

Lake Mackay

Location and Description

Lake Mackay is a vast saline lake that straddles the border of Western Australia and the Northern Territory. It is located 500 km west-north-west of Alice Springs and, with an area of 4737 km², is the fourth largest lake in Australia. About one third of the lake lies within in the Northern Territory, and although inundation is infrequent, this portion is relatively deep and can retain water for six months or more after flooding. The Site includes the main lake and associated outlying lakes, and surrounding dunefields, lateritic plains and rises. Bare salt pans on the lake bed are fringed by samphire shrubland.

Tenure and Land Use

Lake Mackay is Aboriginal freehold land held by the Lake Mackay Aboriginal Land Trust. The main land use within the Site is Indigenous. Nyrripi Community (population 251) is located 132 km to the west of the Site.

Significance Rating

International Significance

Ecological Values

Following flooding, Lake Mackay provides important habitat for birds, and significant numbers of Banded Stilt, Black-winged Stilt and Red-necked Avocet have been recorded at the Site. Inundation can last a relatively long time and the lake, especially its numerous islands in the deeper Northern Territory portion, is believed to be an important breeding area for shorebirds, notably the Banded Stilt, and waterbirds.

One endemic plant species (*Stackhousia* sp.), one threatened plant species (*Eleocharis papillosa*) and three threatened vertebrate species (Australian Bustard, Emu and Bilby) are reported from the Site.

Management Issues

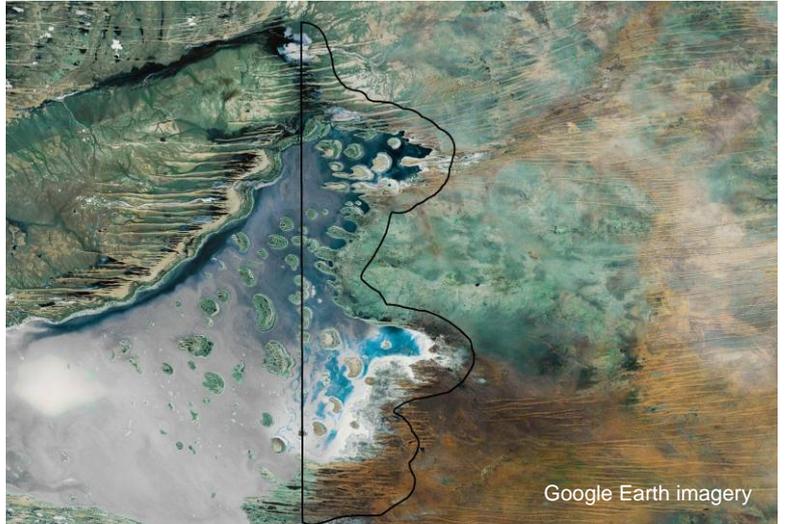
No current threats are identified; infestation by weeds and invasive exotic plants is a potential threat.

Condition

The absence of significant pressures such as grazing, weeds or Silver Gull (a major predator on breeding shorebirds elsewhere in Central Australia), suggests that the lake's ecological values may be relatively intact.

