

Murrawondah Lakes



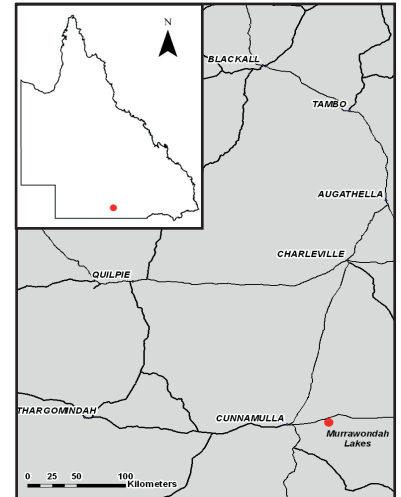
Queensland
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Study Area

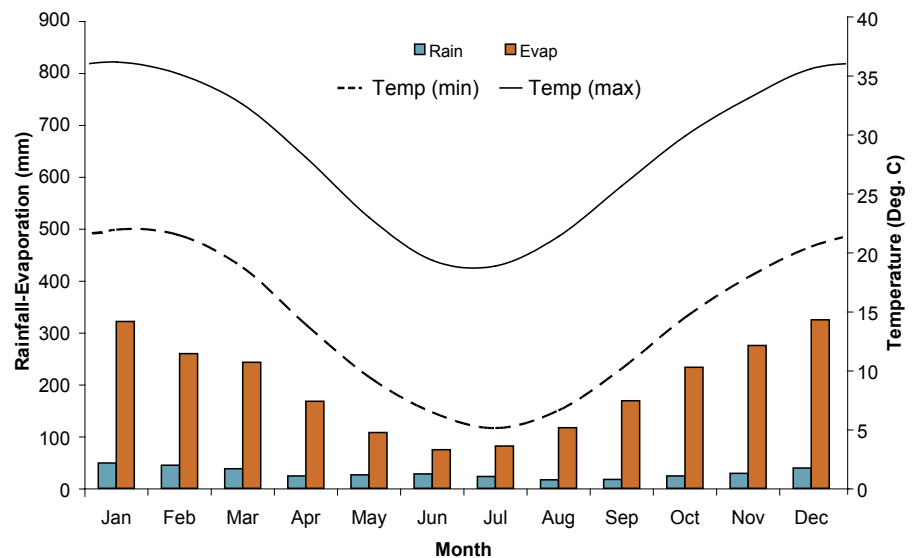
The “Murrawondah lakes” are located approximately 30 km east of Cunnamulla, and consist of three large ephemeral claypan lakes.

These freshwater lakes are intermittently inundated and at the time of sampling had not been inundated for over 10 years.

This study area 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 and dry season. Evaporation exceeds rainfall in every month. The average annual rainfall for the area is 354 mm.

Landform and Inundation	Lake on plains of slightly gilgaied cracking clays Freshwater intermittently inundated from overland flow
Soils²	Vertosols and Dermosols
Vegetation³	<i>Eleocharis pallens</i> with or without short grasses with or without <i>Eragrostis australasica</i> open herbland on clays, associated with ephemeral lakes, billabongs and permanent waterholes (RE 6.3.11)
Geology⁴	Quaternary alluvium
Disturbance	No effective disturbance except grazing by hooved animals



