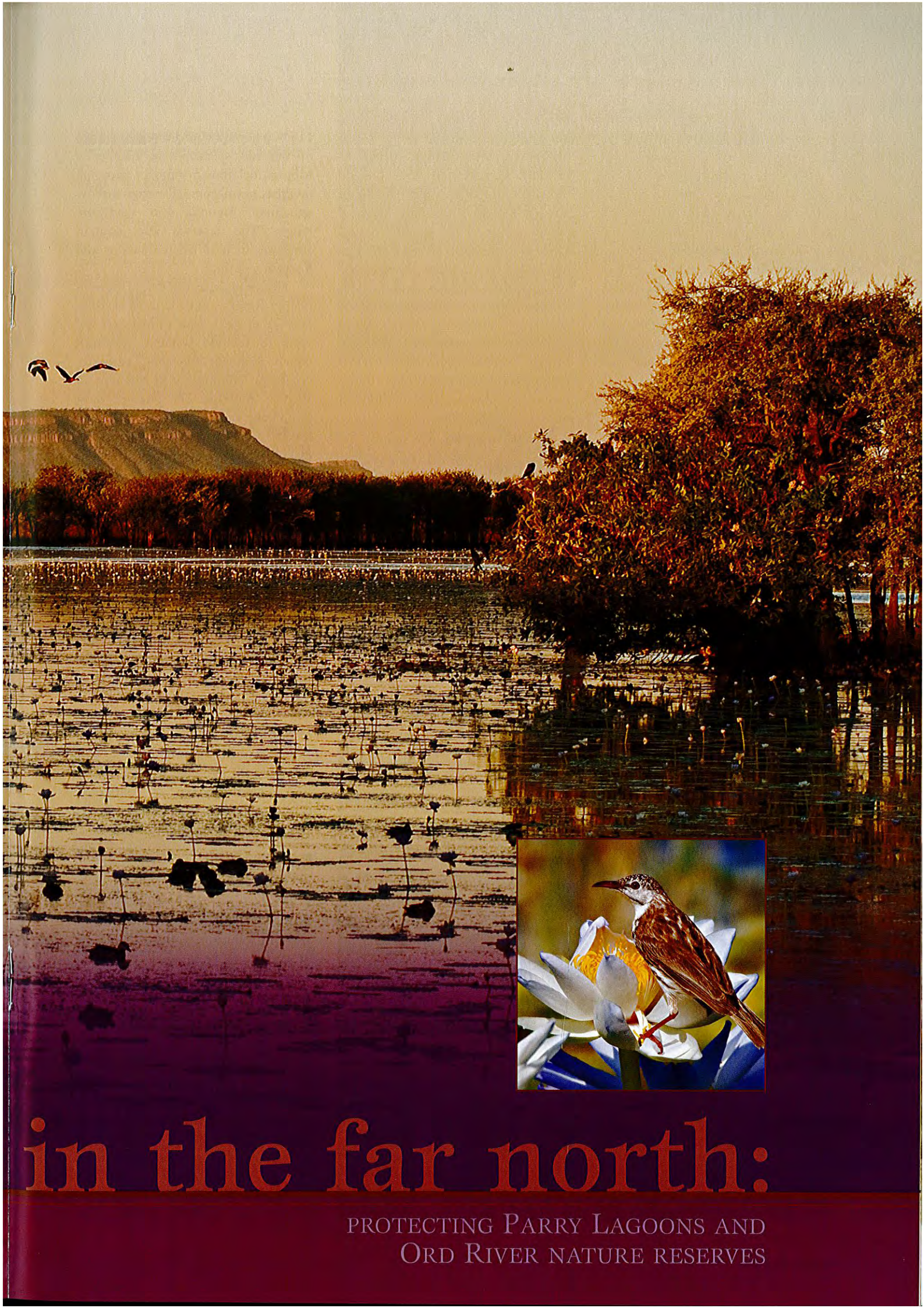
Sprawled across 115,000 hectares of the remote east Kimberley are the spectacular wetlands of Parry Lagoons and Ord River nature reserves. The reserves teem with a breathtaking array of birdlife and are now subject to a draft management plan designed to protect and enhance the area well into the future.

