

## INDIGENOTES

ISSUE NUMBER 19, NOVEMBER - DECEMBER 1988.

### **November Meeting**

Tuesday November 29th at 8 p.m. at Ross House, 247 Flinders Lane, Melbourne (between Swanston and Elizabeth Streets). To get in, press the doorbell.

### **December Gathering**

Instead of a meeting in December we will have a purely social gathering on Sunday 11th December at the Campus Wildlife Reserve at La Trobe University, Bundoora, starting at midday. Come and catch up with other indigephiles, relax, enjoy strolling around the billabongs. Bring food and drink. Contact Geoff Carr for more details.

**January - WE NEED A NEW MEETING VENUE.** See page 12 for details.

#### **Articles**

Contributions to Indigenotes should be sent to the Editor, Tony Faithfull, 10 Alsace Street, Brunswick East 3057 (03) 386 0264. The deadline for issue number 20 is January 7th.

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# Help needed to establish a seedbank and information network for the indigenous flora of Melbourne.

By Darcy Duggan and Mark Walsh

The indigenous vegetation throughout much of the state of Victoria has undergone significant and irreversible change since settlement, resulting in the fragmentation of plant communities into small isolated remnants, often confined to roadside reserves, creeks or cemeteries.

The continued loss and degradation of these remnant vegetation sites is highlighted when one examines the status of indigenous vegetation of the Melbourne region. Of the few fragments that have survived, many are under immediate threat of continued urban development, road construction or disturbance and weed invasion due to ignorance and mismanagement. The rate of decline of sites can be very rapid as we have noted from our observations of several sites over the last 12 months. The extent of degradation is such that many ground flora species in particular are facing local extinction.

There is now a growing awareness of the value and significance of Melbourne's natural heritage, and recognition of the need to preserve our indigenous flora. The result of this has been the establishment of a small number of groups and individuals committed to the conservation of remnant sites, re-establishment of wildlife habitat and revegetation of urban waterways within Melbourne.

Seed for most indigenous species is only available for a very limited period of the year and many species operate on a four to five year cycle in which they may produce a large amount of seed in one particular year in the cycle, and either none or very little in the other years. Lack of seed for propagation can seriously disrupt or even prevent any worthwhile revegetation of sites from occurring. Seed from appropriate gene pools must be kept in storage and readily accessible to those propagating plants for revegetation purposes, to offset shortfalls in seed availability and so that available resources in terms of funds, time and labour can be used to maximum efficiency.

One of IFFA's objectives is to establish a network with other groups and individuals involved in propagation and revegetation, to exchange information, contacts and resources. Central to this is the need to collect and collate seed and site information, and establish a seed bank. This would aim to store seed of indigenous species representative of different gene pools throughout Melbourne, which could then be distributed to appropriate groups when required for propagation.

We desperately need help from any interested people who may be able to volunteer a small amount of their time and assist in collecting seed over the coming summer, mainly from December to February.

Past experience has shown that regular monitoring is needed to ensure that seed is not missed when it matures. Monitoring can best be achieved by having a network of people throughout Melbourne who can keep track of remnant vegetation sites in their immediate locality, where they live or work. Where this is not possible however, interested people would be more than welcome to join in small group excursions to designated sites.

As well as seed, there is an urgent need to survey and register remnant vegetation sites to enable proper management of these areas. Any information regarding the location of sites, regardless of how small is important.

Historical information concerning the original vegetation of an area is invaluable in trying to reconstruct vegetation communities, and develop appropriate revegetation strategies for particular sites. This information needs to be collated and documented, and distributed to different groups.

Seed collecting is an excellent means of discovering and learning more about your local indigenous flora, and provides an opportunity to play a vital and positive role in the preservation of these species.

# The Tree Project

from Tony Faithfull

Last week I attended the inaugural public meeting of The Tree Project at the Commission for the future. This new group was full of enthusiasm to contribute to the slowing of the greenhouse effect and the reduction of pollution and environmental damage through planting one million trees in Melbourne by 1990. The group's other aims include "to inform, enrol, guide and inspire the general public with respect to the planting of trees such that everyone can do something that makes a positive difference to our environment".

At the meeting a video was shown which was produced by The Tree People in Los Angeles about a project there which successfully planted over one million trees in the lead-up to the Olympic Games. The video was as a 'pep talk', and led into discussion of how The Tree Project could operate in Melbourne.

The issue of what 'appropriate species' meant was raised. One person argued that an aisle of English Oaks lining the highway from Melbourne to Geelong would be far more interesting than the plantations of native trees and scruffy native vegetation.

