat critical for survival

Crimson finch (white-bellied)

Two key habitat types containing essential habitat components for crimson finches (white-bellied) on Cape York were identified by M Todd (pers. comm., November 1999 Figure 3):

Pandanus type habitat: Usually within 10 km of the coast. Swampy grasslands with scattered *Pandanus spiralis* or within dune woodland with a dense grassy understorey. Canopy species can vary but *P. spiralis*, which is used for nesting, is abundant in the midstorey and there is long grass in the understorey. Birds stay fairly close to sheltering shrubs (e.g. *Barringtonia acutangula*) or trees when foraging in grassland. This type of habitat is used at Pormpuraaw and Aurukun. Vegetation units containing *Pandanus* habitat were identified by Neldner and Clarkson (1994), and correspond to regional ecosystems (RE) 3.2.3, 3.2.6 and 3.3.62 (Environmental Protection Agency 2003).

Canegrass type habitat: Open forest with a thick grassy understorey, usually along watercourses. In Lakefield this grass is mostly *Chionachne cyathopoda*, although other species can probably fulfil a similar structural role. Overstorey is usually *Corymbia tessellaris* in the east and *C. tessellaris var. dallachyana* on the west coast. The mid-storey includes deciduous shrubs and palms such as *Corypha elata* and *Livistona* species. This type of habitat supports crimson finch (white-bellied) populations at Kowanyama and in the Lakefield area, which use *Corypha* trees for nesting. This type of habitat is contained primarily within RE 3.3.30 (Environmental Protection Agency 2003) in the Lakefield area, but is also included in other grassland and woodland ecosystems — including RE 3.3.34 which is *Corypha utan* open woodland with a dense to mid-dense grassy groundlayer.

Although crimson finch (white-bellied) habitat is regularly burnt, the birds persist in shrubs and unburnt remnants nearby (Garnett & Crowley 2000), particularly on islands of habitat in and around rivers.

