

Lake Bindegolly

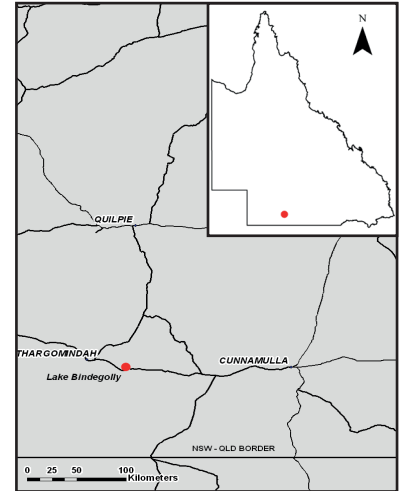


Study Area

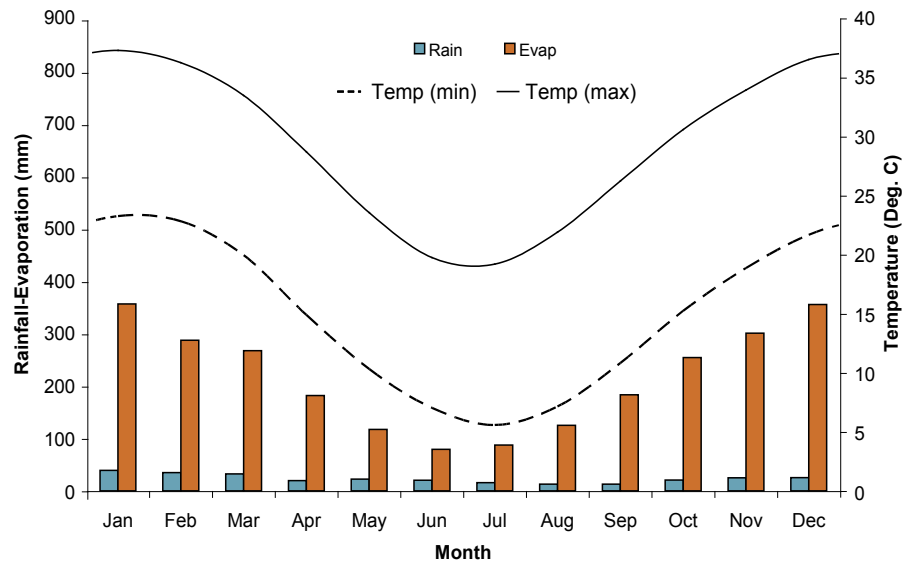
Lake Bindegolly is located approximately 40 km east of Thargomindah, South-West Queensland.

It is part of Lake Bindegolly National Park which encompasses two hydrologically connected lakes systems (Bindegolly and Toomarro) and a number of smaller ephemeral lakes.

Lake Bindegolly is an example of a semi-arid floodplain lake in the Mulga Lands Bioregion.



Climate¹



The study area is situated within a semi-arid climatic region with no distinct wet or dry season. Evaporation exceeds rainfall in every month. The average annual rainfall for the area is 279 mm.

Landform and Inundation	Shallow lake on gently undulating sand plains Permanently inundated lake from overland flow Lake may dry out in times of prolonged drought, water is fresh to brackish, salinity increases as water levels decline ²
Soils³	Hydrosols and Rudosols
Vegetation⁴	<i>Halosarcia</i> spp. open succulent shrubland on alluvium (RE 6.3.10)
Geology⁵	Quaternary alluvium
Disturbance	No effective disturbance except grazing by hoofed animals