Rob Yule from the Department of Conservation, Forests and Lands spoke about farm trees groups using indigenous species, about environmental weeds, about 'urban forestry' having three aspects - planting, conservation of remnants, and long term planning of streetscapes. He spoke about the desirability of using natural regeneration and direct seeding as techniques where appropriate, and mentioned a few groups which have experience in the field. These groups included IFFA and the Victorian Indigenous Nurseries Coop. Rob raised the idea of an 'Urban Forestry Trust' to pursue these broader aims in Melbourne.

The indigenous or not issue was not fully resolved at the meeting, being left to a later date, and to the Group's expert advisors (Men of The Trees), but it was clear that the feeling of the majority of the people attending the meeting was that indigenous was the general rule, not the exception.

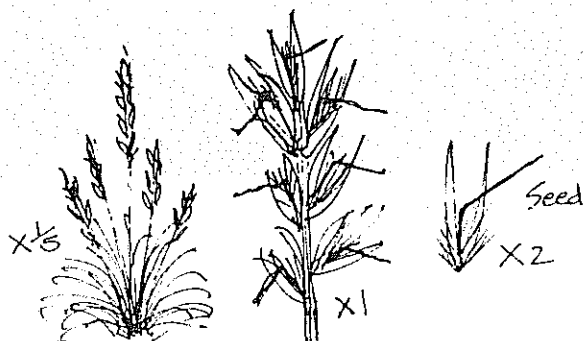
For further information about The Tree Project, contact Maggie Mcleod on (03) 380 8153 (a.h.) or Andrew Wood on (03) 4899405 (a.h.)

People interested and willing to assist in the collection of seed should collect and store seed in paper bags or large envelopes, and label these with the following information: Species name, Locality (include Melways reference), vegetation association, Geology and soil type (a good description can be deciphered by our geologist), date collected, name and address of collector, and any other comments that may be relevant. If the identity of the species is not certain, a pressed specimen of the plant must be included with the seed to allow verification. Collections should be sent to the address below.

All site information regarding species present and seed collected and lodged in the seed bank is being placed on computer file and will be an essential asset in establishing an information and resource network.

We are hoping to establish a comprehensive collection of seed covering most of the gene pools of the Melbourne region over the forthcoming summer. To help achieve this we ask for your support.

For further information please contact Darcy Duggan at Yarra Bend Park, on (03) 4810866, or Mark Walsh at the Victorian Indigenous Nurseries Coop, Lee Street, East Brunswick 3057, on (03) 3874403.



WALLABY GRASS  
*Danthonia* spp.

# More wildlife in South Yarra

By Ian Faithfull

Reference is made to Peter Tucker's note *Wildlife Around South Yarra (Indigenotes vol 17, p7)*. I walked in the Botanic Gardens on 2 September from about 3.40 p.m. There were 27 or 28 White Cockatoos which fed intensively in a small area on the ground on the edge of the Oak Lawn towards the Herb Garden. My impression was that more than one of these birds had a pink tinge to its feathers.

These cockatoos were on the ground when I arrived and seemed to remain in the same area until dusk when about 10 of them took up their overnight roosts in tall trees at the point where Ornamental Lake meets Central Lake. I did not have binoculars and could not see what the birds were eating, while I was reluctant to disturb the flock and suffer their raucous displeasure.

Irene Tomaszewski has told me of a flock of White Cockies seen regularly at St Kilda Public Gardens (about 4.5 km to the south) which is probably the same one seen at the Botanic Gardens. In late August I saw from a moving tram a similar group of birds on the Yarra Park oval just east of the Tennis Centre and across the river from the Botanic Gardens.

