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# Capricorn Yellow Chat (*Epthianura crocea macgregori*) Recovery Action Plan 2023-2033



Prepared by: Threatened Species Operations, Wildlife and Threatened Species Operations, Department of Environment and Science

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## 1. INTRODUCTION

The Capricorn Yellow Chat Recovery Action Plan (RAP) was developed as part of the Queensland Department of Environment and Science (hereafter the department or DES) *Threatened Species Program 2020-2040* ([www.qld.gov.au](http://www.qld.gov.au)) framework. It provides the strategic management direction for the recovery of the Capricorn yellow chat (CYC). The plan identifies the key threats impacting on the species and sets out the recovery actions needed to address these threats and facilitate the species recovery in Queensland. The goals, objectives and actions developed under this plan have been based on the best available information and in collaboration with key stakeholders.

The adaptive management approach that underpins this Recovery Action Plan (RAP) ensures that decision making, and the most effective management interventions, are used in the recovery effort for the long-term.

Successful implementation of the recovery actions depends on the commitment and cooperation of all relevant stakeholders. The delivery of actions identified in the plan is a shared responsibility and one that is achieved through a collaborative and participatory approach. This document is non-statutory and does not bind any one potential contributor to resourcing or implementing the plan.

This RAP was approved by the department and is subject to modification as dictated by new findings, changes in status of the taxon, and the completion of recovery actions. Information in this RAP was accurate as of October 2023.

### Term and review date

Timeframe: 10 years from 2023 to 2033

Review date: 2028

For further information on this or other Recovery Action Plans please contact [Threatened.Species@des.qld.gov.au](mailto:Threatened.Species@des.qld.gov.au).

### Acronyms and Abbreviations

BLC – BirdLife Australia - Capricornia

CQU – Central Queensland University

CYC – Capricorn yellow chat

DES – Department of Environment and Science

DES GBR&MP Region – DES Great Barrier Reef & Marine Parks Region

DES TSO – DES Threatened Species Operations unit

DoD – Department of Defence

FBA – Fitzroy Basin Association

GA – Greening Australia

RAP – Queensland Recovery Action Plan

TSO – Threatened Species Operations

LO – Landowners

## 2. EXECUTIVE SUMMARY

### 2.1 Species

- Capricorn yellow chat *Epthianura crocea macgregori*

### 2.2 Family

- Meliphagidae (honeyeaters)

### 2.3 Conservation status

- Queensland *Nature Conservation Act 1992*: Endangered
- Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*: Critically Endangered

### 2.4 Current population and distribution

The total population of the CYC is approximately 200-300 individuals. The subspecies occurs in three geographically grouped populations, all within Central Queensland:

- Broad Sound including Torilla Plain (~75% of the total population),
- Fitzroy River delta (~22%), and
- Curtis Island Conservation Park (~3%).

### 2.5 Threats

- Small population size
- Changes to hydrological regimes
- Habitat alteration by feral pigs
- Pastoral grasses and other introduced plant species
- Inappropriate grazing
- Climate change
- Predation
- Habitat loss and modification

### 2.6 Vision statement

“By 2043, all three subpopulations of CYC persist in the wild. The extent of currently occupied and/or suitable habitat is maintained, habitat condition and protection is improved, and there is no decline in CYC population from 2020 levels. The capacity of CYC to adapt to climate change impacts is increased by incorporating the best available science in habitat management and reduction of threats. The CYC is valued by landholders and local community through active participation and engagement in the subspecies recovery.”

### 2.7 Goals

- Goal 1: Maintain three subpopulations and improve population trend in order for the CYC to persist in the wild for the long term.
- Goal 2: The condition of habitat is improved and increases resource availability for CYC.
- Goal 3: The extent of existing habitat critical to the survival of the CYC is maintained.
- Goal 4: Management interventions for the CYC are improved through addressing critical knowledge gaps.

Goal 5: Improve engagement of key stakeholders and First Nations groups (Bailai, Gurang, Gooreng Gooreng & Taribelang Bunda People and Darumbal People) in CYC habitat management to better effect recovery.

### 3. FIRST NATIONS PEOPLE

The department is committed to progressing self-determination by recognising the rights and interests of First Nations people across Queensland. The [Gurra Gurra Framework 2020–2026](#) accelerates this commitment by reframing our relationship with First Nations peoples to work in genuine partnership to safeguard ecological and cultural values across Queensland.

The department acknowledges and respects First Nations peoples' lived experiences, knowledge, skills and expertise, and seeks to incorporate their perspectives into the policies, programs and systems that guide land and sea management. We commit to work in genuine partnership with First Nations people across Queensland to ensure their vision and knowledge of Country is appropriately reflected in the *Threatened Species Program 2020-2040*.

The CYC occurs on First Nations Bailai, Gurang, Gooreng Gooreng & Taribelang Bunda People and Darumbal People traditional land (see Figure 1). DES is continuing to work with Bailai, Gurang, Gooreng Gooreng & Taribelang Bunda People to incorporate their perspectives into the CYC Recovery Action Plan.