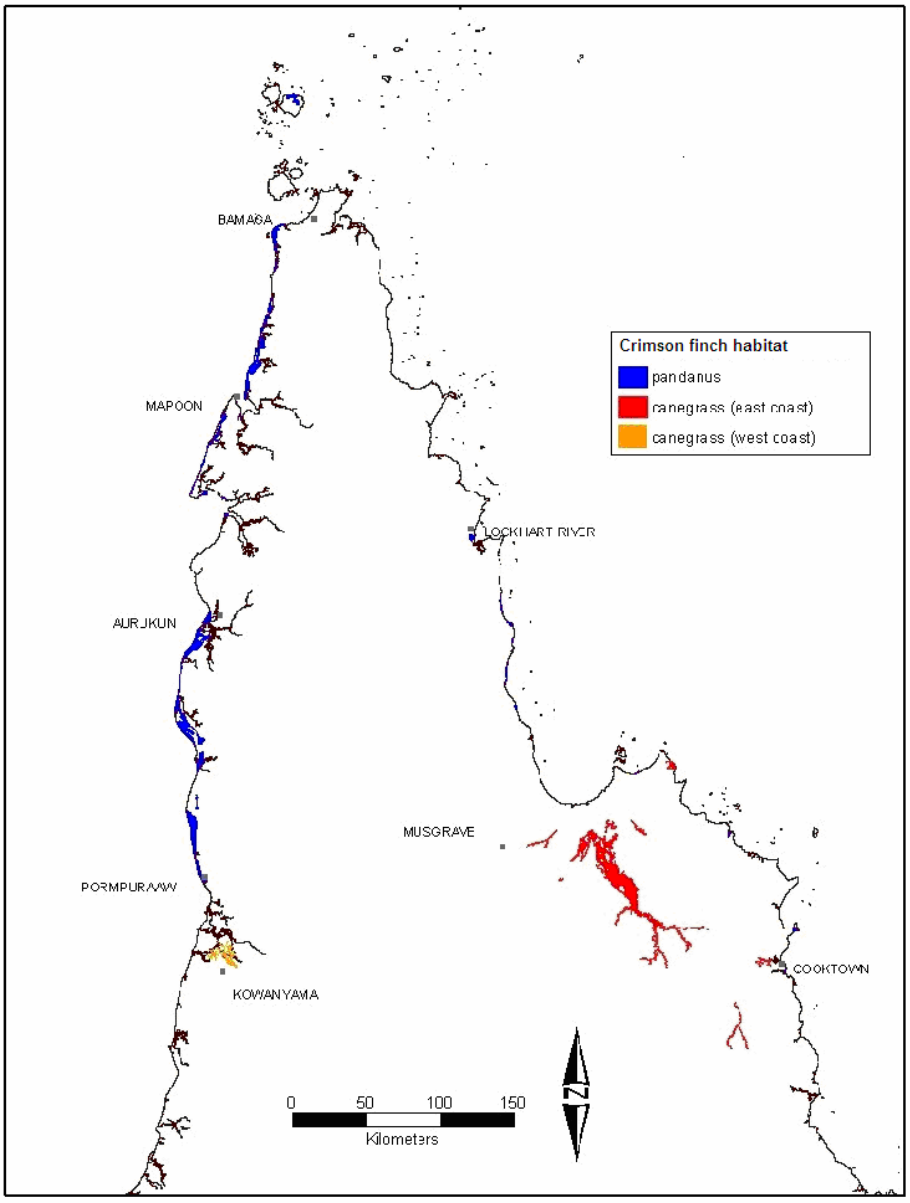

Figure 3. Distribution of essential habitat for the white-bellied subspecies of the crimson finch on Cape York Peninsula.

Star finch (northern)

A study by Garnett et al. (2005) concluded that the grass *Xerochloa imberbis* is essential for the persistence of star finches (northern) in the Princess Charlotte Bay area, and that it may also be important for the population near Pormpuraaw. This grass is a component of sparse herblands on salt plains and saline flats which are protected from fire as no vegetation grows in the surrounding areas because of regular inundation by salt water.

Salt flat communities were mapped by Neldner and Clarkson (1994) as vegetation unit 194, which corresponds to RE 3.1.6 (Environmental Protection Agency 2003). This vegetation type occurs along the coast on both sides of the Peninsula. The largest areas adjacent to the star finch's (northern) known grassland habitat are at Princess Charlotte Bay on the east coast and between Aurukun and Kowanyama in the west, as shown in Figure 4. RE 3.1.6 is well represented in reserves (Environmental Protection Agency 2003).