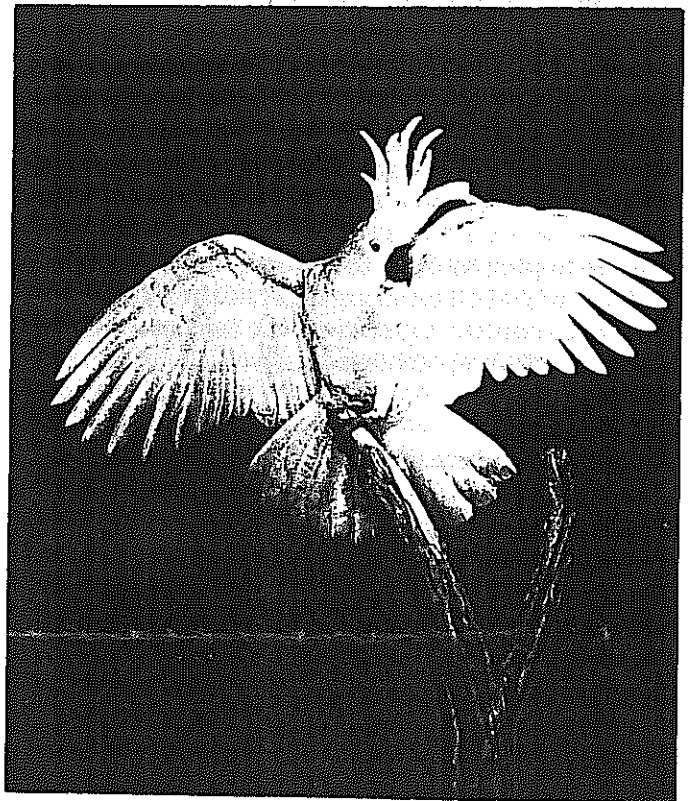
On 25 October one cockie was seen feeding in a tall, leafless, heavily flowered *Erythrina velutina* near A Gate and at dusk four birds took up roost in a tall Liquid-ambar on the promontory north-west of the kiosk.

A distraction from identifying the cockie food on 2 September was the distinctive descending whistle of the Horsefield Bronze Cuckoo. There were two of these, one of which picked grubs or spiders from the underside of tree limbs on the Oak Lawn.

Other native birds seen that afternoon were two species of cormorant, Nankeen Night Heron (1 juvenile), Black Swan, Hardhead (2), Black Duck and Mallard hybrids, Coot, Dusky Moorhen, Silver Gull, Crimson Rosella (3 juvenile), Welcome Swallow (4), Grey Fantail (1), Willy Wagtail, Supurb Blue Wren (a family), White-browed Scrubwren (many), Little Wattlebird, Red Wattlebird (juvenile), White-plumed Honeyeater, Silvereye (Tas. form), Magpie Lark (pair), raven (?sp). Introduced

birds seen were Spotted Turtle-dove, Domestic Pigeon, Blackbird, Thrush, House Sparrow, Starling, Indian Mynah.

I am compiling a list of the birds I have seen at the Botanic Gardens. Can any readers tell me of published lists?



# Coming Events

## NOVEMBER

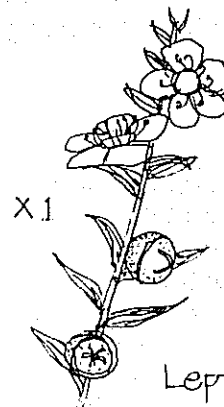
- 25 Friday. Desert Life. Meeting of the Hawthorn Junior Field Naturalists Club. 7.30 p.m. at the Balwyn Primary School Hall, cnr. Balwyn and Whitehorse Roads, Balwyn.
- 26 Saturday. Leadbeaters Possum Survey. Fauna Survey Group of the Field Naturalists Club of Victoria excursion. Contact Ray Gibson on (03) 874 4408 (a.h.) or (03) 328 2441 (b.h.).
- 26 Saturday. Grasses. FNCV Botany Group excursion, led by David Albrecht and Neville Walsh. Contact Miss Margaret Potter, (03) 292779.
- 27 La Trobe University Wildlife Reserves working bee. Bring gloves and a lunch on the day. Contact George Paras on (03) 479 2081.
- 29 Tuesday. IFFA meeting. 8 p.m. at Ross House, 247 Flinders Lane, Melbourne (between Swanston and Elizabeth Streets).

## DECEMBER

- 2 - 3 Friday - Saturday. Native Grassland Re-vegetation Seminar. Seminar aiming to provide people with the theoretical knowledge and practical skills necessary to establish new native grasslands, manage existing ones and rehabilitate damaged land such as pastures, alpine areas and mining sites. 9.30 a.m. to 5.00 p.m. at the University of Tasmania Geography Building, ground floor lecture theatre. Contact Louise Gilfedder (002) 232 597 or Jerry deGryse (002) 238 477.
- 3 Saturday. Leadbeaters Possum Survey. Fauna Survey Group of the Field Naturalists Club of Victoria excursion. Contact Ray Gibson on (03) 874 4408 (a.h.) or (03) 328 2441 (b.h.).
- 10 - 11 Saturday - Sunday. Water Rat survey at Werribee. FNCV Fauna Survey Group survey camp. Contact Julian Grusovin, (03) 211 4997.