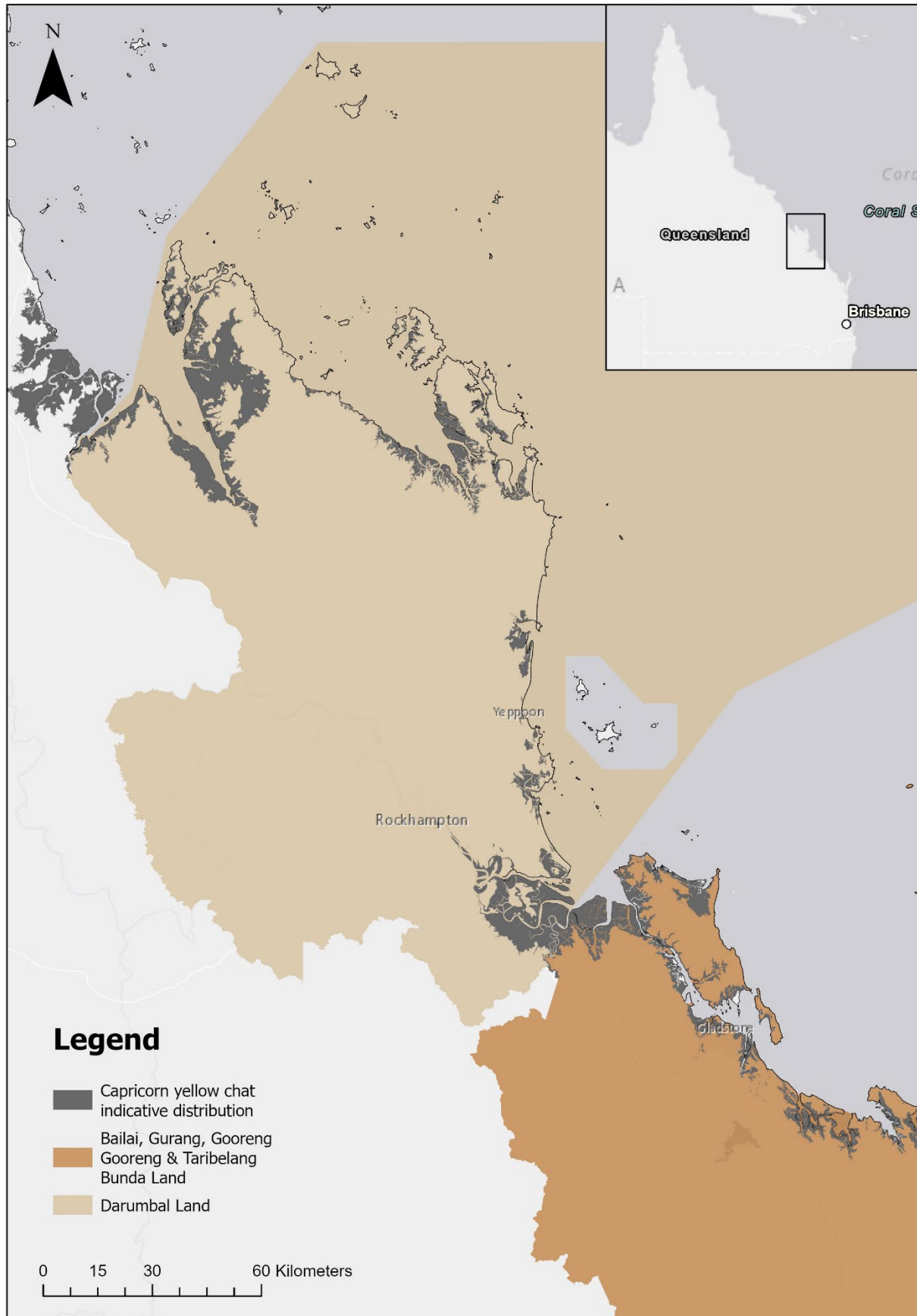
#### 3.1 Darumbal People

The Darumbal People are traditional custodians of country from just south of Rockhampton, north to the Styx River near Ogmoo. In 2016, the Darumbal People's native title claim QCD2016/006 was granted by the Federal Court, and the Darumbal People Aboriginal Corporation Registered Native Title Body Corporate (DPAC RNTBC) was established. The Darumbal People and the Department of Defence signed an Indigenous Land Use Agreement (ILUA) in 2019 for country in the Shoalwater Bay Training Area expansion footprint, with part of this area containing an important population of CYC. The ILUA provides for direct opportunities for employment and working on country for Darumbal People.

#### Darumbal People CYC cultural significance statement

The Darumbal People acknowledge the significant loss of CYC habitat and its associated biocultural values. Similarly, Darumbal have witnessed the threats and pressures on Darumbal country for short and long periods of time and have had to adapt to these dramatic environmental and human-induced changes. It is a goal for Darumbal to restore, heal country and reinstate access for Darumbal people *'as country needs to hear the sound of its people and heal together'*.

Darumbal have a strong desire to lead restoration projects and partner with multiple organisations to support the successful recovery of culturally significant species such as the CYC. Darumbal acknowledges the need for a clearer picture for planning and implementing the most effective means to improving populations of the species and will seek the necessary support for the on-ground efforts for Darumbal's Land and Sea Rangers to recover the species. Darumbal's goal is to lead a number of Recovery Action Plans across Darumbal country with cultural dimensions, reinforcing the cultural and conservation value of the CYC (Malcolm Mann 2023, Darumbal Traditional Owner).



**Figure 1** Traditional country of the Bailai, Gurang, Gooreng Gooreng & Taribelang Bunda People and Darumbal People, overlaid with Capricorn yellow chat distribution.