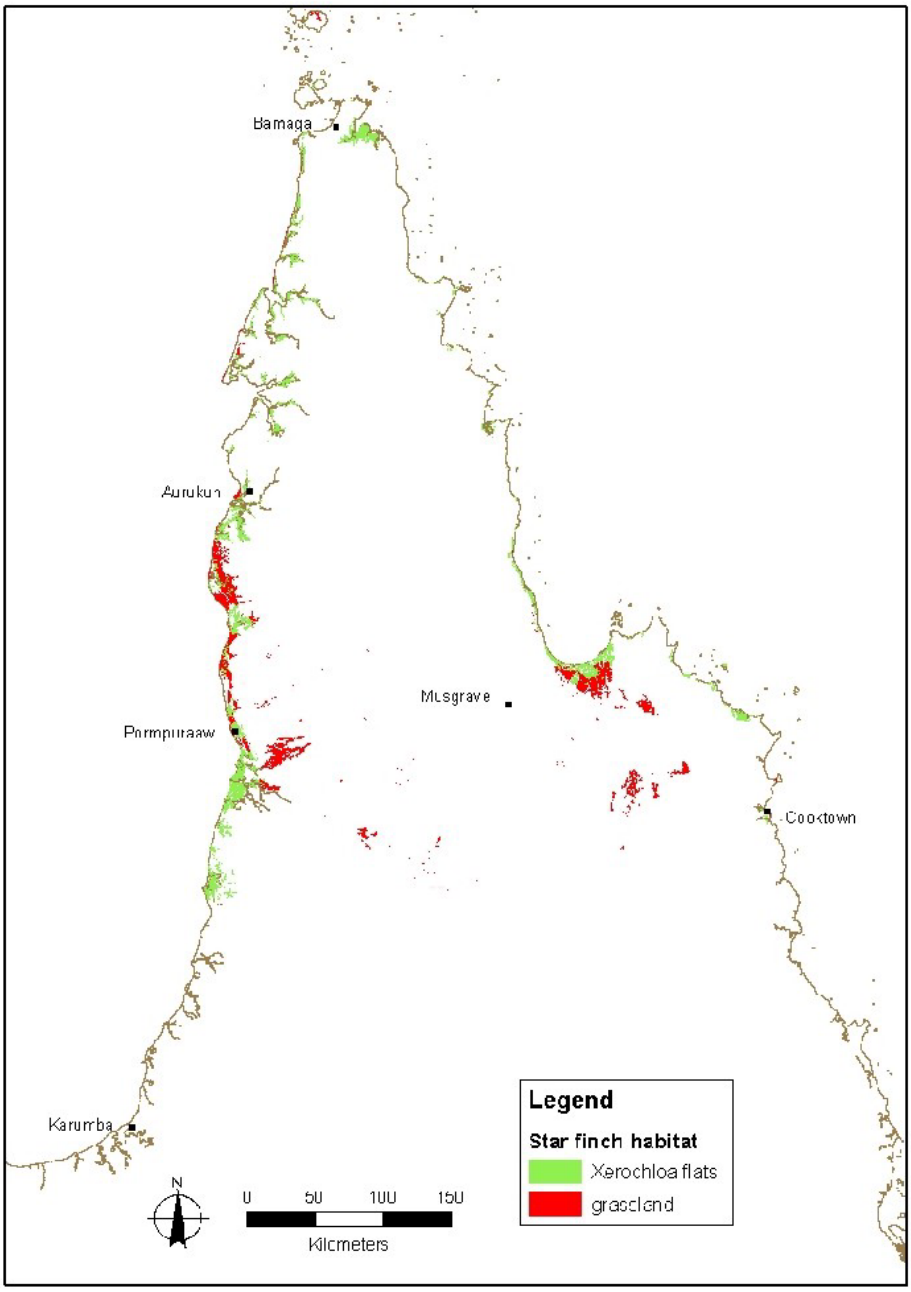

Figure 4. Distribution of essential habitat for the northern subspecies of the star finch.

Important populations

Crimson finch (white-bellied)

The largest population of crimson finches (white-bellied), estimated to contain 1000 individuals, occurs on the east coast of Cape York Peninsula, although the reliability of this estimate is low (Garnett & Crowley 2000). The population is mostly within Lakefield National Park. Recent records provided by Birds Australia indicate the crimson finches (white-bellied) are concentrated in the Normanby River area (northern Lakefield) and along the Laura River (southern Lakefield). Some birds were also recorded on Kalpowar Station, which is unallocated state land east of Lakefield, and on Olive Vale Station, which is leasehold land next to Lakefield's southern boundary (Garnett, S 2004, pers. comm., date Jan.).

Other important populations are at Magnificent Creek near Kowanyama, containing at least 300 individuals, in dune swales between the Chapman and Munkun rivers at Pormpuraaw, and at sites near Aurukun (estimated at least 50 individuals).

Star finch (northern)

The two largest known sub-populations of star finches (northern) on Cape York Peninsula are south of Princess Charlotte Bay, where there are estimated to be approximately 3000 individuals, and near Pormpuraaw, where there thought to be about 500 birds (Garnett & Crowley 2000). The size of populations at Karumba and Aurukun are unknown, with only small numbers of individuals being seen at each site.

Threats

Identification of threats

Crimson finch (white-bellied)

Inappropriate fire regimes
Fires late in the dry season in cane grass type habitat are potentially damaging as they destroy the canegrasses, which provide shelter. Timing of burning is particularly crucial in *Pandanus* type habitat since there are likely to be fewer unburnt refugia (Todd, M, pers. comm., November 1999).

Presence of weed species
Invasion of preferred habitats by rubber vine *Cryptostegia grandiflora,* which shades out grasses used by the finches. Rubber vine is a weed of national significance.

Illegal trapping
This subspecies has historically fetched high prices in the aviculture industry. Some illegal trapping may continue but there have been no successful prosecutions. Although listed in Garnett and Crowley (2000) as a threat, the information from aviculturists indicates this is not considered a significant threat.

Star finch (northern)

Changing habitat
Altered fire regimes and cattle grazing are thought to be responsible for causing the invasion of the coastal grassland habitat of star finches (northern) by woody species such as *Melaleuca viridiflora, Eucalyptus acroleuca* and *Terminalia aridicola* (Crowley & Garnett 1998; Neldner et al. 1997). This process may have started in the 1920s, and has been occurring at a rate of approximately one percent a year.