## DECEMBER

- 11 Sunday. IFFA social gathering. Celebrate the seed collecting season and the end of the year. Catch up on other indigenous-photos, or stroll around the billabongs. Starting midday and going on into the wee hours, at the Campus Wildlife Reserve, La Trobe University. Bring food and drink. Contact Geoff Carr (03) 489 4191 (b.h.) or (03) 20 5784 (a.h.).
- 11 Sunday. Bird Seminar. Organized by the Friends of the Brisbane Ranges. Speakers include Paul Peake on 'Birds of prey' and Trevor Pescott on 'Birds of the Brisbane Ranges'. 1.00 p.m. at Anakie Hall, Stangton Vale Road, Anakie. Contact: Nola Haines (052) 96388.
- 30 - Feb 5th. The Great Tasmanian Forests Walk. The Wilderness Society walk from north coast to southern tip of Tasmania. Take part in all or part of the walk. For information kit and registration, enclose \$5 and send to TWS (the Walk), 130 Davey St, Hobart 7000.



PRICKLY  
TEA-TREE

*Leptospermum juniperinum*

# Notes on the original vegetation of the lower Yarra River and Hobsons Bay area.

By G.W. Carr.\*

## Introduction

The original vegetation of the lower Yarra and its mouth is almost totally destroyed by urban and industrial development. The area includes the cities of Port Melbourne, Melbourne, South Melbourne, Footscray and Williamstown. Attempted reconstruction of the vegetation is further hampered because of extensive alteration to the land surface in the form of filling of swamps etc, obscuring the original soils and relief. By extrapolation however from the very few existing vegetation remnants in the study area, with reference to a geological map, a broad scale hypothetical reconstruction is possible.

## Methods

The study area was surveyed in November 1979 for any remnants of the original vegetation or occurrences of native species. The location of species were noted along with the soil type on which they occurred.

The general geology of the area was taken from the Geological Survey of Victoria (1967) and the original vegetation was extrapolated, based on relief, soil type, existing vegetation remnants in the study area and Greater Melbourne as well as by historical records.

## Results and discussion

The study area basically contains two geologies: Quaternary basalts (rises) and Quaternary alluvial flats, mud flats, beach and estuarine deposits which include siliceous and shelly beach dunes. These alluvial deposits occupy the greater part of the study area.

In all 40 species of native plants were found in the study area. Most of these are considered members of the original vegetation but a few may be recent introductions (in fill etc), the original material having become locally extinct.

Some of the species found were dominants of well defined communities in the study area which are intact enough for accurate reconstruction while

others exist only as isolated remnants of an almost obliterated community. Two additional dominants of the original vegetation were taken from the historical record (Hall, 1932). Appendix 1 lists all species found during the study and includes additional species recorded by Hall (1932).

On the basis of the information obtained, 15 community types have been recognised as probable components of the original vegetation in the study area. These communities with the dominant species indicated are presented in Table 1. Structural nomenclature of vegetation follows Specht (1970) and plant nomenclature follows Forbes and Ross (1988). It is emphasised that this is a hypothetical reconstruction based on minimal data and that the communities cannot be defined on the ground in most instances.

The study area would have contained a mosaic of vegetation communities determined by gradients in soil nutrient status, moisture, salinity and pH. A sequence seaward to landward of plant communities would have reflected most of these parameters.

As a strictly marine community, mangroves would have been extensive in sheltered embayments. These are now virtually extinct (Ashton 1972), probably as a result of pollution. Landward to the littoral fringe of mangroves, extensive tidal and sub-tidal salt marshes dominated by halophytes would have occurred. Almost intact remnants still exist at Port Melbourne (though very reduced in area).

Further inland the salinity gradient would have determined the extent of brackish marshes, much degraded examples of which still exist under Westgate Bridge (Port Melbourne), and freshwater swamps. Shrublands or thickets dominated by *Melaleuca ericifolia* (Swamp Paperbark) may have also been occurred in the area at the margin of the swamps. This species occurs further up the Yarra River and is a well-defined vegetation community east of Melbourne. Grasslands and sedgeland

\* Manuscript originally written in December 1979; taxonomic nomenclature updated November 1988.

would probably have formed extensive communities around or as part of the brackish or freshwater marshes.

