

Eubenangee Swamp

Southern Transect



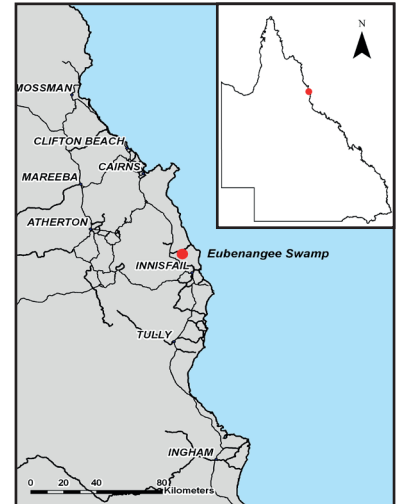
Queensland
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Study Area

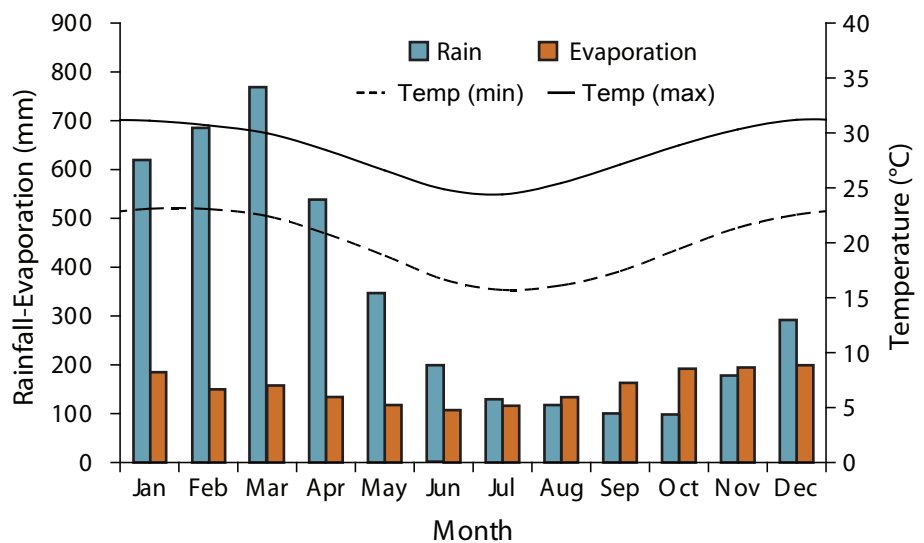
Eubenangee Swamp is located 20 km north of Innisfail along the Bramston Beach Road, Northern Queensland.

The majority of the site falls within the Eubenangee Swamp National Park. There were two study areas undertaken at Eubenangee, located at the northern and southern sections of the swamp.

Eubenangee swamp is an example of a coastal and sub-coastal floodplain grass, sedge, herb swamp with organic soils in the Wet Tropics Bioregion.



Climate¹



The study area is situated within a tropical/equatorial climatic region with a distinct wet and dry season. Rainfall exceeds evaporation in the majority of months. The average annual rainfall for the area is 4065 mm.

Landform and Inundation	Closed depression on alluvium Freshwater permanent and seasonally inundated areas from overland flow
Soils²	Organosols, Hydrosols and Kandosols
Vegetation³	<i>Melaleuca quinquenervia</i> and/or <i>Melaleuca cajuputi</i> closed forest to shrubland on poorly drained alluvial plains (RE 7.3.5)
Geology⁴	Quaternary alluvium and minor colluvial deposits
Disturbance	Disturbed by a residential development upslope of transect which has caused some depositional material to settle on the fringes of the wetland