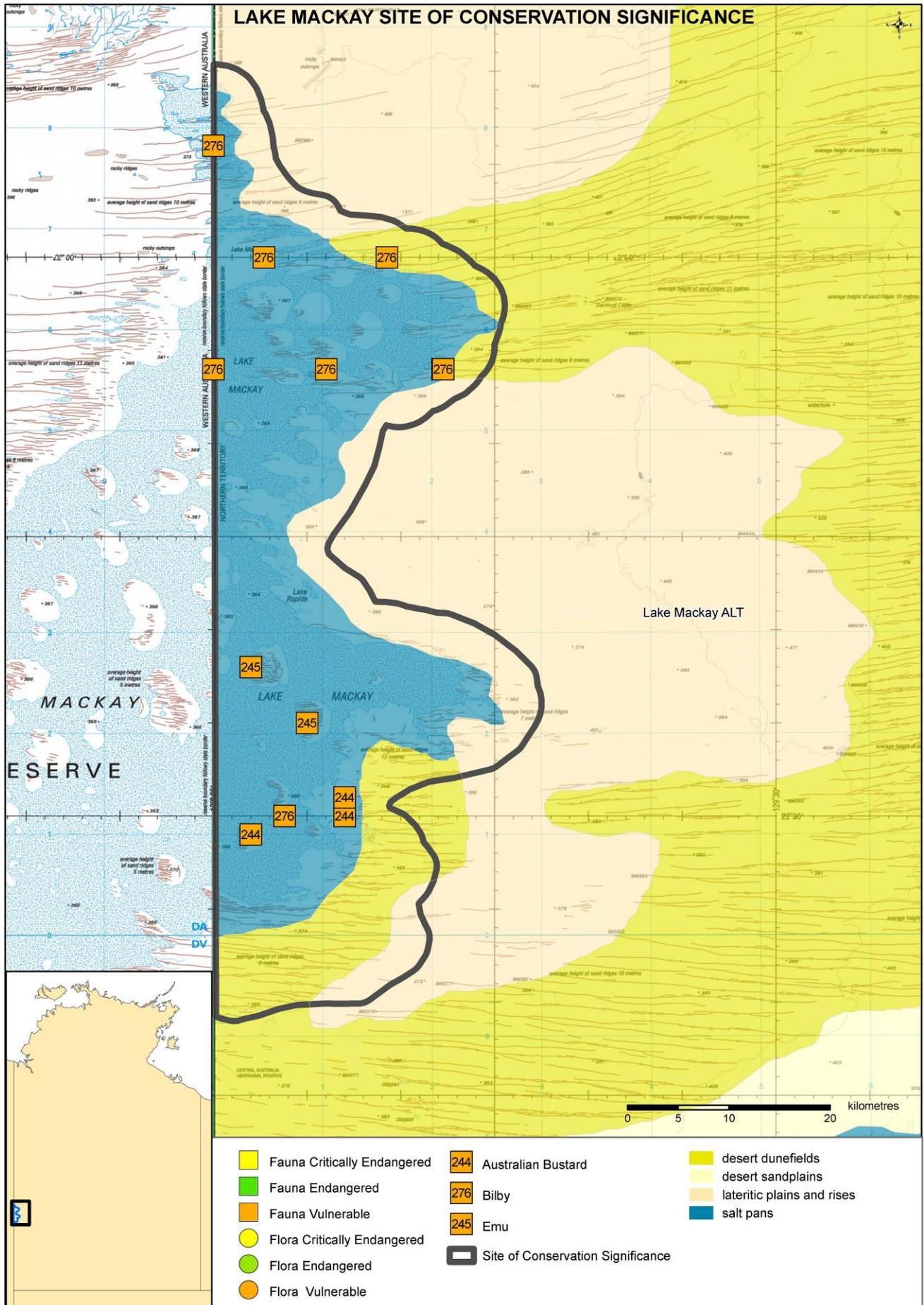
Current Conservation Initiatives

The Northern Territory portion of Lake Mackay is within the proposed Southern Tanami Indigenous Protected Area. The Central Land Council implemented aerial assisted



fire management in 2008, targeting mature fuel loads on Lake Mackay Aboriginal Land Trust to protect fire sensitive vegetation and culturally significant sites.

