

**MICROPALAEONTOLOGICAL REPORT
for LAKE OIL P/L
on THREE SAMPLES from Banjo-1A**

REPORT 01/06

Dr. Stephen Gallagher
School of Earth Sciences, The University of Melbourne,
Victoria 3010.

Micropalaeontology report on 3 samples from Banjo-1A for Lakes Oil P/L
INTRODUCTION

The following is a report on three samples from Banjo-1A in Gippsland. The lithology is briefly described. A sample was processed by standard micropalaeontological techniques. The biozonation used in this work is shown on Figure 1 and the biostratigraphic data in Table 1.

Sample 231.95m

Sample description

Lithology: Fine grey/green silt/siltstone to fine sand/sandstone

Microfauna: A diverse microfauna occurs in this sample.

Benthic: Benthic foraminifera include common *G. subglobosa*, *Cibicides* spp. and the semi-endemic *Parrellina crespinae*, *Notorotalia howchini* and *N. spinosa*.

Plankton: Plankton are rare and include one species *Globigerina praebulloides*.

Palaeoenvironment: The fauna and facies suggest a low-energy middle to outer shelf environment.

Age: Probably late Oligocene

Correlatives: The age, facies and nature of the fauna typifies the **Lake Entrance Formation** as described in Holdgate and Gallagher (1997).

Sample 231.95m

Sample description

Lithology: Fine grey/green siltstone to fine sandstone

Microfauna: Sparse fauna of *Cibicidoides perforatus*, *Elphidium* spp., *Cibicides vortex* and *Astrononion*.

Plankton: Plankton are absent

Palaeoenvironment: The fauna and facies suggest a low-energy middle to outer shelf environment.

Age: Probably late Oligocene (see note below).

Correlatives: The age, facies and nature of the fauna typifies the **Lake Entrance Formation** as described in Holdgate and Gallagher (1997).

Sample 254.95m

Sample description

Lithology: Coarse-grained shelly green sand/sandstone. Common glauconized gastropods. Bioclasts include echinoid spines and bryozoans

Microfauna: A diverse microfauna occurs in this sample.

Micropalaeontology report on 3 samples from Banjo-1A for Lakes Oil P/L

Benthic: Benthic foraminifera include common *Pararotalia mackayi*, *Notorotalia howchini*, *Parrellina crespinae*, *Elphidium crispum* with lesser *G. subglobosa* and *G. zealandica*.

Planktonic: Plankton are absent.

Palaeoenvironment: The fauna and facies suggest a high-energy inner shelf environment.

Age: Probably Late Oligocene (see comment below).

Correlatives: This sample is likely to be a shallow water equivalent to the **Lake Entrance Formation** as described in Holdgate and Gallagher (1997).

Comment: In the absence of diagnostic plankton, the occurrence of the benthic rotaliids: *P. crespinae*, *Pararotalia mackayi*, *N. spinosa* and *N. howchini* suggests an Oligo-Early Miocene age (these taxa are common in strata of this age, however they may be rare in later Miocene or younger strata). The sandy silty facies, and lack of plankton with the presence of *G. subglobosa* and *Parrellina* peaks are typical of the **Late Oligocene Lakes Entrance Formation**. *Pararotalia mackayi* is typically abundant in the Late Oligocene (P22) shallow water Point Addis in Torquay, however this taxon also last appears in the Middle Miocene in Batesford Quarry. The biofacies and relative lack of carbonate in the facies precludes assignment to the Miocene Gippsland Limestone, Wuk Wuk Marl or Bairnsdale limestone. The presence of this *Pararotalia mackayi* suggests the lowest sample is not equivalent to the Early Oligocene Colhoun Gravel.

