

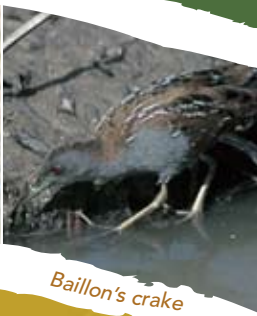
CRAKES AND RAILS



Australian spotted crake



Spotless crake



Baillon's crake



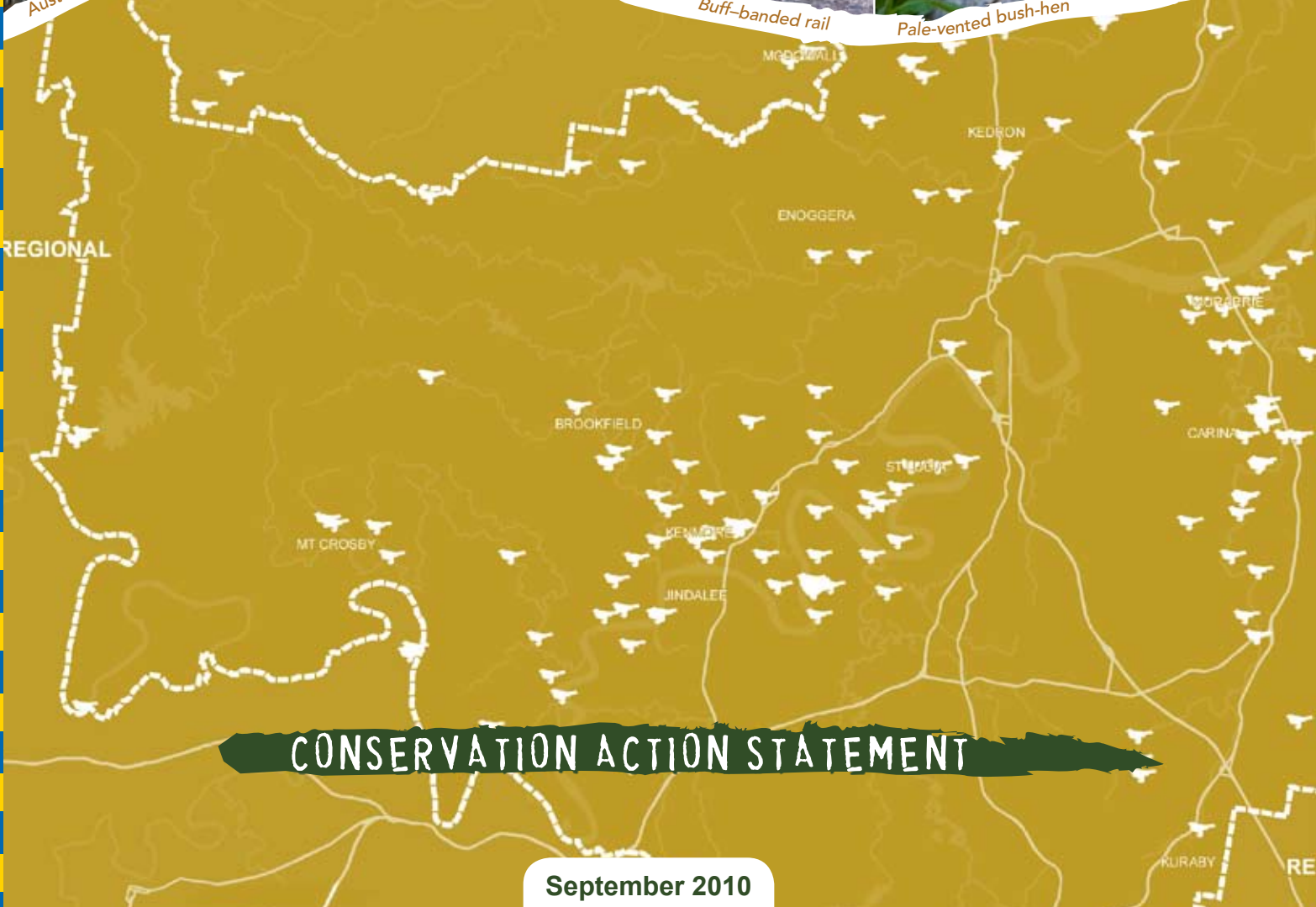
Buff-banded rail



Pale-vented bush-hen



Lewin's rail



CONSERVATION ACTION STATEMENT

September 2010

I ♥ BNE

That's why I'm taking action
to conserve our wildlife.



Dedicated to a better Brisbane

CRAKES AND RAILS

Contents

1	Introduction	3
2	Conservation status	4
3	Distribution	5
4	Ecology	8
5	Threats	13
6	Conservation	13
7	Research	14
8	Management intent	14
9	Further information	18

Tables

Table 1: Official conservation status of Brisbane's crakes and rails	4
Table 2: Breeding seasons	11
Table 3: Management actions	15
Table 4: Habitat protection and management guidelines	17

Maps

Map 1: Species distribution	7
------------------------------------	---

Photography acknowledgments

- Australian spotted crake, *Porzana fluminea*, Ian Montgomery.
- Spotless crake, *Porzana tabuensis*, Stuart Harris.
- Baillon's crake, *Porzana pusilla*, ©Queensland Museum, Ray Viljoen.
- Buff-banded rail, *Gallirallus philippensis*, ©Queensland Museum, Gary Cranitch.
- Pale-vented bush-hen, *Amaurornis moluccana*, Ian Montgomery.
- Lewin's rail, *Lewinia pectoralis*, Chris Tzaros, Birds Australia.

