

Adelaide River coastal floodplain

Location and Description

The Adelaide River coastal floodplain lies 50 km east of Darwin and is one of a series of adjacent coastal floodplains between the Adelaide River and Murgengella Creek in the Top End. The floodplain is a large seasonally-inundated freshwater floodplain that is traversed by a major and permanent tidal river. The floodplain comprises a mix of tidal and seasonal wetland habitats and is dominated by grass and sedge communities and is fringed by open woodland with pockets of monsoon forest.

Tenure and Land Use

Almost half of the Adelaide River floodplain is pastoral leasehold land, encompassing two pastoral properties (Woolner, Koolpinyah). About 10% of the site is Crown leasehold land and the numerous remaining smaller portions are mostly freehold land. The main land use within the site is pastoral operations and other uses include conservation, recreation, tourism, Indigenous, horticulture and aquaculture. Approximately 25% of this site is managed as conservation reserves.

Significance Rating

International Significance

Ecological Values

The Adelaide River floodplain regularly supports large numbers of waterbirds including internationally significant numbers of many species such as Magpie Goose and Whistling-Ducks. The upper and middle parts of the floodplain provide core nesting habitat for Magpie Geese, and the largest waterbird breeding colony in the Northern Territory is found in mangroves in the lower reaches of the Adelaide River. This colony supports about 30 000 birds and is likely to be the largest regularly-used egret colony in Australia. Significant numbers of at least three species of migratory shorebird periodically use inland wetland areas on the floodplain, such as Lake Finniss. 14 threatened species are reported from this site including four plant and ten vertebrate species.

Management Issues

Exotic plants, especially *Mimosa pigra* and introduced pasture grasses, feral animals (including Water Buffalo, horse and pig), and groundwater extraction are likely to be affecting the conservation values of this Site. Saltwater intrusion is impacting on near-coastal wetlands, and sea-level rise associated with global climate change is expected to exacerbate the problem.

