PALYNOLOGY OF SIX SAMPLES,

OTWAY BASIN, VICTORIA, AUSTRALIA

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BY

ROGER MORGAN

for Victorian DME

March 1994

REF:OTW.RPSIXSPL

PALYNOLOGY OF SIX SAMPLES,

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4 **MacArthur-3** ; 322-26m(core) : *apoxyexinus* Zone : Santonian : nearshore marine : usually Belfast/Paaratte

5 **Warrain-7** ; 1464.5-68.5m(core) : lower *balmei* Zone with very minor *longus* Zone reworking : early Paleocene : marginal marine : usually basal Pebble Point Formation with minor latest Sherbrook reworking

6 **Warrong-5** ; 902-08m(core) : *apoxyexinus* Zone/*striatoconus* Dino Zone : Santonian : nearshore marine : usually Flaxmans/Belfast.

II INTRODUCTION

Steve Ryan, Geologist from the Basin Studies Group of the Victorian Geological Survey, submitted 6 samples for palynology. All except the Cressy sample were aimed to detect the presence or absence of condensed Late Cretaceous Sherbrock Group. The Cressy sample was aimed to date the "lower Volcanics" in the area.

Palynomorph occurrence data are shown as Appendix I and form the basis for the assignment of the samples to zones of Cretaceous and Tertiary age. Specimen counts were made on all assemblages and expressed in the raw data as percentages.

The Cretaceous spore-pollen zonation is essentially that of Dettmann and Playford (1969), but has been significantly modified and improved by various authors since, and most recently discussed in Helby et al (1987), as shown on Figure 1. Tertiary zones are essentially those of Partridge (1976), as in Figure 2.

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4(a)

