

APPENDIX 1

THE PALYNOLOGY OF

MORWONG - 1,

GIPPSLAND BASIN.

by.

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INTRODUCTION

The spore-pollen zonation is based on well preserved and diverse assemblages from the sidewall cores. The same assemblages were recognised in the cuttings examined but these were not used in delimiting the zones because of the uncertainty of the depths owing to incorrect lag times.

The following spore-pollen zones are identified in Morwong-1:

Zone	Depth in Feet	Age
•	Highest data Lowest data	
Triporopollenites bellus Zone	5370 - 5418	Miocene
Malvacipollis diversus Zone	5460 - 574 6	Early Eocene
Lygistepollenites balmei Zone	5876 - 7920	Paleocene

COMMENTS

The palynological evidence indicates that the top of Latrobe Group unconformity lies between 5418 and 5460 feet and represents a time break from Early Eocene to Early Miocene.

Dinoflagellates dominate the palynological assemblages from the Lakes
Entrance Formation and are absent or rare to common in assemblages from
the Latrobe Group. In the latter those assemblages in which contain a
high proportion of dinoflagellates are generally dominated by only a single
species, either Cyclonopelium retiintextum or Wetzeliella homomorpha.
Dinoflagellates were the only marine fossils found in the Latrobe Group
and are probably indicative of only a very marginal marine environment.

Reworked Early Cretaceous spore-pollen are present in the \underline{L} . balmei and \underline{T} . bellus Zones. Paleocene and early Eocene spore-pollen derived from the underlying Latrobe Group were also observed in the \underline{T} . bellus Zone.

At total depth Morwong-1 was still within the <u>L.balmei</u> Zone based on well preserved and diverse assemblages containing common <u>Lygistepollenites</u>

<u>balmei</u>. The top of the zone is taken at the extinction of <u>Polycolpites</u>

langstonii, Gambierina rudata and the last common occurrence of

Australopollis obscurus and L.balmei.

The M. diversus Zone is recognised by the occurrence of Spinizonocolpites prominatus, Intratiporopollenites notabilis, Proteacidites grandis

Polycolpites esobalteus and the absence of any younger species. The occurrence of L. balmei and A. obscurus, indicator species for the underlying zone in the lowest sample (5746 feet) from the M. diversus

Zone is considered to reflect the closeness of the zone boundary. The possibility of reworking is discounted because of the absence of other

L. balmei Zone species while sample contamination has been checked for by reprocessing the sample.

The palynology assemblages between 5370 and 5418 feet are dominated by long ranging Oligocene-Miocene spore-pollen and dinoflagellate species which are referred to the <u>T.bellus</u> Zone on the basis of the occurrence of the spore <u>Rugulatisporites</u> <u>micraulaxus</u>;

	SAMPLES EXAMINED . ,	
Sample	Depth (in feet)	Zone
SWC 24	5370 * B D	T. bellus Zone
SWC 23	5386*	
SWC 22	5410* K,B	in the second second
SWC 21	5418*	
SWC 20	5460*	Lower \underline{M} . diversus Zone
SWC 19	5603	п
SWC 18	5746*	· II
SWC 17	5876*	L. balmei Zone
SWC 16	5947*	H
SWC 15	6018* K	H
SWC 14	6148*	н
SWC 13	6279* К	II .
SWC 12	6378*	۲
SWC 11	6492*	11
SWC 10	6636	и
SWC 9	6752	n

Sample	Depth (in feet)	Zone
SWC 7	7044	<u>L.balmei</u> Zone
SWC 6	7148 K	11
SWC 5	7284*	II .
SWC 4	7390 <u>*</u>	н .
SWC 3	7526	11
Core - 1	7551월	Barren
Core - 1	7552	<u>L</u> . <u>balmei</u> Zone
SWC - 2	7704*	н
SWC - 1	7920	n

* Dinoflagellates present.

Reworked spore-pollen present in the samples are indicated by the following letters after the depth

K= Early Cretaceous

B= L.balmei Zone reworking

D = M. diversus Zone reworking

Rotary cutting samples were also examined from the following depths:

5380 - 400 ft (coal), 5460 - 70 ft, 5600 - 10 (coal) ft,

5810 - 20 ft, 5950 - 60ft, 6000 - 10 ft (coal),

6150 - 60 ft and 6200 - 10 ft.