CRAKES AND RAILS

1 Introduction

This Conservation Action Statement addresses the following crane and rail species, collectively referred to as crakes and rails, which are identified as significant species within Brisbane as per Council's Natural Assets Planning Scheme Policy (Brisbane City Council 2000):



1. Australian spotted crane (*Porzana fluminea*)¹.
2. Spotless crane (*Porzana tabuensis*).
3. Baillon's crane (*Porzana pusilla*).
4. Buff-banded rail (*Gallirallus philippensis*).
5. Pale-vented bush-hen (*Amaurornis moluccana*) (referred to as 'bush-hen *Gallinula olivacea*' within Council's Natural Assets Planning Scheme Policy).
6. Lewin's rail (*Lewinia pectoralis*) (referred to as '*Dryolimnas pectoralis*' within Council's Natural Assets Planning Scheme Policy).

This Conservation Action Statement will be updated as new information becomes available and to report progress on conservation actions. For more information about this or any other Conservation Action Statement, visit Council's website at www.brisbane.qld.gov.au or phone Council on (07) 3403 8888.

Aims

This Conservation Action Statement details Council's management intent for the long-term protection and conservation of significant crakes and rails within Brisbane through the following actions.

- Collating **existing information** on the distribution, ecology and management requirements of these species within Brisbane and surrounds.
- Identifying **key threats** that significantly impact upon these species within Brisbane.
- Identifying **gaps in existing knowledge** of the habitat and management requirements of these species and research priorities.
- Detailing **practical and affordable strategies and actions** that support the long-term protection and conservation of these species within Brisbane.

2 Conservation status

The conservation status of a species will influence how it is managed. 'Threatened' species are typically accorded a more stringent management regime than 'common' species. Various conservation registers identify the status of fauna species at local, state and national levels. The current conservation status of the crakes and rails is provided in Table 1.

Table 1: Official conservation status of Brisbane's crakes and rails

Species	Brisbane City ¹	South East Queensland ²	Queensland ³	National details ⁴
Australian spotted crane	Significant	Not listed	Least concern	Not listed
Spotless crane	Significant	Not listed	Least concern	Marine ⁵
Baillon's crane	Significant	Not listed	Least concern	Marine
Buff-banded rail	Not listed	Not listed	Least concern	Not listed
Pale-vented bush-hen	Significant	Not listed	Least concern	Marine
Lewin's rail	Significant	Not listed	Near threatened	Not listed

¹ Brisbane City Council 2000, *Brisbane City Plan 2000*, Natural Assets Planning Scheme Policy, vol. 2 ² Significant for South East Queensland Bioregion under the Biodiversity Assessment and Mapping Methodology (Environmental Protection Agency 2002) ³ Queensland *Nature Conservation (Wildlife) Regulation 2006* under the *Nature Conservation Act 1992* ⁴ *Environment Protection and Biodiversity Conservation Act 1999* ⁵ Listed as Marine Flyover species under EPBC Act (1999)

'Significant' in Council's Natural Assets Planning Scheme Policy denotes that the species listed is at risk of extinction within Brisbane City if future land use and management do not adequately accommodate their ecological needs.

3 Distribution²

National/state

Australian spotted crane

- A wetland bird endemic to Australia, found mainly in the south-east and south-west of mainland Australia and on Tasmania, with sparse records elsewhere.
- Considered rare in Queensland and is sparsely distributed from Booby Island, Torres Strait along the east coast to Brisbane.
- There are few records for this species in Queensland, with no breeding records for the whole of Queensland over a four year survey period (Barrett *et al.* 2003).
- May be more common than the records indicate because of the bird's cryptic habits.

Spotless crane

- A wetland bird mainly found in the south-east and south-west of mainland Australia and north-eastern Tasmania.
- Sparsely distributed in Queensland, with very few sightings recorded.
- May have been overlooked because of its cryptic nature.
- No breeding records for the whole of Queensland over a four year survey period (Barrett *et al.* 2003).

Baillon's crane

- Mainly found in eastern, south-eastern and south-western Australia.
- Sparsely distributed throughout Queensland, with most records from central-east and south-east areas of the state.
- No breeding records throughout Queensland during a four year survey period (Barrett *et al.* 2003).

Buff-banded rail

- A wetland species widespread in coastal, subcoastal and riverine regions and on many offshore islands.
- Few records from far inland regions.
- Distributed from the eastern Gulf of Carpentaria to the islands of Torres Strait and along the eastern Queensland coast, with scattered records throughout the rest of the state.
- Over a four year survey period, a reasonable number of breeding records were recorded for coastal Queensland, including a few from the south-east region and Brisbane (Barrett *et al.* 2003).

