Lake Lewis and surrounds

Location and Description
Lake Lewis is a large ephemeral saline lake located about 170 km north-west of Alice Springs. The lake is fed by Napperby Creek and other small ephemeral creeks, and when inundated is relatively deep and long-lasting (up to six months). The lake system comprises vast areas of saltpans, claypans and associated saline lakes, and is bounded in the north by Stuart Bluff Range.

Tenure and Land Use
The Site is predominantly on pastoral leasehold land within two pastoral leases (Napperby and Derwent Stations), and Aboriginal freehold land within Ngalurtjú Aboriginal Land Trust lands. The main land use in the Site is pastoral operations. The Tanami Road passes through the Site and Tilmouth Well is within it.

Significance Rating
National Significance

Ecological Values
Lake Lewis is periodically an important site for waterbirds, and probably also for shorebirds. 27 waterbird species are reported from the Site, including significant (at a Northern Territory level) aggregations of Black-winged Stilt and Grey Teal. The Site also supports endemic and restricted range plant species. The lake has an unusual geomorphological setting in arid Australia as it is fed directly by a relatively large river, and has a population of fish when flooded. With the inclusion of the swamps and claypans to the north of Lake Lewis there is a good variety of wetland types in this Site.

Management Issues
Grazing by cattle, spread of buffel and couch grass, and extensive fires may potentially affect the conservation values of the Site.

Condition
The Lake Lewis area is used for cattle grazing and there are some signs of soil erosion.

Current Conservation Initiatives
The Ngalurtjú Aboriginal Land Trust portion of the Site is included within the proposed Southern Tanami Indigenous Protected Area.
### Location

**SOCS Number**: 54 (NT Parks and Conservation Masterplan Map Number 83)

**Latitude/Longitude**: 22° 49´ South, 132° 24´ East (at centre)

**Bioregion**: Great Sandy Desert

**Description**: The boundary for the site follows that defined by White et al. (2000) in listing the lake as a site of botanical significance, with the addition of a 2 km buffer. It has an area of 170 km². The southern edge of the site is bounded by the shoreline of Lake Lewis and associated saline lakes. The northern boundary extends into the intervening alluvial plains and includes the Stuart Bluff Range. Some of the major vegetation communities at the site include bare salt pans, mulga (Acacia aneura) tall sparse-shrubland with grassland understorey, and inland teatree (Melaleuca glomerata) open-shrubland (White et al. 2000). When inundated, the shoreline of the lake supports the aquatic plant (Ruppia tuberosa) in abundance (Duguid, 2005).

Lake Lewis is part of a larger wetland system which includes the Newhaven Lakes, 28 km to the west of the site. The Newhaven Lakes are also identified as a site of high conservation significance in the NT.

### Threatened Species

**Significance Rating**: Regional Significance

**Threatened plants and animals**

- **Vertebrates**
  - Australian Bustard (Ardeotis australis) (-/VU)
  - Emu (Dromaius novaehollandiae) (-/VU)
  - Brush-tailed Mulgara (Dasycercus blythi) (VU/VU)
  - Southern Marsupial Mole (Notoryctes typhlops) (EN/VU)

Another threatened species recorded from the site is believed to now be locally extinct (Bilby (Macrotis lagotis)).

### Endemic Species

**Significance Rating**: Not Significant

**Notes**: Endemic to the NT: Three plant species recorded from this site are endemic to the NT (Eragrostis subtilis, Sclerolaena sp. Saline soils and Triodia hubbardii).

Other: One plant species is only found in the Great Sandy Desert bioregion within the NT but is also found in other states (Swainsona laciniata).

### Wildlife Aggregations

**Significance Rating**: Regional Significance (possible National)

**Marine turtles**: Not applicable

**Seabirds**: None known

**Waterbirds**: **Total numbers of waterbirds**: The lake periodically supports significant populations of waterbirds (Duguid 2005). 27 waterbird species are reported for the site, and during an opportunistic 30 minute survey during an inundation event in September 2001, 13 170 birds were counted at the site (Duguid 2005). The lake had been filled in February 2000, and the surface waters had receded considerably by the time the survey was carried out, so it is likely that waterbird counts would be higher during periods of peak inundation (Duguid 2005).

**Counts of individual species**: During aerial surveys in September 2001, 1000 Black winged stilts were recorded at the site (Duguid 2005). Groups of 4000 and 8000 Grey Teals were also counted at two locations on the lake during the same survey.