Australian Government



Queensland Government

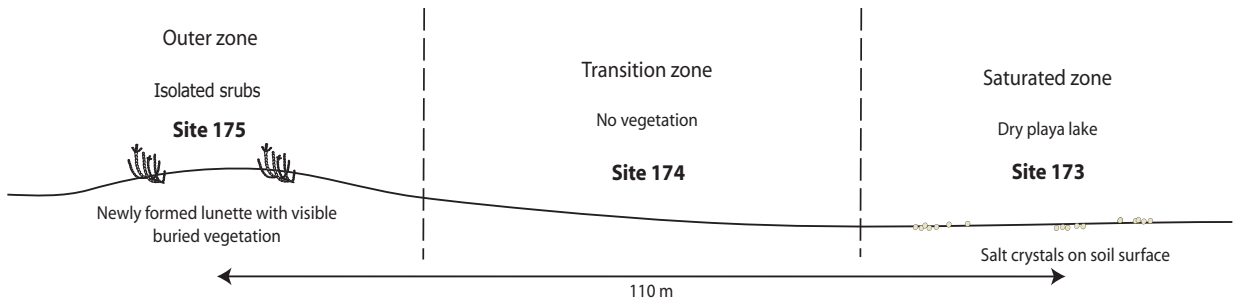
Queensland
Wetlands Program

Location

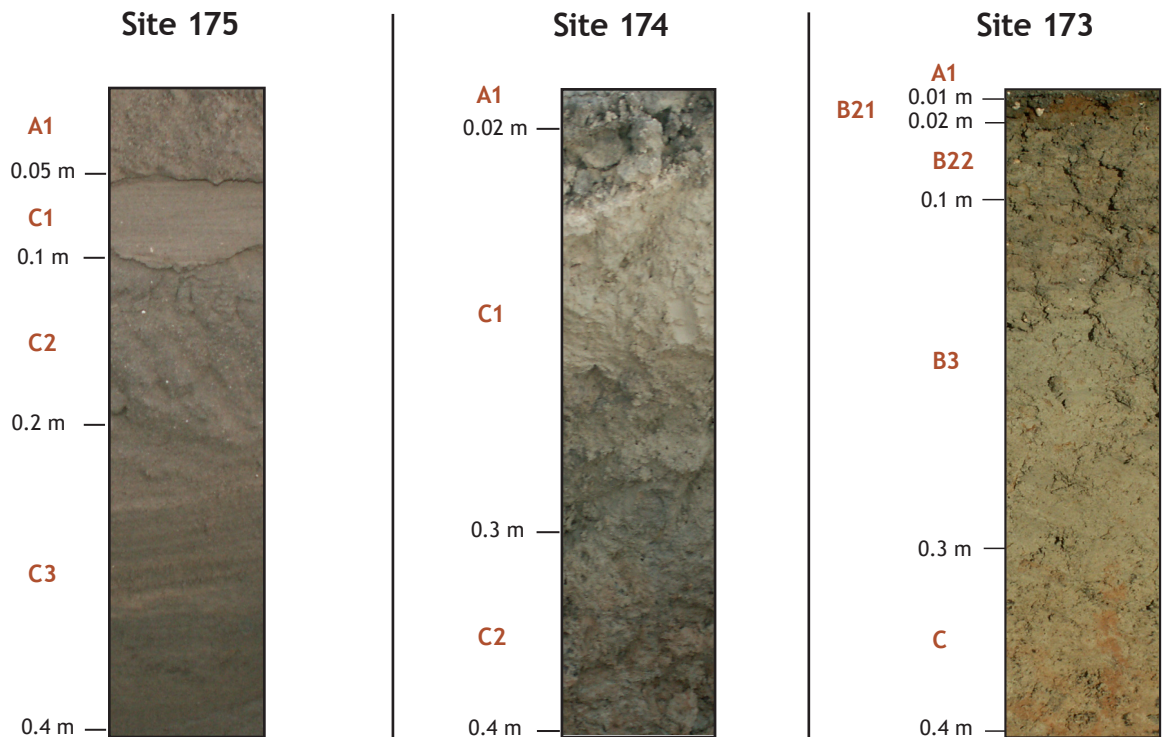
GDA94 • MGA Coordinates : 223204 E, 6892367 N, Zone 55 • Lat/Long : -28.06525 S, 144.18375 E



Landscape Diagram



Soil Profiles



Soil Indicators Present (within 0.3 m of surface)

Indicator ⁶	Site 173	Site 174	Site 175
Organic materials and organic carbon (OC)*	No organic materials OC: 0.98%	No organic materials OC: 0.51%	No organic materials OC: 1.73%
Matrix colour	Dark grey to olive grey	Dark grey to brownish grey	Dark grey to greyish brown
Chroma (thickness of layer)**	Present (0.3 m)	Present (0.3 m)	Present (0.3 m)
Mottles and Segregations	Many <5 mm prominent brown mottles Common <5 mm distinct brown mottles Few <5 mm faint brown mottles Common <2 mm saline crystals Very few <2 mm calcareous soft segregations	Many <2 mm saline crystals	Very few <5 mm faint brown mottles
Depth to groundwater	Not present	Not present	Not present
Ferruginous root channel and pore linings	Not present	Not present	Not present
pH ⁷	Moderately alkaline	Strongly alkaline	Moderately alkaline
Texture	Silty light clay to silty light medium clay	Silty light clay	Fine sandy clay loam to silty light clay
Acid sulfate material	Not present	Not present	Not present
Electrical Conductivity (EC) ⁷	Highly saline	Highly saline	Highly saline

*Organic carbon % (Dumas method) and pH taken from surface (0-0.1 m)

**Chroma value is less than or equal to 2

Summary of Field Observations

- Organic carbon content increases moving into the saturated zone, whilst there is no visible accumulation of plant materials this can be attributed to the presence of microscopic algae
- A large organic carbon level measured within the outer zone is attributed to the presence of visible buried vegetation from the formation of a new lunette
- Faint, distinct and prominent mottling all indicative of water fluctuation throughout the soil profiles at all sites
- Evaporative salt profiles at all sites
- Higher EC level in site outside of wetland attributed to wind blown salts being deposited on the new lunette
- Manganiferous soft segregations at depth in the transition and saturated zone indicative of periodic drying