The more elevated area (newer basalt at Williamstown) would have carried woodland communities dominated by *Casuarina stricta* (Drooping Sheoak), *Acacia mearnsii* (Black Wattle) and *Exocarpos cupressiformis* (Cherry Ballart) as described by Hall (1932, see also Carr 1979). Basalt of the same type also occurs on the north side of the Yarra River in the vicinity of Spencer Street Bridge. This would probably have supported the same species but *Eucalyptus viminalis* (Manna Gum) may well have occurred here as well. *Eucalyptus camaldulensis* (Red Gum) would very likely have occurred on the river flats such as the lower Maribyrnong River forming open woodland with a grassy understorey dominated by *Poa labillardieri* (Tussock Grass).

Siliceous and shelly beach deposits fringing Hobsons Bay in South and Port Melbourne still carry remnants of former vegetation. Siliceous foredunes are presently dominated by *Spinifex hirsutus* (Hairy Spinifex) with swards of *Carex pumila* (Strand Sedge) in moist depressions. Secondary siliceous dunes probably supported a dense shrubland of *Leptospermum laevigatum* (Coast Tea-tree) with *Leucopogon parviflorus* (Coast Beard-heath) and *Banksia integrifolia* (Coast Banksia) especially in the eastern extremity of the study area. *Pteridium esculentum* (Common Bracken) still occurs on secondary dunes at Port Melbourne and would doubtless have been a prominent species in the shrublands.

Shelley deposits would have supported shrublands of *Atriplex cinerea* (Grey Salt-bush) as indicated by Hall (1932, see also Carr 1979). This species also occurs as remnants on mixed sandy-shelley dunes at Port Melbourne.

*Melaleuca lanceolata* (Moonah) may have formed shrublands or stands in parts of the study area on well drained soils of higher pH. Such sites may have occurred on basalt and alluvial soils - see Willis (1948).

### Conservation

The existing remnant species and communities are considered to have very high conservation value and should be preserved wherever possible. Material from local species should be used in restoration work. The remnants are also valuable in the botanical-historical context.

During the study Banded Stilts (*Cladorhynchus leucocephalus*) and Black Swans (*Cygnus atratus*) were noted breeding on the salt marsh and brackish swamp remnants in Port Melbourne.

### References

- Ashton, D.H. 1971-1972, 'Mangroves in Victoria', *Victorian Resources*, vol. 13, no. 4, pp. 67-74.
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- Hall, W.A. 1932, 'Early Williamstown', *The Victorian Historical Magazine*, vol. 1, no. 4, pp. 115-128.
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- Willis, J.H. 1970, *A Handbook to Plants in Victoria*, vol. 1, Melbourne University Press, Melbourne.
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**Table 1. Probable plant communities within study area.**

| Community Type                     | Dominants   | Existing Remnants  | Comments   |
|------------------------------------|---|--|--|
| 1. Mangrove shrublands             | <i>Avicennia marina</i>   | see Ashton (1972).   | Probably now extinct in study area.  |
| 2. Coast Tea-tree shrubland        | + <i>Leptospermum laevigatum</i><br><i>Leucopogon parviflorus</i><br><i>Banksia integrifolia</i><br>( <i>Helichrysum paraltum</i> )<br>( <i>Rhagodia candolleana</i> )<br>+ <i>Pteridium esculentum</i>                   | 1 specimen of <i>L. laevigatum</i> found at Port Melbourne on secondary dune (but this may have been planted). | A dominant coastal vegetation type of eastern Port Phillip Bay.  |
| 3. Tidal and sub-tidal salt marsh. | <i>Sclerostegia arbuscula</i><br>+ <i>Halosarcia pergranulata</i><br>+ <i>Sarcocornia quinqueflora</i><br>+ <i>Suaeda australis</i><br>+ <i>Frankenia pauciflora</i><br>+ <i>Samolus repens</i><br><i>Juncus kraussii</i> | A salt marsh remnant still occurs in Port Melbourne.   |  |
| 4. Brackish Marsh                  | + <i>Bolboschoenus caldwellii</i><br>+ <i>Schoenoplectus pungens</i><br>+ <i>Potamogeton pectinatus</i>   | Intact remnants still occur under Westgate Bridge at Port Melbourne.   |  |
| 5. Freshwater swamp.               | <i>Phragmites australis</i><br>+ <i>Typha domingensis</i><br><i>Eleocharis sphacelata</i><br><i>E. acuta</i><br><i>Triglochin procera</i><br><i>Potamogeton spp.</i>  | No remnants found  | Permanent swamps of the type once existing in the lower Yarra billabongs such as at the site of the Royal Botanic Gardens.   |
| 6. Swamp Paper-bark thickets       | <i>Melaleuca ericifolia</i><br>+ ( <i>Acacia melanoxylon</i> )  |  | No evidence of this community exists but the species occurs on the lower Yarra and widely in eastern Melbourne suburbs. A small stand of <i>A. melanoxylon</i> was found in Port Melbourne on an industrial allotment in seasonally waterlogged soil.  |
| 7. Coastal Salt-bush               | + <i>Atriplex cinerea</i>   | Several specimens found on beach dunes at Port Melbourne.  | See Hall (1932) and Carr (1979).   |
| 8. Grassland                       | A) <i>Stipa stipoides</i><br>B) <i>Poa poliformis</i><br>C) <i>Danthonia spp.</i><br><i>Stipa spp.</i><br>D) <i>Themeda triandra</i><br>E) <i>Poa labillardieri</i>   |  | A frequent dominant or co-dominant on brackish soils in central Victoria.<br>A frequent dominant on fertile coastal clay loam soils (see Carr, 1979).<br>Frequent on basalt plains where <i>Themeda triandra</i> is not a dominant. Probably associated with woodland communities in study area (see Willis, 1964).<br>A dominant community of the basalt plains and a typical understorey to <i>Eucalyptus camaldulensis</i> and <i>E. viminalis</i> woodland (see Willis, 1964).<br>Dominant community on seasonally waterlogged soils on the basalt plains and alluvial flats, often with <i>Eucalyptus camaldulensis</i> . |
| 9. Woodlands                       | A) <i>Allocasuarina verticillata</i><br><i>Acacia mearnsii</i><br>B) <i>Eucalyptus viminalis</i><br>C) <i>Eucalyptus camaldulensis</i>  |  | See Hall (1932) and Carr (1979).<br><br>Occurs on the basalt plain and as a dominant riparian tree (see Willis, 1964).   |
| 10. Sedgeland                      | <i>Gahnia filum</i><br>( <i>Juncus kraussii</i> )   |  | These species form extensive communities bordering salt marshes and on brackish soils in coastal Victoria.   |
| 11. Moonah shrublands or stands    | <i>Melaleuca lanceolata</i>   |  | This tree is common in coastal central and western Victoria (see Willis, 1948).  |