BY CORRIN EVERITT AND TROY SINCLAIR

Wetland wonders



in the far north:

PROTECTING PARRY LAGOONS AND ORD RIVER NATURE RESERVES

The Kimberley is renowned as being one of the wildest and most remote places in Australia. Its isolation has helped protect it from disturbances that have led to the decline of native species elsewhere—in fact, the north Kimberley is the only place on mainland Australia that retains a largely intact mammal fauna. That's not to say, however, that the area is not fragile and sensitive to disturbance. Changes caused by altered fire regimes, increasing visitor use, grazing by feral animals and, especially in the case of the Ord River, hydrological changes, mean that management intervention is required if the unique wildlife of the Kimberley is to be maintained.

Located on the lower Ord River are the Parry Lagoons and Ord River nature reserves—two examples of the special but sensitive places found throughout this remote corner of the state. The wetlands here provide important feeding and breeding grounds for an outstanding array of migratory waders and waterbirds. Ord River Nature Reserve also provides important nesting habitat for estuarine crocodiles (*Crocodylus porosus*). Such is the area's value as an important wetland habitat that it was listed as a wetland of international significance under the Ramsar Convention in 1990. Visitors to the reserves enjoy the opportunity to observe a diverse range of fauna in some of the most breathtaking scenery in the east Kimberley.

The habitat

Parry Lagoons and Ord River nature reserves cover more than 115,000 hectares and are representative of the full spectrum of Kimberley habitats, including mangroves, estuarine mudflats, permanent billabongs, shallow ephemeral lagoons and sandstone ranges. The reserves also contain attributes such as basalt outcrops and freshwater springs.

The boundaries of Parry Lagoons Nature Reserve, initially listed as 'Palm Springs' in 1971, have grown over the years to include wetland grasslands which represent the most extensive vegetation community of this type in Western Australia. The reserve's most prominent lagoon, Marglu, is known for its amazing array of waterbirds, making it a hot spot for birdwatchers the world over. Parry Lagoons Nature Reserve is also recognised for its historical significance to the region for here, perched atop Telegraph Hill, is the old Telegraph Station, which overlooks vast grassland floodplains and unique woodlands bordering stunning lagoons and freshwater springs.

Ord River Nature Reserve, located on the eastern side of Cambridge Gulf, has some of the best areas of mangroves in the Kimberley in terms of species diversity, structural complexity and size. The reserve includes the 'False Mouths of the Ord'—the most extensive mudflat and tidal waterway complex in WA. The False Mouths are home to more than 12,000 hectares of contiguous mangrove forest and contain 16 of the 18 species of mangrove found in WA.