Pale-vented bush-hen

- Mainly recorded in coastal and subcoastal parts of the 'top end' of the Northern Territory and eastern Queensland. Sporadic records from northern Western Australia. In New South Wales it is restricted to the Northern Rivers district.
- Recorded in Queensland from Weipa and along the east coast to Rockhampton and from the Blackall Ranges to Brisbane.
- This shy, cryptic species is possibly more common than records would indicate.
- Virtually all Australian breeding records lodged during a four year survey period were confined to eastern Queensland (Barrett *et al.* 2003).

Lewin's rail

- Occurs from the Atherton Tablelands south to Proserpine-Mackay.

3 Distribution continued...

Local

Australian spotted crane

- Rare in Brisbane (BAAM 2005). Only one record from 1937 is listed by Jack (1963), not listed for Brisbane by Venables (1983) and considered very rare by Low (1995).
- Most records are from wetlands near the Brisbane River at Lytton, Pullenvale, Sherwood Forest Park and Upper Brookfield.
- Observed at Pinjarra Hills (BAAM 2005) and a 1937 record from Sandgate Lagoon.

Spotless crane

- Although considered as very rare or not present by Low (1995) it is better regarded as rare in Brisbane (Venables 1983; BAAM 2005).
- Recorded at Bulimba Creek, Kuraby, Lytton, Sherwood Forest Park and Pinjarra Hills (BAAM 2005).

Baillon's crane

- Uncommon or rare in Brisbane but has a fairly wide distribution (Venables 1983; Low 1995). Influxes can occur in summer (Jack 1963).
- Recorded at Bald Hills Creek, Brisbane Forest Park, Bulimba Creek, Doboy Swamp, Fisherman Islands, Lytton, Minnippi Parklands, Moggill Creek, Mt Coot-tha Botanical Gardens, Oxley, Pine River, Rocklea Swamp, Sandgate Lagoons, Schulz Canal and Sherwood Forest Park (BAAM 2005)

Buff-banded rail

- Probably common and is very widespread in Brisbane (Venables 1983; Low 1995).
- Has been recorded throughout most areas of Brisbane wherever suitable habitat exists (BAAM 2005)