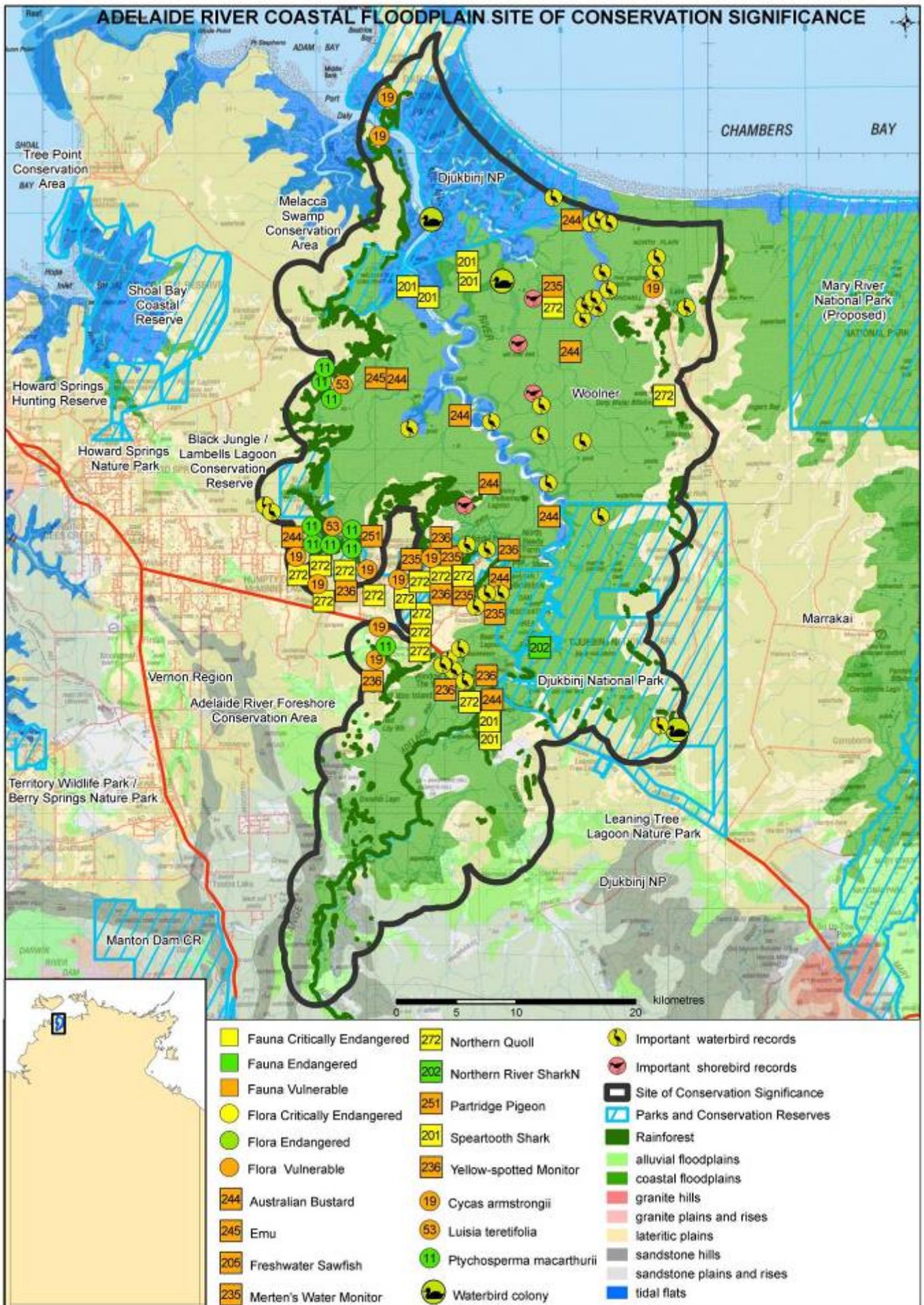


Condition

Condition varies across the site, with areas heavily impacted by weeds or feral animals or recreational activities, and other areas in a more natural state.

Current Conservation Initiatives

Government and pastoralists are cooperating to address saltwater intrusion and exclude buffalo and cattle from sensitive wetland habitats such as part of Lake Finniss. The Friends of Fogg Dam are working to improve visitor facilities and management at Fogg Dam and nearby wetlands. Aboriginal land management activities around Acacia Gap include fire and mimosa management.



