

## Tarrabool Lake

### Location and Description

Tarrabool Lake is a huge seasonal lake located on the Barkly Tableland, about 160 km north-east of Tennant Creek. Lake waters most frequently occupy an inner basin of about 400 km<sup>2</sup> but extent of the flooded area varies enormously from year to year. In exceptionally wet years (such as 1993 and 2001) the lake joins with Eva Downs Swamp in the north and together they cover an area of over 2750 km<sup>2</sup>, forming one of the largest freshwater wetlands in inland Australia. Unlike the other Barkly lakes, Tarrabool Lake is dominated by woodland of coolibah and has a wooded area of at least 1200 km<sup>2</sup>, making it one of Australia's largest wooded swamps. The lake also supports large areas of grassland and open lignum and bluebush shrubland.

### Tenure and Land Use

Tarrabool Lake is situated on pastoral leasehold land. The inner basin of the lake (the most frequently flooded area) is mostly within the Anthony Lagoon pastoral lease but during times of maximum inundation, the lake also extends onto neighbouring pastoral properties (including Rockhampton Downs, Brunchilly and Eva Downs). The main land use within the site and surrounding catchment is pastoral operations.

### Significance Rating

International Significance

### Ecological Values

At its full extent, Tarrabool Lake is probably the largest basin-form freshwater wetland and largest wooded swamp in tropical Australia. Wetlands of such large scale often support enormous wetland biomass and complex ecosystem processes. During periods of extensive inundation, Tarrabool Lake is known to support over 200 000 waterbirds, including globally significant numbers of at least three species. Major waterbird breeding events occur on the lake after flooding and include some of the largest known breeding colonies of these species in the Northern Territory. The importance of sub-humid wetlands such as Tarrabool Lake is likely to increase over the coming decades if global climate change drives even minor rises in sea level, and saltwater inundation occurs on the vast floodplain wetlands of coastal northern Australia.



### Management Issues

A significant infestation of *Parkinsonia aculeata* occurs in the north-east of the main lake and the potential spread of this weed remains an ongoing management issue. Good management of pastoral operations in the catchment and on the lake bed is needed to ensure the conservation values of the site are sustained.