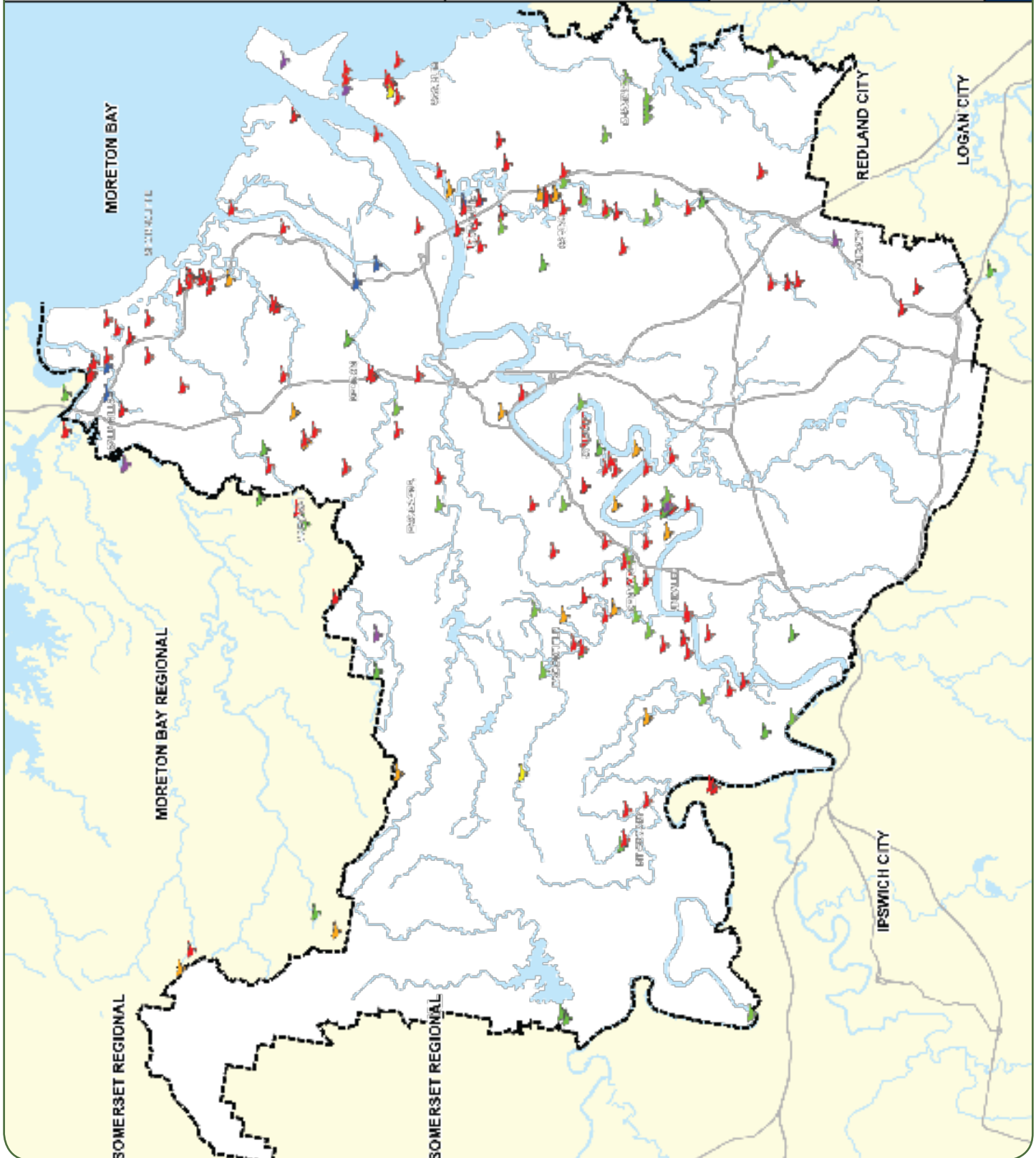
Pale-vented bush-hen

- Widespread throughout Brisbane and probably uncommon (Venables 1983; Low 1995), though moderately common along the Brisbane River and on most densely-vegetated streams (Beruldsen 2003). Less common in winter (Czechura 2007).
- Records for this species throughout most areas of Brisbane where suitable habitat exists (BAAM 2005).







Lewin's rail

- Considered rare in Brisbane (Jack 1963; Venables 1983; Low 1995).
- Sightings recorded at Bulimba Creek, Bulwer Swamp, Downfall Creek Bushland Centre, Fig Tree Pocket, Indooroopilly Golf Course, Kenmore, Lytton, Metroplex Lake, Minnippi Parklands, Moggill Creek, Mt Nebo Road, Pinjarra Hills, Oxley and Pullenvale (BAAM 2005)

Verified crane and rail records for Brisbane are shown on Map 1.



Crakes and rails

-  Australian spotted crake
-  Spotless crake
-  Bailien's crake
-  Buff-banded rail
-  Pale-vented bush-hen
-  Lewin's rail



DATA INFORMATION

© Brisbane City Council. All rights reserved.
 This information is for general information only and does not constitute an offer of insurance or any other financial product. For more information, please contact your broker.
 2008 Brisbane City Council
 2008 Brisbane City Council
 2008 Brisbane City Council
 2008 Brisbane City Council
 2008 Brisbane City Council

Information on the location of the crakes and rails is provided for general information only. It is not intended to be used as a guide for the location of crakes and rails. The information is provided for general information only. It is not intended to be used as a guide for the location of crakes and rails. The information is provided for general information only. It is not intended to be used as a guide for the location of crakes and rails.

Scale: 1:250,000
 Date: 2008
 Author: Brisbane City Council
 Project: Conservation Action Statement



Kilometers
 1:250,000 @ A4



City of Brisbane
 Council Information Centre
 Brisbane
 Queensland
 Australia
 Phone: (07) 3747 2000
 Fax: (07) 3747 2001
 Email: info@brisbane.qld.gov.au

Conservation Action Statement

Records of crakes and rails in Brisbane

4 Ecology

Habitat

Australian spotted crane

- Occurs in well-vegetated, permanent-to-ephemeral, fresh-to-saline wetlands.
- Also found in tidal wetlands and in mangroves.
- Can be found in all natural wetlands and sometimes around artificial wetlands and sewerage ponds.
- Usually occurs and roosts in dense vegetation such as reeds and rushes, mangroves, rank grass or dense thickets of melaleuca.
- Occasionally occurs in grassy areas such as lawns, pasture and golf courses and may occur some distance from water.

Spotless crane

- Occurs in permanent-to-ephemeral, freshwater-to-brackish wetlands (including littoral areas), with stands of tall emergent reeds, rushes, sedges and grasses (including introduced species).
- Prefers wetlands with flowing water, but avoids deeper, swifter sections.
- Has also been recorded in agricultural and suburban areas.

Baillon's crane

- Occurs in fresh-to-saline, permanent-to-ephemeral vegetated wetlands.
- Usually prefers wetlands with dense vegetation (including introduced species), often with abundant floating plants.
- Also occurs in open waters with clumped vegetation.
- Sometimes found in temporarily-flooded depressions and artificial wetlands.

Buff-banded rail

- Has the widest range of habitats of the cryptic crakes and rails.
- Occurs in fresh-to-saline, permanent-to-ephemeral vegetated wetlands.
- Also found in artificial wetlands such as farm dams, sewerage ponds and drains.
- Has been recorded in non-wetland habitats such as grassland, pasture and crops.
- Usually occurs amongst dense vegetation, including introduced species.

Pale-vented bush-hen

- Primarily associated with dense, overgrown margins of permanent freshwater wetlands.
- Often associated with rainforest or regrowth and its margins including lantana (*Lantana camara*) and other weeds.
- Can also be found around swamps, artificial wetlands and grasslands adjacent to forested areas and urban areas.

Lewin's rail

- Prefers permanent, fresh-to-saline wetlands surrounded by dense vegetation.
- Preferred wetlands can be located in closed-to-open woodland, including heathlands.
- Can also occur in artificial wetlands that have dense fringing and emergent vegetation, including lantana and other weeds.
- Has occasionally been recorded away from water in agricultural and suburban areas.