ADELAIDE RIVER COASTAL FLOODPLAIN - SITE OF CONSERVATION SIGNIFICANCE

LOCATION	SOCS Number	12 (NT Parks and Conservation Masterplan Map Number 10)
	Latitude/Longitude	12° 31' South, 131° 20' East (at centre)
	Bioregion	Darwin Coastal (80%), Pine Creek (20%)
	Description	<p>This site extends from near the junction of the Margaret River in the south, downstream to the mouth of the river. It includes the mangrove swamp in the Wilshire Creek area and the east limit is the narrow connection with the Mary River floodplain on the eastern side of Lake Finniss.</p> <p>Floodplain wetlands within the site include Lake Finniss, Melacca and Black Jungle Swamps, the artificial Fogg and Harrison Dams, and various billabongs and lagoons. The site encompasses an area of 1770 km² and comprises almost 975 km² of seasonally inundated coastal floodplain and 164 km² of tidal flats in the north, excluding the adjoining tidal flats in Chambers Bay.</p> <p>The site abuts Chambers Bay, to the north, the Mary River coastal floodplain, to the east, and the Howard sand sheets, to the west. These are also recognized as sites of high conservation significance in the NT.</p>
THREATENED SPECIES	Significance Rating	International Significance
	Threatened plants and animals (Listings at National/NT level CR - Critically Endangered, EN - Endangered, VU - Vulnerable, NT - Near Threatened, LC - Least Concern, DD - Data Deficient)	14 threatened species are reported from this site. Plants <ul style="list-style-type: none"> ▪ <i>Cycas armstrongii</i> (-/VU) ▪ <i>Xylopia</i> sp. Melville Island (alias <i>Xylopia monosperma</i>) (EN/EN) ▪ <i>Luisia teretifolia</i> (-/VU) ▪ <i>Ptychosperma macarthurii</i> (EN/EN) Vertebrates <ul style="list-style-type: none"> ▪ Australian Bustard <i>Ardeotis australis</i> (-/VU) ▪ Emu <i>Dromaius novaehollandiae</i> (-/VU) ▪ Partridge Pigeon <i>Geophaps smithii</i> (VU/VU) ▪ Yellow Chat (Alligator River subspecies) <i>Epthianura crocea tunneyi</i> (VU/EN) ▪ Northern Quoll <i>Dasyurus hallucatus</i> (EN/CR) ▪ Yellow-spotted Monitor <i>Varanus panoptes</i> (-/VU) ▪ Merten's Water Monitor <i>Varanus mertensi</i> (-/VU) ▪ Freshwater Sawfish <i>Pristis microdon</i> (VU/VU) ▪ Speartooth Shark <i>Glyphis</i> sp. A (CR/VU) ▪ Northern River Shark <i>Glyphis</i> sp. C (EN/EN) <p>The majority of the known NT populations of <i>Ptychosperma macarthurii</i> occur in rainforest patches in the west of the site (Liddle <i>et al.</i> 2006). The only mainland record of the rainforest tree <i>Xylopia monosperma</i> in the NT is from Bankers Jungle (Liddle <i>et al.</i> in prep). Similarly, the only mainland records of the arboreal orchid <i>Luisia teretifolia</i> in the NT are from Bankers Jungle and Black Creek (Woinarski <i>et al.</i> 2007), both of which are spring-fed rainforests on the margin of the floodplain. Formal naming of <i>Xylopia</i> sp. Melville Island in 2007 may lead to down listing from the national level, however, listing at the NT level is expected to continue.</p>
ENDEMIC SPECIES	Significance Rating	Not Significant
	Notes	<p>Endemic to the NT: 61 plant and nine vertebrate species recorded from this site are only known from the NT.</p> <p>Other: Six plant species recorded in this site are only known from the site or the Darwin Coastal bioregion within the NT, but are also found in other states.</p> <p>Seven of the eight known NT populations of the endangered palm <i>Ptychosperma macarthurii</i> occur in this site in rainforest patches on the western margin of the Adelaide River floodplain (Liddle <i>et al.</i> 2006).</p>