+ Species actually recorded within the study area.  
Common names can be found in Willis (1970, 1972).

Species in brackets were probably minor constituents of the community.

## Appendix 1. Native vascular plant species recorded in the lower Yarra River and Hobsons Bay area, Victoria, December 1979.

| <u>Botanical Name</u>            | <u>Common Name</u>          | <u>Botanical Name</u>                     | <u>Common Name</u>   |
|----------------------------------|-----------------------------|---|----------------------|
| FERNS                            |                             | DICOTYLEDONS                              |                      |
| Dennstaedtiaceae                 |                             | Aizoaceae                                 |                      |
| <i>Pteridium esculentum</i>      | Austral Bracken             | <i>Disphyma crassifolium</i>              | Rounded Noon-flower  |
| MONOCOTYLEDONS                   |                             | Asteraceae                                |                      |
| Cyperaceae                       |                             | <i>Pseudognaphalium luteoalbum</i>        | Jersey Cudweed       |
| <i>Carex pumila</i>              | Strand Sedge                | Caryophyllaceae                           |                      |
| <i>Bolboschoenus caldwellii</i>  | Sedge                       | <i>Spergularia media</i>                  | Coast Sand Spurrey   |
| <i>Isolepis cernuua</i>          | Sedge                       | Casuarinaceae                             |                      |
| <i>I. nodosa</i>                 | Knobby Club-rush            | <i>Allocasuarina verticillata</i>         | Drooping She-oak     |
| <i>Schoenoplectus pungens</i>    | Sedge                       | Chenopodiaceae                            |                      |
| Juncaceae                        |                             | <i>Sclerostegia arbuscula</i>             | Grey Glasswort       |
| <i>Juncus bufontis</i>           | Toad Rush                   | <i>Atriplex cinerea</i>                   | Grey Saltbush        |
| <i>J. kraussii</i>               | Sea Rush                    | <i>A. semibaccata</i>                     | Berry Saltbush       |
| <i>J. pallidus</i>               | Pale Rush                   | <i>Sarcocornia quinqueflora</i>           | Beaded Glasswort     |
| <i>J. subsecundus</i>            | Rush                        | <i>Suaeda australis</i>                   | Austral Seablite     |
| Juncaginaceae                    |                             | Crassulaceae                              |                      |
| <i>Triglochin striata</i>        | Streaked Arrow-grass        | <i>Crassula sieberana ssp siebertiana</i> | Sieber Crassula      |
| Lemnaceae                        |                             | Frankeniaceae                             |                      |
| <i>Lemna minor</i>               | Duckweed                    | <i>Frankenia pauciflora</i>               | Sea Heath            |
| Poaceae                          |                             | Geraniaceae                               |                      |
| <i>Agrostis avenaceae</i>        | Blown Grass                 | <i>Geranium solanderi</i>                 | Austral Crane's-bill |
| <i>Distichlis distichophylla</i> | Australian Salt Grass       | Mimosaceae                                |                      |
| <i>Eragrostis parviflora</i>     | Love Grass                  | <i>Acacia mearnsii</i>                    | Black Wattle         |
| <i>Poa poliformis</i>            | Blue Tussock Grass          | <i>A. melanoxylon</i>                     | Blackwood            |
| <i>Puccinellia stricta</i>       | Australian Salt-marsh Grass | Myrtaceae                                 |                      |
| <i>Spinifex hirsutus</i>         | Hairy spinifex              | <i>Leptospermum laevigatum</i>            | Coast Tea-tree       |
| Potamogetonaceae                 |                             | Onagraceae                                |                      |
| <i>Potamogeton pectinatus</i>    | Fennel Pond weed            | <i>Epilobium hirtigerum</i>               | Hairy Willow-herb    |
| Zannichelliaceae                 |                             | Oxalidaceae                               |                      |
| <i>Lepilaena cylindrocarpa</i>   | Long-fruited Water-mat      | <i>Oxalis</i> sp.                         | Yellow Wood-sorrel   |
|                                  |                             | Primulaceae                               |                      |
|                                  |                             | <i>Samolus repens</i>                     | Creeping Brookweed   |
|                                  |                             | Santalaceae                               |                      |
|                                  |                             | + <i>Exocarpos cupressiformis</i>         | Cherry Ballart       |
|                                  |                             | Verbenaceae                               |                      |
|                                  |                             | <i>Avicennia marina</i>                   | White Mangrove       |

