Department of
Environment and Conservation

Our environment, our future

Resource Condition Report for a Significant Western Australian Wetland

Marglu Billabong, Parry Lagoons

2009

Figure 1 – A view across the water body at Marglu Billabong.

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1. Introduction

This Resource Condition Report (RCR) was prepared by the Inland Aquatic Integrity Resource Condition Monitoring (IAI RCM) project. It describes the ecological character and condition of the Marglu Billabong, a permanent, inchannel, freshwater lake within Parry Lagoons Nature Reserve. The Parry Lagoons are an extensive floodplain containing permanent billabongs, seasonal marshes and wooded swamps. They are an important breeding ground and drought refuge for a large number of bird species.

Marglu Billabong was selected as a study site in the current project because of its significance to migratory waterbird populations and as a refuge for non-migratory taxa during periods of aridity, but also because frequent tourist visitation is threatening the integrity of the site. The information presented in the current report will supplement the Ecological Character Description (ECD) for the Ord River Floodplain that is soon to be published (Hale, 2009). Minimal background information is presented here, to avoid duplication of that ECD.

This RCR describes the findings of a survey of aquatic invertebrates and water quality, conducted at Marglu Billabong in May 2008.

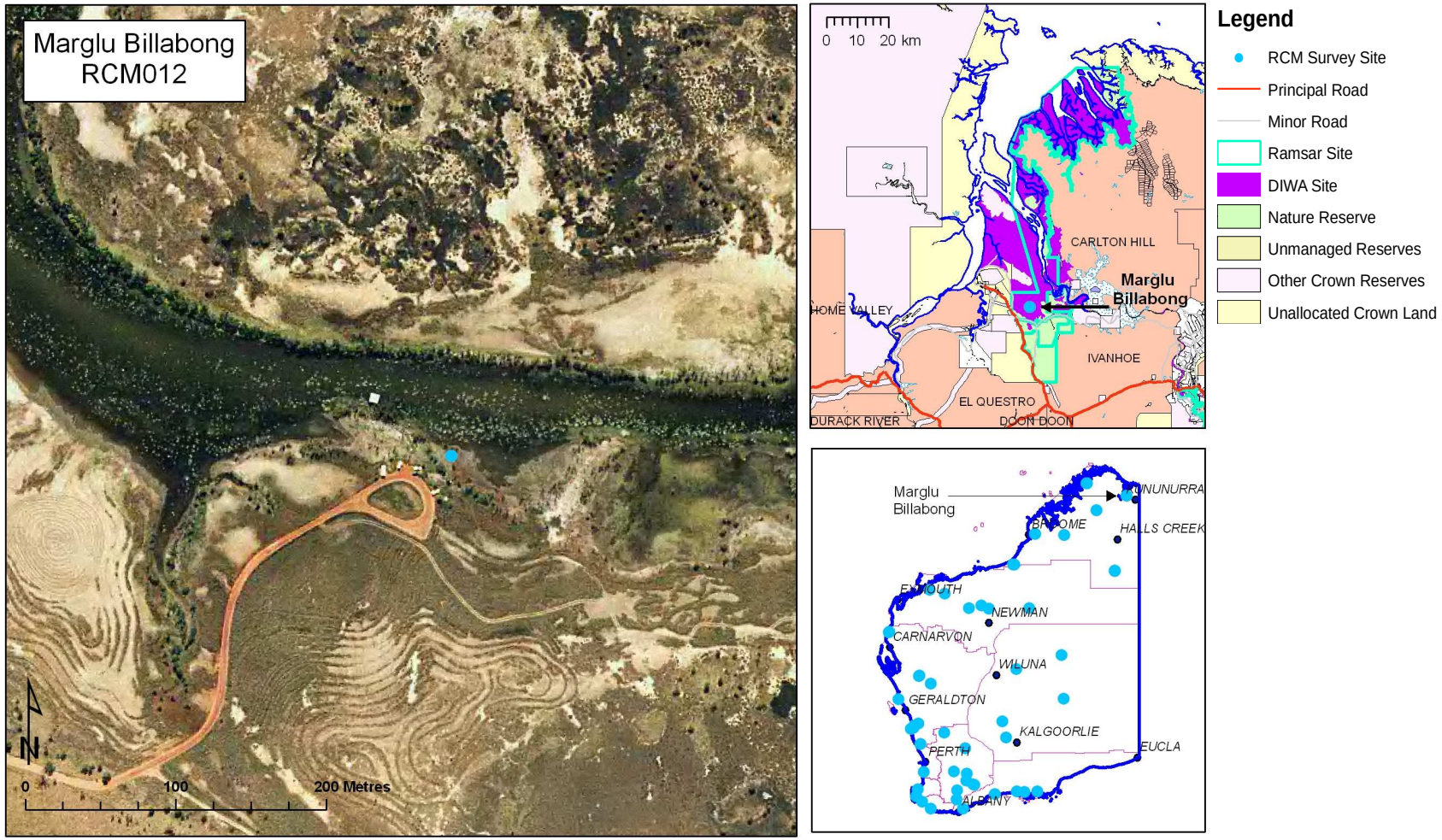

Figure 2 – Aerial photograph of Marglu Billabong. The upper insert shows the location of the survey site relative to the Ord River Floodplain Ramsar site. The lower insert shows the location of the lake in the state of Western Australia.