4 Ecology continued...

Diet

Australian spotted crane

- Active during the day (diurnal).
- Mainly forages at margins of wetlands in shallow water (less than five centimetres) or on mud near or among vegetation.
- Has also been observed wading and feeding on floating vegetation.
- Diet consists mainly of seeds, molluscs, insects, crustaceans and spiders.

Spotless crane

- Active at dawn and dusk (crepuscular).
- Usually forages on the ground in mudflats or in shallow water at the margins of wetlands.
- Has been observed searching for prey by moving leaf litter with bill or feet.
- Diet consists mainly of seeds, fruits, shoots, insects, molluscs, crustaceans, spiders and carrion.

Baillon's crane

- Diurnal.
- Usually feeds on mud in and next to reeds and other fringing vegetation.
- Will also feed while wading in either clear water or water covered with floating vegetation.
- Diet consists mainly of aquatic insects as well as seeds, molluscs, crustaceans and small vertebrates.

Buff-banded rail

- Crepuscular.
- Usually feeds alone in vegetated margins of wetlands among or next to tall grass, reeds or rushes.
- Sometimes scavenges.
- Diet consists mainly of live crustaceans, molluscs, worms and insects, but sometimes includes seeds, seedlings and fruit.

Pale-vented bush-hen

- Mainly crepuscular but often active during the day.
- Feeds alone or in pairs, on the ground and sometimes in shallow water in the cover of long grass.
- Diet consists of plant material, seeds, insects and occasionally frogs.

Lewin's rail

- Crepuscular, sometimes diurnal.
- Solitary feeder, foraging in soft mud at edges of wetlands.
- Usually remains close to or in dense vegetation, where they drill or probe for prey on the ground or sometimes in shallow water.
- Has occasionally been observed feeding in gardens, on lawns or short pastures.
- Diet consists mainly of live crustaceans, molluscs, worms and insects.

4 Ecology continued...

Reproduction

Australian spotted crane

- Breeds in clumps of dense vegetation in swamps and other inundated wetlands.
- Nests are made of dry, soft materials and placed amongst grass, weeds or other plants growing in shallow water and often in large tussocks of grass (Beruldsen 2003).
- Breeding occurs from August to January with clutches found in Queensland in early October.
- Breeding frequency is once, sometimes twice per year with clutch size of four to five eggs (Beruldsen 2003).
- Probably monogamous, however the duration of pair bonds is unknown.
- Chicks are precocial (hatch well developed, down-covered and able to move freely) and nidifugous (leave the nest soon after hatching).

Spotless crane

- In eastern Australia this species breeds in early September to December.
- Usually in large, unbroken stands of dense, tall emergents such as reeds, sedges, grass tussocks and stands of dense shrubs.
- Nests are constructed one metre or more above water level.
- Occasionally been observed breeding in tussocks in paddocks beneath ferns and blackberries.
- Has been recorded breeding up to 90 metres from the nearest water.
- Breeding frequency is usually once, but sometimes twice per year.
- Monogamous in breeding season and possibly pairs for life.
- Clutch size is often three to four eggs, but sometimes five or more.
- Eggs are incubated by both parents for approximately 22 days.
- Chicks are semi-precocial and remain in the nest for one to two days.

Baillon's crane

- Breeds in clumps and tussocks on edges of wetlands or in floating vegetation well out in swamps.
- Nests are similar to Australian spotted crane's, although less frequently placed in large tussocks of grass (Beruldsen 2003).
- In northern Australia this species breeds from December to April.
- Breeding frequency is once, sometimes twice a year.
- Clutch size is between four and seven eggs, usually five or six.
- Probably monogamous although duration of bonds is unknown.
- Both parents incubate eggs for approximately 18 days and both parents feed the chicks.
- Chicks are precocial and nidifugous.

Buff-banded rail

- Often breeds around wetlands or in pasture or crops among dense clumps of grass, rushes or shrubs such as melaleuca.
- Nests are constructed of grasses and other soft vegetation and are frequently placed in dry situations close to a swamp or wetland (Beruldsen 2003).
- Breeding usually occurs only once per year from September to March.
- Clutch size is usually five to eight eggs.
- Probably monogamous, with both parents incubating the eggs for around 19 days.
- Chicks are precocial and nidifugous.

CRAKES AND RAILS

4 Ecology continued...

Reproduction continued...

Pale-vented bush-hen

- Breeds amongst dense and tall grass or reeds next to creeks, dams or swamps and often near the edge of rainforests, rainforest remnants or in secondary growth.
- Nests are usually constructed from grasses and placed either close to the ground amongst dense, tall grass by a swamp or creek above normal flood level, or in dense bush by a creek, up to two metres or more above the ground (Beruldsen 2003).
- Breeds only once per year, from December to February (Beruldsen 2003).
- The nature of social bonding is unknown, although they are probably monogamous.
- Clutch size is usually four to seven eggs.
- Both sexes incubate the eggs for around 25 days.
- Chicks are semi-precocial and nidifugous.

Lewin's rail

- Breeds in swamps and marshes with low, dense concealing vegetation, such as sedges, rushes or tall grass.
- Nests are a saucer-shaped structure composed of dry vegetation such as reeds, rushes and grasses and are placed a few centimetres above water or wet ground in dense reeds or rushes, or in the centre of a large tussock of grass (Beruldsen 2003).
- Breeds usually between August and January and may raise two broods per season.
- Probably monogamous. The role of parents in building nests, incubation and care of young is not known.
- Clutch size is usually four eggs.
- Chicks are precocial and nidifugous and may remain in the nest for 24 hours.