## 4. CONTEXT

### 4.1 Species Information

The CYC was first recorded in the Rockhampton district in 1859 (Mack 1930) and Torilla Plain in the Broad Sound area north of Rockhampton (Houston & Melzer 2008). There were no further published sightings over the next 60 years and the species was considered possibly extinct (Higgins *et al.* 2001; Houston & Melzer 2008). The CYC was rediscovered on Curtis Island in 1991 (Arnold *et al.* 1993), in the Broad Sound north of Rockhampton in 2003, (Jaensch *et al.* 2004) and the Fitzroy River Delta in 2004 (Houston *et al.* 2004a). Since its rediscovery, significant knowledge has been gained regarding the species distribution, ecology and management actions to recover the species (e.g. Houston *et al.* 2013, 2015, 2018a, 2018b, 2020a, 2020b).

The Department of Environment and Science's [Capricorn yellow chat - Species summary and future directions report](#) (DES 2020) identifies the future directions for management actions for the subspecies and has been adapted to develop this Recovery Action Plan. A summary of the subspecies ecology, biology and threats is provided below, with further details found in DES (2020).

#### 4.1.1 Conservation Status

Legislation	Conservation status
<i>Nature Conservation Act 1992</i>	Endangered
<i>Environment Protection and Biodiversity Conservation Act 1999</i>	Critically Endangered

#### 4.1.2 Taxonomy and Description

The CYC is one of three subspecies (races) of yellow chat and is geographically isolated from the Alligator River (*E. crocea tunneyi*) and central Australian (*E. crocea crocea*) races (Schodde & Mason 1999).

The CYC is a small passerine weighing 10-11g (Houston *et al.* 2015). Breeding male birds have a bright yellow crown, olive back, yellow rump and a 4-6mm wide black bar across its chest (Schodde & Mason 1999). Non-breeding males are similar in colouration, with the black breast bar being reduced or absent (Menkhorst *et al.* 2017). Breeding females have a yellow crown, grading to an olive back and a golden yellow rump and vent (Schodde & Mason 1999).

#### 4.1.3 Biology and Ecology

All yellow chat subspecies are predominantly insectivorous (Keast 1958; Higgins *et al.* 2001), feeding within low vegetation in or near channels and basins (Houston & Melzer 2008). Foraging by adult birds is generally on the ground at the base of sedges on bare mud or dry substrates, depending on season, and amongst low vegetation such as grass tussocks, samphire vegetation and occasionally shrubs fringing the sedge-beds (Jaensch *et al.* 2004; Houston *et al.* 2004b). It is infrequently found foraging in dense para grass *Urochloa mutica* swards (Houston & Melzer 2008). When nesting, adults have been observed foraging around pools and muddy substrates bordering sedge-beds (Houston *et al.* 2004a; Houston *et al.* 2020a).

Capricorn yellow chats predominantly breed in spring and summer, following rainfall and subsequent freshwater inundation of the marine plains which triggers food abundance (Houston 2013). The CYC has the ability to breed more than once per year and can show breeding site fidelity (Houston *et al.* 2020a). CYCs nest close to the ground in grasses,



samphire or sedges, with high levels of vegetative cover within 1-metre of the nest (Houston *et al.* 2020a). The recorded clutch size is two or three eggs but may be greater as adults have been observed feeding in groups of up to four fledged young (Jaensch *et al.* 2004; Houston *et al.* 2004a; Houston *et al.* 2004b).

When breeding, the CYC has been observed foraging on muddy substrates around the edges of channels and pools for semi-aquatic prey at the base of sedges and samphire (Houston *et al.* 2020a). Adult chats have been observed feeding on a variety of insects including flies, caterpillars of moths and butterflies, spiders, grasshoppers, damsel flies, winged ants, cockroaches and beetles (Houston *et al.* 2020a).

#### **4.1.4 Species Population and Distribution**

The average population size of the CYC has been estimated at 251 (SE +/-31) across three disjunct subpopulations (see Figure 1, next page), based on seven years of repeated surveys from 2004-2010. The majority of the population ( $\geq 75\%$ ) is found in the Broad Sound region, while approximately 22% of the population is found in the Fitzroy River delta area and approximately 3% on Curtis Island (Houston *et al.* 2018a). The CYC population can fluctuate markedly dependent on seasonal rainfall. There is a positive relationship between good rainfall in the preceding wet season and higher CYC abundance (Houston *et al.* 2018a). After a series of wetter years, the population may approach 1,000 (R. Black, pers. comm 2023). During periods of drought, populations can decrease by approximately 50% (Houston *et al.* 2018a).

The distribution of the CYC does not overlap with any other species of chat (*Epthianura* spp.). Curtis Island Conservation Park is the only protected area where the CYC occurs; the remainder of the subspecies' distribution is on private land (freehold and leasehold) and Commonwealth land.