Trampling
Physical trampling can be a problem where cattle and pig numbers are high, particularly in areas of long grass used for breeding in the wet season and for shelter in the dry season (Holmes 1998).

Rising sea levels
The saline herblands that support *Xerochloa imberbis* will be threatened if sea levels rise due to global climate change (Garnett et al. 2005).

Populations under threat summary

Table 3. Threats summary

Location name	Land tenure	Type of threat	Current actions to reduce threats	Proposed actions to reduce threats
Crimson finch (white-bellied)				
Lakefield National Park	National Park	Extensive fire in riparian grasslands	Annual fire planning	A2.1, A2.4
		Invasion of habitat by rubber vine	Wet season burning, spread of rubber vine rust	A1.1, A2.1, A2.4
Magnificent Creek, Kowanyama	Deed of Grant in Trust, Local government	Invasion of habitat by rubber vine	Spread of rubber vine rust	A1.1, A2.1 A2.4
Pormpuraaw	Deed of Grant in Trust, Local government	Extensive fire in grasslands	Principle habitat within fenced crocodile farm	A2.1, A2.4
Aurukun	Deed of Grant in Trust, Local government	Extensive fire in grasslands	Traditional land management	A2.1, A2.4
Star finch (northern)				
Lakefield National Park	National Park	Invasion of grasslands by tea-tree	Regular mustering, storm burning when possible	A1.2, A1.3, A2.2, A2.3 A2.4
		Sea level rise	Nil	A2.2, A2.4
Pormpuraaw	Deed of Grant in Trust, Local government	Loss of grasslands to cattle grazing or extensive fire	Principle habitat within fenced crocodile farm	A1.3, A2.2 A2.4

3 *Recovery objectives*

Overall objectives

The overall objectives are to:

- maintain all sub-populations of crimson (white-bellied) and star finches (northern) on Cape York Peninsula;
- develop and implement land management strategies that maintain and or restore key finch habitat areas to the benefit of dependent fauna and to complement co-existing land values; and
- assist re-colonisation of known former crimson (white-bellied) and star finch (northern) habitat in Cape York Peninsula.

Specific objectives for the life of this recovery plan

The specific objectives for the life of this recovery plan are to:

- manage habitat for known populations of crimson (white-bellied) and star finches (northern) in Cape York Peninsula for their conservation;
- monitor effectiveness of management; and
- assess potential for re-introduction of crimson (white-bellied) finches at Lockhart River.

Performance Criteria

C1.1 Crimson finches still present at all sites where rubber vine recorded.
C1.2 Boundary fence and pig exclusion fencing completed.
C1.3 Burning undertaken at appropriate sites, times and intervals.
C1.4 Strategy for protection of finches at Pormpuraaw completed.

C2.1 Star finch (northern) is still present at Lakefield National Park and Pormpuraaw.
C2.2 Crimson finch (white-bellied) is still present at Lakefield National Park, Kowanyama, Pormpuraaw and Aurukun.
C2.3 Monitoring sites on Lakefield National Park demonstrate no loss of habitat.
C2.4 Analysis of monitoring undertaken every two years.

C3.1 Assessment of potential for re-introduction at Lockhart River completed.

4 *Summary Table*

Table 3. Summary of relationship between specific objectives, performance criteria and actions (Priority H = High, M = Medium, L = Low).

Specific objective	Performance criteria	Action	Priority
1. Manage habitat for known populations of crimson and star finches (northern) in Cape York Peninsula for their conservation.	C1.1 Crimson finches still present at all sites where rubber vine recorded.	A1.1 Manage rubber vine at Crimson finch sites	M
	C1.2 Boundary fence and pig exclusion fencing completed.	A1.2 Reduce grazing by cattle and pigs on Lakefield National Park	H
	C1.3 Burning undertaken at appropriate sites, times and intervals.	A1.3 Burn to restore grassland on Lakefield National Park	H
	C1.4 Strategy for protection of finches at Pormpuraaw completed.	A1.4 Develop a strategy for protection of habitat at Pormpuraaw	H
2. Monitor effectiveness of management.	C2.1 Crimson finch is still present at Lakefield National Park, Kowanyama, Pormpuraaw and Aurukun.	A2.1 Monitor persistence of crimson finches	H
	C2.2 Star finch (northern) is still present at Lakefield National Park and Pormpuraaw.	A2.2 Monitor persistence of star finches	H
	C2.3 Monitoring sites at Nifold Plain demonstrate no loss of grassland.	A2.3 Monitor grasslands at Nifold Plain	H
	C2.4 Analysis of monitoring undertaken every 2 years.	A2.4 Analyse and report on monitoring	H
3. Assess potential for re-introduction of crimson finches at Lockhart River.	C3.1 Assessment of potential for re-introduction at Lockhart River completed.	A3.1 Assess potential for re-introduction at Lockhart River	L