Table 2: Breeding seasons (green shading indicates breeding months)

Species	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Australian spotted crane												
Spotless crane												
Baillon's crane												
Buff-banded rail												
Pale-vented bush-hen												
Lewin's rail												

Movement patterns

Australian spotted crane

- Movement patterns unknown but possibly dispersive and irruptive.
- Occur at times in exceptional numbers, suddenly appearing in an area and then departing.
- Abundant after floods and heavy rains, but seem to follow receding water rather than deeper flooded wetlands.

4 Ecology continued...

Movement patterns continued...

Spotless crane

- Secretive species with unknown movement patterns. Possibly migratory.
- Fewer sightings in winter when they are less conspicuous and not calling, which may mean reporting rates are an underestimate of the actual number.
- Occurrence and numbers may alter suddenly or seasonally, possibly in response to rainfall or receding water.

Baillon's crane

- Probably migratory, however there is little information.
- Generally disappear from the southern part of their range between April and September.
- May move erratically from areas after dieback of vegetation, drop in water levels or in drought, or move into areas of high rainfall and flooding.

Buff-banded rail

- Movement patterns not well known.
- Buff-banded rails are possibly migratory, though present in some areas throughout the year.
- Apparently resident in Brisbane, although numbers are reduced towards winter.
- Possibly move into areas of high rainfall, leaving areas of drought.

Pale-vented bush-hen

- Movement patterns are unknown.
- Possibly nomadic, moving into regions with the onset of rains.
- May retire to areas of permanent water in the dry season and move out to wetter habitat in wet seasons.

Lewin's rail

- Movement patterns virtually unknown.
- Could be partly migratory.
- Apparently resident or sedentary in some areas.

5 Threats

Habitat loss, fragmentation and simplification

- Since European settlement, an estimated 67,000 hectares, or two-thirds of the original woody vegetation in Brisbane City, has been cleared. This includes approximately 90% of lowland forests and more than 80% of all lowland vegetation (below 100 metres elevation). Habitat fragmentation is extensive – around 80% of the bushland remnants in the city are less than 20 hectares (Brisbane City Council 2001).
- Habitat loss, fragmentation and simplification are considered the major threats to these species (BAAM 2005).
- A considerable amount of preferred habitat for these species has been lost through the expansion of the Brisbane Airport (BAAM 2005).
- Roadways can have deleterious impacts on crakes and rails either directly, through collisions with vehicles, or indirectly by fragmenting their preferred habitat. Pale-vented bush-hens and buff-banded rails are the most vulnerable to being killed by vehicles as they are more active ground runners and wander greater distances from water than the other species.
- Planned and unplanned fires destroy dense vegetation that is necessary for crakes and rails to remain in an area.

Habitat modification

- Reclamation and drainage works are a major threat to these species.
- In rehabilitation projects along creeks and around wetlands, the weedy ground cover is typically removed. Sometimes the bare ground is mulched, usually resulting in severe habitat loss for crakes and rails until the groundcover regrows. Often the ground cover does not regrow for many years. After some rehabilitation projects the vegetation is no longer suitable habitat for crakes and rails.

Predation and competition

- Crakes and rails roost and nest on the ground, which may make them more vulnerable to predation.
- Foxes, cats and dogs prey directly on eggs and chicks.

Climate change

- Expected changes in rainfall patterns, especially increased frequency and duration of droughts will likely see the extent and quality of existing wetland habitat impacted significantly, resulting in possible local extinctions of crakes and rails.
- Climate change may reduce the amount of habitat available for crakes and rails due to changes in flora and fauna composition, particularly in regards to increased weed infestations.

6 Conservation

Several Council biodiversity initiatives are contributing to the protection and management of crakes and rails and their habitat across the city. The following are key initiatives.

- Bushland Acquisition program. Through this program more than 2700 hectares of the city's most significant lowland habitats have been purchased and protected to date.
- Wildlife Conservation Partnerships program. More than 600 private properties have established conservation partnerships with Council, covering some 2000 hectares of principally lowland habitat in significant bird habitat areas.
- Conservation Reserve Estate. More than 13,700 hectares of parkland, including 7755 hectares of bushland and wetland reserves are managed and protected. This reserve network provides habitat for Brisbane's significant species.
- *Natural Assets Local Law (2003)*. Over 61,000 hectares of significant native vegetation is covered by the Natural Assets Local Law.

6 Conservation continued...

- *City Plan (2000)*. The City Plan designates a green space system throughout the city to recognise and protect the contribution of open space areas to ecological functions. The plan's Biodiversity Code and supporting Ecological Assessment Guidelines provide performance criteria and acceptable solutions to protect significant biodiversity values on, or adjacent to, proposed development. City Plan also includes statutory schedules of flora and fauna species considered significant in Brisbane, recognising species significant at a citywide or regional level.