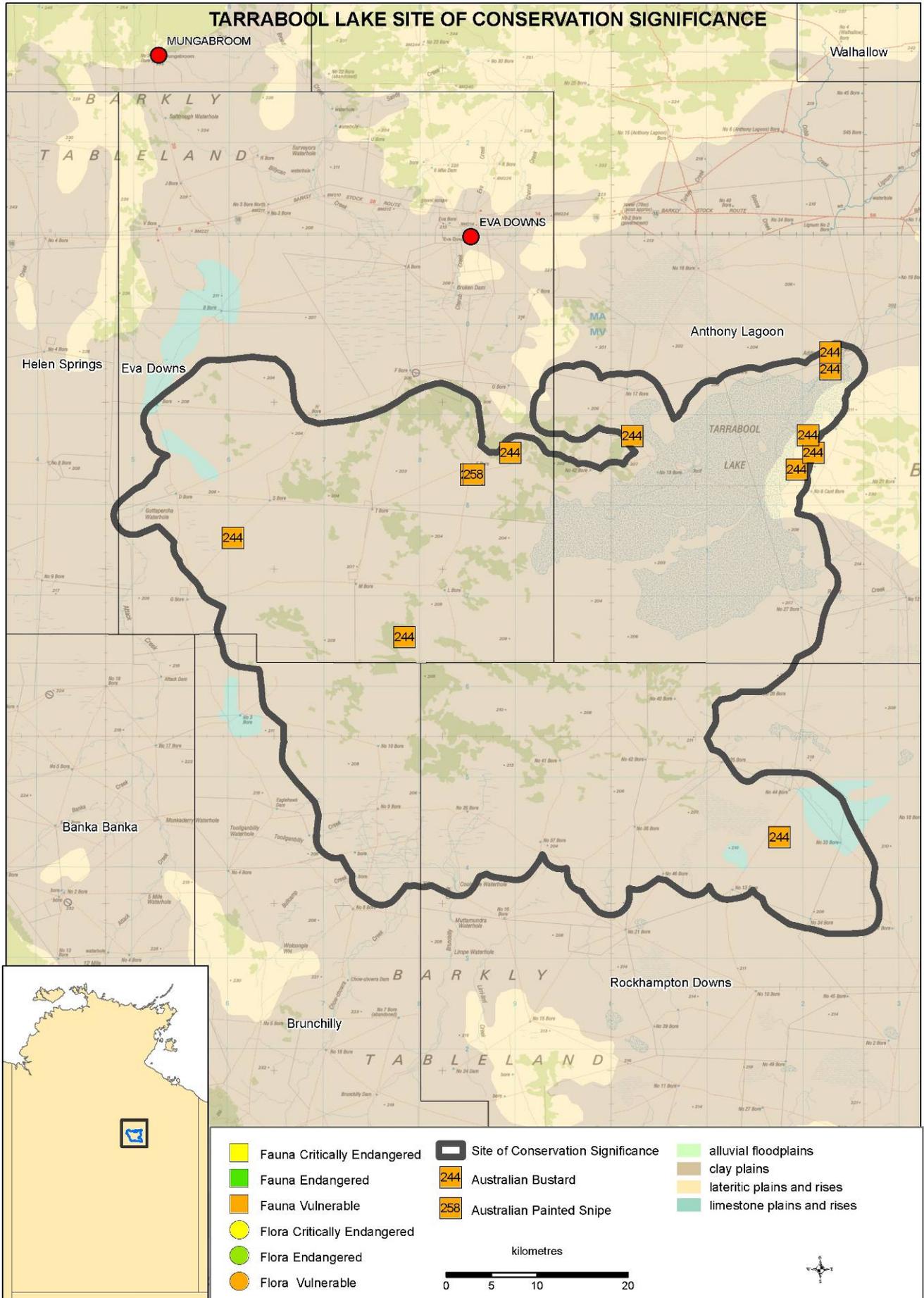
### Condition

Little is known of the condition of the lake or its vegetation. The grasslands in this region are generally resilient to grazing, but sustained overgrazing may reduce perennial grass density and increase erosion rates. Bluebush and lignum shrubs are more sensitive to grazing, and may be locally eradicated by overgrazing. Grazing may also inhibit regeneration of trees and shrubs after flooding.

### Current Conservation Initiatives

In a collaborative project by land managers to treat *Parkinsonia aculeata* infestations along headwaters flowing into Tarrabool Lake, a 35 km stretch of Creswell Creek was sprayed with herbicide in 2005 and follow up work continues. Surveys of waterbirds are conducted opportunistically by Wetlands International after major flood events.

