

Lake Woods

Location and Description

Lake Woods is a large ephemeral wetland located on the western edge of the Barkly Tableland and 220 km north of Tennant Creek. The Lake most frequently occupies an area of about 350 km², but during periods of major flooding (such as 1993 and 2001) it is broadly contiguous with the lower reaches of Newcastle Creek, and can reach 850 km² and, at times, nearer 1000 km², making it one of the largest temporary freshwater lakes in the Northern Territory and tropical Australia. The lake basin supports grass/sedge communities, including broad bands of lignum which comprise one of the largest areas of lignum swamp in the Northern Territory. The northern edge of the Lake and Newcastle Creek are fringed by river red gum and coolibah. The slopes of the Ashburton Range to the east are dominated by spinifex communities.

Tenure and Land Use

Lake Woods is located on pastoral leasehold land and encompasses two pastoral properties (Powell Creek and Newcastle Waters). The main land use within the Site is pastoral operations, but a fenced enclosure on the northern part of the lake is managed as the Longreach Waterhole Protected Area (approximately 7% of Site) by Parks and Wildlife Service NT in cooperation with the pastoral lease managers. The reserve is popular for conservation and recreation purposes.

Significance Rating

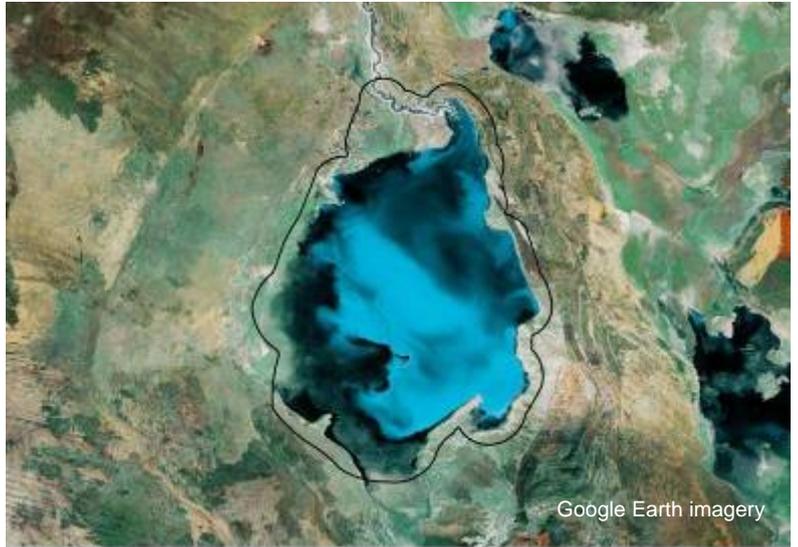
International Significance

Ecological Values

During periods of inundation, Lake Woods is a vast flooded area comprising diverse wetland habitat dominated by open water and with substantial areas of lignum shrubland and woodland at the lake margins. When conditions are suitable, the lake supports more than 100 000 waterbirds including internationally significant numbers of Plumed Whistling-Duck. The shrubland and wooded habitats provide breeding sites for several colonies of waterbird species including egrets, cormorants and spoonbills. Large numbers of shorebirds also use the lake for migration stopover, and the near permanent waterholes in Newcastle Creek are an important refuge for many species during the dry season.

Management Issues

Parkinsonia aculeata is widespread in the northern part of this lake and creek system and represents a major management issue. Cattle access to the Longreach Waterhole Reserve in the past caused erosion of creek banks, which is still apparent, and infestation by weeds has limited regeneration of native plant species in this area. Unrestricted recreational boating and visitor access could be disturbing significant waterbird breeding colonies.