5 *Recovery actions*

Specific objective 1: Manage habitat for known populations of crimson (white-bellied) and star finches (northern) in Cape York Peninsula for their conservation

Action 1.1 Manage rubber vine at crimson finch (white-bellied) sites

Performance criteria: Crimson finches still present at all sites where rubber vine recorded.

Action 1.1.1 Manage rubber vine at crimson finch (white-bellied) sites on Lakefield National Park.

Justification: Rubber vine has the potential to cause the loss of the rank grasses needed by crimson finches.

Methods: Check for presence of rubber vine at 12 Mile Waterhole (-15.19028, 144.41388E), Kennedy Hole (-14.63000,144.03999), and Orange Plains (-14.70833,144.16556) and, if necessary, ensure fire management plan for the year promotes grasses at the expense of rubber vine.

Potential contributors: EPA/QPWS, Cape York Natural Resource Management Group (CYNRMG) and traditional owners.

Estimated costs:

Year 1	Year 2	Year 3	Year 4	Year 5	Total cost
$500	$500	$500	$500	$500	$2500

Action 1.1.2 Manage rubber vine at crimson finch (white-bellied) sites on Magnificent Creek.

Justification: Rubber vine has the potential to cause the loss of the rank grasses needed by crimson finches (white-bellied).

Methods: If rubber vine present and considered a threat at crimson finch sites along Magnificent Creek, commence control strategies.

Potential contributors: Kowanyama Land and Sea Management Centre and CYNRMG.

Estimated costs:

Year 1	Year 2	Year 3	Year 4	Year 5	Total cost
$2000	$2000	$2000	$2000	$2000	$10,000

Action 1.2 Reduce grazing by cattle and pigs on Lakefield National Park

Performance criteria: Boundary fence and pig exclusion fencing completed.

Justification: Grazing by cattle and pigs is contributing to loss of grasslands by reducing fuel loads and allowing the proliferation of woody weeds. Actions to reduce their impact on the national park will have many other benefits.

Methods: Complete boundary fencing of Lakefield National Park and undertake regular musters to remove wandering stock. Also fence off selected waterholes from pigs to reduce their numbers in the dry season. These should include Knife Hole, the Palms and the spring at Jane Table Hill. The dams around Jane Table Hill could be filled in to limit further dry season resources available to stock.

Potential contributors: EPA/QPWS, traditional owners and CYNRMG.

Estimated costs: Costs include those for fencing remaining unfenced boundary ($245,000) and waterhole fencing/filling (80,000). Costs of mustering and annual costs of fence maintenance not included.

Year 1	Year 2	Year 3	Year 4	Year 5	Total cost
$50,000	$100,000	$100,000	$75,000	$0	$325,000

Action 1.3 Burn to restore grassland on Lakefield National Park

Performance criteria: Burning undertaken at appropriate sites, times and intervals.

Justification: Grasslands at the northern end of Lakefield National Park are gradually being invaded, particularly by broad-leaved tea-tree, as a result of grazing and fires at the wrong time of year. This action is to encourage burning to recover the grasslands.

Methods: Restore grasslands where there are tea-tree suckers by storm-burning at least every second year, using earlier fires to create fire breaks that will help keep fuel for later fires. Areas without suckers do not have to be burnt as often, but are unlikely to be damaged by frequent fires. Fire should be avoided, however, in the patches of grass that occur among saltbush, although these are naturally protected by surrounding saltpans.

Potential contributors: EPA/QPWS and traditional owners.

Estimated costs: Consultation costs only; costs of subsequent action to be determined from consultation.