Australian Government



Queensland Government

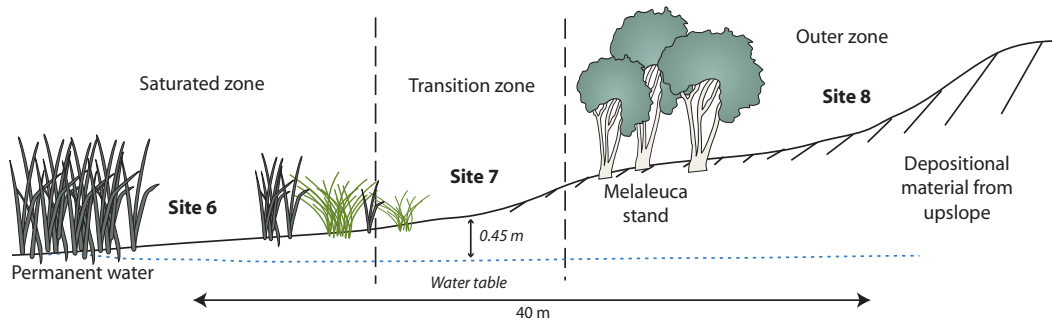
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Location

GDA94 • MGA Coordinates : 391047 E, 8070705 N, Zone 55 • Lat/Long : -17.44697 S, 145.97400 S

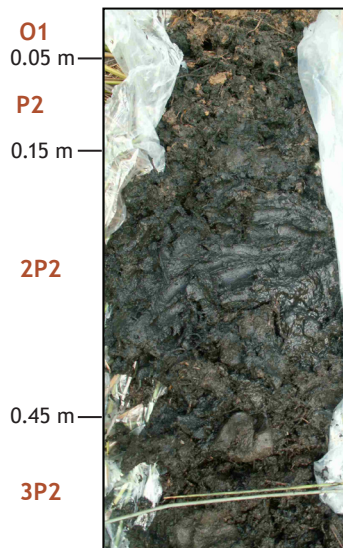


Landscape Diagram



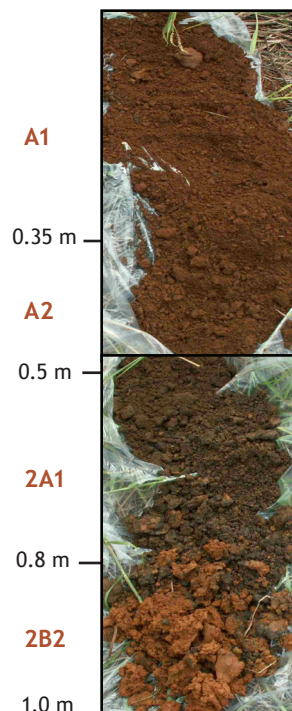
Soil Profiles

Site 6



Dark peaty material typical of waterlogged environments

Site 8



No evidence of wetland soil indicators
Profile is significantly influenced by depositional material from upslope

Soil Indicators Present (within 0.3 m of surface)

Indicator ⁵	Site 6	Site 7	Site 8
Organic materials and organic carbon (OC)*	Organic materials to 0.3 m OC: 24.3%	Organic materials 0.2 m OC: 7.47%	No organic materials OC: 3.75%
Matrix colour	Dark brown to black	Dark brown to black	Yellowish red
Chroma (thickness of layer)**	Present (0.15 m)	Present (0.1 m)	Not present
Mottles and Segregations	Not present	Common <5 mm distinct orange mottles Very few 5-15 mm faint brown mottles	Not present
Depth to groundwater	0.2 m	0.45 m	Not present
Ferruginous root channel and pore linings	Not present	Not present	Not present
pH* ⁶	Very strongly acid	Very strongly acid	Very strongly acid
Texture	Loam	Light clay	Light clay
Acid sulfate material	Not present	Not present	Not present
Electrical Conductivity (EC) ⁶	Non saline	Non 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

- Presence of swamp hummock microrelief implies a saturated environment
- High organic carbon levels and organic materials indicate reducing conditions in saturated and transition zone
- Mottles indicate fluctuating water table within the transition zone
- Dark surface soil colours are a positive indicator of reducing conditions in upper 0.3 m of the saturated and transition zone where there is organic accumulation
- High watertables with poor external drainage predispose area to saturation
- The soil profile at site 8 may all be depositional either from erosion events or man made