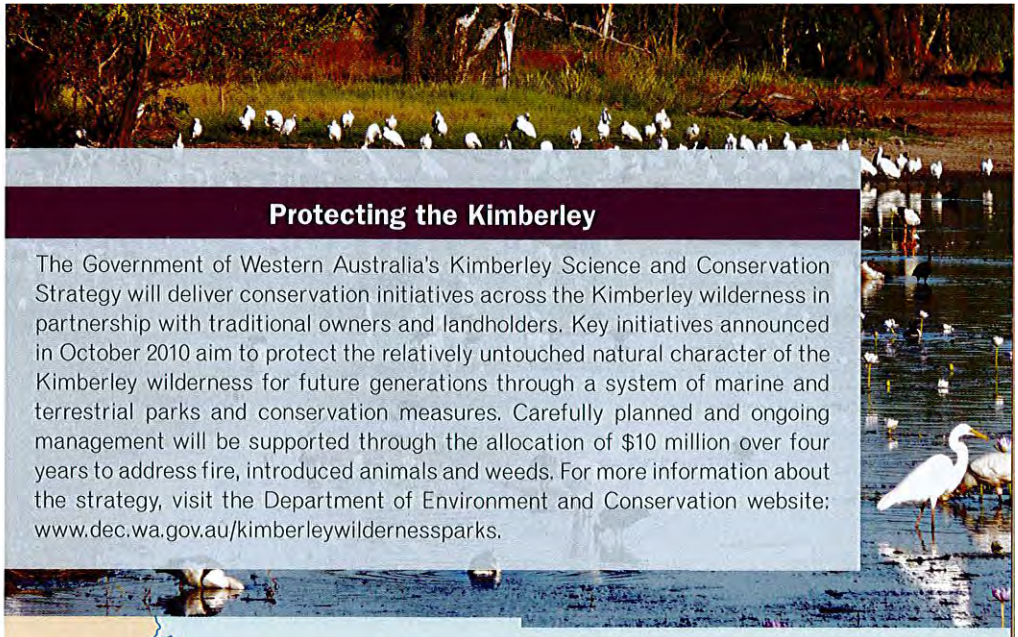
Bountiful birds

The two nature reserves support a diverse range of birds with more than 190 species recorded from the area, including significant numbers of waterbirds, migratory birds and numerous species of finches. It also contains an array of bats, with nine species recorded.

Previous page
Main Parry Lagoons at sunrise.
Photo - Marie Lochman

Inset Bar-breasted honeyeater.

Left Ord River.
Photos - David Bettini



Right background Birds become more concentrated as waterholes shrink or dry up.
Photo – Jan Lewis

