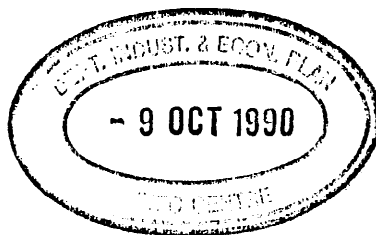




1990/26



PALYNOLOGY OF THREE SAMPLES
OTWAY BASIN, VICTORIA

BY:
M K MACPHAIL

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M.K. MACPHAIL

INTRODUCTION

Three samples were submitted by S Tickell of the Basin Studies Section to Roger Morgan for palynological examination. Dr Morgan subcontracted the work to Dr M K Macphail.

The two samples from Cat Reef Point were taken from a coastal cliff 1.5 kilometres northwest of Moonlight Head (Fig 1). The section above the Eumeralla Formation was assumed to be either Early Tertiary or Late Cretaceous. The Late Quaternary age of the "Upper bed", sample 001 is therefore surprising. The bed is lithologically similar to and contains similar sedimentary structures as the "Lower bed", sample 002 which is Early Eocene in age. At this stage the Late Quaternary age must be viewed with some suspicion. The Early Eocene age of the second sample suggests that it belongs to the Dilwyn Formation rather than the Sherbrook Group.

S J TICKELL

SJT:CG22 D.6

5 October 1990

record no: 001 date: 25/7/90 client:

BOREHOLE: CAT REEF POINT BASIN: OTWAY [onshore]

SAMPLE TYPE: outcrop ID: XC6928577074 DEPTH: "upper bed" m

YIELD [spore-pollen]: high YIELD [dinocysts]: - PRESERVN: good

DEPOSITIONAL ENVIRONMENT: peat or soil A horizon

AGE: Late Quaternary ZONE: - CONFID RTG: 1

INDEX SPP: "Acacia" octosporites & numerous modern pollen taxa
(see Comments).

MAXIMUM AGE: Early Quaternary - based on abundance of Asteraceae spp.
[Tubulifloridites antipoda/similis]

MINIMUM AGE: Holocene - based on abundance of modern pollen taxa.

CONTAMINANTS: Pinaceae

REWORKED SPP: Nothofagidites emarcidus-hetrerus

RELATIVE ABUNDANCE:

1. ABUNDANT [>30%] : Epacridaceae [cf Cyathodes fasciculata]
2. COMMON [5-30%] : Acacia, Asteraceae, Correa, indet. apiculate Sc.
3. FREQUENT [1-5%] : Casuarina [H. cainozoical]
4. RARE [<1%] : Pimelea
5. TRACE [<<1%] : (see attached species tick sheet)

SOURCE VEGETATION: Coastal heath

COMMENTS: Virtually all taxa recorded as pollen occur in heath communities in coastal south-eastern Australia although one, "Acacia" octosporites, an 8 unit polyad produced by Acacia baueri and possibly other wattles, may not now be part of the Otway vegetation. The palynoflora is unusual in that it includes Orchidaceae pollen.

The absence of sedge [Cyperaceae, Restionaceae] and aquatic pollen types is against the carbonaceous unit representing a swale or other environment with free-standing water.

Dr. M.K. Macphail Consultant Palynologist Phone/Fax 02-817-4369:

record no: 002 date: 25/7/90 client:

BOREHOLE: CAT POINT REEF BASIN: OTWAY [onshore]

SAMPLE TYPE: outcrop ID: XC692857074 DEPTH: "lower bed" ■

YIELD [spore-pollen]: v high YIELD [dinocysts]: medium PRESERVN: mod.

DEPOSITIONAL ENVIRONMENT: marginal marine

AGE: Early Eocene ZONE: Lower M. diversus CONFID RTG: 2

INDEX SPP: Intra-triporopollenites notabilis. Cyathidites giganteus.
Ceratopsis dartmooria. Apectodinium homomorphum (long spine)

MAXIMUM AGE: Upper L. balmei Zone - based on Amosopollis cruciformis,
Gambierina rudata. Lygistepollenites balmei. Proteacidites
incurvatus, P. annularis, Latrobosporites amplus.

MINIMUM AGE: Lower M. diversus Zone - based on C. giganteus abundance of
C. dartmooria and absence of Middle M. diversus Zone spp.

CONTAMINANTS: Chenopodiaceae

REWORKED SPP: Early Cretaceous and (?) Paleocene spp.

RELATIVE ABUNDANCE:

1. ABUNDANT [>30%] : Araucariacites, Dilwynites, dinoflagellates
2. COMMON [5-30%] : Podocarpidites spp., Proteacidites spp.
3. FREQUENT [1-5%] : Tricolpites spp., Tricolporites spp., Cyathidites
4. RARE [<1%] : Lygistepollenites spp., Stereisporites spp.
5. TRACE [<<1%] : (see attached species tick sheet)

SOURCE VEGETATION: Conifer-dominated (swamp?) forest

COMMENTS: This palynoflora contains a mixture of species which range no higher than the Upper L. balmei Zone, e.g. Amosopollis cruciformis and Gambierina spp., and species which first appear in the overlying Lower M. diversus Zone, e.g. Intra-triporopollenites notabilis and Ceratopsis dartmooria. The former are considered to be reworked based on the relative abundance of the dinoflagellates Ceratopsis dartmooria and the 'long spine' form of Apectodinium homomorphum. Dinoflagellate spp. diagnostic of the Early Eocene, A. hyperacanthum marine transgression are absent and the Cat Reef Point "lower carbonaceous bed" cannot be correlated with the Early Eocene Rivernook Member of the Princetown Section, Otway Basin.

Dr. M.K. Macphail Consultant Palynologist Phone/Fax 02-817-4369:

record no: 004 date: 25/7/90 client:

BOREHOLE: COBDEN - LAVERS HILL GRAVEL PIT BASIN: OTWAY [onshore]

SAMPLE TYPE: pit face? ID: YC702557198 DEPTH: -

YIELD [spore-pollen]: negl. YIELD [dinocysts]: - PRESERVN: good

DEPOSITIONAL ENVIRONMENT: insufficient data

AGE: No younger than Pliocene ZONE: - CONFID RTG: -

INDEX SPP: Nothofagidites falcatus

MAXIMUM AGE: Middle Eocene - based on N. falcatus

MINIMUM AGE: Pliocene - based on N. falcatus

CONTAMINANTS: Eucalyptus
REWORKED SPP:

RELATIVE ABUNDANCE: n/a
1. ABUNDANT [>30%]:
2. COMMON [5-30%]:
3. FREQUENT [1-5%]:
4. RARE [<1%]:
5. TRACE [<<1%]: (see attached species tick sheet)

SOURCE VEGETATION: insufficient yield

COMMENTS: Dates assumes that the single grain of N. falcatus present
in the palynoflora is in situ.

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Depth (meters)
below cliff top

Fig 1 PROFILE OF CAT REEF POINT