Soil Morphology

Site 173			Classification				Australian Soil Classification				Epicalcareous, Hypersalic Hydrosol		
			Boundary				Landform Element				Playa		
			Texture				Morphological Type				Flat		
Horizon	Depth (m)		Boundary	Texture	Colour	Mottles	Coarse Fragments	Structure	Segregations				
A1	0 to .01		sharp to	silty light clay	dark grey (2.5Y41)	none	none	strong <2 mm granular	common (10-20%) fine (<2 mm) saline crystals, very few (<2%) fine (<2 mm) calcareous soft segregations				
B21	.01 to .02		sharp to	silty light medium clay	greyish brown (2.5Y52)	many (20-50%) fine (<5 mm) prominent brown mottles	none	moderate 2-5 mm subangular blocky	very few (<2%) fine (<2 mm) calcareous soft segregations				
B22	.02 to .1		clear to	silty light clay	light brownish grey (2.5Y62)	common (10-20%) fine (<5 mm) distinct brown mottles	none	weak 2-5 mm subangular blocky	very few (<2%) fine (<2 mm) calcareous soft segregations				
B3	.1 to .3		clear to	silty light clay	light olive grey (5Y62)	few (2-10%) fine (<5 mm) faint brown mottles	very few (<2%) angular shell small pebbles (2-6 mm)	massive	very few (<2%) fine (<2 mm) calcareous soft segregations				
C	.3 to .4		clear to	-	light brownish grey (2.5Y63)	very few (<2%) fine (<5 mm) faint orange mottles	none	massive	very few (<2%) fine (<2 mm) calcareous soft segregations				
2B	.4 to .9		-	-	light brownish grey (2.5Y63)	common (10-20%) medium (5-15 mm) distinct orange mottles	none	massive	few (2-10%) medium (2-6 mm) mangiferous soft segregations, very few (<2%) fine (<2 mm) calcareous soft segregations				
Site 174			Classification				Australian Soil Classification				Haplic, Hypersalic Hydrosol		
			Boundary				Landform Element				Playa		
			Texture				Morphological Type				Midslope		
Horizon	Depth (m)		Boundary	Texture	Colour	Mottles	Coarse Fragments	Structure	Segregations				
A1	0 to .02		-	silty light clay	dark grey (2.5Y41)	none	none	massive	many (20-50%) fine (<2 mm) saline crystals				
C1	.02 to .3		-	silty light clay	light brownish grey (2.5Y62)	none	none	massive	none				
C2	.3 to .4		-	silty light clay	light brownish grey (10YR62)	common (10-20%) fine (<5 mm) faint orange mottles	none	massive	few (2-10%) medium (2-6 mm) mangiferous soft segregations				

Site 175		Classification			Australian Soil Classification				Hypersalic Rudosol			
		Boundary			Colour			Mottles		Landform Element		
		Texture			Morphological Type				Lunette			
		Depth (m)			Mottles				Midslope			
Horizon	Depth (m)	Boundary	Texture	Colour	Mottles	Coarse Fragments	Structure	Segregations	Consistence			
A1	0 to .05	sharp to	silty light clay	dark grey (10YR4/1)	none	few (2-10%) rounded shell small pebbles (2-6 mm)	single grain	none	-			
C1	.05 to .1	sharp to	fine sandy light clay	dark grey (10YR4/1)	none	none	single grain	none	-			
C2	.1 to .2	sharp to	fine sandy clay loam	dark grey (2.5Y/4)	none	very few (<2%) rounded shell small pebbles (2-6 mm)	single grain	none	-			
C3	.2 to .4	-	fine sandy clay loam	greyish brown (2.5Y5/2)	very few (<2%) fine (<5 mm) faint brown mottles	none	single grain	none	-			

Soil Chemistry

Site	Depth (m)	pH*	EC	Cl	NO3-N	TC**	TN**	Ca	Mg	Na	K	ESP	CEC
			dS/m	mg/kg	mg/kg	%	%	meq/100g	meq/100g	meq/100g	meq/100g	%	meq/100g
173	0.00-0.10	8.2	13.6	16700	30	0.98	0.12	7.22	6.8	17.8	3.14	52.4	34
	0.20-0.30	8.7	9.55	12500	25	0.15	<0.03	3.28	6.89	17.6	4	53.3	33
	0.40-0.50	8.7	9.13	11300	23	0.06	0.03	2.85	7.5	19.1	3.83	56.2	34
174	0.00-0.10	8.6	22.3	33900	59	0.51	0.06	3.34	5.11	7.37	2.46	40.9	18
	0.20-0.30	8.6	9.9	14500	13	0.11	<0.03	2.26	5.57	14.3	3.43	55	26
	0.30-0.40	8.8	9.28	14000	9	0.12	<0.03	2.91	6.71	18.4	3.43	57.9	32
175	0.00-0.10	8.1	31.1	48700	81	1.73	0.19	-----	-----	-----	-----	-----	-----
	0.20-0.30	8.1	4.32	1470	150	2	0.23	-----	-----	-----	-----	-----	-----

*Aqueous 1:5 **Total carbon and total nitrogen

References

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