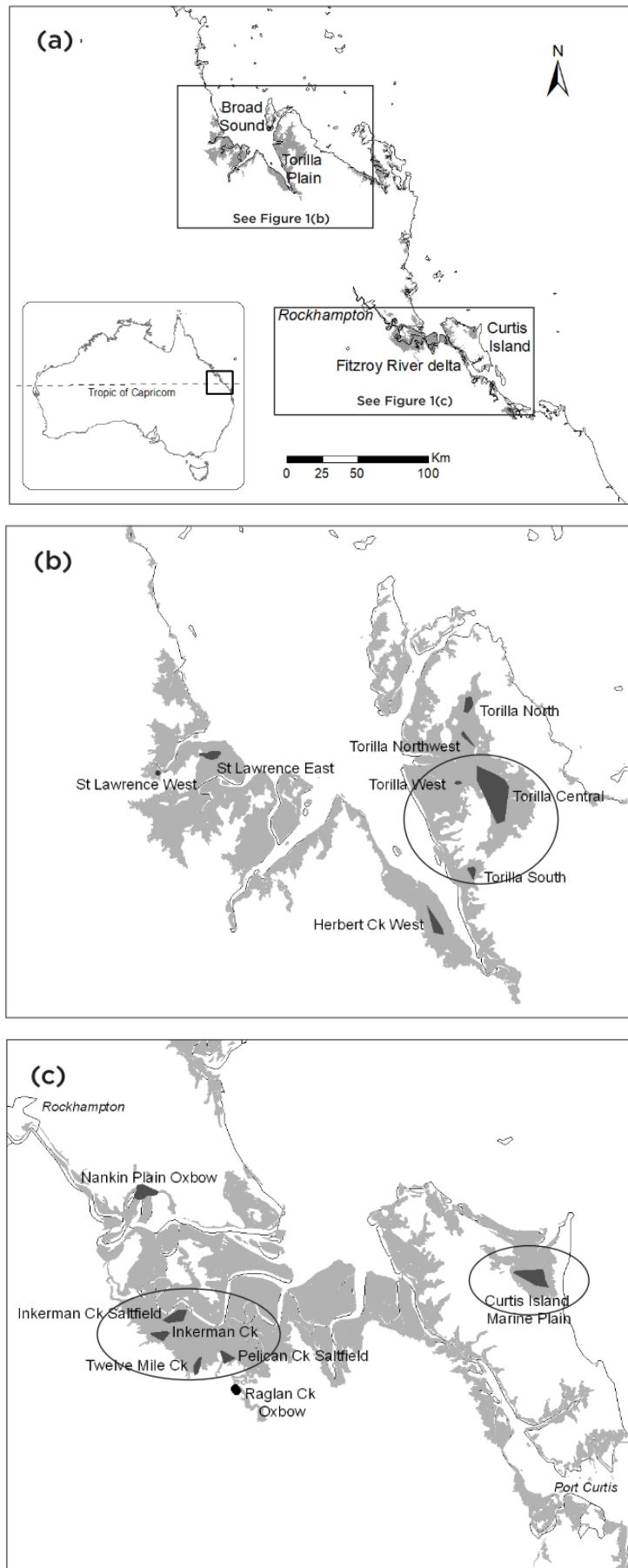
Although CYCs are still found across their historical distribution and the majority of CYC populations are known, further surveys are required to refine knowledge of habitat usage, particularly outside of the breeding season.

#### **4.1.5 Habitat Requirements**

CYC occupy marine plains with grass-sedge wetlands with patches of salt-tolerant samphire, creating a more open vegetation structure and are generally not found in adjacent unvegetated salt flats or mangrove dominated vegetation. These marine plains receive significant freshwater flows during the wet-season (December-February), before generally drying out (Houston *et al.* 2013). The majority of these wetlands are banked, which excludes or reduces tidal influence while retaining freshwater for longer periods. These tide-excluded banked wetlands have high value to CYC's (Houston *et al.* 2023).

The vegetation generally corresponds with RE 11.1.1, 11.1.2b, 11.1.3, 11.3.27 and 12.1.2, with dominant species including, but not limited to, *Cyperus alopecuroides*, *Schoenoplectus subulatus*, interspersed with other species, including *Paspalum distichum*, *Sporobolus virginicus*, *Tecticornia pergranulata*, *Eleocharis dulcis* and *Leptochloa fusca* (Jaensch *et al.* 2004; Houston *et al.* 2004a; Houston *et al.* 2004b; Houston *et al.* 2013). The marine plains are treeless, except for the bordering areas of mangroves (Houston *et al.* 2013).

Habitat critical to the survival of the Capricorn yellow chat includes all wetlands and grasslands on seasonally inundated marine plains, where they currently occur (Houston & Melzer 2008).



**Figure 2** (a) Range of the CYC, with known sites shown by dark-grey polygons superimposed on marine plains indicated by pale-grey shading in (b) Broad Sound and (c) Fitzroy River Delta and Curtis Island. Maps sourced from Houston et al. (2020).

## 4.2 Threats

### 4.2.1 Small population size

The small population size of the CYC increases its risk of extinction due to stochastic environmental events. The subspecies may also be at risk from potential reduced genetic diversity. Previous genetic research of the CYC has found restricted gene flow between the Broad Sound and Fitzroy River Delta subpopulations (Houston *et al.* 2018b). Understanding the genetic relationship between the CYC subpopulations requires further assessment.

### 4.2.2 Changes to hydrological regimes

Marine plain wetlands are dependent on both freshwater and tidal inflows. Interruption to the hydrological regimes will affect the vegetation structure and productivity of this habitat on which the CYC is dependent. Upstream land-uses that reduce freshwater surface in-flows and/or sheet overland flows will influence the natural flooding processes of the marine plain. This will influence habitat quality and reduce productivity of insect diversity and abundance required by the CYC, which will in-turn reduce breeding and the long-term survival of the species.

Both dams and ponded pasture banks established for agricultural purposes may contribute to this problem by reducing the quantity of freshwater reaching breeding habitats on marine plains. Ponded pasture banks are used extensively in this region to establish wetlands for ponded pasture grasses in order to increase productivity of the land for pastoralism. The creation of large dams on important catchments associated with the Torilla Plain breeding habitat, such as Wardallah Creek, could have serious consequences for CYC persistence.