TARRABOOL LAKE - SITE OF CONSERVATION SIGNIFICANCE



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<b>LOCATION</b>	<b>SOCS Number</b>	41 (NT Parks and Conservation Masterplan Map Number 53)
	<b>Latitude/Longitude</b>	18° 23' South, 134° 55' East (at centre)
	<b>Bioregion</b>	Mitchell Grass Downs
	<b>Description</b>	<p>This site and the surrounding upland plains are dominated by deep-cracking grey clay soils and changes in altitude and slope are slight. Apart from the occasional low chenier ridge that indicates the edge of the inner basin and the highly channelised delta where Creswell Creek floods out into the lake, there are few conspicuous geomorphological features in this system.</p> <p>The lake most frequently occupies an inner basin of about 400 km<sup>2</sup> 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 3413 km<sup>2</sup>.</p> <p>Tarrabool Lake is fed principally by Creswell Creek in the north and significant inflow also can occur via Brunchilly Creek and other creeks entering from the south and south-west. The lake is shallow and water colour is usually milky white. Water may persist in the inner basin for more than 18 months after major floods, but it appears there are no permanent waterholes in the lower Creswell Creek or lake. Inundation is variable but major flooding occurs perhaps once every 5-10 years (1993, 2001 and 2006) with moderate flooding more frequently.</p> <p>Other large wetlands on the Barkly Tableland, including the Lake Sylvester system, Eva Downs Swamp and Lake Woods, are also recognised as sites of high conservation significance in the NT.</p>
<b>THREATENED SPECIES</b>	<b>Significance Rating</b>	<b>Regional Significance</b>
	<b>Threatened plants and animals</b> (Listings at National/NT level <b>CR</b> - Critically Endangered, <b>EN</b> - Endangered, <b>VU</b> - Vulnerable, <b>NT</b> - Near Threatened, <b>LC</b> - Least Concern, <b>DD</b> - Data Deficient)	<p>Two threatened species are reported from this site.</p> <p><b>Vertebrates</b></p> <ul style="list-style-type: none"> <li>▪ Australian Bustard <i>Ardeotis australis</i> (-/VU)</li> <li>▪ Australian Painted Snipe <i>Rostratula australis</i> (VU/VU)</li> </ul> <p>There are very few, scattered records for Australian Painted Snipe in northern Australia, but large areas of suitable habitat occur in the Barkly wetlands and these are likely to be some of the most important sites for this species in northern Australia (Jaensch 2003a). The first documented breeding by Australian Painted Snipe in the NT was in wetland habitat at Tarrabool Lake in May 1993 (Jaensch 2003a).</p>
<b>ENDEMIC SPECIES</b>	<b>Significance Rating</b>	<b>Not Significant</b>
	<b>Notes</b>	The site contains a suite of plant and animal species characteristic of the blacksoil grasslands of subhumid north Australia.
<b>WILDLIFE AGGREGATIONS</b>	<b>Significance Rating</b>	<b>International Significance</b>
	<b>Marine turtles</b>	Not applicable
	<b>Seabirds</b>	In wet years, significant numbers of terns feed aerially over the lakes and surrounding grassland and some species breed at the site. Jaensch and Bellchambers (1997) recorded a notable count of 1300 Gull-billed Terns at the site in 1995.
	<b>Waterbirds</b>	<p><b>Total numbers of waterbirds:</b> Tens of thousands of waterbirds of at least 46 species aggregate on Tarrabool Lake after major flooding and numbers often reflect the extent of flooded area. Maximum counts from aerial surveys include 237 000 waterbirds in 2001, 148 000 in 1993, and 60 000 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 et. al. 2004; Morton <i>et al.</i> 1990).</p> <p><b>Counts of individual species:</b> Maximum counts of species that are internationally significant (&gt;1% global population; Dutson in prep.) include: 10 000 Australian Pelican; and 12 300 Straw-necked Ibis (Jaensch and Bellchambers 1997).</p> <p>Maximum counts of other species that are nationally significant (&gt;1% Oceania population; Wetlands International 2006) include: 1000 Great Egret; and 10 000 Glossy Ibis (Wetlands International unpubl.).</p> <p>Other species that occur in high numbers (but not yet confirmed exceeding population threshold levels) include: Hardheads, Plumed Whistling-Ducks, Intermediate Egrets, Grey Teals, and Magpie Goose (Wetlands International unpubl.).</p> <p>The Freckled Duck, an uncommon and Near Threatened species in the NT, is recorded in small numbers (82) at this site (Jaensch 2003b).</p> <p><b>Breeding records:</b> Fourteen waterbird species are recorded breeding at this site and large colonies include: 5000 pairs Australian Pelican on north-east Tarrabool Lake in 1993; and 5500 pairs Straw-necked Ibis in lignum in 1995 (Jaensch &amp; Bellchambers 1997). These are some of the largest breeding records of these species in the NT.</p>
	<b>Shorebirds</b>	Although extensive areas of suitable habitat is periodically available for shorebirds at Tarrabool Lake, large numbers are not recorded to date, most likely due to a lack of survey effort at appropriate times. Maximum counts of one species, Black-winged Stilt (3250) (Jaensch and Bellchambers 1997) are, however, internationally significant (>1% global population; G. Dutson in prep.).
	<b>Other aggregations</b>	None known

