

Lake Machattie

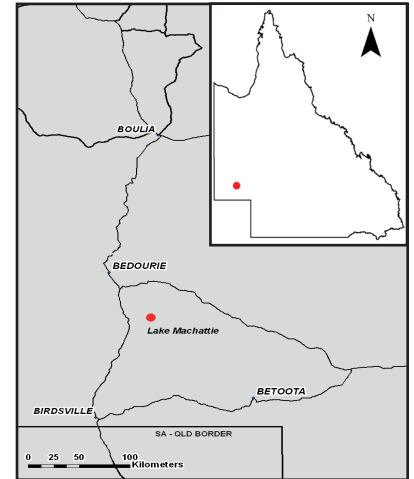


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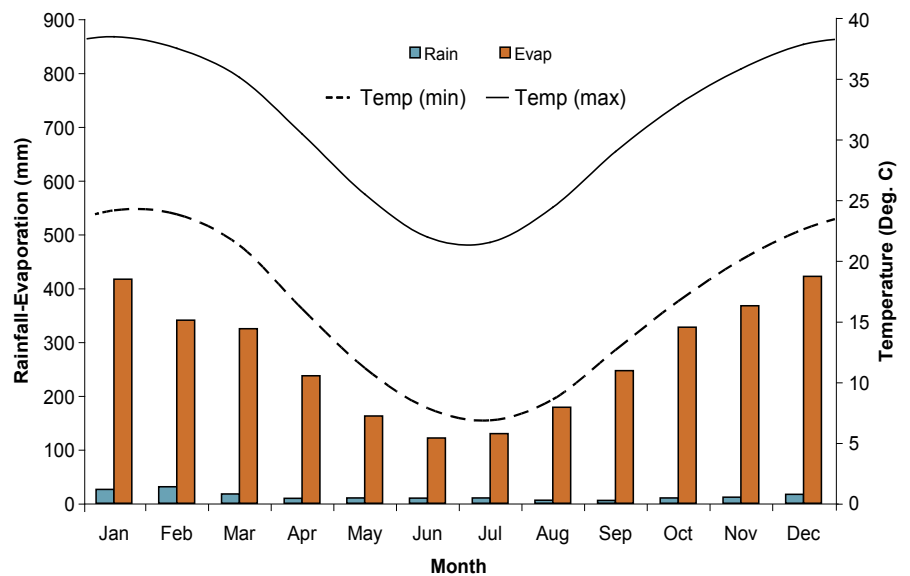
Study Area

Lake Machattie is located approximately 130 km north of Birdsville along the Eyre Developmental Road, South-West Queensland.

This wetland is an example of an arid floodplain lake in the Channel County Bioregion.



Climate¹



The study area is situated within an arid climatic region with no distinct wet and dry season. Evaporation exceeds rainfall in every month. The average annual rainfall for the area is 161 mm.

Landform and Inundation	Lake on a floodplain Freshwater inundation from overland flow Water can become saline when water levels decline
Soils²	Hydrosols
Vegetation³	Sparse herbland on floodplain lakes (RE 5.3.22)
Geology⁴	Quaternary alluvium
Disturbance	No effective disturbance except grazing by hoofed animals



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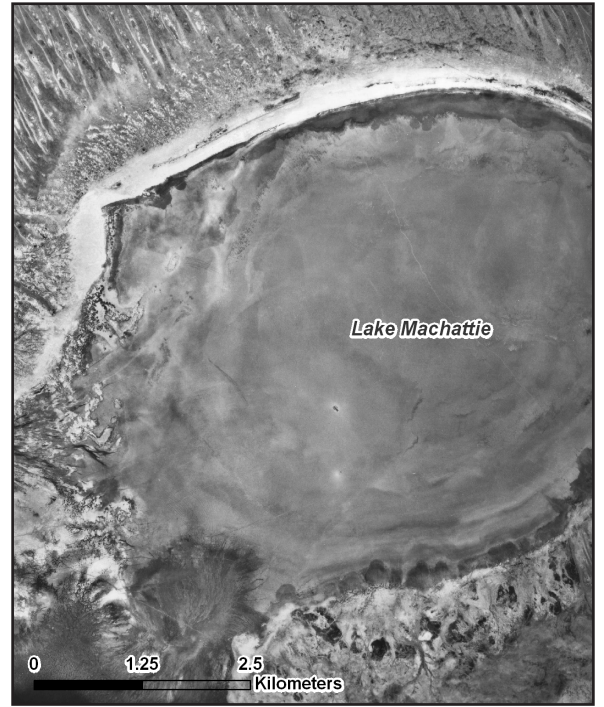