Any construction activities on marine plains supporting CYCs need careful consideration as these can impede freshwater flows and affect downstream wetlands. Examples of potential disturbance include embankments associated with roads or pipelines that act as barriers. Pipelines that cross creeks supporting CYCs could also interfere with hydrology and associated downstream flows.

At the lower end of the marine plain system, levee banks have the capacity to cause extensive pooling of freshwater, increasing the hydroperiod, as well as preventing tidal inflows. This can improve the quality of CYC habitat, however it also prevents the movement of fish between freshwater, estuarine and marine habitats. Existing levee banks should be maintained as they provide suitable CYC habitat, while the construction of new banks is not recommended. Small check banks do not provide a significant barrier to freshwater flows and strategic placement of these banks have the potential to enhance low quality CYC habitat (Houston *et al.* 2009, 2013, 2023).

Potential changes to hydrological regimes are a greater risk to CYCs in the Fitzroy River delta and Broad Sound subpopulations, compared to Curtis Island, where the population there is protected by national park tenure.

### 4.2.3 Habitat alteration by feral pigs

Feral pigs are present at all three localities where CYCs occur and can cause extensive damage to CYC habitat by uprooting sedges and associated grasslands of the marine plain wetlands, upon which CYCs depend for shelter and foraging (Houston & Melzer 2008).

Historically, feral pigs have been at high densities on Curtis Island (J. Hodgson pers. comm 2020) and have caused extensive damage to the marine plains. A feral pig management program implemented by DES GBR&MP Region has resulted in a significant reduction in feral pig numbers, however on-going management is required.

On the Torilla Plain, landowners regularly undertake feral pig management when conditions are permitting (W. Houston pers. comm 2020). The Fitzroy Basin Association (FBA) has also funded and supported the coordination of feral pig management programs on the Torilla Plain and neighbouring land owned and managed by the Department of Defence (DoD) for several years (S. van Nunen pers. comm 2020).

Eradication of feral pigs is unlikely and coordinated feral pig management programs, undertaken by landowners, is required to reduce damage caused by feral pigs.

#### **4.2.4 Pastoral grasses and other introduced plant species**

The CYC habitat of the marine plains has been subject to significant modification since European settlement through the establishment of pasture grasses, primarily para grass *Urochloa mutica*, which is a dominant component of the marine plain vegetation on the Torilla Plain (Houston & Melzer 2008). These pasture grasses, if not managed appropriately, have the potential to smother CYC habitat (DES 2020). This threat is of greatest relevance to the Fitzroy River delta and Broad Sound subpopulations of CYC.

Other introduced plant species with the potential to impact CYC habitat include aleman grass *Echinochloa polystachya*, harrisia cactus *Harrisia martinii*, and prickly acacia *Vachellia nilotica*. These species require control to ensure habitat value to CYCs is maintained, and in the case of prickly acacia, reduces opportunities for birds of prey to launch attacks on CYCs in otherwise treeless marine plain country.

#### **4.2.5 Inappropriate grazing**

High, prolonged stocking rates of cattle on marine plain environments results in trampling and grazing of sedges and grasses and damage to CYC habitat. Many pastoralists have been involved in the conservation of the CYC and utilise conservative stocking rates and rotational grazing methods that are compatible with maintaining CYC habitat and populations (Houston *et al.* 2013; Houston *et al.* 2020a). This threat is relevant to the Fitzroy River delta and Broad Sound populations of CYC; cattle and horses are managed to very low/nil numbers within Curtis Island Conservation Park.

#### **4.2.6 Climate change**

Climate change is expected to impact the CYC and its habitat in several ways. The frequency of weather-induced impacts such as heat waves, droughts, floods, wildfires, cyclones and storm surges are expected to increase in frequency, severity and duration. These events will impact the CYC through changes to habitat condition and resources, as well as direct mortality, increasing the vulnerability of the subspecies to population decline (Houston *et al.* 2020b).

The CYC occupies a very narrow niche on the marine plains of central Queensland, making it highly susceptible to climate-induced sea level rise. The majority of CYC habitat is less than five metres above mean sea level; this situates key CYC habitat on the threshold of the highest annual tides and increases vulnerability to even small rises in sea level. Declines of habitat quality have been documented over a 16-year period on Curtis Island, where mean sea level has been observed to have risen by ~80mm (Houston *et al.* 2020b). This magnitude of sea level rise results in loss of tall plant cover and reduced habitat quality for the CYC, with populations on Curtis Island and the Fitzroy River delta considered to be at greatest risk of inundation (Houston *et al.* 2020b). Creating, maintaining and/or raising tidal exclusion banks is a management option that can protect CYC habitat from sea level rise impacts (Houston *et al.* 2023).

#### **4.2.7 Predation**

Feral cats *Felis catus*, foxes *Vulpes vulpes* and wild dogs *Canis lupus* are well documented predators of Australian wildlife, including birds (Paltridge 2002; Doherty *et al.* 2015, Woinarski *et al.* 2017, 2018), however a specific study into CYC predators has not been undertaken. The impact of these mammalian predators on CYC's represent a potential threat that requires further research to quantify severity.