Year 1	Year 2	Year 3	Year 4	Year 5	Total cost
$2000	$2000	$2000	$2000	$2000	$10,000

Action 1.4 Develop a strategy for protection of habitat at Pormpuraaw

Performance criteria: Strategy for protection of finches at Pormpuraaw completed.

Justification: Pormpuraaw is the only site where the two finches co-exist. The main reason for this is likely to be the presence of the freshwater lagoon that is used for breeding by the Edward River Crocodile Farm. The long grass in the lagoon is not grazed and seldom burnt making ideal habitat for the star finches (northern). Given that the surrounding lands are grazed extensively by cattle and pigs, the long grass in the lagoon area may be critical for the local population of star finches (northern), the largest on the west coast, and possibly also the crimson finches (white-bellied). The costs of maintaining the lagoon fence and pumping freshwater, which is used by both finches and crocodiles, are substantial and may not be economically sustainable. However the lagoon could also be the basis for ecotourism in the area if that was the wish of the community.

Methods: Discuss with the Pormpuraaw Land and Sea Management Centre and the Pormpuraaw Community Council the value of the lagoon for crimson (white-bellied) and star finches. Discuss these considerations for the long term management of the site.

Potential contributors: Pormpuraaw Community Council, Pormpuraaw Land and Sea Management Centre, EPA/QPWS, CYNRMG.

Estimated costs: Consultation costs only; costs of subsequent action to be determined from consultation.

Year 1	Year 2	Year 3	Year 4	Year 5	Total cost
$0	$2500	$0	$0	$0	$2500

Specific objective 2: Monitor effectiveness of management

Action 2.1 Monitor persistence of crimson finches (white-bellied)

Action 2.1.1 Monitor persistence of crimson finches (white-bellied) at Lakefield National Park.

Performance criteria: Crimson finch (white-bellied) is still present at Lakefield National Park, Arukun, *Pormpuraaw and* Kowanyama.

Justification: Presence of crimson finches (white-bellied) at selected sites along the Normanby and Laura rivers in Lakefield National Park will show whether management of the habitat is effective. Monitoring is particularly important at sites where there is rubber vine present.

Methods: Check for presence of crimson finches (white-bellied) and provide estimate of flock size in September and October at 12 Mile Waterhole (-15.19028, 144.41388E), Kennedy Hole (-14.63000, 144.03999), and Orange Plains (-14.70833, 144.16556) each year. All data to be sent to EPA/QPWS.

Potential contributors: EPA/QPWS, traditional owners and/or visiting birdwatchers and CYNRMG.

Estimated costs:

Year 1	Year 2	Year 3	Year 4	Year 5	Total cost
$500	$500	$500	$500	$500	$2500

Action 2.1.2 Monitor persistence of crimson finches (white-bellied) at Aurukun.

Justification: Presence of crimson finches (white-bellied) at known sites on Aurukun will show whether management of the habitat is effective. Given the persistence of the finches for 90 years at Aurukun without active intervention there is no reason to believe action is now needed but regular checking will determine whether this assumption is valid.

Methods: Check for presence of crimson finches (white-bellied) and provide estimate of flock size in September and October at known sites on Aurukun (-13.47111, 141.64473; -13.47444, 141.64084) each year. Data to be provided to Aurukun Land and Sea Management Centre and EPA/QPWS.

Potential contributors: Aurukun Land and Sea Management Centre, community rangers, CYNRMG and visiting birdwatchers.

Estimated costs:

Year 1	Year 2	Year 3	Year 4	Year 5	Total cost
$1000	$1000	$1000	$1000	$1000	$5000

Action 2.1.3 Monitor persistence of crimson finches (white-bellied) *at Pormpuraaw*

Justification: Presence of crimson finches (white-bellied) at known sites on Pormpuraaw will show whether management of the habitat is effective. The presence of crimson finches (white-bellied) from the Chapman to the Munkan Rivers suggests no active management is necessary. Regular checking will determine whether this assumption is valid.

*Methods: C*heck for presence of crimson finches (white-bellied) and provide estimate of flock size in September and October at Pormpuraaw crocodile breeding lagoon each year. Data to be provided to Pormpuraaw Land and Sea Management Centre and EPA/QPWS.