+ Species recorded by Hall (1932).

# GERMINATION OF AUSTRALIAN NATIVE PLANT SEED

Peter J Langkamp

\$60.00 236pp Inkata Press 1987

The landscapes and natural environments of Australia have been dramatically altered over the last 200 years. Agriculture and mining have played a central role in the production of national wealth, but they have been the major contributors to this environmental change. Aggravated and chronic salinity, weed infestation, soil erosion, rock piles and settlement ponds, are all signs of economic activity. Ecological processes and dynamics have been altered.

This book represents a significant contribution to our understanding of native plants. Scientists and land managers combine to present valuable information which will help those who have any responsibility for land development or rehabilitation.

Peter Langkamp and all contributors should be congratulated on the publication of this excellent compendium of information. Congratulations also to the Australian Mineral Industries Research Association for their support.

The book is authoritative, the

topic development is logical and it is attractively produced. Each chapter is full of information and is well referenced so that a reader can follow more specialist interests if desired. This is a book for the manager and the practical re-

tiveness of landscape rehabilitation and development.

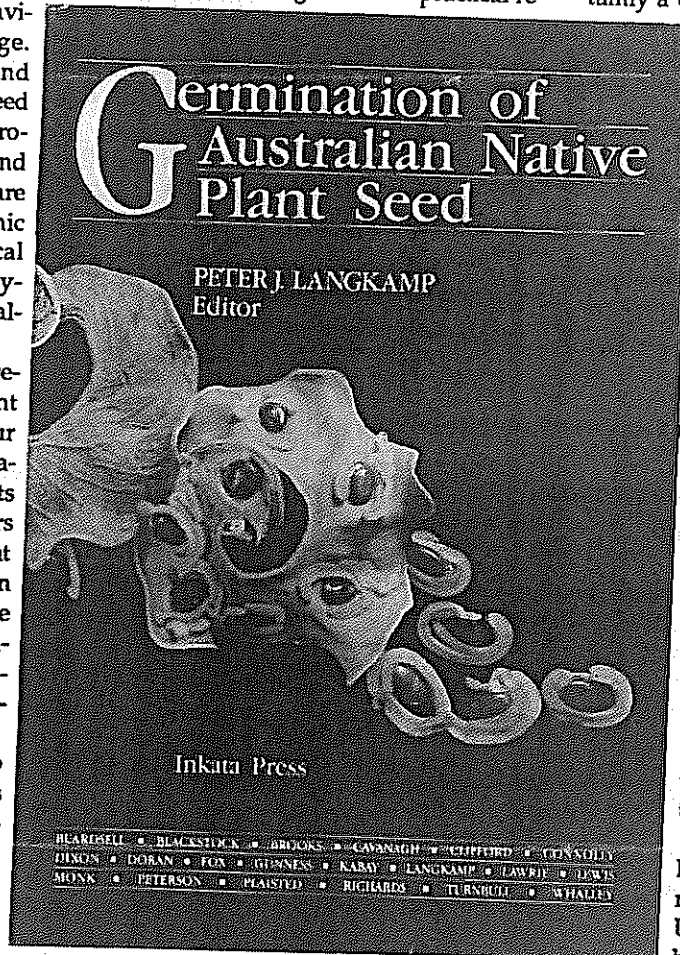
Inkata Press are making a name for themselves as publishers of quality books on the Australian environment and this one is certainly a credit to their team. Al-