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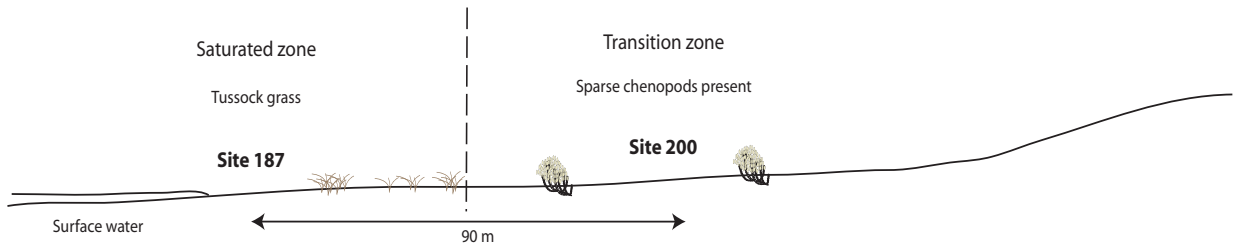
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Location

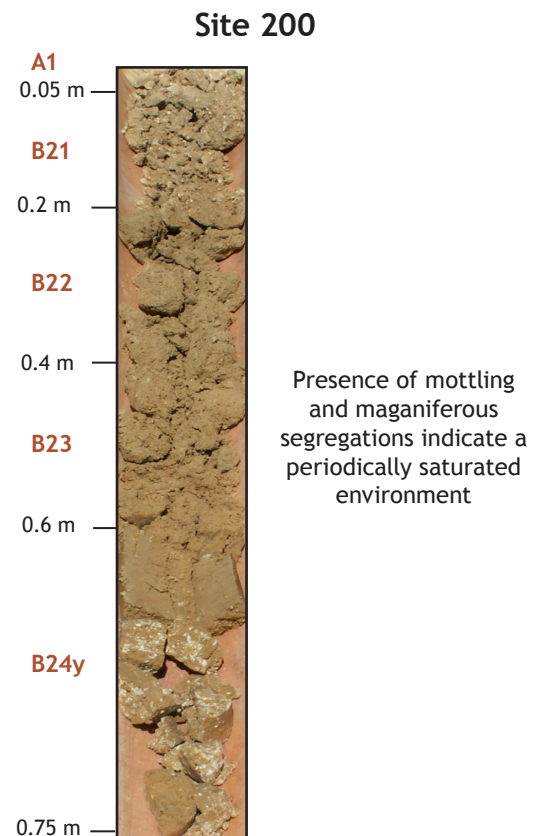
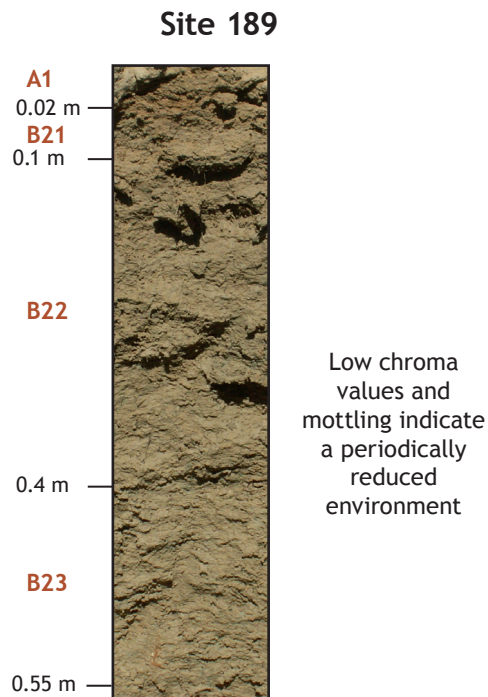
GDA94 • MGA Coordinates : 382995 E, 7252460 N, Zone 54 • Lat/Long : -24.83830 S, 139.84206 E



Landscape Diagram



Soil Profiles



Soil Indicators Present (within 0.3 m of surface)