Survey effort to date has been opportunistic and does not adequately document the site’s value for wetland birds.

**Shorebirds**: Four shorebird species are recorded from the site.

**Other aggregations**: None known

### Wetlands

**Significance Rating**: National Significance (possible International)

**Ramsar criteria met**: Lake Lewis is not listed as a Ramsar site however Duguid et al. (2005) assessed the Lake against criteria for listing as a wetland of international importance under the Ramsar convention and concluded that the site possibly meets Criteria 1 and 5.

**DIWA criteria met**: Lake Lewis is not listed in the Directory of Important Wetlands in Australia (DIWA) however Duguid et al. (2005) assessed the lake against criteria for listing and concluded that the site meets Criteria 1 and 3.

**Notes**: Saline groundwater discharges into the Lake and inundation occurs through surface runoff following heavy rainfall. Inundation can last for up to 6 months. The lake is considered to be part of a larger wetland aggregate/system that includes the Newhaven Lakes (Duguid 2005).

Extinct mound springs are thought to occur in the site (White et al. 2000).

**Rivers**: Napperby Creek is one of a series of large periodic rivers draining the Burt Plain, all of which run towards Lake Lewis. Napperby Creek is the only watercourse with a channel that connects to the lake.
### LAKE LEWIS AND SURROUNDS - SITE OF CONSERVATION SIGNIFICANCE

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<th>Significance Rating</th>
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| Notes               | **Restricted range species:** Two plant species reported for the site have restricted ranges within the NT (*Swainsona cyclocarpa* and *Daviesia eremaea*).  
**Relictual species:** One plant recorded at the site, *Schoenus centralis*, is a relictual sedge confined to rocky creek beds and seepage areas in the NT. The type location is within the site and this is one of only two locations known for the NT. |

| FLORA               | Lake Lewis is identified as being significant for biodiversity conservation by Duguid et al. (2005).  
Lake Lewis is identified as a Site of Botanical Significance in White et al. (2000).  
This lake system is believed to be the only salt lake in the NT with fish. The Spangled Grunter *Leiopotherapon unicolor* occurs in the lake and catchment area (Duguid 2005).  
Five migratory species recorded for this site are listed under international conventions or bilateral agreements protecting migratory animals. |

| OTHER ENVIRONMENTAL VALUES | Fire: No parts of the site were burnt more than twice in the period 1997-2005, but large-scale fires can occur. Changes in fire regime may affect conservation values at the site (NRETA 2005).  
Feral animals: No information located  
Weeds and invasive exotic plants: Caltrop *Tribulus terrestris* (category B weed) and buffel grass *Cenchrus ciliaris* occurs within the site. Couch grass *Cynodon dactylon* is also likely to be spreading in the site.  
Other: The lake area is currently grazed by cattle and over-grazing of the site may be leading to erosion. |

| MANAGEMENT ISSUES | NRM groups | Warlpiri Rangers. |
|                  | **Protected areas** | The Ngalurrtnj Aboriginal Land Trust portion of the Site is included within the proposed Southern Tanami Indigenous Protected Area. |
|                  | **Current management plans** | Site-specific plans: No information located.  
National recovery plans for threatened species: Southern Marsupial Mole (Benshemeshe 2006); Brush-tailed Mulgara (SA Department of the Environment and Heritage in prep.).  
Other management plans: Australian Weeds Strategy (NRMMC 2007). |
|                  | **Monitoring programs and research projects** | There are eleven Tier 1 rangeland monitoring points within this site (Karfs and Bastin 2001).  
|                  | **Management recommendations** | Investigate listing of Lake Lewis in the DIWA (and possibly Ramsar) (NRETA 2005).  
Establish a survey program to assess the conservation and cultural values of the site and develop appropriate conservation management programs (NRETA 2005).  
Establish cooperative conservation and cultural heritage management with landholders and other stakeholders (J. Young, CLC, pers. comm.).  
Investigate opportunities for developing a formal Conservation Agreement or park acquisition with landholder in the longer term (NRETA 2005). |
*Plant species and sites of botanical significance in the southern bioregions of the Northern Territory; volume 2: significant sites.* A report to the Australian Heritage Commission from the Arid Lands Environment Centre. Alice Springs, NT. |
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