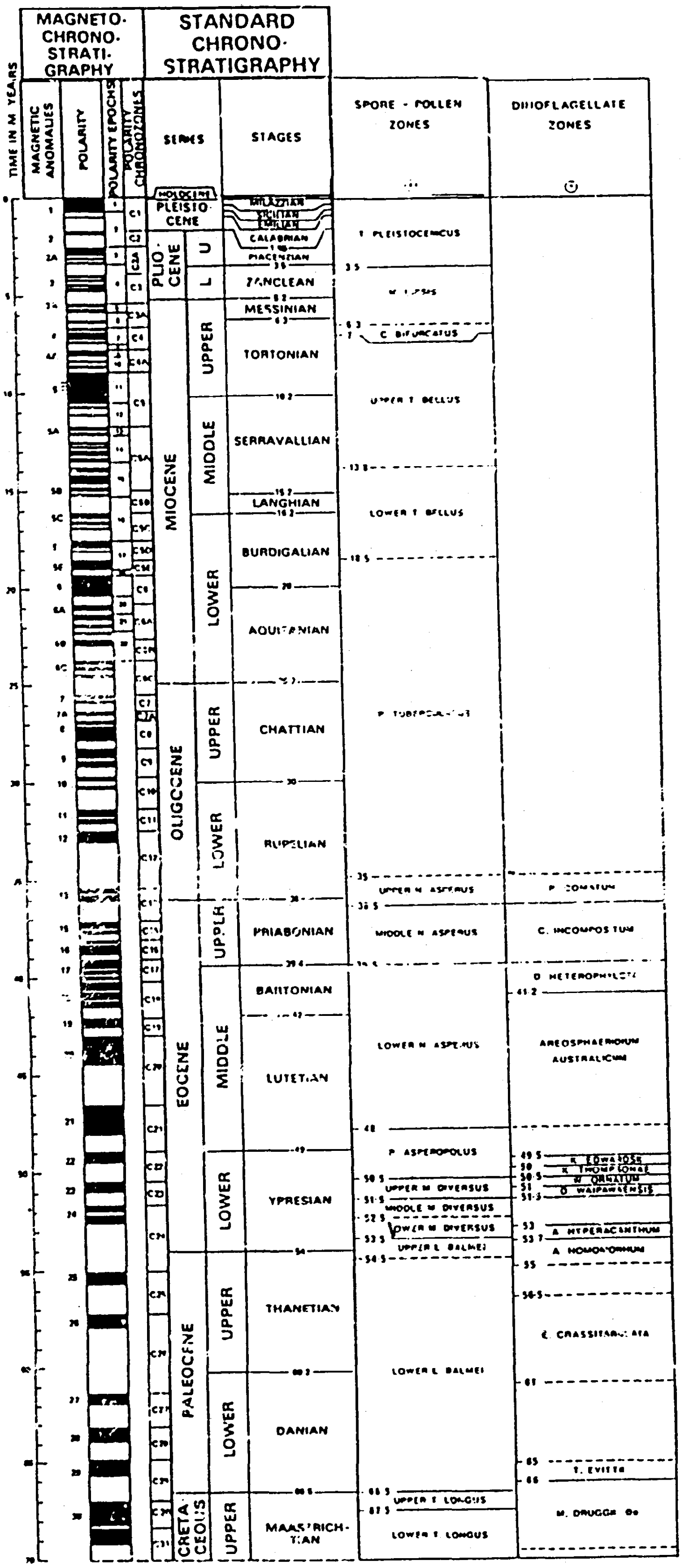

FIGURE 1 ZONAL FRAMEWORK

25×

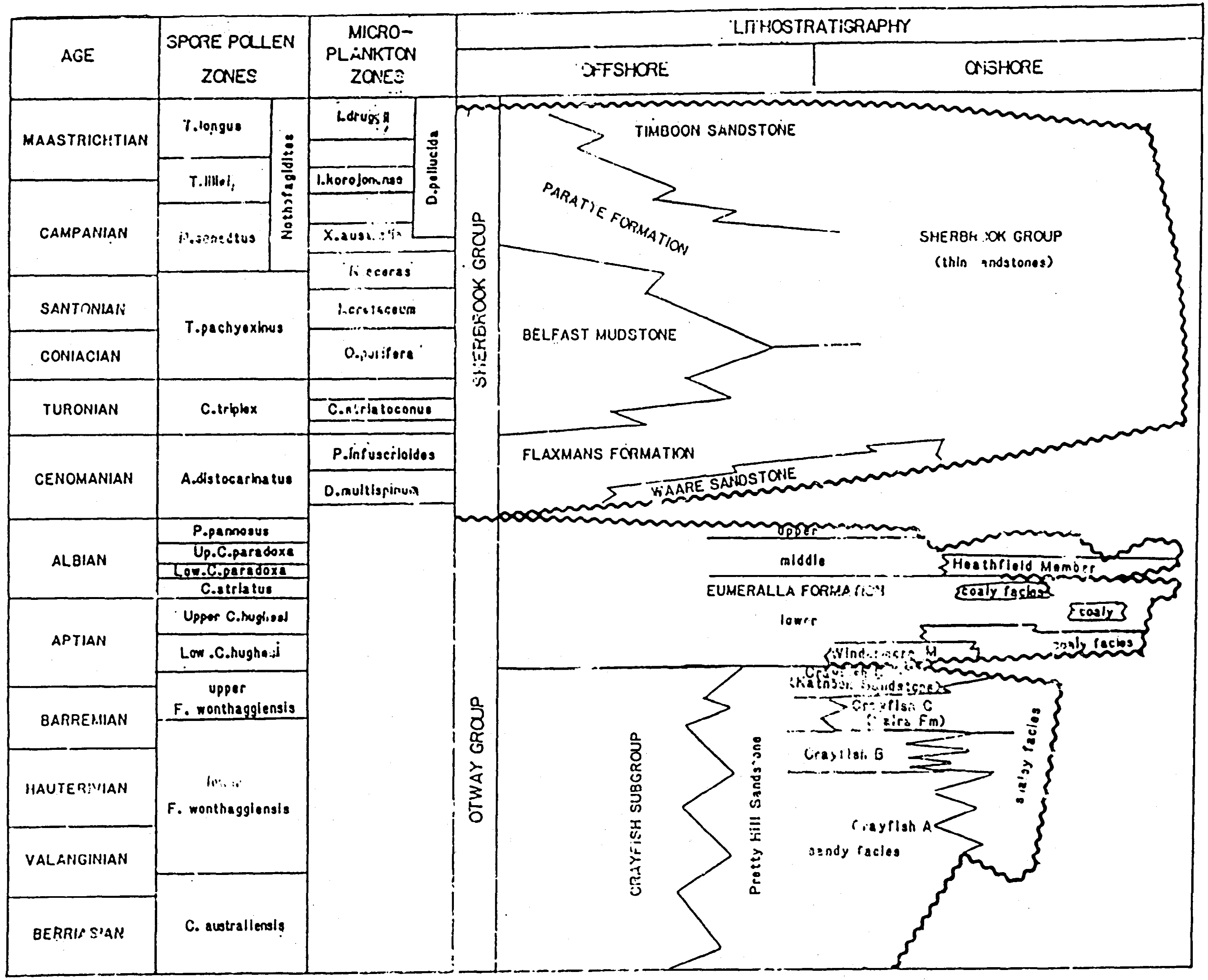

FIGURE 2 CRETACEOUS REGIONAL FRAMEWORK, OTWAY BASIN

4(b)