7 Research

- There have been no scientific studies of crakes and rails undertaken in South East Queensland (BAAM 2005). All of the target species are cryptic and difficult to observe which makes them unpopular study subjects.
- There has been one detailed publication by the naturalist R. Dunlop of the behaviour of buff-banded rail on a small island in Pumicestone Passage near Bribie Island (Dunlop 1970).

8 Management intent

Strategies

Council intends to contribute to the long-term conservation of the city's significant crakes and rails through the following.

- Adopting and encouraging innovative voluntary and statutory mechanisms that protect important habitats and movement corridors.
- Securing and long-term protection of important habitat areas for crakes and rails.
- Ensuring appropriate ecological assessment, reporting and survey procedures are adopted in development, planning and management activities.
- Encouraging land management practices that avoid or at least minimise direct and indirect impacts on crakes and rails and their habitats on public and private lands.
- Ensuring the timely availability of accurate, adequate and contemporary information for policy, planning and management decisions and actions.
- Facilitating research that targets priority information gaps and contributes positively to the conservation of Brisbane's crakes and rails and their habitats.
- Providing the Brisbane community with appropriate information and opportunities to contribute in a practical way to better understand and protect Brisbane's crakes and rails.

Actions

Table 3 describes priority conservation actions that Council will pursue with its partners to address the stated strategies. These priority actions have been drawn from studies undertaken for Council by recognised bird experts and from consultation with a range of stakeholders. Actions will be undertaken as funds become available through Council's budgetary process. It should be recognised that Council must consider the timing of these actions against other priorities across the whole of the city.

8 Management intent continued...

Actions continued

Table 3: Management actions

Management aspect	Action	Timing	Lead agent & key stakeholders ³
Habitat protection	Conserve and protect important crane and rail habitat on privately-owned land within Brisbane, through Council acquisition of significant habitat (Bushland Acquisition program) and conservation partnerships with private landowners (Wildlife Conservation Partnerships program).	Ongoing	Council, private landowners
Habitat management	Maintain habitat connectivity by ensuring linear infrastructure does not detrimentally impact on aquatic habitat connectivity in areas of wading bird habitat through Council's Wildlife Movement Solutions program.	Ongoing	Council
	Where rehabilitation is being undertaken in suitable locations, replicate preferred habitats of crakes and rails.	Ongoing	Council, catchment and Habitat Brisbane groups
	Trial the replacement of weedy ground cover with vetiver grass (<i>Vetivera zizanioides</i>).	Commence 2010	Council, catchment and Habitat Brisbane groups
	Develop a training course for Council field staff for the appropriate management of weedy wetlands.	Commence 2010	Council, QHerb
Research	Investigate options for mitigating the impacts of fuel reduction burns on the presence of crakes and rails and investigate the impact of wild fires which may be a greater threat.	Commence 2010	Council, FABCon, universities
	Seek collaborative partnerships to undertake research into: efficient techniques for the identification of presence of crakes and rails in Brisbane; distribution and abundance of crakes and rails in Brisbane; habitat preferences for all species in Brisbane; identify appropriate habitat areas within Brisbane that could be restored /rehabilitated; the impact of predatory domestic and feral animals on population structure and their effect on habitat quality e.g. trampling and pig rooting.	Commence 2010	Council, universities

8 Management intent continued...

Actions continued

Table 3: Management actions continued

Management aspect	Action	Timing	Lead agent & key stakeholders ³
Invasive species management	Investigate the impacts of invasive species on the presence of crakes and rails and develop options for mitigating these impacts.	Commence 2011	Council
	Develop protocols for mitigating the effects of rehabilitation of weedy wetlands for community groups and local government.	Ongoing	Council, catchment and Habitat Brisbane groups
Information management	Develop a central database for the collation of monitoring data.	Underway	Council
Community involvement	Support one crane and rail identification workshop each year.	Commence 2011	Council, birding groups
	Develop guidelines for community groups and local government for the rehabilitation of crane and rail habitat.	2011	Council, Catchment and Habitat Brisbane groups
	Support community-based monitoring.	Commence 2011	Council, birding groups

8 Management intent continued...

Guidelines

The habitat protection and management guidelines detailed in Table 4 are provided to assist environmental planners, land owners, land managers, private industry, community conservation groups and the broader community. These guidelines are preliminary and will be refined as more information about these species and their habitat requirements becomes available.