Australian Government

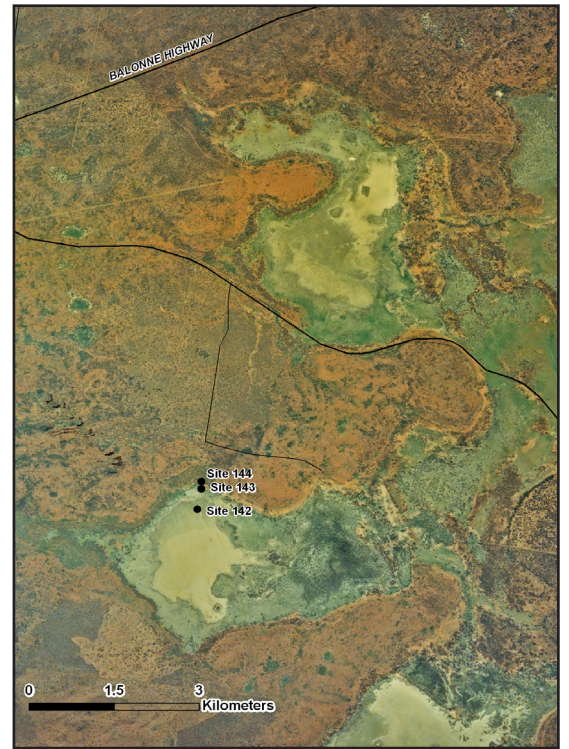


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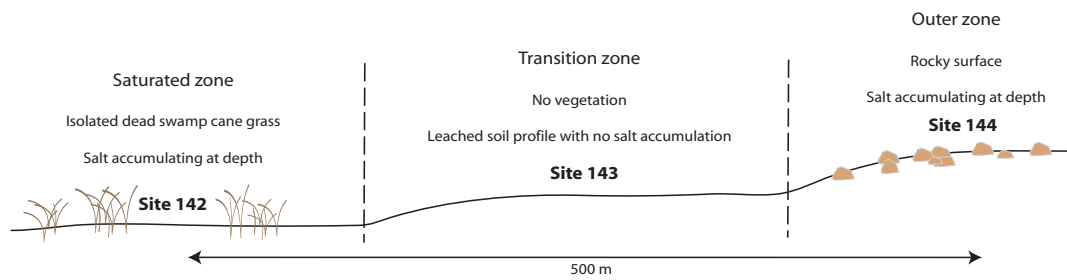
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Location

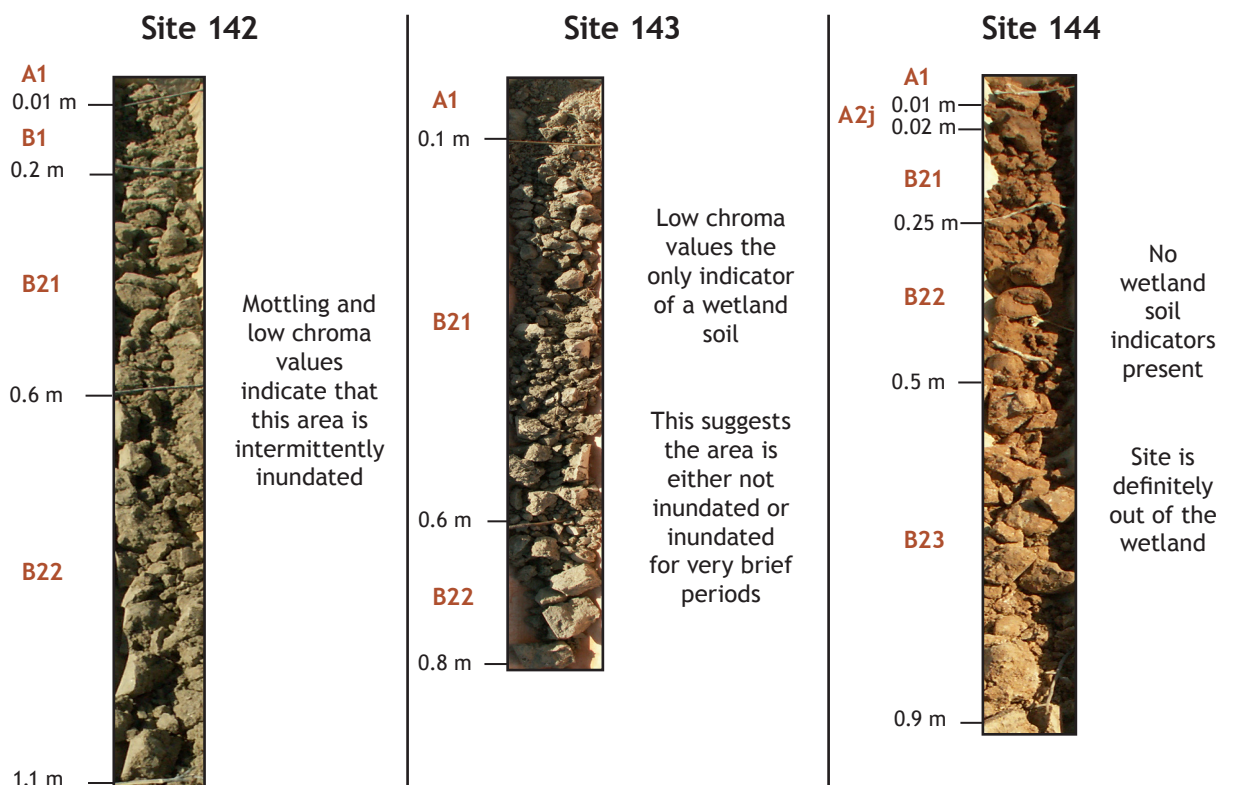
GDA94 • MGA Coordinates : 406613 E, 6893775 N, Zone 55 • Lat/Long : -28.07815 S, 146.04953 E