III PALYNOSTRATIGRAPHY

A Ardonachie-2 at 882.4-884.5m(core) *apoxyexinus* Zone (lower *cretaceum* Dino Zone)

Assignment to the *Tricolporites apoxyexinus* Zone of Santonian age is indicated by rare *Amosopollis cruciformis* without younger or older markers. *Gleicheniidites similis* is very common with *Cyathidites minor* and *Microcachryidites antarcticus* common. Rare elements include *Australopollis obscurus*, *Coptospora pileosa* and *Tricolpites gillii*. Very rare Permian reworking was seen.

Assignment to the lower *Isabelidinium cretaceum* Dinoflagellate Zone is indicated by oldest *I. cretaceum* without younger markers, and is correlative with the upper *apoxyexinus* Spore Pollen Zone. Other age significant rare elements include *Dinogymnium acuminatum*, *Eucladinium madurense* and *Odontochitina porifera*. All dinoflagellates are very rare.

Very nearshore marine environments are indicated by the very low dinoflagellate content (3%) and moderate diversity. Spores and pollen are abundant and diverse.

These features certainly indicate the Sherbrook Group, and are usually seen in the Belfast Mudstone or Paaratte Formation where individual formations can be distinguished.

B Cressy 2001 at 281m(core) : middle *diversus* Zone

This assemblage is very nondescript, dominated by cellular debris and only minor spore pollen. The spore pollen flora is nondescript with *Laevigatosporites* and simple *Proteacidites* common and *Haloragacidites harrisii*, *Cyathidites* and *Tricolporites* frequent. *Nothofagidites* are rare, comprising just 2% of the pollen assemblage. Rare Early Eocene elements include *Cupaneidites orthoteichus*, *Banksieacidites arcuatus*, *Proteacidites grandis*, *Malvacipollis diversus*, *Proteacidites nasus* and *P. tuberculiformis*. The assemblage is unusual however by having fewer *Cyathidites*, *Dilwynites*, *Gleicheniidites*, and *Myrtaceidites* than usual, and by having more *Laevigatosporites* and *Tricolporites*. This confirms that the volcanics overlying this coal belong to the "Older Volcanics".

The environment is non-marine as saline indicators such as dinoflagellates are totally absent.

C **Greenslopes-1 at 500-540m(cuts) : *paradoxa* Zone**

Assignment to the *Coptospora paradoxa* Zone of mid-late Albian age is indicated by *C. paradoxa* and *Pilosisporites grandis*, without older markers. *Cyathidites minor* and *Falcisporites similis* are common with *Cicatricosisporites australiensis*, *Microcachryidites antarcticus* and *Osmundacidites wellmanii* frequent. Rare elements include *Crybelosporites striatus*, *Foraminisporis asymmetricus*, *Petrotriletes majus* and *Triporoletes reticulatus*. Single specimens of *Amosopollis cruciformis*, *Phyllocladidites mawsonii* and *Trithyrodinium marshalli* are the only suggestions of a Late Cretaceous age, but these might have been reworked into the Tertiary and then caved. They also may reflect caving from a thin Sherbrook Group section above this point. The single dinoflagellate specimen seen (*T. marshalli*) is inconsistent with the spore pollen assemblage and is considered caved.

Non-marine lacustrine environments are indicated by the absence of "*insitu*" saline markers and presence of frequent freshwater algae (*Botryococcus* 5%). Spores and pollen are abundant and diverse.

These features are normally seen in the Eumeralla Formation in the Otway Basin.

D **MacArthur-3 at 322-26m(core) : apoxyexinus Zone**

Assignment to the *Tricolporites apoxyexinus* Zone of Santonian age is indicated by the presence of frequent *A. cruciformis* without younger or older markers. Common taxa are *Cyathidites minor*, *Falcisporites similis* and *M. antarcticus*. Rare elements include *Australopollis obscurus*, *Coptospora pileosa* and *Cyatheacidites tectifera*.