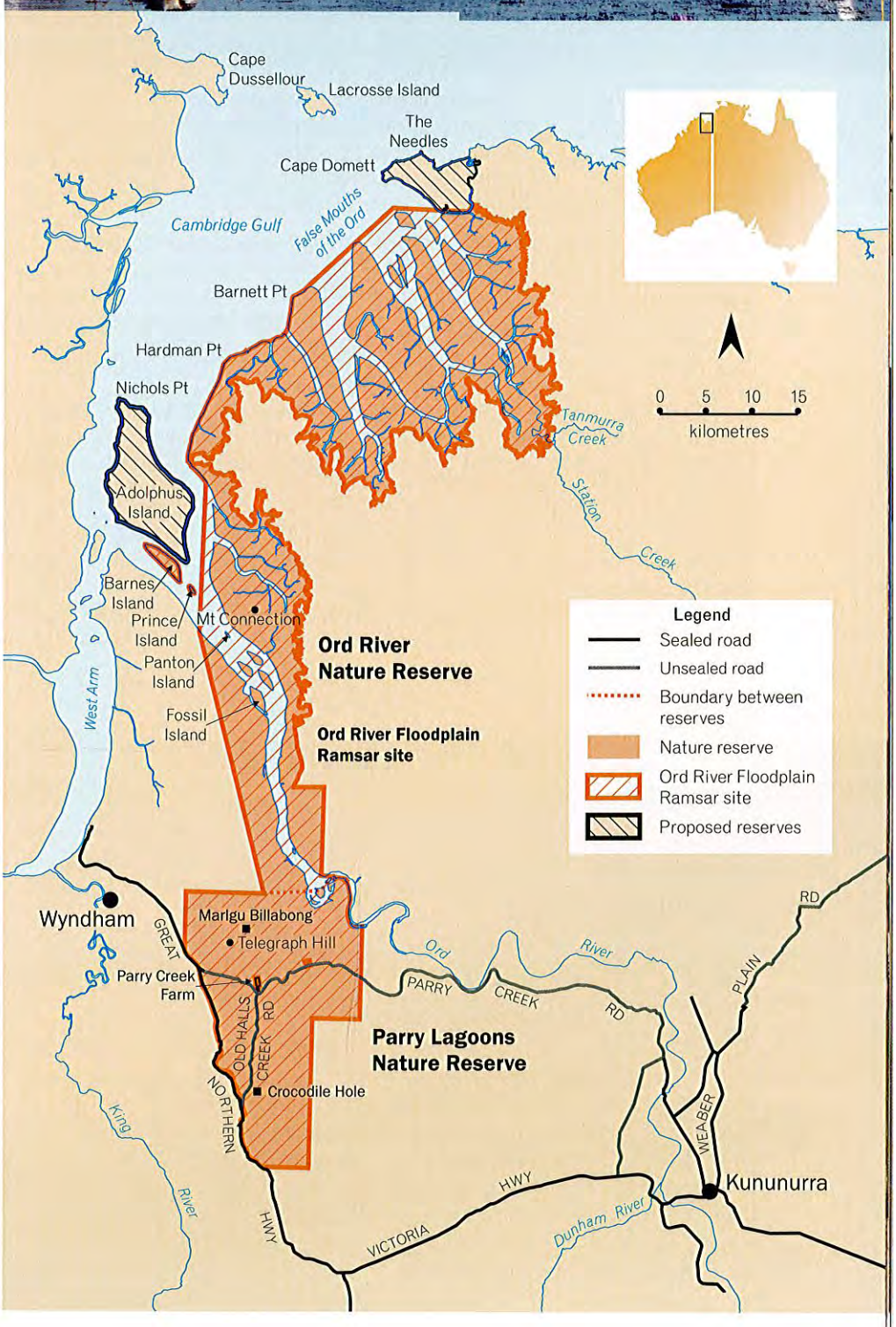
Protecting the Kimberley

The Government of Western Australia's Kimberley Science and Conservation Strategy will deliver conservation initiatives across the Kimberley wilderness in partnership with traditional owners and landholders. Key initiatives announced in October 2010 aim to protect the relatively untouched natural character of the Kimberley wilderness for future generations through a system of marine and terrestrial parks and conservation measures. Carefully planned and ongoing management will be supported through the allocation of $10 million over four years to address fire, introduced animals and weeds. For more information about the strategy, visit the Department of Environment and Conservation website: www.dec.wa.gov.au/kimberleywildernessparks.

While the famed gouldian finch (*Erythrura gouldiae*) is rarely seen in the area, the species is believed to use southern parts of Parry Lagoons Nature Reserve for foraging and possibly breeding among the sandstone hills. Dr Sarah Pryke of the Save the Gouldian Finch Foundation has been studying gouldian populations to the west of Parry Lagoons Nature Reserve, at the upper Grotto Creek system, for more than three years. This area supports a large breeding population from which most juveniles have been banded for identification over the past three years. Significant numbers of star finches (*Neochmia ruficauda*), crimson finches (*N. phaeton*) and chestnut-breasted mannikins (*Lonchura castaneothorax*) also use the reserves for feeding and breeding grounds. These finches are best seen in the early morning and late afternoon during the dry season, drinking at the remaining waterholes dotted throughout the reserves (see 'Fire and finches' on page 36).

Additionally, the area contains 21 of the 22 forest birds which are confined to mangroves in WA. These include the collared kingfisher (*Halcyon chloris*) (rare in the rest of the Kimberley but common here), shining flycatcher (*Myiagra alecto*) and chestnut rail (*Eulabeornis castaneoventris*). A population of black butcherbirds (*Cracticus quoyi spaldingi*) also breeds in the area and is the only known population in WA.

The area is also significant for seasonally supporting large numbers of migratory wader birds such as black-tailed godwits (*Limosa limosa*), marsh sandpipers (*Tringa stagnatilis*), wood sandpipers (*T. glareola*), little curlews (*Numenius minutus*), oriental pratincoles (*Glareola maldivarum*), black-winged stilts (*Himantopus himantopus*) and sharp-tailed sandpipers (*Calidris acuminata*). Any area that supports populations of wader birds is important and needs to be protected to sustain the estimated 850,000 birds that move to



Left Gouldian finch.
Photo - David Bettini

Fire and finches

Historically, large populations of finches and mannikins occurred in areas around Wyndham, including Ord River Nature Reserve. However, species such as gouldian finches are now confined to small populations scattered throughout the east Kimberley. Other species of finches that use the reserves include double bars (*Taeniopygia bichenovii*), crimson finches (*Neochmia phaeton*), long-tail finches (*Poephila acuticauda*), chestnut-breasted mannikins (*Lonchura castaneothorax*), star finches (*N. ruficauda*) and zebra finches (*T. guttata*).