#### **4.2.8 Habitat loss and modification**

Industrial expansion within the Fitzroy Delta associated with salt field development and port infrastructure is a potential threat to the CYC through habitat loss (Houston & Melzer 2008). There are no known industrial expansion plans at Torilla Plain or Curtis Island, however a key CYC site in the western Broad Sound is now part of the Shoalwater Bay expansion area (Australia – Singapore Military Training Initiative) and may be subject to land use intensification for Department of Defence training purposes.

In June 2023, an arson-lit wildfire in Curtis Island Conservation Park directly impacted CYC habitat. Planned burns conducted during dry periods also have the potential to impact CYC habitat across their range, as most cattle grazing fire management is conducted during the dry season.

### **4.3 Previous and Current Conservation and Management Actions**

A CYC recovery plan was produced in 2008 (Houston & Melzer 2008).

Selected management actions for the CYC are already being implemented by a range of stakeholders, including population monitoring, grazing land management, weed control and feral pig control. This recovery action plan seeks to further coordinate and expand recovery actions to improve the conservation outcome for the species.

## 5. RECOVERY STRATEGY

This Recovery Action Plan guides recovery actions for the CYC for the next 10 years and covers the full extent of the subspecies' distribution.

### 5.1 Vision

The long-term vision of the recovery program for the CYC extends beyond the life of this plan but is important to state to ensure a consistent, long-term strategy. The vision is:

“By 2043, all three subpopulations of CYC persist in the wild. The extent of currently occupied and/or suitable habitat is maintained, habitat condition and protection is improved, and there is no decline in CYC population from 2020 levels. The capacity of CYCs to adapt to climate change impacts is increased by incorporating the best available science in habitat management and the reduction of threats. The CYC is valued by landholders and local community through active participation and engagement in the subspecies recovery.”

### 5.2 Goals

There are five goals presented in the following section, each with specific objectives and actions, that are practical and operational steps toward achieving the long-term vision. These goals are for the life of the plan.

- Goal 1: Maintain three subpopulations and improve population trend in order for the CYC to persist in the wild for the long term.
- Goal 2: The condition of habitat is improved and increases resource availability for CYC.
- Goal 3: The extent of existing habitat critical to the survival of the CYC is maintained.
- Goal 4: Management interventions for the CYC are improved through addressing critical knowledge gaps.
- Goal 5: Improve engagement of key stakeholders and First Nations groups (Bailai, Gurang, Gooreng Gooreng & Taribelang Bunda People and Darumbal People) in CYC habitat management to better effect recovery.

### 5.3 Recovery Action Table

Actions identified for the recovery of the Capricorn yellow chat during the life of this plan are described in Table 2 below under each of the relevant goals and objectives. The information in the Action Table should be interpreted as follows:

**Table 1.** Definitions for priority, timeframe, cost, and responsibility described within the recovery action table.

Factor	Description	1	2	3	4
Priority	Level of importance of the action	Taking prompt action is necessary to mitigate the threats and ensure the persistence of the species	Action is necessary to mitigate threats and work towards the long-term recovery of the species	Action is desirable, but not critical to recovery at this time but will provide for longer term recovery	N/A
Timeframe	Expected time to implement and /or achieve the result	Very short: 1-2 years	Short: 2-5yrs	Medium: 5-10yrs	N/A

Cost<sup>1</sup> – Indicative cost estimate \$1,000’s; \$10,000’s; \$100,000’s; \$1,000,000’s

Potential Contributors<sup>2</sup> - Identify who leads the action (L). Other contributors (C) are also identified where possible.

#### Notes

1. Costs do not account for inflation, and do not include standard management activities on conservation estate by the department that are to be considered as in-kind contribution. If an action is attributed a cost and it is led by the department then at least a partial in-kind contribution is assumed. The provision of funds necessary to implement actions are subject to budgetary and other constraints affecting the parties involved, as well as the need to address other priorities.
2. The nominated lead for actions is not necessarily responsible for cost, however the lead should coordinate as necessary to determine source/s of funding for the activity.

**Table 2.** Recovery action table for the Capricorn yellow chat that lists the goals, objectives, performance indicators and actions for the duration of the plan.

**Goal 1: Maintain three subpopulations and improve population trend in order for the CYC to persist in the wild for the long term.**

<b>Objective 1.1: Improve the current knowledge of the subspecies population genetics through research and use the results to inform CYC population planning and management effectiveness by 2026.</b>				
<b>Performance indicators</b>				
<ul style="list-style-type: none"> <li>CYC population genetics and demographics are well understood and inform population management.</li> </ul>				
<b>Action</b>	<b>Priority</b>	<b>Timeframe</b>	<b>Indicative Cost</b>	<b>Potential Contributors <i>L = Lead C = Contributor</i></b>
1.1.1 Undertake CYC genetic and demographic research.	2	2	\$10,000's	L – CQU C – other university or research facility
1.1.2 Develop a population management plan to guide management of the three subpopulations.	2	2	\$1,000's	L – DES TSO C – CQU, or other university or research facility
<b>Objective 1.2: Establish the CYC population trend and habitat use across the three subpopulations by 2033.</b>				
<b>Performance indicators</b>				
<ul style="list-style-type: none"> <li>CYC population trend, habitat use, area of occupancy and extent of occurrence are estimated at 3-year intervals, detecting any change in population trend measured against historical data.</li> </ul>				
<b>Action</b>	<b>Priority</b>	<b>Timeframe</b>	<b>Indicative Cost</b>	<b>Potential Contributors <i>L = Lead C = Contributor</i></b>
1.2.1 Undertake annual population monitoring of known CYC populations using standardised population survey methodology.	1	3	\$10,000's	L – CQU C – BLC
1.2.2 Undertake surveys in suitable habitat to identify potential new populations of CYC and document dispersal activity.	3	2	\$1,000's	L – CQU C – BLC