Dinoflagellates are minor and longranging. *Heterosphaeridium* spp are the most common forms.

Environments are nearshore marine as shown by the low dinoflagellate content (8%) and low diversity. Spores and pollen are dominant and diverse.

These features certainly indicate the Sherbrook Group, and usually occur in the Belfast and Paaratte Formation where these can be distinguished.

E Warrain-7 at 1464.5-68.5m(core) : lower *balmei* Zone

Assignment to the lower *Lygistepollenites balmei* Zone of Paleocene age is indicated at the top by consistent *L. balmei* and *Gambierina rudata* without younger markers, and at the base by the absence of older markers. *Proteacidites* spp, *F. similis* and *G. rudata* are common. Rare elements include *L. balmei* and *Stereisporites punctatus*. Single specimens of *Tricolpites longus* and *Tricolporites lillei* were seen (suggesting the Maastrichtian *longus* Zone), but these are considered reworked. Rare Permian reworking was seen.

Marginally marine to brackish environments are indicated by the rare spiny acritarchs and absence of dinoflagellates Spores and pollen are rich and diverse.

These features are normally seen in the lower Pebble Point Formation.

F Warrong-5 at 902-908m(core) : *apoxyexinus* Zone (*striatoconus* Dinoflagellate Zone)

Assignment to the *T. apoxyexinus* Zone is indicated by frequent *A. cruciformis* without younger or older markers. *F. similis* is very common, with *Cyathidites minor* common, and *A. cruciformis* and *M. antarcticus* frequent. Rare forms are *A. obscurus*, *C. pileosa* and *Tricolpites variverrucatus*. Permian reworking is minor.

Amongst the dinoflagellates, the presence of *Conosphaeridium striatoconus* and *Isabelidinium balmei* indicates the *C. striatoconus* Zone of mostly Coniacian age. *Trithyrodinium marshalli* and *Odontochitina operculata* are the most frequent forms with rare elements including *Dinogymnium acuminatum*, *Gillinia hymenophora* and *Xiphophoridium alatum*.

Nearshore marine environments are indicated by the presence of frequent dinoflagellates (19%) of moderate diversity. Spores and pollen are abundant and diverse.

These features indicate the Sherbrook Group and are usually seen in the Flaxmans or Belfast Formations where these can be distinguished.

IV CONCLUSIONS

The Sherbrook Formation is clearly present in Ardonachie-2, MacArthur-3 and Warrong-5. Eumeralla equivalents have been sampled in Greenslopes-1 and the Sherbrook may be absent.

Pebble Point equivalents have been sampled in Warrain-7.

The Cressy sample is Early Eocene and indicates that at least the overlying volcanics belong to the "Older Volcanics".

V REFERENCES

Dettmann ME and Playford G (1969) Palynology of the Australian Cretaceous : a review **In** Stratigraphy and Palaeontology. Essays in honour of Dorothy Hill, **KSW Campbell ED.** ANU Press, Canberra 174-210

Helby RJ, Morgan RP and Partridge AD (1987) A palynological zonation of the Australian Mesozoic **In** Studies in Australian Mesozoic Palynology **Assoc. Australas. Palaeontols. Mem 4** 1-94

Partridge AD (1976) The geological expression of eustacy in the early Tertiary of the Gippsland Basin **APEA J 16(1)** 73-79.

25×

ARDONACHIE/CRE. 2001/GREENSLOPES/MACARTHUR/WARRAIN/WARRONG

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C L I E N T: VICTORIAN GEOLOGICAL SURVEY
W E L L: ARDONACHIE#2 / CRESSY 2001 / GREENSLOPES#1 / MACARTHUR#3
WARRAIN #1 / WARRONG #1 A R E A: OTWAY BASIN
A N A L Y S T: ROGER MORGAN D A T E: MARCH '94
N O T E S: ALL DEPTHS ARE IN METRES
FIGURES ARE PERCENTAGES IN 100 SPECIMEN COUNT - "X" INDICATES
RARE PRESENCE OUTSIDE OF THE COUNT

RANGE CHART OF OCCURRENCES BY ALPHABETICAL LIST WITHIN GROUP

8(a)

25X

0000 0001 0209

8(b)