Results of the IAI RCM Survey

The ecology of the broad Ord River Floodplain Ramsar site is described in the ECD that is due to be released in 2009 (Hale, 2009). The following information is supplementary to that report, and describes the water chemistry and aquatic invertebrate community recorded at Marglu Billabong on 21 May 2008.

Water Quality

The water of Marglu Billabong was very fresh and somewhat alkaline (Table 1). Nutrient levels in the water column were at, or just above, the upper limits of the default trigger values for concern provided in the ANZECC/ARMCANZ guidelines (2001) for tropical wetlands (10-50 µg/L for TP and 350-1200 µg/L for TN). The default trigger for chlorophyll is 10 µg/L whereas the value recorded in the IAI RCM survey was 22.5 µg/L. The fairly high pH values were probably due to the density of submerged macrophytes and algae.

Table 1 – Water quality parameters recorded by the IAI RCM project at Marglu Billabong in May 2008.

pH	8.4 to 9.4
Alkalinity (mg/L)	55
TDS (g/L)	0.56
Turbidity (NTU)	3.8
Colour (TCU)	19
Total nitrogen (ug/L)	1200
Total phosphorus (ug/L)	70
Total soluble nitrogen (ug/L)	830
Total soluble phosphorus (ug/L)	20
Chlorophyll (ug/L)	22.5
Na (mg/L)	159
Mg (mg/L)	23.7
Ca (mg/L)	11.2
K (mg/L)	1
Cl (mg/L)	278
SO_4 (mg/L)	3.9
HCO_3 (mg/L)	67
CO_3 (mg/L)	0.5

Aquatic Invertebrates

Aquatic invertebrate samples were collected from three areas of the site, representing two different habitat types:

1. Macrophytes (*Potamogeton, Myriophyllum*) in deep water at eastern end of site.
2. Macrophytes (*Potamogeton, Myriophyllum*) in deep water at western end of site.
3. Sparse low sedges and submerged macrophyte in shallow backwater between boardwalk and shore.

A total of 62 species of macroinvertebrates were identified from Marglu Billabong (Table 2 and Table 3). A previous survey of Marglu Billabong by Andrew Storey in 2001 (Storey et al. 2007) resulted in the collection of 72 taxa in 28 families, of which 70 were macroinvertebrates, though plankton samples were not taken. This was only slightly more than the 62 macroinvertebrate taxa collected during the RCM survey, indicating little change in condition. Several species, especially beetles are potentially new or undescribed but the Kimberley region is not well surveyed for aquatic invertebrates so these may be widespread. The high diversity indicates good water quality though there is little comparable data for the Kimberley region.

Table 2 – Aquatic invertebrate diversity as identified by the IAI RCM survey and an earlier University of Western Australia survey at Marglu Billabong.

Diversity measure	UWA Ord River Survey Sep 2000	RCM Survey RCM006 May 2008
Total invertebrate species richness	72	-
Macroinvertebrate species richness	70	62
Total invertebrate family richness	28	-
Macroinvertebrate family richness	26	30

Table 3 – Aquatic macroinvertebrate taxa identified by the IAI RCM survey and an earlier University of Western Australia survey at Marglu Billabong.

Class	Order	Family	Lowest ID	RCM Survey RCM012	UWA Ord River Survey UWA006
Nematoda	-	-	Nematoda	1,3	
Gastropoda	Architaeniglossa	Viviparidae	*Notopala* sp.		1
	Neotaeniglossa	Bithynidae	*Gabbia* sp.		1
	Basommatophora	Lymnaeidae	*Austropeplea vinosa*		
		Planorbidae	*Glyptophysa* cf. *gibbosa* (SAP)		1
			Glyptophysa sp. K1 (RCM)	1,2,3	
			Glyptophysa sp. K2 (RCM)	1	
			Glyptophysa sp. K3 (RCM)	2	
			Gyraulus sp.	1,2,3	1
			Ameriana carinata		1
			Ameriana sp. K1 (RCM)	1,2	
Aphanoneura	-	Aeolosomatidae	*Aeolosoma* sp. 1 (PSS)	3	
Oligochaeta	Tubificida	Naididae	*Dero digitata*	1	
			Dero nivea	2	
			Dero sp.		1
			Haemonais waldvogeli	1	
			Branchiodrilus hortensis		1
			Allonais ranauana	3	1
			Pristina longiseta	2,3	
			Stylaria lacustris		1
			Aulodrilus pigueti		1
Arachnida	Acariformes	Unionicolidae	*Neumania* K1 (=P1?)	1,2,3	
		Arrenuridae	*Arrenurus anbangbang*	3	
			Arrenurus sp.	2	
		-	Oribatida	1,2,3	
Crustacea	Decapoda	Palaemonidae	*Macrobrachium australiense crassum*	2	
Crustacea	Ostracoda	Cyprididae	*Bennelongia* sp. 673 nr *australis* (KIM-UWA)		1
Crustacea	Copepoda	Cyclopidae	*Mesocyclops* sp.		1
Insecta	Coleoptera	Haliplidae	*Haliplus* sp.	3	
		Noteridae	*Hydrocanthus waterhousei*	2	1
		Dytiscidae	*Laccophilus sharpi*		1
			Laccophilus clarki		1
			Hyphydrus lyratus	1,2	1
			Hyphydrus contiguus		1
			Hydroglyphus leai		1