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 (1998). *Innisfail: 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 6		Classification		Australian Soil Classification			Terric, Acidic, Sapric Organosol		
				Landform Element			Swamp		
				Morphological Type			Closed depression		
Horizon	Depth (m)	Boundary	Texture	Colour	Mottles	Coarse Fragments	Structure	Segregations	Consistence
O1	0 to .05	clear to	-	-	none	none	massive	none	-
P2	.05 to .15	abrupt to	sapric loam	dark brown (10YR33)	none	none	massive	none	-
2P2	.15 to .8	gradual to	sapric loam	black (10YR21)	none	none	massive	none	-
3P2	.8 to 1	-	sapric light clay	very dark brown (10YR22)	none	none	massive	none	-

Site 7		Classification		Australian Soil Classification			Humose-Acidic, Kurosollic, Oxyaquic Hydrosol		
				Landform Element			Hillslope		
				Morphological Type			Flat		
Horizon	Depth (m)	Boundary	Texture	Colour	Mottles	Coarse Fragments	Structure	Segregations	Consistence
O1	0 to .05	-	-	-	none	none	-	-	-
A1	.05 to .2	abrupt to	light clay	dark brown (7.5YR34)	common (10-20%) fine (<5 mm) distinct orange mottles, very few (<2%) medium (5-15 mm) faint brown mottles	none	massive	none	-
2A1b	.2 to .4	gradual to	fibric light clay	black (10YR21)	none	none	massive	none	-
2A2b	.4 to .7	abrupt to	light clay	dark grey (2.5Y41)	none	none	massive	none	-
2B2b	.7 to .9	-	medium clay	very pale brown (10YR73)	none	none	massive	none	-

Site 8		Classification			Australian Soil Classification				Acidic, Eutrophic, Red Kandosol		
		Landform Element			Hillslope				Lower slope		
		Morphological Type									
Horizon	Depth (m)	Boundary	Texture	Colour	Mottles	Coarse Fragments	Structure	Segregations	Consistence		
A1	0 to .35	abrupt to	light clay	yellowish red (5YR36)	none	none	massive	none	-		
A2	.35 to .5	clear to	light medium clay	reddish brown (5YR44)	none	none	massive	none	-		
2A1	.5 to .8	diffuse to	medium clay	brown (7.5YR42)	none	none	massive	none	-		
2B2	.8 to 1	-	medium heavy clay	yellowish red (5YR56)	common (10-20%) medium (5-15 mm) distinct red mottles	none	massive	very few (<2%) medium (2-6 mm) ferruginous nodules	-		

Soil Chemistry

Site	Depth (m)	pH*	EC dS/m	Cl mg/kg	NO3-N mg/kg	P mg/kg	S mg/kg	TC** %	TN** %	Ca meq/100g	Mg meq/100g	Na meq/100g	K meq/100g	Na corr meq/100g	Cu mg/kg	Zn mg/kg	Mn mg/kg	Fe mg/kg	
6	0.00-0.10	4.5	0.12	67	4	125	67	24.3	1.56	-	-	-	-	-	-	-	-	-	-
	0.20-0.30	4.5	0.08	52	<1	80	31	32.3	1.81	-	-	-	-	-	0.4	0.5	1.6	202	
	0.40-0.50	4.6	0.05	31	1	56	15	17.4	0.9	0.18	0.882	0.197	0.04	0.11	0.3	0.3	0.7	97.7	
7	0.00-0.10	4.6	0.05	40	1	152	59	7.47	0.49	0.087	0.333	0.132	0.073	0.019	1.2	0.5	2.1	314	
	0.20-0.30	4.7	0.03	23	2	150	29	14.4	0.96	0.148	0.476	0.117	0.061	0.052	1	0.4	0.8	171	
	0.40-0.50	4.7	0.03	23	1	132	23	14	0.83	0.15	0.401	0.1	0.04	0.035	1.4	0.3	1.3	196	
8	0.00-0.10	4.8	0.03	<20	3	128	125	3.75	0.24	0.037	0.089	0.046	0.062	0.046	2.2	1	12.3	206	
	0.20-0.30	4.4	0.02	21	2	121	202	2.73	0.18	0.03	0.025	<0.012	0.023	<0.012	1.4	0.7	3.8	97	
	0.40-0.50	4.4	0.02	<20	2	107	184	3.08	0.19	<0.026	0.018	<0.012	<0.018	0.012	1.4	0.3	1.2	72	

*Aqueous 1:5

**Total carbon and total nitrogen