Potential contributors: Pormpuraaw Land and Sea Management Centre in collaborations with community rangers, and/or visiting birdwatchers.

Estimated costs:

Year 1	Year 2	Year 3	Year 4	Year 5	Total cost
$500	$500	$500	$500	$500	$2500

Action 2.1.4 Monitor persistence of crimson finches (white-bellied) at Kowanyama.

Justification: Presence of crimson finches (white-bellied) at Magnificent Creek will show whether management of the habitat is effective. Particular emphasis should be given to sites where rubber vine is present.

Methods: Check for presence of crimson finches (white-bellied) and provide estimate of flock size in September and October at Magnificent Creek each year. Data to be provided to Kowanyama Land and Sea Management Centre, TSCU and EPA/QPWS.

Potential contributors: Kowanyama Land and Sea Management community rangers, CYNRMG and visiting birdwatchers.

Estimated costs:

Year 1	Year 2	Year 3	Year 4	Year 5	Total cost
$1000	$1000	$1000	$1000	$1000	$5000

Action 2.2 Monitor persistence of star finches (northern)

Performance criteria: Star finch (northern) is still present at Lakefield National Park and Pormpuraaw,

Action 2.2.1 Monitor persistence of star finches at Lakefield National Park.

Justification: Presence of star finches at selected sites on northern grass plains of Lakefield National Park will show whether management of the habitat is effective.

Methods: Conduct early morning waterhole counts at The Palms and Knifehole Lagoon in September and October each year. On each occasion count all granivorous birds including finches coming to drink from dawn for two hours. All data to be sent to EPA/QPWS.

Potential contributors: EPA/QPWS, traditional owners, CYNRMG and birdwatchers.

Estimated costs:

Year 1	Year 2	Year 3	Year 4	Year 5	Total cost
$500	$500	$500	$500	$500	$2500

*Action 2.2.2 Monitor persistence of star finches (*northern*) at Pormpuraaw*

Justification: Presence of star finches (northern) at Pormpuraaw crocodile breeding lagoon will show whether management of the habitat is effective.

Methods: Check for presence of star finches (northern) and provide estimate of flock size in September and October at Pormpuraaw crocodile breeding lagoon each year. Data to be provided to Pormpuraaw Land and Sea Management Centre and EPA/QPWS.

Potential contributors: Pormpuraaw Land and Sea Management Centre community rangers, CYNRMG and visiting birdwatchers.

Estimated costs:

Year 1	Year 2	Year 3	Year 4	Year 5	Total cost
$500	$500	$500	$500	$500	$2500

Action 2.3 Monitor grasslands at Nifold Plain

Performance criteria: Monitoring sites at Nifold Plain demonstrate no loss of grassland.

Justification: A major threat to star finches (northern) is loss of grasslands as a result of invasion by broad-leaved tea-tree. The extent to which management is reducing this threat needs to be monitored so, if necessary, management can be adjusted.

Methods: Monitoring sites have already been established using SavMon methodology. These should be monitored annually. Additional sites need to be established to sample Nifold Plain in its entirety.

Potential contributors: EPA/QPWS, traditional owners, rangers, tertiary institutions and CYNRMG.

Estimated costs:

Year 1	Year 2	Year 3	Year 4	Year 5	Total cost
$2000	$1200	$1200	$1200	$1200	$6800

Action 2.4 Analyse and report on monitoring

Performance criteria: Analysis of monitoring undertaken every two years.

Justification: Monitoring must be analysed and is essential if changes to management are to be designed.

Methods: Build up a time-series of counts for crimson finches (white-bellied) and star finches (northern) at sites where counting has taken place. For Nifold Plain augment with counts of other granivorous birds. Summary reports should be produced annually for stakeholders, although it may take some years before trends are apparent. After five years test ability of counts to detect change based on inter-annual variability.

Potential contributors: EPA/QPWS, tertiary institutions, Land and Sea Centres, CYNRM G.

Estimated costs:

Year 1	Year 2	Year 3	Year 4	Year 5	Total cost
$1500	$1500	$1500	$1500	$3000	$9000

Specific objective 3: Assess potential for re-introduction of crimson finches (white-bellied) at Lockhart River

Action 3.1 Assess potential for re-introduction at Lockhart River

Performance criteria: Assessment of potential for re-introduction at Lockhart River completed.