Sample	1 MICROPLANKTON %	2 CIRCULODINIUM DEFLANDREI	3 CIRCULODINIUM SCLIDA	4 CONOSPHAERIDIUM STRIATOCONUS	5 CRIBROPERIDINIUM SP	6 CYCLONEPHELIUM COMPACTUM	7 DINOGYMNIUM ACUMINATUM	8 ELCLADINIUM MADURENSE	9 EXOCHOSPHAERIDIUM PHRAGMITES	10 GILLINIA HYMENOPHORA	11 HETEROSPHAERIDIUM CONJUNCTUM	12 HETEROSPHAERIDIUM HETEROCANTHUM	13 ISABELIDINIUM BALMEI	14 ISABELIDINIUM CRETACEUM	15 MICRHYSTRIDIUM SP	16 ODONTOCHITINA CRIBROPODA	17 ODONTOCHITINA NO HORNS	18 ODONTOCHITINA OPERCULATA	19 ODONTOCHITINA PORIFERA	20 ODONTOCHITINA TRIANGULATA	21 SPINIFERITES FURCATUS/RAMOSUS	22 TRICHODINIUM	23 TRITHYRODINIUM MARSHALLII	24 TRITHYRODINIUM SUSPECTUM	25 XIPHOPHORIDIUM ALATUM	26 AEQUITRIRADITES VERRUCOSUS	27 AMOSOPOLLIS CRUCIFORMIS	28 ARAUCARIACITES AUSTRALIS	29 AUSTRALOPOLLIS OBSCURUS	30 BALMEISPORITES HOLODICTYUS	31 BANKSIEACIDITES ARCUATUS	32 CAMEROZONOSPORITES OHAIENSIS	33 CERATOSPORITES EQUALIS	34 CICATRICOSISPORITES AUSTRALIENSIS	35 CINGUTRILETES CLAVUS	36 CLAVIFERA TRIPLEX	37 CONTIGNISPORITES COOKSONIAE	38 COPTOSPORA PARADOXA
ARDONACHIE #2 882.4-4.5 CRE	3	.	.	.	.	.	X	X	.	.	X	1	.	X	.	2	X	.	X	X	.	.	X	.	.	.	X	.	1	X	.	1	2	2	X	2	.	.
CRESSY 2001 281 CORE	0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X	.	.	.	.	.	.	.
GREENSLOPES 1 500-40 CUTTS	0	.	.	.	.	.	.	.	.	.	.	X	.	.	.	.	.	.	.	.	.	.	X	.	.	X	X	2	.	.	.	.	1	10	.	.	X	X
MACARTHUR #3 322-26 CORE 4	8	.	.	.	X	.	.	.	.	.	X	3	.	.	.	.	.	2	.	.	1	.	2	.	.	.	5	.	X	.	.	.	1	2	X	1	.	.
WARRAIN #7 1464.5-68.5	2	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	1	.	X	.	1	.	X	.	.	.	.
902-08 CORE WARRONG #5	19	X	X	X	.	X	X	.	X	X	.	3	2	.	.	.	.	5	.	.	1	1	5	X	1	.	7	.	2	.	.	.	3	X	.	2	.	.

8(c)