WILDLIFE AGGREGATIONS	Significance Rating	International Significance
	Marine turtles	Not applicable
	Seabirds	No major aggregations recorded
	Waterbirds	<p>Total numbers of waterbirds: This site regularly supports large numbers of waterbirds in both the breeding (late wet season) and non-breeding (dry season) periods. Counts are dominated by Magpie Geese with 330 000 reported in 1984 (DIWA). Separate surveys of other waterbird species report numbers regularly exceed 20 000, with highest counts of about 32 000 in 1995 and 25 000 in 1993 (R. Chatto, NRETAS, unpubl.). These counts were dominated by egrets, Pied Heron, Glossy Ibis and Magpie Geese.</p> <p>Counts of individual species: Maximum counts of species that are internationally significant (>1% global population; G. Dutson in prep.) include: 330 000 Magpie Geese; 52 225 Wandering Whistling-duck (DIWA); 2000 Pied Heron (Chatto 2000a).</p> <p>High counts of other species such as Great Egret, Intermediate Egret, Little Egret, and Cattle Egret (Chatto 2000a) are likely to be nationally significant (>1% Oceania population; Wetlands International 2006).</p> <p>One hundred important waterbird records (including records from Chambers Bay) are noted for this site (Chatto 2006; R. Chatto, NRETAS, unpubl.), including the significant counts identified above and counts of other species that are regionally important.</p> <p>Breeding records: Three waterbird breeding colonies are reported from this site, including two in mangroves in the lower reaches of the Adelaide River (Chatto 2000a). One colony (W025) supported an estimated 30 000 birds (mostly egrets) in 1994, and is believed to be the largest waterbird colony in the Top End and perhaps the largest regularly used egret colony in Australia (Chatto 2000a).</p> <p>The floodplains of the Adelaide and Mary Rivers encompass the most important nesting habitat for Magpie Geese in the NT (Bayliss and Yeomans 1990) and the highest reported count of nests on this site is 44 000 in 1985 (DIWA).</p>
Shorebirds	<p>Some inland wetland areas associated with this site (such as Lake Finnis) include habitat suitable and significant for shorebirds.</p> <p>Maximum counts of species that are internationally significant (>1% global population; G. Dutson in prep.) include: 12 000 Little Curlew (Jaensch 1994c); and 3000 Red-necked Avocet (Chatto 2006). Counts of 2000 Black-tailed Godwits (Chatto 2003) are also internationally significant (>1% East Asian-Australasian Flyway population; Bamford <i>et al.</i> 2008).</p> <p>Chatto (2003; R. Chatto, NRETAS, unpubl.) notes ten important shorebird records for this site, including the significant counts identified above and other counts that are regionally important.</p> <p>The tidal flats of Chambers Bay to the north of this site also support internationally significant aggregations of shorebirds (Bamford <i>et al.</i> 2008).</p>	
Other aggregations	None known	
WETLANDS	Significance Rating	National Significance (possible International)
	Ramsar criteria met	This site has not been formally assessed against Ramsar criteria but is likely to satisfy at least waterbird based criteria (criterion 5: important waterbird aggregation site with >20 000 waterbirds; criterion 6: regularly supports >1% of the individuals in a population) for listing as a wetland of international importance under the Ramsar Convention.
	DIWA criteria met	Parts of this site are listed as a wetland of national significance in the Directory of Important Wetlands in Australia (DIWA ID: NT020 Adelaide River Floodplain System). The site meets criteria 2, 3, 4, 5, 6 and includes DIWA wetland types B4, A6, A8, A9, A7, B1, B6, B9, B10, B14, and C1.
	Notes	The site is a good example of a major floodplain-tidal wetland system typical of the Top End region with a diversity of dry and wet habitats (DIWA).
	Rivers	The Adelaide River is one of eight rivers in the Top End that have large floodplains in their catchments. The floodplains of the Adelaide, Mary and Alligator Rivers form one very large interconnected wetland system each wet season. Above the site the Adelaide River rises in the low hills south and east of Bachelor and flows through savanna woodlands.
FLORA	Significance Rating	National Significance
	Notes	<p>Rainforest: About 5500 ha of rainforest (or 2% of NT rainforest estate) occur as scattered patches in this site, mainly along the upland margin of the floodplain. The majority of patches are dry rainforest although small areas of riparian and groundwater-dependent spring-fed types also occur. Many patches are small (<10 ha), but 11 patches are >100 ha (Russell-Smith 1991).</p> <p>In a study of reserve design for mobile species in monsoon rainforests, Price <i>et al.</i> (1998), identified rainforests in proximity to the Adelaide River floodplain as one of six clusters of rainforest patches required to capture NT rare endemic rainforest plant species.</p> <p>Restricted range species: The western margin of the Adelaide River floodplain is identified as an area of high richness in <i>Utricularia</i> (Bladderwort) species (Cowie 2002), many of which have a restricted range within the NT.</p> <p>The near threatened tree <i>Endospermum myrmecophilum</i> occurs in spring-fed rainforests on the western margin of the floodplain.</p>