LAKE MACKAY - SITE OF CONSERVATION SIGNIFICANCE



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LOCATION	SOCS Number	52 (NT Parks and Conservation Masterplan Map Number 74)
	Latitude/Longitude	22° 17' South, 129° 6' East (at centre)
	Bioregion	Great Sandy Desert
	Description	<p>The boundary of this site is delineated based on wetland mapping by Duguid <i>et al.</i> (2005) and the Lake Mackay Site of Botanical Significance identified by White <i>et al.</i> (2000), with the addition of a 2 km buffer applied to the whole site. The area of the site is 1698 km².</p> <p>Major landforms and vegetation communities within the site include bare salt pans (which make up around half of the total site area), desert dunefields and lateritic plains and rises, samphire <i>Halosarcia</i> low open-shrubland which fringe the bare salt pans and soft spinifex <i>Triodia pungens</i> and feathertop spinifex <i>Triodia schinzii</i> hummock grassland with acacia tall sparse-shrubland overstorey (White <i>et al.</i> 2000).</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)	Four threatened species are reported from this site. Plants <ul style="list-style-type: none"> ▪ Dwarf desert spike-rush <i>Eleocharis papillosa</i> (VU/VU) Vertebrates <ul style="list-style-type: none"> ▪ Australian Bustard <i>Ardeotis australis</i> (-/VU) ▪ Emu <i>Dromaius novaehollandiae</i> (-/VU) ▪ Bilby <i>Macrotis lagotis</i> (VU/VU)
ENDEMIC SPECIES	Significance Rating	Regional Significance
	Notes	<p>Endemic to the site: One plant species (<i>Stackhousia</i> sp. Lake Mackay) is only known from this site.</p> <p>Endemic to the bioregion: Two plant species recorded from the site (<i>Acacia</i> sp. Lake Mackay, <i>Stackhousia</i> sp. Lake Mackay) are presently only known from the Great Sandy Desert bioregion.</p> <p>Endemic to the NT: One plant species recorded from this site is an NT endemic (<i>Stackhousia</i> sp. Lake Mackay).</p> <p>Other: Two plant species recorded from this site are restricted to the Great Sandy Desert bioregion within the NT but are also found in other bioregions and other states (<i>Atriplex flabelliformis</i>, <i>Heliotropium transforme</i>).</p>
WILDLIFE AGGREGATIONS	Significance Rating	International Significance
	Marine turtles	Not applicable
	Seabirds	About 4600 White-winged and Whiskered Terns were recorded during an aerial survey of Lake Mackay in 2001 (Duguid <i>et al.</i> 2005).
	Waterbirds	<p>Total numbers of waterbirds: Significant numbers of birds use Lake Mackay opportunistically following inundation events. During a two hour aerial survey in September 2001, when the lake was inundated, 40 334 birds of at least 21 species were recorded (Duguid <i>et al.</i> 2005).</p> <p>Counts of individual species: Counts of 4,653 Grey Teal and 8,460 unidentified ducks are reported from surveys in 2001 (Duguid <i>et al.</i> 2005).</p> <p>Breeding records: Islands and submerged aquatic plants such as <i>Ruppia tuberosa</i>, provide food and protected breeding sites for waterbirds during periods of inundation.</p>
	Shorebirds	<p>Counts of individual species: Internationally significant counts (> 1% global population; G. Dutson in prep.) of three shorebird species are reported from this site including: 12 000 Banded Stilts; 3262 Black-winged Stilts; and 1295 Red-necked Avocets (Duguid <i>et al.</i> 2005).</p> <p>Breeding records: The site is likely to be an occasional breeding location for the Banded Stilt. About 4400 juveniles were recorded during the aerial survey in 2001. The absence of large colonies of the Silver Gull at the site, which is a predator of Banded Stilt hatchlings, enhances the significance of the site as a breeding area for this species (Duguid <i>et al.</i> 2005).</p>
	Other aggregations	None known
WETLANDS	Significance Rating	National Significance (possible International)
	Ramsar criteria met	Lake Mackay is not listed as a Ramsar site, however Duguid <i>et al.</i> (2005) assessed the lake against criteria for listing as a wetland of international importance under the Ramsar convention and concluded the Lake meets Criterion 1 and possibly Criteria 2, 4, 5 and 6.
	DIWA criteria met	Lake Mackay is not listed in the Directory of Important Wetlands in Australia (DIWA), however Duguid <i>et al.</i> (2005) assessed the lake against criteria for listing and concluded the Lake meets Criteria 1 and 4, and possibly Criterion 5.