***Conclusion:* Based of the bio- and lithofacies considerations the samples are from the Lakes Entrance Formation and have a probable Late Oligocene age.**

References:

- HOLDGATE, G. & GALLAGHER, S. 1997. Microfossil paleoenvironments and sequence stratigraphy of Tertiary cool-water carbonates, onshore Gippsland Basin, southeastern Australia. Spec. Publication SEPM, 56, 205-220.
- LI, Q., QUILTY, P.G. MOSS, G. and MCGOWRAN, B 1996. Southern Australian endemic and semi-endemic foraminifera: a preliminary report. Journal of Micropalaeontology 15: 169-185.
- MCGOWRAN, B., LI, Q. & MOSS, G. 1997. The Cenozoic neritic record in southern Australia: the biogeohistorical framework. In: N. James and C. J. ed. Cool and Temperate Water Carbonates, Vol. 56, pp. 185-203. Society of Economic Palaeontologists and Mineralogist, Tulsa. Special Publication.

Micropalaeontology report on 3 samples from Banjo-1A for Lakes Oil P/L

TABLE 1						Banjo-1A	LAKES OIL				
							Taylor zonules	Zonule			
							Epoch	Late Oligocene			
							Palaeoenvironment				
							Stratigraphic Unit		Lakes Entrance		
							Holdgate & Gallagher 1997		Fm		
		I	M	O	ub	mb	ROTALIDS	Depth	264	254.95	231.95
											Palaeodepth
i		3	2	1			<i>Elphidium crispum</i>	x			
i		3	2	1			<i>Elphidium</i> spp.		x	x	
e		3	2	1			<i>Pararotalia mackayi</i>	xxx			
e		3	2	1			<i>Rosalina</i> spp.				x
		3	2	1			<i>Notorotalia howchini</i>	x			x
		3	2	1			<i>Notorotalia spinosa</i>				x
e		3	2				<i>Discorbis</i> spp.				x
i		1	1				<i>Sigmoidella</i> spp.	x			x
i		2					<i>Pseudononion</i> spp.				x
i		1	1				<i>Pullenia quinqueloba</i>				x
e		3	3	3	3		<i>Cibicidoides perforatus</i>		x	x	
e	1	3	3	2	1		<i>Cibicides vortex</i>	x	x	x	
e	1	3	3	2	1		<i>Cibicides pseudoconvexus</i>				x
i	1	3	2	1			<i>Parrellina crespinae</i>	x			x
i	1	2	3	2	1		<i>Astrononion tasmanensis</i>		x		x
e		2	3	2	1		<i>Anomalinoides macraglabra</i>	x			x
e	1	2	2	1			<i>Discorbinella bertheloti</i>				x
e	1	2	2	1			<i>Discorbinella</i> spp.				x
i	1	1	3	3	3		<i>Cassidulina laevigata</i>				x
i	1	1	3	3	3		<i>Cassidulinoides</i> spp.		x		
i		1	3	3	1		<i>Globocassidulina subglobosa</i>	x			xxx
e	1	1	2	3	2		<i>Lenticulina</i> spp.				x
e	1	1	2	2			<i>Eponides repandus</i>				x
e	1	1	2	2			<i>Eponides lornensis</i>	x			
e		1	2	2	1		<i>Heterolepa brevoralis</i>				x
i		1	1	1	1		<i>Guttulina</i> spp.	x			
e		2	2	1			<i>Gyroidinoides zealandica</i>	x			
i							<i>Astacolus</i> spp.	x			
i							<i>Oolina</i> spp.				x
i							<i>Fissurina</i> spp.				x
							<i>Siphonina australis</i>				x
i							<i>Vaginulinopsis gippslandica</i>	x			
i							<i>Trifarina</i> spp.				x
							MILIOLINIDS				
e							<i>Triloculina</i> spp.	x			
							<i>Spiroloculina</i> spp.				x
							TEXTULARIDS				
e							<i>Gaudryina crespinae</i>	x			
e							<i>Dorothia minima</i>	x			
							PLANKTONICS				
							<i>Globigerina praebulloides</i>				rare