Spore-pollen and dinoflagellate distribution Morwong-1 : Sheet - 1

	5370	5386	5410	5418	2460	5603	5746	5876	5947	6018	6148	6279	6378	6492	9699	6752	6877	7044	7148	7284	7390	7526	7552	7704	7920
SPORE-POLLEN																									
Amosopollis dilwynensis										•				•											
Australopollis obscurus	0						•		•	•	•	•					•	•	•	•	•	•	•	•	
Baculatisporites disconformis					•		•	•	•	•			•	•									•		
Banksieaeidites elongatus			,			•																			
Camarozonosporites bullatus								•																	
Cupanieidites orthoteichus					•		•			•															
Cyatheacidites annulatus		•		•																					
Cyathidites gigantis							•			•															
C. splendens		٥			•	•	•	•	•	•	•	•		•	•	•			•	•	•		•	•	
Dilwynites granulatus		•			•	•		•		•	•	•	•	•	•	•		•	•						
D. tuberculatus	Į		•				•			•	•														
Foveotriletes balteus				•			•			•	•														
F. lacunosus		•	•																						
Gambierina rudata	1							•		•	•		•	•	•	•				•	•			٠	
Gephrapollenites calathus	}		•	•																					
Gleicheniidites/Clavifera	}				•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•			
Haloragacidites harrisii		•	•	•	•	•	•	•	•		•	•			•			•							
Herkosporites elliottii	}		•					•					•		•		•	•		•		•	•	•	•
Intratriporopollenites notabilis	1				٠		•																		
Ischyosporites gremius	1				•																	•			
Kuylisporites waterbolkii	}																								
Latrobosporites amplus	1										•							•		•					
L. crassus	1				•		•	•		•		•	•	•	•	•		•	•	•	•				
L. ohaiensis	}																			•					
Lygistepollenites balmei	0						•	•	•	•		•				•	٠.	•	•	•			•		•
L. florinii		•	•	•	•	•	•	•		•			•	•			**	•			•				•
Malvacipollis diversus					•		•																		
M. subtilis							٠										•								
Matonisporites ornamentalis			٠	•																					

Spore-pollen and dinoflagellate distribution Morwong-1 : Sheet - 2

	5370	5386	5410	5418	5460	5603	5746	5876	5947	6018	6148	6279	6378	6492	9899	6752	6877	7044	7148	7284	7390	7526	7552	7704	7920
Myrtaceidites parvus					•	•	•			. :	· · · · ·										*				
M. verrucosus				•																					
Nothofagidites asperus																									
N. brachyspinulosus	1																				_				
N. emarcidus										-				•						_					_
N. endurus													_		_	_		_	•	•					•
N. falcatus		_								•			•		•	•	•	•							
N. flemingii		•	•	•	_					_	_														
Parvisaccites catastus					•			•		•	•														
Periporopollenites polyoratus	1				_	•				_		_									_				
Peromonolites densus			_		•	_		_		•	_	•	_	_	_	_		_	_		-		_		_
P. vellosus	}							•		_	•	•	•	•	•	•	•	•	•		•		•	•	•
Phyllocladidites mawsonii						•				•	•														
P. reticulosaccatus	1 "				•			•		•	•	•	•	•	•	•	•	•	•	•	•	٠	•	•	•
P. verrucosus	1																•				•	•		_	
							_						•				•							•	
Polycolpites esobalteus							•					_													
P. langstonii			,				_	•		•	•	•		* 2	•	•					•				
Proteacidites adenanthoides	1						•	•				•	•	•		•	•		•	•					•
P. angulatus																	•	•	•	٠	•	•	•	•	•
P. annularis					•	•				•	•						•								
P. grandis	0				•	•	•																		
P. incurvatus					•																				
P. obscurus	İ						•																		
P. pseudomoides	1				•											•		•							
P. reticuloscabratus	1				•																				
P. tenuiexinus	t				•	•	•	•		•	•	•		•									•		•
Rugulatisporites mallatus	t				•		•	•	•	•	•		•	•		•	٠,				•				
R. micraulaxus	•	•	•	•																					
Simplicepollis meridianus					•	•	•			٠	•		•									•			
Spinizonocolpites prominatus							•																		
Stereisporites regium	L										•					•									

Spore-pollen and dinoflagellate distribution Morwong-1 : Sheet - 3

	5370	5386	5410	5418	2460	5603	5746	5876	5947	6018	6148	6229	6378	6492	9699	6752	6877	7044	7148	7284	7390	7526	7552	704	920
S.(Tripunctisporis) sp.					•		1	•		•			-	-	-	- -									
Tetracolporites verrucosus	1									•				•	-							-	•		•
Tricolpites gillii	1						•				•							•					•	_	•
T. phillipsii	1									•				•		•			•			•		•	
Tricolporites microreticulatus	1						•														_				•
T. paenestriatus	1				•		•																		
Trilites tuberculiformis		-				•						•													
Verrucosisporites cristatus	4		•																						
V. kopukuensis	-	•			•		•	•	•	•															
DINOFLAGELLATES																									
Cordosphaeridium inodes]					*																			
Cyclonephelium retiintextum	1				_		•			•															
Deflandrea dartmooria	1						•													•	•				
D. dilwynensis										_															
D. medcalfii										•											•			•	
Diphyes colligerum	1							_																•	
Eisenackia crassitabulata	1							•						173											
Hystrichosphaera cingulata	1						_														•			•	
H. crassipellis	1.						•																		
Hystrichosphaeropsis borussica							_														•				
Kenleyia spp.			-																						
Lingulodinium machaerophorum		•			•		•			•															
Nematosphaeropsis balcombiana				•	•																				
Operculodinium centrocarpum		•	_																						
Scriniodinium australiense		. •	•	•																					
Spinidinium sp.																									
Systematophora placacantha			_																		•			•	
Tasmanites sp.		_	-														,4								
Wetzeliella homomorpha			•				_	_	_																
W. hyperacantha	1						•	•	•	•	•	•	•	•											
	1						•																		