	39 COPTOSPORA PILEOSA	40 COROLLINA TOROSUS	41 CRYBELLOSPORITES STRIATUS	42 CUPANIEIDITES ORTHOTEICHUS	43 CYATHEACIDITES TECTIFERA	44 CYATHIDITES AUSTRALIS	45 CYATHIDITES MINOR	46 CYATHIDITES SPP	47 DENSOISPORITES VELATUS	48 DILWYNITES GRANULATUS	49 ERICIPITES SCABRATUS	50 FALCISPORITES GRANDIS	51 FALCISPORITES SIMILIS	52 FORAMINISPORIS ASYMMETRICUS	53 FORAMINISPORIS DAILYI	54 FOVEOTRILETES PARVIRETUS	55 GAMBIERINA RUDATA	56 GLEICHENIIDITES	57 HALORAGACIDITES HARRISII	58 HERKOSPORITES ELLIOTTII	59 ILEXPOLLENITES SP	60 LAEVIGATOSPORITES OVATUS	61 LEPTOLEPIDITES VERRUCATUS	62 LILIACIDITES PEROREТICULATUS	63 LYCOPODIACIDITES ASPERATUS	64 LYGISTIPOLLENITES BALMEI	65 LYGISTIPOLLENITES FLORINII	66 MALVACIPOLLIS DIVERSUS	67 MICROCACHRYIDITES ANTARCTICUS	68 NOTHOFAGUS BRACHYSPINULOSUS	69 NOTHOFAGUS EMARCIDUS/HETERUS	70 NOTHOFAGUS ENDURUS	71 OSMUNDACIDITES WELLMANII	72 PERIPOROPOLLENITES POLYORATUS	73 PEROTRILETES JUBATUS/MORGANII	74 PEROTRILETES MAJUS	75 PHIMOPOLLENITES PANNOSUS	76 PHYLLOCLADIDITES MAWSONII
ARDONACHIE #2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
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281 CORE	.	.	.	X	.	.	.	12	.	3	7	8	.	.	.	.	.	.	10	.	4	21	.	.	.	.	.	X	.	X	2	.	.	X	.	.	.	X
GREENSLOPES 1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
500-40 CUTTS	.	3	X	.	.	3	20	.	.	1	.	3	15	X	X	X	.	1	.	.	.	1	2	X	.	.	.	.	10	.	.	.	10	.	.	X	.	?
MACARTHUR #3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
322-26 CORE 4	X	.	.	.	X	3	14	.	.	7	.	.	21	.	.	.	.	4	.	1	.	.	.	.	X	.	1	.	17	.	.	.	3	.	.	.	.	3
WARRAIN #7	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1464.5-68.5	.	.	.	.	.	.	.	14	.	3	3	.	15	.	.	.	13	.	.	10	.	1	.	.	.	X	.	.	2	1	.	3	.	.	.	.	.	2
902-08 CORE	1	.	.	.	.	3	13	.	.	4	.	1	21	.	.	.	.	2	.	1	.	.	.	.	.	.		.	8	.	.	.	3	.	1	.	X	1
WARRONG #5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

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	77 PHYLLOCLADIDITES VERRUCOSUS	78 PILOSISPORITES GRANDIS	79 PODOSPORITES MICROSACCATUS	80 PROTEACIDITES	81 PROTEACIDITES GRANDIS	82 PROTEACIDITES NASUS	83 PROTEACIDITES OTWAYENSIS	84 PROTEACIDITES TUBERCULIFORMIS	85 RETITRILETES AUSTROCLAVATIDITES	86 STEREISPORITES ANTIQUISPORITES	87 STEREISPORITES PUNCTATUS	88 TRICOLPITES	89 TRICOLPITES GILLII	90 TRICOLPITES LONGUS	91 TRICOLPITES VARIVERRUCATUS	92 TRICOLPORITES	93 TRICOLPORITES ESTOUTUS	94 TRICOLPORITES LILLIEI	95 TRIPOROLETES RADIATUS	96 TRIPOROLETES RETICULATUS	97 VITREISPORITES PALLIDUS	98 BOTRYOCOCCUS	99 NUMMUS	100 NUMMUS MONOCULATUS	101 REWORKING: PERMIAN	
ARDONACHIE #2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	ARDONACHIE #2
882.4-4.5 CRE	2	.	.	2	.	.	X	.	.	1	.	.	X	.	.	.	.	.	.	.	6	.	.	.	X	882.4-4.5 CRE
CRESSY 2001	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	CRESSY 2001
281 CORE	.	.	2	21	X	X	.	X	.	.	.	3	.	.	.	7	X	.	.	.	.	.	.	.	.	281 CORE
GREENSLOPES 1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	GREENSLOPES 1
500-40 CUTTS	.	X	6	.	X	.	.	.	1	4	.	.	.	.	.	.	.	.	X	2	X	5	.	.	.	500-40 CUTTS
MACARTHUR #3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	MACARTHUR #3
322-26 CORE 4	.	.	1	1	.	.	.	.	1	1	.	.	.	.	.	.	.	.	.	.	.	5	X	.	.	322-26 CORE 4
WARRAIN #7	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	WARRAIN #7
1464.5-68.5	.	.	.	20	.	.	.	.	2	4	X	X	.	X	.	.	.	X	.	X	.	3	.	.	X	1464.5-68.5
902-08 CORE	.	.	4	.	.	.	.	.	2	1	.	1	.	.	X	.	.	.	.	.	.	.	.	1	X	902-08 CORE
WARRONG #5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	WARRONG #5

8(d)

25X

8(e)

SPECIES LOCATION INDEX

Index numbers are the columns in which species appear.