Finches in the reserve area would normally feed on late-seeding perennial grasses such as spinifex. Spinifex needs to be at least three years old to produce viable seed, and it is spinifex that is three years old or older that burns best. Due to fires and increasingly abundant annual sorghum (locally known as 'cane grass'), sandstone escarpment spinifex communities are unable to produce enough seed to reliably support finches late in the season when other seed sources are lacking.

However, cane grass outcompetes other grasses due to its vigor, and thrives under the disturbance of fire and grazing. Finches in the reserve are now overly reliant on cane grass for food. This is problematic because, unlike the regular-seeding spinifex, cane grass seeds in a 'boom or bust' cycle whereby it seeds prolifically all at once and then doesn't seed at all for the rest of the year. Critical to the long-term survival of these finch populations in the reserves is the management of cane grass through altered fire management. This change in fire regime will increase the diversity of aged spinifex so that an ongoing supply of seed can be maintained once more. Also critical to the birds' survival is the control of hot late season fires which destroy nesting hollows.

The Department of Environment and Conservation (DEC) is working with stakeholders to improve the management of fire in the Kimberley, including within Parry Lagoons and Ord River nature reserves, to reduce the total area of reserve burnt by late season fires. DEC's objective in gouldian finch habitat is to introduce a mosaic of differing aged vegetation while maintaining some areas of longer unburnt country which will benefit seed production and assist in the maintenance of species diversity. The Save the Gouldian Finch Foundation has already reported a rise in the number of gouldian finches in areas where late season fire is controlled, a suite of grasses is able to produce seed all year and there is adequate nesting ground.

Conservation efforts including fire management, supplementary nest boxes and education programs promoting the species aim to restore populations of gouldians to their once-common status throughout the east Kimberley.

the north-west coastal strip of Australia every year in preparation for their long flight to the northern hemisphere.

The numbers of birds that the Ord River floodplain and Parry Lagoons support in relation to surrounding areas was highlighted in recent aerial and ground surveys undertaken by the state government for the Ord River Irrigation Area Weaber Plain Development Project. Surveys took place in March and August 2010 along the Ord River below the Diversion Dam adjacent to Kununurra, as well as along the lower Keep River. Results from the March survey indicated approximately 27,000 birds were using the Ord River floodplain and Parry Lagoons, compared to approximately 1,000 for the lower Keep River. These numbers help ensure the area maintains its Ramsar listing, which requires a minimum of 20,000 birds.

Croc country

Parry Lagoons Nature Reserve includes large tracts of habitat suitable for nesting estuarine crocodiles. Increased protection from threats such as hunting and trampling of nests by cattle has led to a significant increase in the estuarine crocodile population in the Ord River. A 2008 spotlight survey on the Ord River adjacent to the reserve revealed that there had been a two-fold increase in the number of non-hatchling crocodiles since the survey was last conducted in 1992. The estuarine crocodile population in this area has therefore been recovering from the extensive commercial hunting of the 1970s quicker than any other population in the east Kimberley.

Reserve extension

Species such as the northern quoll (*Dasyurus hallucatus*) have probably become locally extinct from the reserves but a large population is located nearby at Adolphus Island, which is situated in the mouth of the Ord River and surrounded by tidal mudflats and mangroves. It is the largest island in the east Kimberley and supports the only known island population of northern quolls in the region. Adolphus also supports the only known Kimberley island population of the yellow spotted monitor (*Varanus panoptes*). In light of these unique attributes, the 2009 Ord River and Parry Lagoons draft management plan has recommended that Adolphus Island be included in Ord River Nature Reserve.

Seasons of change

Over the years, the reserves have been subject to significant changes in use. They have long been important to the Aboriginal people of the area for food and cultural activities. The

traditional owners recognise three seasons: Mawan (build up to the wet season) when the grasses are brown, the clay soils and lagoon bed are cracked and dusty and birdlife is least noticeable; Maiyurr (the wet) characterised by heavy rainfall, an abundance of new growth and increased birdlife; and Bandenyirrin (the start of the dry season) when the area receives dry cool easterly winds and floodwaters recede to pools.