OTHER ENVIRONMENTAL VALUES		<p>The Adelaide River floodplain, together with the Mary River floodplain and Chambers Bay, is proposed to be nominated by Birds Australia as an internationally-recognised <i>Important Bird Area</i> (G. Dutson in prep.).</p> <p>Lake Finnis is identified as an internationally important site for migratory shorebirds in the East Asian-Australasian Flyway (Bamford <i>et al.</i> 2008).</p> <p>Melacca Swamp is an elevated freshwater wetland adjacent to the Adelaide River (Webb <i>et al.</i> 1983). Unlike many of the swamps in northern Australia, Melacca Swamp is permanently inundated, with a spring-fed creek traversing the southern section. This year round water supply makes the swamp one of the most important areas for off-bank crocodile nesting in the NT (Harvey & Hill 2003).</p> <p>53 species recorded from this site are listed under international conventions or bilateral agreements protecting migratory species.</p> <p>Very high densities of the Water Python <i>Liasis mackloti</i> and its prey, the Dusky Rat <i>Rattus colletti</i>, have been recorded on the Adelaide River floodplain (Madsen and Shine 1996).</p> <p>Saltwater Crocodiles occur in high densities in the Adelaide River (Fukuda <i>et al.</i> 2007).</p> <p>A single confirmed record of a Caspian Plover at Lake Finnis (McCrie and Jaensch 1999) is only the second Australian record for this species.</p> <p>A number of sites on the Adelaide River floodplain are included on the Register of the National Estate for their natural values including the Marrakai Flora Reserve, Cape Hotham Forest Reserve, Black Jungle Palm Site, Black Jungle Orchid Site, Black Jungle, Scotch Creek Area, and Fogg Dam (Australian Heritage Council).</p>
MANAGEMENT ISSUES		<p>Fire: In the period 1993-2004, 35% of the site was burnt in fewer than three years, and 20% was burnt in more than six years. Fire impacts on spring-fed rainforests (Russell-Smith and Bowman 1992; Liddle <i>et al.</i> 2006).</p> <p>Feral animals: The floodplain has sustained substantial impacts from the effects of introduced animals including Water Buffalo, horse, pig, feral cat, dog, and Cane Toad, over many years. The removal of buffalo and the absence of grazing have changed the dynamics of wetland vegetation and channels are being clogged with weeds. Pigs continue to damage wetland and rainforest habitats. Buffalo and pig impact on spring-fed rainforests (Russell-Smith and Bowman 1992; Liddle <i>et al.</i> 2006).</p> <p>Weeds: Three Weeds of National Significance (<i>Mimosa pigra</i>, <i>Parkinsonia aculeata</i>, <i>Hymenachne amplexicaulis</i>), 12 category A and B weeds, and 4 other undeclared but problematic environmental weeds (high priority weeds: Smith 2001) are recorded from this site. Very large areas of the floodplain have been transformed by <i>Mimosa pigra</i> (Woinarski 2002) and exotic pasture grasses are also a concern.</p> <p>Other: Substantial areas of coastal floodplain have been altered by saltwater intrusion (Fogarty 1982; Whitehead <i>et al.</i> 1990b; Woodroffe and Mulrennan 1993), and future rises in sea-level associated with global warming are likely to exacerbate the situation and negatively affect freshwater wetlands.</p> <p>Groundwater extraction in horticultural areas on the margin of the floodplain is impacting on freshwater springs and rainforest patches such as around Black Jungle Swamp (Liddle <i>et al.</i> 2006).</p>
MANAGEMENT INFORMATION	NRM groups	Acacia Larrakeyah Land Management (Acacia Gap), Friends of Fogg Dam, Lambell's Lagoon Landcare Group.
	Protected areas	A number of discontinuous conservation reserves occur within this site including: Adelaide River Foreshore Conservation Area (2 km ² / 0.1% of site), Black Jungle / Lambell's Lagoon Conservation Reserve (40 km ² / 2% of site), Djukbinj National Park (325 km ² / 18% of site), Fogg Dam Conservation Reserve (18 km ² / 1% of site), Harrison Dam Conservation Area (33 km ² / 2% of site), Melacca Swamp Conservation Area (23 km ² / 1% of site).
	Current management plans	<p>Site-specific plans: Djukbinj National Park Draft Plan of Management (PWCNT 2000); Draft Vegetation Retention Plans for the Darwin, Marrakai, and Katherine/ Mataranka regions (Berghout <i>et al.</i> 2007).</p> <p>National recovery plans for threatened species: Northern Quoll (Hill and Ward in prep.); Partridge Pigeon (Woinarski 2004).</p> <p>Other management plans: Australian Weeds Strategy (NRMCC 2007); Threat Abatement Plan for Predation by Feral Cats (Environment Australia, 1999); Threat Abatement Plan for Predation, habitat degradation, competition and disease transmission by feral pigs (DEH 2005) ; FIREPLAN: Fire management for the savanna community (Russell-Smith <i>et al.</i> in press.); A management program for <i>Ptychosperma macarthurii</i> (PWCNT 1998).</p>