Micropalaeontology report on 3 samples from Banjo-1A for Lakes Oil P/L

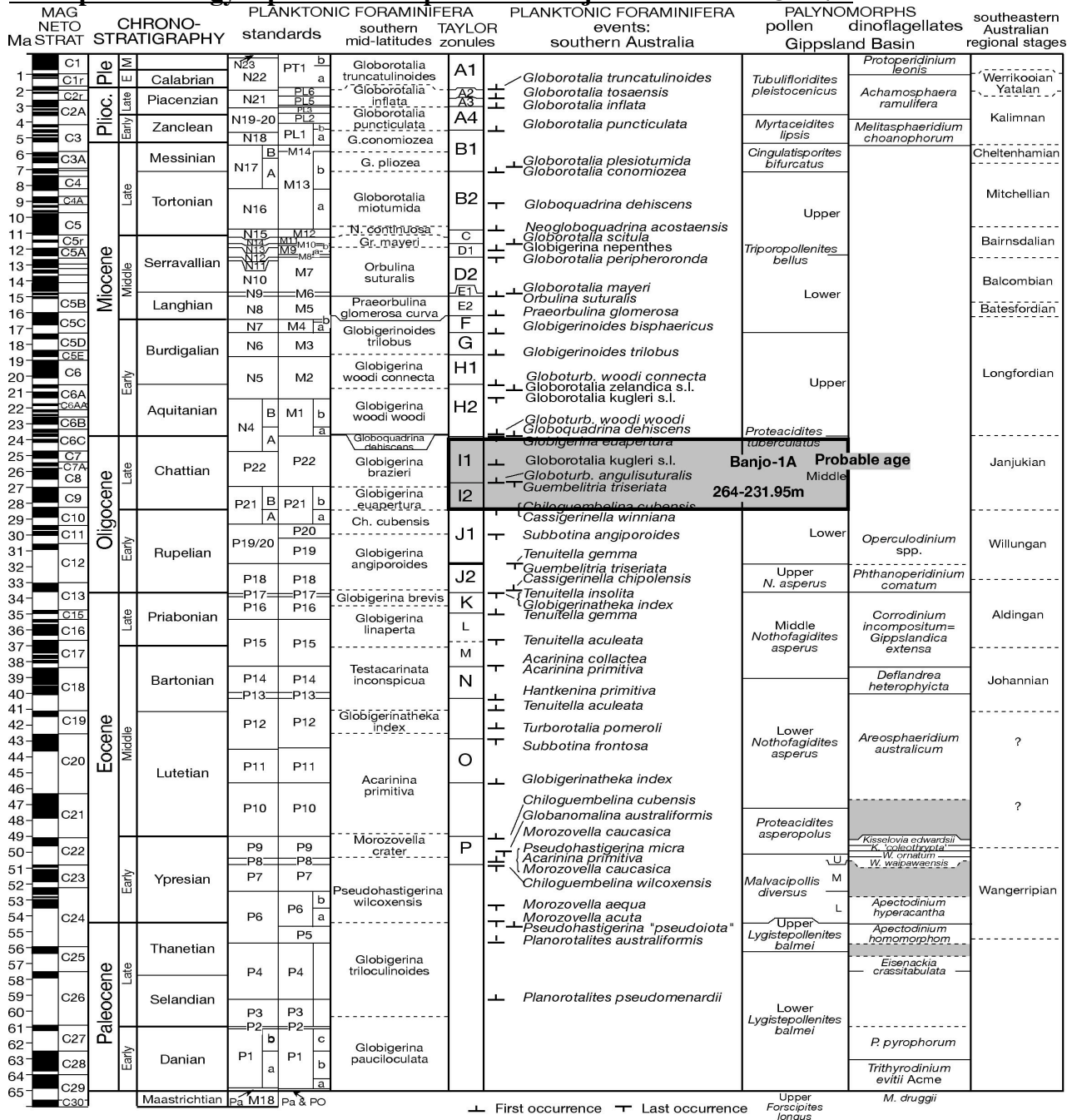


Figure 1: Biozonal scheme for Southeastern Australia (adapted from McGowran et al. 1997)