**Goal 2: The condition of habitat is improved and increases resource availability for CYC.**

<b>Objective 2.1: Control feral pigs, cattle and horses across 80% of CYC habitat by 2028</b>				
<b>Performance indicators</b>				
<ul style="list-style-type: none"> <li>Feral pig, cattle and horse populations are controlled to an extent that their impacts to CYC habitat are minimal.</li> </ul>				
<b>Action</b>	<b>Priority</b>	<b>Timeframe</b>	<b>Indicative Cost</b>	<b>Potential Contributors L = Lead C = Contributor</b>
2.1.1 Landowners/managers integrate feral pig management for each subpopulation.	1	2	\$10,000's	L – LO C – FBA, GA
2.1.2 DES GBR&MP Region continues to remove feral pigs and horses from the marine plain of Curtis Island Conservation Park.	1	2	\$10,000's	L – DES GBR&MP Region
<b>Objective 2.2: Reduce the extent of invasive grasses, harrisia cactus and prickly acacia in all areas of CYC habitat by 2028.</b>				
<b>Performance indicators</b>				
<ul style="list-style-type: none"> <li>Weed extent is reduced to improve habitat condition for CYCs.</li> </ul>				
<b>Action</b>	<b>Priority</b>	<b>Timeframe</b>	<b>Indicative Cost</b>	<b>Potential Contributors L = Lead C = Contributor</b>
2.2.1 Undertake weed management across all subpopulation sites to mitigate the impacts of weeds on CYC habitat.	1	2	\$100,000's	L – LO C – FBA, GA
<b>Objective 2.3: Support more landholders to implement sustainable grazing and fire management practices in the Fitzroy River delta and Broad Sound by 2028.</b>				
<b>Performance indicators</b>				
<ul style="list-style-type: none"> <li>The number of landholders implementing sustainable grazing and fire management practices that benefit the CYC have increased</li> </ul>				
<b>Action</b>	<b>Priority</b>	<b>Timeframe</b>	<b>Indicative Cost</b>	<b>Potential Contributors L = Lead C = Contributor</b>
2.3.1 Landholders implement or maintain appropriate grazing and fire regimes to improve CYC habitat condition.	1	2	\$1,000's	L – LO C – FBA, GA

**Goal 3: The extent of existing habitat critical to the survival of the CYC is maintained.**

<b>Objective 3.1: Identify and plan for the implementation of actions to reduce the impacts of sea level rise on CYC habitat.</b>				
<b>Performance indicators</b>				
<ul style="list-style-type: none"> <li>The management of sea level rise impacts on CYC habitat is informed by research and practical trials.</li> </ul>				
<b>Action</b>	<b>Priority</b>	<b>Timeframe</b>	<b>Indicative Cost</b>	<b>Potential Contributors <i>L = Lead C = Contributor</i></b>
3.1.1 Undertake LIDAR mapping of CYC habitat to identify areas at risk of sea level rise and identify priority areas for the construction of check banks.	2	2	\$10,000's	L – CQU C – other university or research facility
3.1.2 Trial the construction of protective earthen banks around areas of CYC habitat to prevent tidal ingress.	2	3	\$10,000's	L – DES GBP&MP Region
<b>Objective 3.2: Any change to upstream hydrological regimes has no detrimental impact on CYC habitat values.</b>				
<b>Performance indicators</b>				
<ul style="list-style-type: none"> <li>Development activities upstream of CYC habitat do not impact flows into the marine plains.</li> </ul>				
<b>Action</b>	<b>Priority</b>	<b>Timeframe</b>	<b>Indicative Cost</b>	<b>Potential Contributors <i>L = Lead C = Contributor</i></b>
3.2.1 Maintain freshwater inflows and tidal flows to the marine plain.	1	4	N/A	L – LO C – FBA
3.2.2 Consult with relevant Commonwealth, State and Local government agencies and other stakeholders to ensure the recovery and management actions are incorporated into relevant planning and assessment processes, NRM strategies and water allocation plans.	1	1	N/A	L – DES TSO C – FBA, State and Local Government

<b>Objective 3.3: There is no loss of CYC habitat because of industrial expansion.</b>				
<b>Performance indicators</b>				
<ul style="list-style-type: none"> <li>CYC conservation is considered in industry development assessment, so that no habitat is lost through industrial expansion.</li> </ul>				
<b>Action</b>	<b>Priority</b>	<b>Timeframe</b>	<b>Indicative Cost</b>	<b>Potential Contributors <i>L = Lead C = Contributor</i></b>
3.3.1 Develop a guidance document for Commonwealth, State and Local government development assessment agencies about CYC habitat requirements.	2	1	N/A	L – DES TSO
<b>Objective 3.4: Secure at least one conservation covenant over 1,000ha of CYC habitat in the Broad Sound by 2033.</b>				
<b>Performance indicators</b>				
<ul style="list-style-type: none"> <li>CYC habitat security is increased on private land in the Broad Sound.</li> </ul>				
<b>Action</b>	<b>Priority</b>	<b>Timeframe</b>	<b>Indicative Cost</b>	<b>Potential Contributors <i>L = Lead C = Contributor</i></b>
3.4.1 Secure at least one conservation covenant in the Broad Sound to benefit the CYC.	2	3	\$10,000's	L – DES Nature Refuges or Private Protected Area investment teams C – LO