Landscape Diagram



Soil Profiles



Soil Indicators Present (within 0.3 m of surface)

Indicator ⁵	Site 142	Site 143	Site 144
Organic materials and organic carbon (OC)*	No organic materials OC: 0.23%	No organic materials OC: 0.53%	No organic materials OC: 0.44%
Matrix colour	Brownish grey	Greyish brown	Brown
Chroma (thickness of layer)**	Present (0.29 m)	Present (0.3 m)	Not present
Mottles and Segregations	Few <5 mm faint brown mottles Common 5-15 mm faint brown mottles Very few <2 mm calcareous soft segregations Very few <2 mm calcareous nodules	Few <2 mm calcareous concretions	Very few <2 mm gypseous crystals
Depth to groundwater	Not present	Not present	Not present
Ferruginous root channel and pore linings	Not present	Not present	Not present
pH ⁶	Mildly alkaline	Strongly alkaline	Mildly alkaline
Texture	Silty light clay	Medium clay	Fine sandy clay loam to medium clay
Acid sulfate material	Not present	Not present	Not present
Electrical Conductivity (EC) ⁶	Moderately saline	Non saline	Slightly 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

- Low organic carbon levels indicative of drier, hotter conditions with high decomposition rates
- Presence of *Erogostis australasica* suggest that the area is intermittently inundated
- Low chroma values indicate a reduced environment within the saturated and transition zones
- Faint mottling indicative of water fluctuation throughout the soil profile in the saturated zone
- Manganiferous soft segregations at depth are indicative of periodic inundation in the saturated zone



October 2007



September 2008

References

1. Queensland Department of Natural Resources and Water (2008). SILO [online]. Available at <http://www.longpaddock.qld.gov.au/silo/> [accessed 5/11/2007].
2. Isbell RF (2002). *The Australian Soil Classification*. CSIRO Publishing, Collingwood, Victoria, revised edition.
3. EPA (2008) *Regional Ecosystems*. [online]. Available at http://www.epa.qld.gov.au/nature_conservation/biodiversity/regional_ecosystems/ [accessed 28/06/08].
4. Bureau of Mineral Resources (1971). *Cunnamulla: Australia 1:250,000 Geological Series*, Bureau of Mineral Resources, Canberra.
5. Bryant KB, Wilson PR, Biggs AJW, Brough DM and Burgess JW (2008). *Soil Indicators of Queensland Wetlands: State-wide assessment and methodology*. Queensland Department of Natural Resources and Water. Brisbane.
6. Hazelton P and Murphy B (2007). *Interpreting Soil Test Results: What do all the numbers mean?*. [2nd ed]. CSIRO publishing. Collingwood Victoria.