Class	Order	Family	Lowest ID	RCM Survey RCM012	UWA Ord River Survey UWA006
Insecta	Coleoptera	Dytiscidae	*Hydroglyphus trilineatus*	3	
			Tiporus sp.		1
			Megaporus ruficeps	3	1
			Onychohydrus atratus	3	1
			Cybister godeffroyi		1
			Cybister tripunctatus		1
			Cybister yulensis		1
		Hydrophilidae	*Berosus aquilo*	3	
			Berosus australiae	1,2	1
			Berosus josephenae	3	1
			Berosus pulchellus	3	1
			Berosus sp.	1,2,3	1
			Regimbartia attenuata		1
			Enochrus deserticola		1
			Enochrus esuriens		1
			Helochares clypeatus		1
			Paracymus pygmaeus		1
		Hydraenidae	*Ochthebius* sp.		1
			Ochthebius sp. K1	3	
		Hydrochidae	*Hydrochus australis*		1
			Hydrochus burdekinensis		1
			Hydrochus numerospunctatus	3	
			Hydrochus obscuroaeneus		1
			Hydrochus radjiei		1
			Hydrochus sp.		
	Diptera	Chaoboridae	*Chaoborus punctilliger*	1	
		Culicidae	*Anopheles* (*Cellia*) *annulipes* sp. D (KIM-UWA)		1
			Culex (*Culex*) *annulirostris*		1
			Culex (*Culex*) *sitiens*		1
			Culicini		
		Ceratopogonidae	*Bezzia* sp.	1,2	
			Bezzia sp. (not 1 or 2)		1
			Nilobezzia sp.		1
		Chironomidae	*Procladius paludicola*	3	
			Polypedilum convexum	3	
			Thienemannimyia sp.	3	
			Larsia albiceps	2	
			Penteneurini sp. K1 (RCM)	1,2	
			Thienemanniella sp.	1	
			Tanytarsus bispinosus	1,2,3	
			Tanytarsus fuscithorax/semibarbitarsus	2,3	
			Chironomus occidentalis	1,2,3	
			Parachironomus 'K1' (PSW)	1	
	Ephemeroptera	Baetidae	*Cloeon* sp.		1
			Cloeon sp. K1 (PSW)	1,2	
		Caenidae	*Tasmanocoenis arcuata*		1
			Tasmanocoenis sp.	1	
	Hemiptera	Mesoveliidae	*Mesovelia* sp.		1
		Veliidae	Veliidae		1
		Gerridae	*Limnogonus fossarum gilguy*		1
			Tenagogerris sp.		1
			Gerridae		
		Nepidae	*Ranatra diminuta*		1

Class	Order	Family	Lowest ID	RCM Survey RCM012	UWA Ord River Survey UWA006
Insecta	Hemiptera	Nepidae	*Ranatra occidentalis*	1,2	
			Ranatra sp.		
		Belostomatidae	*Diplonychus eques*	3	
		Corixidae	*Agraptocorixa halei*		1
			Micronecta robusta		1
			Micronecta halei		1
			Micronecta virgata	3	1
			Micronecta sp.		
			Corixidae		
		Naucoridae	*Naucoris subopacus*	1,2	1
			Aphelocheirus australicus		1
		Notonectidae	*Enithares loria*		1
			Enithares nr *loria*		1
			Notonecta sp.		1
			Anisops semitus	3	
			Anisops stali		1
			Anisops sp.	2	
		Pleidae	*Paraplea brunni*		1
			Paraplea sp.	2	
			Paraplea n. sp. (ANIC 6)	1,2	
			Paraplea n. sp. ('*timmsi*' - Lansbury)	3	
	Odonata	Coenagrionidae	*Austroagrion cyane*		1
			Ischnura heterosticta heterosticta	1	
			Pseudagrion microcephalum		1
			Pseudagrion sp.		
		Aeshnidae	*Hemianax papuensis*		1
			Aeshnidae	3	
		Libellulidae	*Crocothemis nigrifrons*		1
			Diplacodes bipunctata		1
			Diplacodes bipunctata\trivialis	1,3	
			Neurothemis stigmatizans stigmatizans	3	
			Orthetrum caledonicum		1
			Rhyothemis graphiptera		1
			Trapezostigma loewii	1	
			Libellulidae	3	
		Lindeniidae	*Ictinogomphus australis*		1
		Macromiidae	*Macromia tillyardi*	1	
	Trichoptera	Hydroptilidae	*Tricholeiochiton* sp.	2	
		Leptoceridae	*Oecetis* sp.		1
			Triplectides helvolus		1
			Leptoceridae		1

Samples 1, 2 and 3 denote the three sub-samples as above.

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