Condition

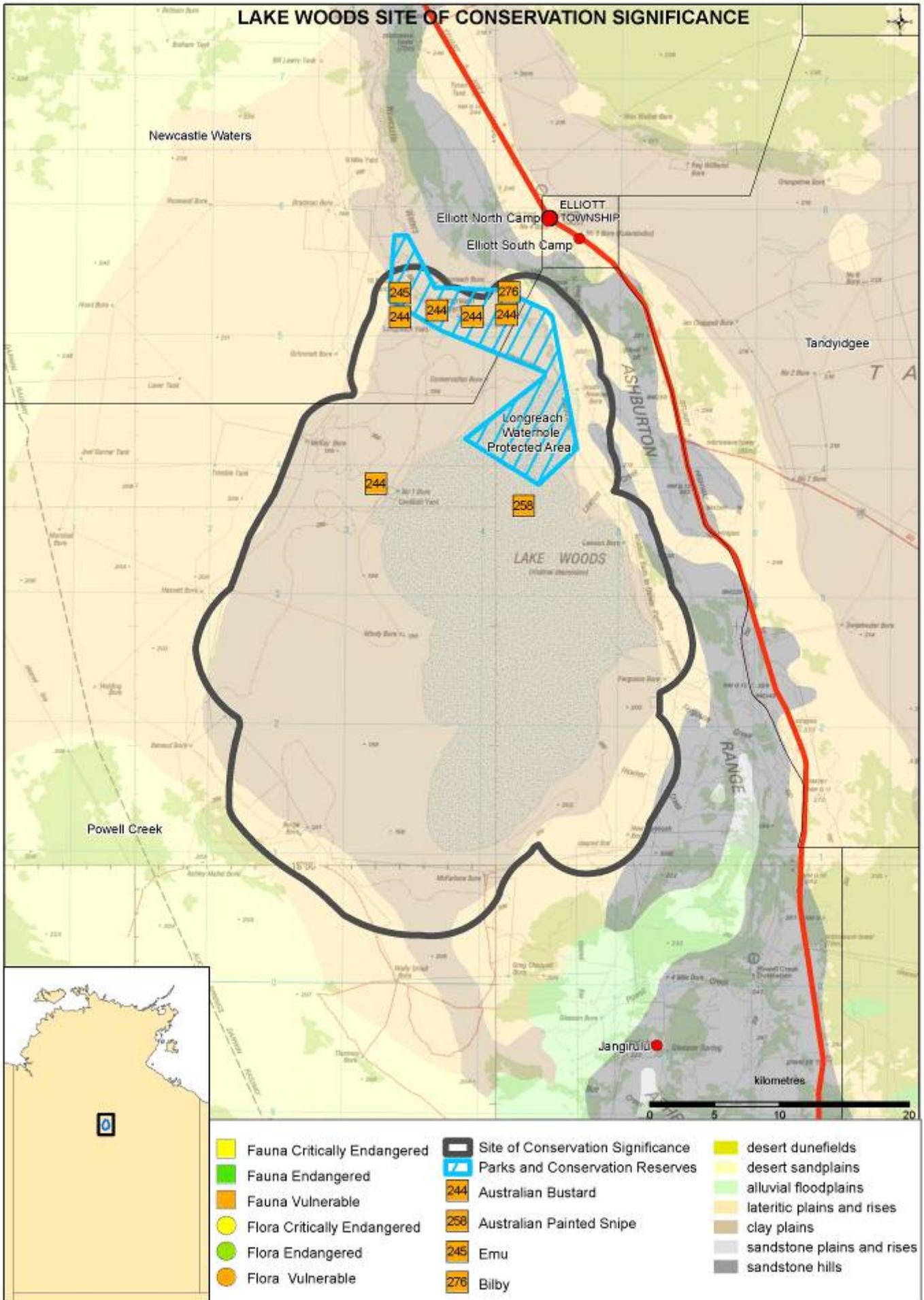
Apart from weed infestations, Lake Woods seems to be relatively resilient to grazing. Some bank erosion is apparent around the Longreach and South Newcastle Waterholes, and streamline erosion occurs in lighter-soil areas of the south-east of the site.

Current Conservation Initiatives

The Longreach Waterhole Protected Area was fenced in 1984 to exclude stock, but maintenance is difficult as the fence is effectively destroyed by each flood event. Surveys of waterbirds are conducted opportunistically by Wetlands International after major flood events.

Landholders muster the lakebed and remove cattle multiple times each dry season and have an on-going weed management program south of the protected area and in the catchment upstream of the reserve. This focuses on eradicating isolated *Parkinsonia* plants. The landholders, in conjunction with NRETAS, are developing a Conservation Management Plan for the site, using Ramsar guidelines.