Justification: Crimson finches (white-bellied) have not been recorded at Lockhart River since 1913. Returning crimson finches (white-bellied) to their former range will not only restore biodiversity but could also symbolise a return to health of Lockhart River community lands.

Methods: Discuss prospects for re-introduction with Lockhart River Land and Sea Management Centre and traditional owners of grasslands beside the Claudie River. Any establishment of a captive breeding colony must comply with the legislation and policies.

Potential contributors: EPA/QPWS, Lockhart River Land and Sea Management Centre and CYNRMG.

Estimated costs: Consultation costs only; costs of subsequent action to be determined from consultation.

Year 1	Year 2	Year 3	Year 4	Year 5	Total cost
$0	$0	$1500	$0	$0	$1500

6 *Cost of recovery*

Action no	Action title	*Priority	Cost Estimate ($'s/year)					Total Cost ($)
			Year 1	Year 2	Year 3	Year 4	Year 5	
1.1.1	*Manage rubber vine at crimson finch (white-bellied) sites on Lakefield National Park*	M	$500	$500	$500	$500	$500	$2500
1.1.2	*Manage rubber vine at crimson finch (white-bellied) sites on Magnificent Creek*	M	$2000	$2000	$2000	$2000	$2000	$10,000
1.2	*Reduce grazing by cattle and pigs on Lakefield National Park*	H	$50,000	$100,000	$100,000	$75,000	$0	$325,000
1.3	*Burn to restore grassland on Lakefield National Park*	H	$2000	$2000	$2000	$2000	$2000	$10,000
1.4	*Develop a strategy for protection of habitat at Pormpuraaw*	H	$0	$2500	$0	$0	$0	$2500
2.1.1	*Monitor persistence of crimson finches (white-bellied) at Lakefield National Park*	H	$500	$500	$500	$500	$500	$2500
2.1.2	*Monitor persistence of crimson finches (white-bellied) at Aurukun*	H	$1000	$1000	$1000	$1000	$1000	$5000
2.1.3	*Monitor persistence of crimson finches (white-bellied) at Pormpuraaw*	H	$500	$500	$500	$500	$500	$2500
2.1.4	*Monitor persistence of crimson finches (white-bellied) at Kowanyama*	H	$1000	$1000	$1000	$1000	$1000	$5000
2.2.1	*Monitor persistence of star finches (*northern*) at Lakefield National Park*	H	$500	$500	$500	$500	$500	$2500
2.2.2	*Monitor persistence of star finches (CYP) at Pormpuraaw*	H	$500	$500	$500	$500	$500	$2500
2.3	*Monitor grasslands at Nifold Plain*	H	$2000	$1200	$1200	$1200	$1200	$6800
2.4	*Analyse and report on monitoring*	H	$1500	$1500	$1500	$1500	$3000	$9000
3.1	*Assess potential for re-introduction at Lockhart River*	L	$0	$0	$1500	$0	$0	$1500
Total	*Annual cost of crimson (white-bellied) and star finch (*northern*) recovery program*		$64,600	$112,700	$113,500	$87,000	$15,500	$396,900

* Priority ratings are: H - action critical to meeting plan objectives; M - action contributing to meeting plan objectives; L - desirable but not essential action

7 *Management practices*

Proper management of the crimson finch (white-bellied) and the star finch (northern) habitats is critical to the survival of the species. Guidelines for habitat management, based on current knowledge of the biology of the finch species, are outlined below.

1. Rubber vine control

Rubber vine, a weed of national significance, is causing the loss of important habitat for the finches and needs to be managed.

2. Managing the impact of feral animals

Grazing by cattle and pigs is contributing to the loss of grasslands and needs to be managed by removing stock and erecting/managing fences.

3. Adaptive fire management

An adaptive approach is needed for fire management in areas of the finches' habitats. This will necessitate not burning at certain times to protect cane grasses and burning at other times to restore other grasslands that have been invaded by competing species.

8 *Evaluation of recovery plan*

To ensure the successful recovery of the crimson finch (white-bellied) and the star finch (northern), annual reviews of this recovery plan which involve stakeholders, will be undertaken to assess the success of the proposed management actions against the performance criteria. A review of the recovery plan will be conducted five years after adoption.

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