KEY REFERENCES	Monitoring programs and research projects	<p>Fire in the tropical savannas is mapped continuously under the North Australia Fire Information Project http://www.firenorth.org.au/nafi/app/init.jsp</p> <p>Regular surveys of Saltwater Crocodiles are conducted in the Adelaide River (PWSNT 2005), with the most recent surveys in mid 2008.</p> <p>Saltwater Crocodile nesting data has been collected from Melacca Swamp and other Adelaide River wetlands over the past 20 years (Harvey and Hill 2003 and references therein).</p> <p>Magpie Goose populations and nests are surveyed regularly in core habitat areas in the NT including the Adelaide River floodplain (PWCNT 2003).</p> <p>The University of Sydney has a long-term research project at Fogg Dam and Middle Point on Cane Toads and their impact on other species and the environment at (Ben Phillips, University of Sydney, pers. comm.).</p> <p>The biology and movements of the shark <i>Glyphis</i> sp. A are being studied in the Adelaide River by CSIRO (Richard Pillans, CSIRO Marine Research, pers. comm.).</p> <p>Monitoring of <i>Ptychosperma macarthurii</i> (Liddle <i>et al.</i> 2006).</p> <p>Groundwater monitoring and water use by rainforest vegetation (Boggs <i>et al.</i> unpublished data) and vegetation monitoring in spring-fed rainforest patches (Liddle <i>et al.</i> unpublished data).</p> <p>There are eight Tier 1 rangeland monitoring points within this site (Karfs and Bastin 2001).</p> <p>Land-use change in the Lambells Lagoon region is being investigated by CSIRO using resilience analysis (M. Bradley, CSIRO, pers. comm.).</p>
	Management recommendations	<p>Survey and identify sites of conservation significance and develop appropriate management programs in conjunction with landholders and other stakeholders (NRETA 2005).</p> <p>By agreement with landholders, investigate options for inclusion of significant egret colony on lower reaches of the Adelaide River into Djukbinj National Park (NRETA 2005).</p> <p>Investigate opportunities for conservation agreements with landholders (NRETA 2005).</p> <p>Declare proposed Lower Adelaide River National Park and establish joint management arrangement in accordance with the Parks and Reserves (Framework for the Future) Act (NRETA 2005).</p> <p>Develop a concept plan for inclusion of spring fed monsoon rainforest patches and associated vegetation on Koolpinyah Station in the reserve network by agreement with landholder (NRETA 2005).</p> <p>Continue to implement the management program for <i>Ptychosperma bleeseri</i> (NRETA 2005).</p>
Papers and reports	<p>Chatto, R. (2006). <i>The distribution and status of waterbirds around the coast and coastal wetlands of the Northern Territory</i>. Technical Report 76, Parks and Wildlife Commission of the Northern Territory, Palmerston. 254pp.</p> <p>Chatto, R. (2003). <i>The distribution and status of shorebirds around the coast and coastal wetlands of the Northern Territory</i>. Technical Report 73, Parks and Wildlife Commission of the Northern Territory, Palmerston. 257pp.</p> <p>Chatto, R. (2000a). <i>Waterbird breeding colonies in the Top End of the Northern Territory</i>. Technical Report 69, Parks and Wildlife Commission of the Northern Territory, Darwin. 159pp.</p> <p>DIWA (A Directory of Important Wetlands in Australia). <i>Australian Wetlands Database</i>. Department of Environment, Water, Heritage & the Arts, Canberra ACT (accessed November 2007).</p> <p>Russell-Smith, J. (1991). Classification, species richness and environmental relations of monsoon rainforest in northern Australia. <i>Journal of Vegetation Science</i> 2, 259-278.</p>	
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