LAKE WOODS - SITE OF CONSERVATION SIGNIFICANCE



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LOCATION	SOCS Number	39 (NT Parks and Conservation Masterplan Map Number 48)
	Latitude/Longitude	17° 50' South, 133° 28' East (at centre)
	Bioregion	Mitchell Grass Downs (99%), Sturt Plateau (1%)
	Description	<p>Lake Woods is located immediately west of the Stuart Highway and 7 km south of the small township of Elliot. The site includes the lower reaches of Newcastle Creek, including two near-permanent waterholes (Longreach and South Newcastle), a delta of distributary channels where the Creek meets the lake, and the lake to the maximum high water mark.</p> <p>The Ashburton Range clearly delineates the east side of the site, but low relief on the west side of the lake means that this boundary is less well defined. The lake most frequently occupies an inner basin of about 350 km² but the boundary of this site has been delineated based on the maximum flooded area of the lake with a 2 km buffer, and encompasses an area of 1305 km².</p> <p>Lake Woods is primarily fed by Newcastle Creek from a large catchment to the north-east. Surface inflows are highly variable, although the creek does flow in most years. Large floods often cause at least partial inundation of the lake, and major floods which fill the lake to capacity have occurred at least three times in the past 15 years (1993, 2001 and 2006). Although the lake is shallow (2-3 m), water can persist for more than 12 months after major flood events.</p> <p>Other large wetlands on the Barkly Tableland including the Lake Sylvester system, Tarrabool Lake and Eva Downs Swamp are also recognised as sites of high conservation significance in the NT.</p>
THREATENED SPECIES	Significance Rating	Regional 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)	<p>Four threatened species are reported from this site.</p> <p>Vertebrates</p> <ul style="list-style-type: none"> ▪ Australian Bustard <i>Ardeotis australis</i> (-/VU) ▪ Australian Painted Snipe <i>Rostratula australis</i> (VU/VU) ▪ Emu <i>Dromaius novaehollandiae</i> (-/VU) ▪ Greater Bilby (<i>Macrotis lagotis</i>) (VU/VU) (Fleming <i>et al.</i> 1983) <p>The Australian Painted Snipe has been recorded on a single occasion at Lake Woods (Jaensch 2003a), but the species is potentially more common given the extent of suitable habitat and difficulty of observation (R. Jaensch, Wetlands International, pers. comm.). There are very few, scattered records for this species in northern Australia. Bustard and Emu occur widely throughout the region, but are listed as threatened due to significant decline.</p> <p>Fleming <i>et al.</i> (1983) found signs of Bilby in sandy areas near Longreach Yards during a biological survey of the area, but the site contains little suitable habitat for this species, Which occurs in the “desert country” to the west.</p>
ENDEMIC SPECIES	Significance Rating	Not Significant
	Notes	Two plant species recorded from this site are endemic to the NT.
WILDLIFE AGGREGATIONS	Significance Rating	International Significance
	Marine turtles	Not applicable
	Seabirds	No major aggregations recorded
	Waterbirds	<p>Total numbers of waterbirds: Maximum counts of waterbirds from aerial surveys of this lake during flood events include: 116 000 in 1993, 100 000+ in 2001, 70 000+ in 2002, and 50 000+ in 2006 (Jaensch and Bellchambers 1997; Wetlands International unpubl.), and real numbers are likely to be at least twice this number if the usual undercounting factor in aerial surveys is taken into account (Costelloe <i>et al.</i> 2004; Morton <i>et al.</i> 1990). The two near-permanent waterholes in this site also support large numbers of waterbirds during the dry season.</p> <p>Counts of individual species: Maximum counts of 27 000 Plumed Whistling-Ducks (Jaensch and Bellchambers 1997) are internationally significant (>1% global population; Dutson in prep.). High counts of 3000+ Great Egrets (Wetlands International unpublished data) are nationally significant (>1% Oceania population; Wetlands International 2006).</p> <p>Other species that occur in high numbers include: Australian Pelican (8000); Grey Teal (5000); Intermediate Egret (2000); and Glossy Ibis (3300) (Wetlands International unpublished data).</p> <p>The Freckled Duck is uncommon in the NT but is reported in small numbers (35) at this site (Jaensch 2003b).</p> <p>Breeding records: 23 waterbird species are reported breeding in this site (Jaensch and Bellchambers 1997) including colonies of several hundred to several thousand Straw-necked Ibis, Intermediate and Great Egret, Little Black Cormorant, Royal Spoonbill and Australasian Darter. Great Cormorants and Magpie Geese also breed at the site (Wetlands International unpubl.).</p> <p>Diversity of waterbirds: The vast size of this lake, the diversity of habitats, and availability of near-permanent water contribute to it being one of the most species-rich inland wetlands in the NT, with 65 waterbird species (Wetlands International unpublished data).</p>