**Goal 4: Management interventions for the CYC are improved through addressing critical knowledge gaps.**

<b>Objective 4.1: Improve understanding of the interaction between threats and the CYC by 2028.</b>				
<b>Performance indicators</b>				
<ul style="list-style-type: none"> <li>Threats to the CYC are known and research is used to inform management interventions.</li> </ul>				
<b>Action</b>	<b>Priority</b>	<b>Timeframe</b>	<b>Indicative Cost</b>	<b>Potential Contributors <i>L = Lead C = Contributor</i></b>
4.1.1 Undertake research into the relationship between grazing land management, particularly pasture grasses and watering points, and the CYC.	2	2	\$10,000's	L – CQU C – other university or research facility
4.1.2 Undertake research into the impact to CYC populations from different fire regimes and by feral cats, foxes and wild dogs.	2	2	\$10,000's	L – CQU C – other university or research facility
<b>Objective 4.2: Set CYC habitat condition benchmarks for at least 60% of habitat of each of the three key subpopulations by 2028.</b>				
<b>Performance indicators</b>				
<ul style="list-style-type: none"> <li>Fine-scale habitat mapping is completed and a rapid assessment technique, such as BioCondition, is used annually/bi-annually to monitor habitat condition.</li> </ul>				
<b>Action</b>	<b>Priority</b>	<b>Timeframe</b>	<b>Indicative Cost</b>	<b>Potential Contributors <i>L = Lead C = Contributor</i></b>
4.2.1 Conduct spatial habitat monitoring by undertaking finer scale (1:25,000 or greater) Regional Ecosystem (RE) mapping to define RE 11.1.2b (saltmarsh) and 11.2.1a (salt flat) and define narrow bands of 11.1.3.	3	1	\$10,000's	L – Queensland Herbarium
4.2.2 Utilise a rapid assessment technique, such as BioCondition, to assess habitat condition, implemented annually/bi-annually.	2	1	\$10,000's	L – CQU C – DES GBR&MP Region, BLC

**Goal 5: Improve engagement of key stakeholders and First Nations groups (Bailai, Gurang, Gooreng Gooreng & Taribelang Bunda People and Darumbal People) in CYC habitat management to better effect recovery.**

**Objective 5.1: Improve the engagement in, and uptake of, appropriate land management practices by key stakeholders and First Nations groups in CYC priority areas by 2028.**

**Performance indicators**

- Improvement in land management for CYCs is implemented at >10 sites, as measured by either: Increased number of CYCs, and/or improvement in habitat condition.

<b>Action</b>	<b>Priority</b>	<b>Timeframe</b>	<b>Indicative Cost</b>	<b>Potential Contributors</b> <i>L = Lead C = Contributor</i>
5.1.1 Support First Nations groups to develop and seek funding for projects that contribute to CYC recovery (e.g. through the Queensland Indigenous Land and Sea Ranger Program).	2	1	N/A	L – First Nations groups C – DES TSO and GBR&MP Region
5.1.2 Support Department of Defence to develop an appropriate management plan for CYC’s and their habitat at Glenprairie.	1	1	\$1,000’s	L – DoD C – DES TSO
5.1.3 Continue to incorporate CYC management into public protected area planning strategies, including the Values Based Management Framework, and support on-ground response.	2	2	\$1,000’s	L – DES GBR&MP Region C – DES TSO
5.1.4 Work with DES GBR&MP Region to improve fire management strategies to protect the marine plain from catastrophic fires, based on learnings from the Curtis Island management program.	2	2	\$1,000’s	L – DES TSO C – DES GBR&MP Region
5.1.5 Publish results from research/monitoring programs in technical reports and papers to inform management.	3	1	\$1,000’s	L – CQU C – other university or research facility

## **6. EVALUATION AND REVIEW**

The plan will be implemented as resources allow by the relevant parties listed in the Recovery Action Table.

Performance indicators are used to evaluate progress toward meeting the objectives. A comprehensive review will be undertaken every five years, however, may be more frequent if actions undertaken or research/learnings highlights a need, and again at the completion of the plan. The evaluation findings will inform future implementation and improve program effectiveness.

All actions have been prioritised based on their benefit to the species, their likelihood of success and their cost. The provision of funds necessary to implement actions are subject to budgetary and other constraints affecting the parties involved, as well as the need to address other priorities.

This plan may be changed at any point in time, in consultation with all stakeholders and First Nations groups, to respond to unforeseen events.

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## **APPENDIX 1: STATEMENT OF CO-BENEFIT**

This Recovery Action Plan focuses on improving habitat value and reducing threats to the Capricorn yellow chat. Actions implemented under this plan will benefit other threatened species that share the same habitat and have similar ecological preferences, such as those that use the marine plain wetlands for foraging and/or breeding. These include the eastern curlew *Numenius madagascariensis*, curlew sandpiper *Calidris ferruginea*, bar-tailed godwit (Western Alaskan) *Limosa lapponica baueri*, great knot *Calidris tenuirostris*, lesser sand plover *Charadrius mongolus*, red knot *Calidris canutus*, greater sand plover *Charadrius leschenaultii*, and Australian painted snipe *Rostratula australis*. Threat abatement activities such as weed, feral pig, and introduced herbivore control will benefit the whole marine plain ecosystem.