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WETLANDS	<b>Significance Rating</b>	<b>International Significance</b>
	<b>Ramsar criteria met</b>	Although no formal assessment has been conducted, Lake Tarrabool comfortably meets at least five of the criteria for listing as a Wetland of International Importance under the Ramsar Convention (1971), 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.
	<b>DIWA criteria met</b>	Tarrabool Lake is listed as a wetland of national significance in the Directory of Important Wetlands in Australia (DIWA: NT014). The site meets criteria 1, 2, 3, 5 and includes DIWA wetland types: B6, B10, B13, B14.
	<b>Notes</b>	Tarrabool Lake is an outstanding example of a wooded inland swamp: when fully inundated it is the largest of this type in tropical Australia and one of the largest freshwater wetlands in Australia (DIWA). The combined Barkly Lakes (Eva Downs Swamp, Lake Sylvester and tarabool Lake system) have been nominated as a national High Conservation Value Aquatic Ecosystem (the finalised list of HCVAE will replace the DIWA list), and form a priority HCVAE in the Caring for our Country Business Plan 2009-2010 (Commonwealth of Australia 2008).
	<b>Rivers</b>	No information located
FLORA	<b>Significance Rating</b>	<b>Not significant</b>
	<b>Notes</b>	There are no patches of rainforest recorded for the site, nor are there records of restricted vegetation communities or restricted range species. However, there have been few ecological surveys of the area and information for the site is limited.
OTHER ENVIRONMENTAL VALUES	<p>Tarrabool Lake and Eva Downs Swamp are listed on the Register of the National Estate for their natural values (Australian Heritage Council 2007).</p> <p>Tarrabool Lake is proposed to be nominated by Birds Australia as an internationally-recognized <i>Important Bird Area</i> (G. Dutton in prep.) as part of a larger site including Eva Downs Swamp.</p> <p>After major floods the inner basin of Tarrabool Lake may retain water for up to 18 months and provide an important dry season refuge for waterbirds.</p> <p>Although fish have been sampled in many creeks on the Barkly Tableland (Midgley 1982) and there has been some opportunistic collections in the region (H. Larson, MAGNT, pers. comm.), the fish fauna of the Barkly Lakes is poorly known. The lake is however expected to hold immense numbers of fish given the great numbers of fish-eating pelicans and cormorants that they support intermittently.</p> <p>The Yellow Chat, a characteristic bird of the Barkly wetlands, is reported from other Barkly wetlands (Jaensch and Bellchambers 1997) and is likely to occur at Tarrabool Lake.</p> <p>Sub-humid wetlands such as Tarrabool Lake are likely to become increasingly important in the coming decades if global climate change drives even minor rises in sea level, and saltwater inundation occurs on the vast floodplain wetlands of coastal northern Australia.</p> <p>At least seven species recorded from this site are listed under international conventions or bilateral agreements protecting migratory animals (DIWA).</p>	
MANAGEMENT ISSUES	<p><b>Fire:</b> Pastoral management generally seeks to suppress fire and in the period 1993-2004, 100% of the site was burnt in fewer than three years, and none was burnt in more than six years.</p> <p><b>Feral animals:</b> The area is within the relatively intensively managed pastoral estate, and numbers of feral grazers are low. Feral cats are common in this region, and very numerous following irruptions of the native long-haired rat <i>Rattus villosissimus</i>.</p> <p><b>Weeds:</b> One Weed of National Significance <i>Parkinsonia aculeata</i> is recorded from the site, mainly in the north-east of the main lake where some thickening of the species was observed between 1993 and 2001 (R. Jaensch pers. obs.). One declared Category B weed caltrop <i>Tribulus terrestris</i> is also recorded from the site.</p> <p><b>Other:</b> Heavy or continuous grazing by livestock is likely to limit regeneration of tree and shrub species and cause pugging and soil compaction on wet soil.</p> <p>The conservation values of this wetland are less widely known than for other Barkly wetlands and this may hinder appropriate conservation planning.</p>	
MANAGEMENT INFORMATION	<b>NRM groups</b>	Barkly Landcare and Conservation Association.
	<b>Protected areas</b>	The site is not included within the formal network of protected areas in the NT.
	<b>Current management plans</b>	<p><b>Site-specific plans:</b> No information located.</p> <p><b>Other management plans:</b> Australian Weeds Strategy (NRMMC 2007); Threat Abatement Plan for Predation by Feral Cats (Environment Australia, 1999).</p>
	<b>Monitoring programs and research projects</b>	<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>Permanent points have been established on Creswell Creek to monitor the treatment of Parkinsonia (Barkly Landcare and Conservation Association 2006).</p> <p>There are eleven 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 <a href="http://www.firenorth.org.au/nafi/app/init.jsp">http://www.firenorth.org.au/nafi/app/init.jsp</a></p>

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	<b>Management recommendations</b>	<p>Conduct a comprehensive assessment of the threats to the site and develop a formal management plan to address significant threats, including weed control and management of grazing pressure.</p> <p>The management plan may also investigate opportunities for stock exclusion areas and appropriate management of the site to maintain conservation values.</p> <p>In cooperation with landholders, research the value of the wetlands for potential nomination as a wetland of international importance (Ramsar site) (NRETA 2005).</p> <p>Develop a conservation agreement and concept plan with landholders to include the wetlands in the reserve system (NRETA 2005).</p> <p>Control priority weeds in the site.</p> <p>Devise and implement a strategy to prevent and respond to fire in the site to protect fire-sensitive waterbird breeding habitat.</p> <p>Conduct detailed surveys and ongoing monitoring of waterbird and fish populations, vegetation condition and weeds within the site.</p>
<b>KEY REFERENCES</b>	<b>Papers and reports</b>	<p>DIWA (A Directory of Important Wetlands in Australia). <i>Australian Wetlands Database</i>. Department of Environment, Water, Heritage &amp; the Arts, Canberra ACT (accessed July 2007).</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 &amp; Wildlife Commission of the Northern Territory, 76 pp.</p>
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**Wooded swamp, Tarrabool Lake (Photo: Roger Jaensch)**