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	Shorebirds	11 shorebird species are recorded from this lake, including two species in substantial (but sub-threshold) numbers: Oriental Pratincole (6000+); and Little Curlew (700+) (Wetlands International unpubl.). A record of 26 Swinhoe's Snipe in 1993 is also notable because this species is an uncommon migrant which rarely travels this far inland (Jaensch 2003c).
	Other aggregations	Substantial numbers of Flock Bronzewing Pigeon are known to frequent the Barkly wetlands and there are historical records of large numbers at Lake Woods (Fleming et al. 1983).
WETLANDS	Significance Rating	International Significance
	Ramsar criteria met	Although no formal assessment has been conducted to date, Lake Woods is likely to meet at least five of the criteria for listing as a Wetland of International Importance under the Ramsar Convention, including criterion 1: rare or unique example of a wetland type; criterion 2: supports threatened species or communities; criterion 4: provides refuge or supports a critical life-cycle stage for important species; criterion 5: important wildlife aggregation site with >20,000 waterbirds; and criterion 6: regularly supports >1% of the individuals in a population.
	DIWA criteria met	Lake Woods is listed as a wetland of national significance in the Directory of Important Wetlands in Australia (DIWA: NT013 Lake Woods). The site meets criteria 1, 2, 3, 4, 5 and includes DIWA wetland types: B1, B6, B10, B13, B14.
	Notes	This site has been nominated as a national High Conservation Value Aquatic Ecosystem (the finalised list of HCVAE will replace the DIWA list), and is a priority HCVAE in the Caring for our Country Business Plan 2009-2010 (Commonwealth of Australia 2008). It is an outstanding example of a temporary freshwater lake and a large semi-permanent waterhole at the end of an inland-draining tropical creek system; one of the largest such lakes in the NT. The lake also includes the largest area of lignum swamp in the NT and one of the largest in tropical Australia (DIWA). Satellite imagery for this site indicates that the lake may be part of an even larger palaeo-lake basin indicative of wetter epochs in the geological past.
	Rivers	No information located
FLORA	Significance Rating	Regional Significance
	Notes	Restricted vegetation communities: The lignum shrubland and associated marsh present at Lake Woods is one of the most extensive occurrences in the NT (R. Jaensch, Wetlands International, pers. comm.). Restricted range species: The site contains a suite of plant and animal species characteristic of the blacksoil grasslands of subhumid north Australia. <i>Eucalyptus barklyensis</i> is a rarely-recorded tree almost entirely restricted to the Mitchell Grass Downs bioregion in the NT.
OTHER ENVIRONMENTAL VALUES		Lake Woods is proposed to be nominated by Birds Australia as an internationally-recognised <i>Important Bird Area</i> (G. Dutton in prep.). Lake Woods is identified as a site of significant refugia for biological diversity in arid and semi-arid Australia due to its importance as a breeding and migratory stop-over location for waterfowl in the sub-tropical inland of the NT (Morton et al. 1995). Lake Woods supports seven fish species and eight frog species are reported in the general region (Fleming et al. 1983). The rare Yellow Chat is abundant at Lake Woods and the lake is one of the few documented breeding sites on the Barkly Tableland for this species (Jaensch and Bellchambers 1997). Lake Woods is listed on the Register of the National Estate for its natural values (Australian Heritage Council 2007). Sub-humid wetlands such as Lake Woods are likely to become increasingly important in the coming decades if global climate change results in even minor rises in sea level, and saltwater inundation occurs on the vast floodplain wetlands of coastal northern Australia. At least 24 species recorded from this site are listed under international conventions or bilateral agreements protecting migratory animals.
MANAGEMENT ISSUES		Fire: Pastoral management generally seeks to suppress fire and in the period 1993-2004, 87% of the site was burnt in fewer than three years, and none was burnt in more than six years. Feral animals: The site is within the relatively intensively managed pastoral estate, and numbers of feral grazers are low. Feral cats are common in the region, and very numerous following irruptions of the native long-haired rat <i>Rattus villosissimus</i> . Weeds: In mid-2006 <i>Parkinsonia aculeata</i> (Weed of National Significance) was observed to be extensive in the northern part of the lake with dense thickets lining sections of Newcastle Creek down into the lake delta (R. Jaensch pers. obs. 2006). The current distribution of this weed in this site is unknown. Other: Cattle and horses have caused significant vegetation loss, trampling and soil erosion around the Longreach Waterhole in the past (Pitts 1994) and continued access to the broader lake area by livestock is likely to limit regeneration of tree and shrub species and cause soil compaction. The fence around the Longreach Waterhole Protected Area is damaged every time the lake floods, making maintenance difficult. Following extensive work by the landholders, at the start of the 08/09 wet season the fence was complete (M. Bolam, CPC, pers. comm.).