Table 4: Habitat protection and management guidelines

Issue	Guideline	Explanatory notes
Habitat disturbance	Protect and enhance crane and rail habitat by applying the Biodiversity, Waterway and Wetland Codes and the Ecological Assessment Guidelines in association with any species-specific assessment criteria when undertaking works in waterway and wetland habitat areas.	These guidelines are detailed and prescriptive. Crakes and rails are vulnerable to any disturbance or clearing of waterway, wetland and associated natural habitat for these species. Desiltation works, broad scale weed clearing and other major works in riparian zones may disturb important crane and rail habitat.
	Undertake a survey to identify the presence of crakes or rails in known habitat areas before any weed removal works are undertaken.	Dense weedy habitat associated with wetlands and waterways may contain significant crakes and rails.
	Only remove weeds in small areas or patches and replace immediately with similar niche native plant species. Avoid works during the breeding season.	Large scale clearing of dense waterway weeds destroys what may be significant habitat and corridor cover for crakes and rails.
Fire management	Ensure a mosaic pattern fire plan is practiced to ensure that all dense vegetation is not destroyed simultaneously. Liaise with the South East Queensland Fire and Biodiversity Consortium to construct the most appropriate fire regime that ensures persistence of preferred habitat for crakes and rails.	Planned and unplanned fires destroy dense vegetation that is necessary habitat for crakes and rails. However, most riparian zones are generally in a fire exclusion zone and therefore may only burn in the event of a wild fire.
Inappropriate rehabilitation practices	Assess risk to crakes or rails as a result of proposed rehabilitation activities. Works should not proceed if it is likely to have a deleterious impact on crakes or rails in the area. Rehabilitation, where possible should include the use of vetiver (a grass with an extensive root system) as a replacement for weedy ground cover. This should be done gradually with native plants and herbs planted in between. As these establish, remove the vetiver grass.	There is much literature on the use of vetiver grass (<i>Vetiveria zizanioides</i> L) (e.g. Carlin et al. 2003; Truong 1999). Vetiver grass is a sterile cultivar that has been registered in Queensland as Monto Vetiver (Carlin et al. 2003). This cultivar does not self-seed, is non-evasive and has neither runners nor rhizomes. It also can be easily removed by uprooting or glyphosate application. It has been used extensively for erosion control and grows readily in a range of climate and soils. Vetiver grass is very effective in soil and moisture conservation in fragile wetland habitats.
Habitat connectivity	Explore any opportunities to incorporate work that aims to connect crane and rail preferred habitats, particularly along drainage lines and watercourses into existing rehabilitation projects.	Existing rehabilitation projects, where appropriate, should aim to also target crane and rail recovery.

9 Further information

Agencies

- Birds Australia (www.birdsaustralia.com.au)
- Birds Queensland (www.birdsqueensland.org.au)
- Brisbane City Council (www.brisbane.qld.gov.au)
- Department of Environment, Water, Heritage and the Arts (Commonwealth) (www.environment.gov.au)
- Department of the Environment and Resource Management (Queensland) (www.derm.qld.gov.au)
- Queensland Museum (www.qm.qld.gov.au)

Bibliography

BAAM 2005, *Conservation Status Review of Cryptic Rails and Crakes: Australian Spotted Crake (Porzana fluminea), Spotless Crake (Porzana tabuensis), Baillon's Crake (Porzana pusilla), Buff-banded Rail (Gallirallus philippensis), Pale-vented Bush-hen (Amaurornis moluccana), Lewin's Rail (Lewinia pectoralis) in Brisbane*, Unpublished report prepared for Brisbane City Council, Biodiversity Assessment and Management, Brisbane.

Barrett G, Silcocks A, Barry S, Cunningham R and Poulter R 2003, *The New Atlas of Australian Birds*, Royal Australasian Ornithologists Union, Hawthorn East.

Beruldsen D 2003, *Australian Birds: their Nests and Eggs*, Kenmore (self published).

Brisbane City Council 2000, *Brisbane City Plan 2000, Natural Assets Planning Scheme Policy*, vol. 2, pp. 140-144, Brisbane City Council, Brisbane.

Brisbane City Council 2001, *Brisbane State of the Environment Report 2001*, Brisbane City Council, Brisbane.

Carlin GD, Truong P, Cook FJ, Thomas E, Mischke L and Mischke K 2003, *Vetiver grass hedges for control of runoff and drain stabilisation*, Pimpama Queensland, CSIRO Land and Water, Brisbane, Technical Report 46/03: 1-27.

Czechura G 2007, 'Birds', Ryan M (ed.), *Wildlife of Greater Brisbane 2nd Edition*, Queensland Museum, Brisbane. pp. 297-361.

Daily G, Alexander S, Ehrlich P, Goulder L, Lubchenco J, Matson P, Mooney H, Postel S, Schneider S, Tilman D, Woodwell, G. 1997, *Ecosystem Services: Benefits Supplied to Human Societies by Natural Ecosystems. Issues in Ecology*, No. 2. A publication of the Ecological Society of America, Washington DC.

DEWHA 2010, *Australian Faunal Directory*, Department of the Environment, Water, Heritage and the Arts, Canberra. www.environment.gov.au/biodiversity/abrs/online-resources/fauna/afd/taxa

Dunlop, R.R. 1970, *Behaviour of the Banded Rail, Rallus philippensis*, Sunbird, 1:3-15.

Jack N 1963, *A list of the Birds of Brisbane*, the author, Brisbane.

Low T 1995, *The Animals of Brisbane: A vertebrate status review*, Unpublished report prepared for Brisbane City Council.

Marchant S and Higgins PJ 1993, *Handbook of Australian, New Zealand and Antarctic birds, vol. 2. Raptors to lapwings*, Oxford University Press, Melbourne.

Truong PN 1999, *Vetiver Grass Technology for land stabilization, erosion and sediment control in the Asia Pacific region*. In: *Proceedings of the First Asia Pacific Conference on Ground Water Bioengineering for Erosion Control and Slope Stabilisation, April 1999*, Manila, The Philippines.

Venables I 1983, 'Birds', Davies W (ed.), *Wildlife of the Brisbane Area*, Jacaranda Press, Brisbane. pp. 54-79.