There are also marked variations from year to year depending on rainfall and flood events. Historically, the Ord River would have played a greater role in the flooding of the vast grassland plains but, since the massive Lake Argyle was created in 1973, the wetlands are now recharged from local runoff from hillsides and the flooding of Parry Creek.

Between 1919 and 1962, it is estimated that at least two million cattle were driven through the area *en route* to the Wyndham meatworks for slaughter. However, with the change to trucking of stock in the 1970s, the area was no longer heavily used for cattle watering and resting.

Due to their abundant birdlife and fragile habitats, the reserves are now managed by the Department of Environment and Conservation (DEC) and have become increasingly popular with tourists.

Filling gaps in knowledge

In 2008 the Australian Government developed an 'ecological character description' of the area which worked to determine limits for acceptable levels of change in key areas, including the mangroves and associated wetlands, species diversity and the area's ability to support critical life-stage development of numerous species of migratory animals. However, there are a number of key knowledge gaps that restrict the setting of such thresholds, namely limited understanding of the hydrology of Parry Lagoons and associated floodplain (particularly the role of Parry Creek in inundation of the floodplain), the connectivity between the floodplain and estuarine areas of the Ramsar-listed site and the hydrology of the False Mouths of the Ord and other tidal creeks that influence the area.

To help overcome these gaps in knowledge, in 2009 Geoscience Australia, on behalf of the Ord Irrigation Cooperative and Rangelands Natural Resource Management, included the Ramsar area in helicopter surveys to assess the hydrology and geology of the Ord floodplains using 'airborne electromagnetic models' and 'digital elevation models'. Information gleaned from the survey is helping determine

Above Walkway at Marglu Lagoon in Parry Lagoons Nature Reserve.
Photo – Marie Lochman

Above right Estuarine crocodile.
Photo – John Kleczkowski/Lochman Transparencies

Right Comb-crested jacana or lotus bird.
Photo – Jiri Lochman

Above Wet season view from Telegraph Hill, in Parry Lagoons Nature Reserve. *Photo – Jan Lewis*

limits of acceptable change within the reserves and is paving the way for management actions to be prioritised. In particular, the information will serve as a benchmark for assessing changes in the wetlands and identifying areas that may be at risk of increased salinity and hydrological changes as a long-term result of the damming of the Ord River in 1972 and consequent changes in its flood patterns.

Such information has helped to guide DEC's newly developed draft management plan, which is designed to provide guidance and consistency to the management of the reserves for the next 10 years and beyond with a focus on balancing the need to manage the reserves to maintain biodiversity while also enhancing the area for visitors.

Into the future

While reserves are declared to protect the unique species assemblages and landscape they contain, it is also important to allow access to the general public to appreciate these values. However, increases in usage provide mechanisms for weed intrusion, introduced animal abundance, disturbance to birds, arson and degradation of the landscape due to vehicle tracks off designated roadways. DEC is working to improve the management of these threats to minimise their impact on the fragile areas.

DEC is also working to enhance the experience for visitors to the reserves. The department has recently upgraded the bird hide and walkway at Marglu Lagoon in Parry Lagoons Nature Reserve to enable visitors to better witness the spectacular birdlife without disturbing it. DEC has also improved designated roadways and rehabilitated areas that had become degraded and provided interpretive material to offer visitors a better understanding of the area's history.

DEC has plans to improve weed management within the reserves with a focus on control of parkinsonia (*Parkinsonia aculeata*), rubber bush (*Calotropis procera*), noogoora burr (*Xanthium strumarium*) and belly ache bush (*Jatropha gossypifolia*). These weeds can significantly alter the wetland and surrounding grassland habitats, which in turn threatens the biodiversity that they support. Management of weeds is one of many threats to biodiversity that relies on good relationships with neighbouring users—something that DEC is continually working to improve through liaison with traditional owners and pastoralists. DEC is also working with neighbouring pastoralists to reduce cattle numbers in the reserves to protect important crocodile nesting habitat, grasslands, riparian habitats and waterways. By working together, these important habitats can be protected well into the future.

Below Star finches. *Photo – Jan van de Kam*

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