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29	AUSTRALOPOLLIS OBSCURUS
30	BALMEISPORITES HOLODICTYUS
31	BANKSIEACIDITES ARCUATUS
98	BOTRYOCOCCUS
32	CAMEROZONOSPORITES OHAIENSIS
33	CERATOSPORITES EQUALIS
34	CICATRICOSISPORITES AUSTRALIENSIS
35	CINCTUTRILETES CLAVUS
2	CIRCULODINIUM DEFLANDREI
3	CIRCULODINIUM SOLIDA
36	CLAVIFERA TRIPLEX
4	CONOSPHAERIDIUM STRIATOCONUS
37	CONTIGNISPORITES COOKSONIAE
38	COPTOSPORA PARADOXA
39	COPTOSPORA PILEOSA
40	COROLLINA TOROSUS
5	CRIBROPERIDINIUM SP
41	CRYBELOSPORITES STRIATUS
42	CUPANIEIDITES ORTHOTEICHUS
43	CYATHEACIDITES TECTIFERA
44	CYATHIDITES AUSTRALIS
45	CYATHIDITES MINOR
46	CYATHIDITES SPP
6	CYCLONEPHELIUM COMPACTUM
47	DENSOISPORITES VELATUS
48	DILWYNITES GRANULATUS
7	DINOGYMNIUM ACUMINATUM
49	ERICIPITES SCABRATUS
8	EUCLADINIUM MADURENSE
9	EXOCHOSPHAERIDIUM PHRAGMITES
50	FALCISPORITES GRANDIS
51	FALCISPORITES SIMILIS
52	FORAMINISPORIS ASYMMETRICUS
53	FORAMINISPORIS DAILYI
54	FOVEOTRILETES PARVIRETUS
55	GAMBIERINA RUDATA
10	GILLINIA HYMENOPHORA
56	GLEICHENIIDITES
57	HALORAGACIDITES HARRISII
58	HERKOSPORITES ELLIOTTII
11	HETEROSPHAERIDIUM CONJUNCTUM
12	HETEROSPHAERIDIUM HETEROCANTHUM
59	ILEXPOLLENITES SP
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14	ISABELIDINIUM CRETACEUM
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63	LYCOPODIACIDITES ASPERATUS
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65	LYGISTIPOLLENITES FLORINII
66	MALVACIPOLLIS DIVERSUS
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69	NOTHOFAGUS EMARCIDUS/HETERUS
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99	NUMMUS
100	NUMMUS MONOCULATUS
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17	ODONTOCHITINA NO HORNS
18	ODONTOCHITINA OPERCULATA
19	ODONTOCHITINA PORIFERA
20	ODONTOCHITINA TRIANGULATA
71	OSMUNDACIDITES WELLMANII
72	PERIPOROPOLLENITES POLYORATUS
73	PEROTRILETES JUBATUS/MORGANII
74	PEROTRILETES MAJUS
75	PHIMOPOLLENITES PANNOSUS
76	PHYLLOCLADIDITES MAWSONII
77	PHYLLOCLADIDITES VERRUCOSUS
78	PILOSISPORITES GRANDIS
79	PODOSPORITES MICROSACCATUS
80	PROTEACIDITES
81	PROTEACIDITES GRANDIS
82	PROTEACIDITES NASUS
83	PROTEACIDITES OTWAYENSIS
84	PROTEACIDITES TUBERCULIFORMIS
85	RETITRILETES AUSTROCLAVATIDITES
101	REWORKING: PERMIAN
21	SPINIFERITES FURCATUS/RAMOSUS
86	STEREISPORITES ANTIQUISPORITES
87	STEREISPORITES PUNCTATUS
22	TRICHODINIUM
88	TRICOLPITES
89	TRICOLPITES GILLII
90	TRICOLPITES LONGUS
91	TRICOLPITES VARIVERRUCATUS
92	TRICOLPORITES
93	TRICOLPORITES ESTOUTUS
94	TRICOLPORITES LILLIEI
95	TRIPOROLETES RADIATUS
96	TRIPOROLETES RETICULATUS
23	TRITHYRODINIUM MARSHALLII
24	TRITHYRODINIUM SUSPECTUM
97	VITREISPORITES PALLIDUS
25	XIPHOPHORIDIUM ALATUM