LAKE MACKAY - SITE OF CONSERVATION SIGNIFICANCE

	Notes	<p>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).</p> <p>Inundation of the Lake is episodic and results from substantial rainfall events. There are no major marked drainage channels but surface and subsurface water flow from surrounding sandplains and sanddunes feed the lake. The lake is believed to be deeper (maximum 120 cm) and longer-lasting than Lake Amadeus and Lake Neale to the south and substantial areas remained flooded for at least 8 months in 2001 (Duguid 2005). Mound springs may occur in the lake (NRETA 2005).</p>
	Rivers	No information located
FLORA	Significance Rating	Not Significant
	Notes	Restricted range species: One species recorded from the site (<i>Swainsona cyclocarpa</i>) has a restricted range in the NT.
OTHER ENVIRONMENTAL VALUES		<p>Lake Mackay is identified as being significant for biodiversity conservation by Duguid <i>et al.</i> (2005). Lake McKay is identified as a Site of Botanical Significance in White <i>et al.</i> (2000). The NT portion of Lake Mackay is within the proposed Southern Tanami Indigenous Protected Area.</p>
MANAGEMENT ISSUES		<p>Fire: In the period 1997-2005, almost no parts of the site were burnt more than once and no parts of the site were burnt more than four times.</p> <p>Feral animals: No information located</p> <p>Weeds and invasive exotic plants: No priority weeds are reported from this site, but couch grass <i>Cynodon dactylon</i> is likely to be spreading in the site.</p> <p>Other: No information located</p>
MANAGEMENT INFORMATION	NRM groups	Warlpiri Rangers.
	Protected areas	The NT portion of Lake Mackay is within the proposed Southern Tanami Indigenous Protected Area.
	Current management plans	<p>Site-specific plans: No information located.</p> <p>National recovery plans for threatened species: Greater Bilby (Pavey 2006).</p> <p>Other management plans: Australian Weeds Strategy (NRMCC 2007).</p>
	Monitoring programs and research projects	<p>Aerial assisted fire management for the protection of fire sensitive vegetation and culturally significant sites was implemented by the Central Land Council in 2008 on areas to the east of Lake Mackay, on the Lake Mackay Aboriginal Land Trust (J. Young, CLC, pers. comm.).</p> <p>Across the NT, fire is mapped continuously under the North Australia Fire Information Project http://www.firenorth.org.au/nafi/app/init.jsp</p>
	Management recommendations	<p>Establish a survey program as part of the Bioregion Natural Resource Assessment to assess conservation and cultural values of the Lake (NRETA 2005).</p> <p>Develop a conservation management program for the site (NRETA 2005).</p> <p>Survey waterbirds and shorebirds within the site at optimal times during the peak flood events.</p> <p>Develop an integrated natural and cultural resource management plan for the area under the Southern Tanami Indigenous Protected Area development process (J. Young, CLC, pers. comm.).</p>
KEY REFERENCES	Papers and reports	<p>Duguid, A., Barnetson, J., Clifford, B., Pavey, C., Albrecht, D., Risler, J. and McNellie, M. (2005). <i>Wetlands in the arid Northern Territory. A report to the Australian Government Department of the Environment and Heritage on the inventory and significance of wetlands in the arid NT.</i> Northern Territory Government Department of Natural Resources, Environment and the Arts. Alice Springs.</p> <p>White, M., Albrecht, D., Duguid, A., Latz, P. and Hamilton, M. (2000). <i>Plant species and sites of botanical significance in the southern bioregions of the Northern Territory; volume 2: significant sites.</i> A report to the Australian Heritage Commission from the Arid Lands Environment Centre. Alice Springs, Northern Territory of Australia.</p>
	Contributors	<p>Chris Pavey, Biodiversity Conservation, NRETAS, Alice Springs.</p> <p>David Albrecht, Alice Springs Herbarium, NRETAS, Alice Springs.</p>