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MANAGEMENT INFORMATION	NRM groups	Barkly Landcare and Conservation Association, Jeulalikari Landcare (Tennant Creek).
	Protected areas	Longreach Waterhole Protected Area (89 km ² / 7% of site).
	Current management plans	<p>Site-specific plans: The protected area was created under a management agreement between Newcastle Waters Station and the NT Parks and Wildlife Service in 1985.</p> <p>An Environmental Management System for Newcastle Waters Station, including the Lake Woods area, commenced in 2006 and is ongoing (M. Bolam, CPC, pers. comm.). In conjunction with NRETAS, the landholder is developing a Conservation Management Plan for the site, using Ramsar guidelines.</p> <p>Other management plans: Australian Weeds Strategy (NRMMC 2007); Threat Abatement Plan for Predation by Feral Cats (Environment Australia, 1999).</p>
	Monitoring programs and research projects	<p>Aerial and ground surveys of waterbirds are conducted opportunistically by Wetlands International after major flood events (R. Jaensch, Wetlands International, pers. comm.).</p> <p>Vegetation of the Longreach Waterhole conservation area was surveyed and mapped in 1990 (Pitts 1990) and vegetation communities have since been identified and monitoring points established (Pitts 1994).</p> <p>There are four Tier 1 rangeland monitoring points within this site (Karfs and Bastin 2001).</p> <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>
	Management recommendations	<p>Conduct a comprehensive assessment of the management issues at the site and develop a formal management plan to address significant threats, including weed control and management of grazing pressure.</p> <p>Review the management agreement for the Longreach Waterhole protected area and investigate opportunities to include all significant areas of Lake Woods into a protected area.</p> <p>Review the management agreement for the Longreach Waterhole protected area in the light of a realistic assessment of NRETAS having the resources and will to manage the site as originally agreed, before consideration is given to adding further areas (M. Bolam, CPC, pers. comm.).</p> <p>In cooperation with landholders, determine the benefits of possible nomination as a wetland of international importance (Ramsar site) (NRETA 2005).</p> <p>Control priority weeds in the site in association with the Barkly Landcare and Conservation Association (NRETA 2005).</p> <p>In conjunction with the Northern Land Council, investigate the interest of the local Aboriginal community to undertake land management activities in the Longreach Waterhole reserve (NRETA 2005).</p> <p>Conduct detailed surveys and ongoing monitoring of waterbird populations, vegetation condition and weeds within the site.</p>
KEY REFERENCES	Papers and reports	<p>DIWA (A Directory of Important Wetlands in Australia). <i>Australian Wetlands Database</i>. Department of Environment, Water, Heritage & the Arts, Canberra ACT (accessed July 2007).</p> <p>Fleming, M.R., K.A. Johnson, P.K. Latz and J.R. McKean. 1983. <i>A biological survey of Junction Stock Reserve and Newcastle Waters Pastoral Lease on the Barkly Tablelands</i>. Unpublished report. Conservation Commission of the Northern Territory: Alice Springs.</p> <p>Jaensch, R.P. (1994a). <i>An inventory of wetlands in the sub-humid tropics of the Northern Territory</i>. Report to the Australian Nature Conservation Agency. Conservation Commission of the Northern Territory, Darwin.</p> <p>Jaensch, R. and Bellchambers, K. 1997. <i>Waterbird conservation values of ephemeral wetlands of the Barkly Tableland, Northern Territory</i>. Unpublished report to Australian Heritage Commission and Parks and Wildlife Commission of the Northern Territory, 76 pp.</p> <p>Pitts B. (1990). <i>Longreach Waterhole Vegetation Survey and Mapping</i>. Internal Report, CCNT: Alice Springs, NT.</p> <p>Pitts B. (1994). <i>Vegetation Communities of Longreach Waterhole</i>. Internal Report, CCNT: Alice Springs, NT.</p>
	Contributors	<p>Roger Jaensch, Wetlands International - Oceania, Brisbane</p> <p>Alaric Fisher, Biodiversity Conservation, NRETAS, Darwin</p>

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Lake Woods (Photo: Roger Jaensch)



Eva Downs Swamp (Photo: Roger Jaensch)