Indicator ⁵	Site 189	Site 200
Organic materials and organic carbon (OC)*	No organic materials OC: 0.25%	No organic materials OC: 0.25%
Matrix colour	Brownish grey	Brown
Chroma (thickness of layer)**	Present (0.3 m)	Not present
Mottles and Segregations	Common 5-15 mm distinct brown mottles Few 5-15 mm distinct gley mottles	Few <5 mm faint grey mottles Very few <5 mm faint grey mottles Few 2-6 mm manganiferous soft segregations
Depth to groundwater	Not present	Not present
Ferruginous root channel and pore linings	Not present	Not present
pH ⁶	Mildly alkaline	Neutral
Texture	Light clay to silty light clay	Light clay to medium clay
Acid sulfate material	Not present	Not present
Electrical Conductivity (EC) ⁶	Slightly saline	Non 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

- Evaporative salt profile within the saturated zone
- Low chroma values and mottling suggests water fluctuation throughout profile and a periodically reduced environment in saturated zone
- *Eragostis australascia* indicative of a periodically inundated environment
- Manganiferous soft segregations and mottling in transition zone suggest a periodically saturated environment

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 (1972). *Machattie: 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 189		Classification				Australian Soil Classification				Eutrophic, Tenosolic, Redoxic Hydrosol									
		Landform Element				Landform Element				Lake									
		Morphological Type				Morphological Type				Flat									
Horizon	Depth (m)	Boundary	Texture	Colour	Mottles	Coarse Fragments	Structure	Segregations	Consistence	Horizon	Depth (m)	Boundary	Texture	Colour	Mottles	Coarse Fragments	Structure	Segregations	Consistence
A1	0 to .02	-	light clay	greyish brown (2.5Y52)	none	none	massive	none	-	B21	.02 to .1	-	silty light clay	light brownish grey (2.5Y62)	common (10-20%) medium (5-15 mm) distinct brown mottles	none	massive	none	-
B22	.1 to .4	-	silty light clay	light brownish grey (2.5Y62)	few (2-10%) medium (5-15 mm) distinct grey mottles	none	massive	none	-	B23	.4 to .55	-	silty light clay	light brownish grey (2.5Y63)	few (2-10%) fine (<5 mm) faint grey mottles	none	massive	very few (<2%) fine (<2 mm) calcareous soft segregations	-

Site 200		Classification				Australian Soil Classification				Eutrophic, Kandosolic, Oxyaquic Hydrosol									
		Landform Element				Landform Element				Lake									
		Morphological Type				Morphological Type				Flat									
Horizon	Depth (m)	Boundary	Texture	Colour	Mottles	Coarse Fragments	Structure	Segregations	Consistence	Horizon	Depth (m)	Boundary	Texture	Colour	Mottles	Coarse Fragments	Structure	Segregations	Consistence
A1	0 to .05	clear to	medium clay	brown (10YR53)	none	none	weak 5-10 mm subangular blocky	none	-	B21	.05 to .2	gradual to	light medium clay	pale brown (10YR63)	few (2-10%) fine (<5 mm) faint grey mottles	none	weak 2-5 mm angular blocky	few (2-10%) medium (2-6 mm) manganese soft segregations	-
B22	.2 to .4	gradual to	light clay	light yellowish brown (10YR64)	very few (<2%) fine (<5 mm) faint grey mottles	none	weak <2 mm lenticular	none	-	B23	.4 to .6	clear to	medium heavy clay	brownish yellow (10YR65)	none	none	weak <2 mm lenticular	none	-
B24y	.6 to .75	-	medium heavy clay	brownish yellow (10YR65)	very few (<2%) fine (<5 mm) distinct orange mottles	none	weak <2 mm lenticular	common (10-20%) fine (<2 mm) gypseous crystals	-										

Soil Chemistry

Site	Depth (m)	pH*	EC (dS/m)	Cl (mg/kg)	NO3-N (mg/kg)	TC%**	TN%**
189	0.00-0.10	7.4	2.41	2300	4	0.25	0.03
	0.20-0.30	8.9	0.14	42	<1	0.12	<0.03
	0.40-0.50	9.1	0.15	23	<1	0.11	<0.03
200	0.00-0.10	7.3	0.11	25	21	0.25	0.03
	0.20-0.30	8.8	0.13	22	1	0.08	<0.03
	0.40-0.50	9	0.26	20	1	0.09	<0.03

*Aqueous 1:5

**Total carbon and total nitrogen



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