Soil Morphology

Site 142			Classification				Australian Soil Classification				Calcareous, Calcarosolic, Oxyaquic Hydrosol		
			Landform Element				Swamp				Flat		
			Morphological Type				Swamp				Flat		
Horizon	Depth (m)	Boundary	Texture	Colour	Mottles	Coarse Fragments	Structure	Segregations	Consistence				
A1	0 to .01	-	silty light clay	pale brown (10YR63)	few (2-10%) fine (<5 mm) faint brown mottles	none	massive	none	-				
B1	.01 to .2	-	silty light clay	light brownish grey (10YR62)	common (10-20%) medium (5-15 mm) faint brown mottles	none	strong 2-5 mm subangular blocky	none	-				
B21	.2 to .6	-	silty light clay	light brownish grey (10YR62)	none	none	weak 2-5 mm subangular blocky	very few (<2%) fine (<2 mm) calcareous, very soft segregations, very few (<2%) fine (<2 mm) calcareous nodules	-				
B22	.6 to 1.1	-	silty light clay	greyish brown (10YR52)	none	none	moderate 5-10 mm subangular blocky	very few (<2%) medium (2-6 mm) manganiferous soft segregations, very few (<2%) fine (<2 mm) calcareous soft segregations	-				
B23	1.1 to 1.5	-	medium clay	light brownish grey (10YR62)	none	none	strong 2-5 mm lenticular	few (2-10%) medium (2-6 mm) calcareous soft segregations, very few (<2%) fine (<2 mm) manganiferous soft segregations	-				
Site 143			Classification				Australian Soil Classification				Sodic, Hypocalcic, Grey Dermosol		
			Landform Element				Swamp				Simple slope		
			Morphological Type				Swamp				Simple slope		
Horizon	Depth (m)	Boundary	Texture	Colour	Mottles	Coarse Fragments	Structure	Segregations	Consistence				
A1	0 to .1	clear to	medium clay	greyish brown (2.5Y52)	none	none	weak 2-5 mm granular, moderate <2 mm granular	none	-				
B21	.1 to .6	gradual to	medium clay	greyish brown (2.5Y52)	none	none	moderate 10-20 mm angular blocky	few (2-10%) fine (<2 mm) calcareous concretions	-				
B22	.6 to .8	-	medium heavy clay	greyish brown (2.5Y52)	none	none	weak 10-20 mm prismatic	few (2-10%) fine (<2 mm) calcareous concretions	-				

Site 144	Classification			Australian Soil Classification				Sodic, Hypocalcic, Brown Dermosol	
				Landform Element				Hillslope	
				Morphological Type				Lower slope	
Horizon	Depth (m)	Boundary	Texture	Colour	Mottles	Coarse Fragments	Structure	Segregations	Consistence
A1	0 to .01	abrupt to	fine sandy clay loam	brown (7.5YR44)	none	none	massive	none	-
A2j	.01 to .02	sharp to	fine sandy clay loam	brown (7.5YR43)	none	none	massive	none	-
B21	.02 to .25	gradual to	medium clay	brown (7.5YR43)	none	none	strong 5-10 mm subangular blocky	very few (<2%) fine (<2 mm) gypseous crystals	-
B22	.25 to .5	diffuse to	medium clay	brown (7.5YR44)	none	none	moderate 5-10 mm lenticular	very few (<2%) fine (<2 mm) gypseous crystals	-
B23	.5 to .9	diffuse to	medium clay	brown (7.5YR54)	many (20-50%) medium (5-15 mm) distinct grey mottles	none	moderate 5-10 mm subangular blocky	few (2-10%) fine (<2 mm) calcareous crystals	-
B24	.9 to 1.3	-	medium clay	pale brown (10YR63)	common (10-20%) fine (<5 mm) distinct brown mottles	none	moderate 5-10 mm lenticular	common (10-20%) medium (2-6 mm) gypseous crystals, few (2-10%) fine (<2 mm) manganiferous laminae	-

Soil Chemistry

Site	Depth (m)	pH*	EC (dS/m)	Cl (mg/kg)	NO3-N (mg/kg)	TC%**	TN%**
142	0.00-0.10	7.8	0.87	1260	3	0.23	0.04
	0.20-0.30	8.3	6.01	9080	9	0.12	<0.03
	0.40-0.50	8.5	6.4	9470	1	0.11	<0.03
143	0.00-0.10	8.8	0.15	55	4	0.53	0.06
	0.20-0.30	9.3	0.56	192	63	0.42	0.05
	0.40-0.50	9.4	0.77	578	14	0.4	0.04
144	0.00-0.10	7.5	0.34	406	1	0.44	0.05
	0.20-0.30	8.3	1.96	2830	6	0.42	0.04
	0.40-0.50	8.1	2.85	2840	7	0.34	<0.03

*Aqueous 1:5

**Total carbon and total nitrogen



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