though at \$60.00 I think the book is rather expensive. It is important that the book is widely used by practical land managers in industry as well as Local and State Government. Its impact will be directly proportional to the number in the hands of practitioners. The mining industry could have contributed to community development by subsidising the purchase price - a small cost for a large impact.

I recommend this book as an authoritative and informative synthesis of information on the complex topic of germination.

**Dr. Malcolm Calder,**  
reader in Botany,  
University of Melbourne. Dr Calder-

has taught Botany at the University since 1966. His research interests include reproductive biology of native plants.



searcher who needs an entrance into the literature. It is a model production and should go a long way towards improving the effec-

Available from Greens Bookshop, 247 Flinders Street, Melbourne 3000. Phone 6544833. Reprinted from Greens Illustrated Review, Environment Victoria.

REVIEW

AFTER YEARS of excellent books that clearly set out the problems facing the Earth's wildlife, how do you write another and make it appealing? The flip answer to that question is: "with great difficulty". In *Life in the Balance*, however, David Rains Wallace succeeds in finding many new examples of animal and plant communities which are in danger due to human activities. Because of this new material, his book is much more than the coffee-table tome that I feared.

Part of the reason I found the material new could be because *Life in the Balance* is based on the American Audubon TV series, and the great majority of cases of endangered plants and animals and communities that Wallace documents are North American.

The fact that the book is based on a prestigious TV series almost certainly accounts for the excellent quality of the photographs which complement but never overwhelm the text.

So much has been written recently about the rapidly disappearing tropical rainforests, that I found Wallace's chapter on the world's grasslands—an ecotype I'd not realised was under special environmental threat—particularly refreshing. Wallace points out that, compared to forests, grasslands are very recent, having evolved only in the past 100 million years and reached major importance only about 30 million years ago. Today's grasses are adapted to

New Scientist 24/31 December 1987

# The threat to our grasslands

by David Rains Wallace, *Harcourt Brace Jovanovich*, pp 309, \$29.95  
Steven Hedges

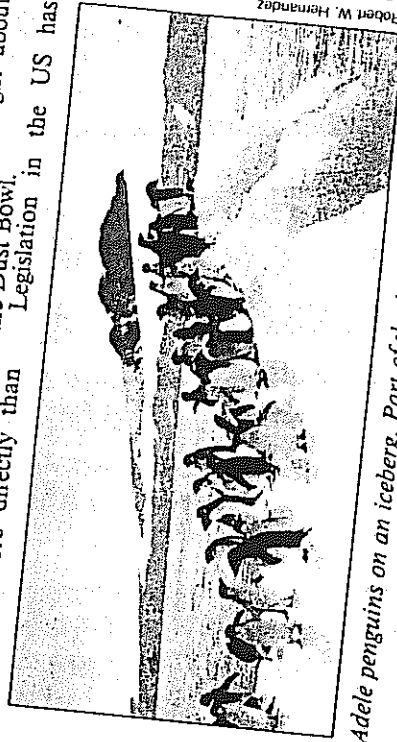
survive adverse conditions, such as soil that is too wet or too dry, or locations where fires are common, or where animals browse the tops of the vegetation. The ancestors of these grasses probably came to prominence when such conditions were widespread.

By the Pliocene period, about 10 million years ago, grasslands were enjoying a peak global distribution and most of today's grassland animals had evolved along with many spectacular creatures such as giant ground sloths, sabre-toothed tigers, 10-foot-tall kangaroos and lion-like marsupials. Later, about 2 million years ago, our ancestor, *Homo erectus*, began exploiting grasslands more directly than

any animal had done before. Quite suddenly and quite recently—within the past 50 thousand years—much of the ancient grassland flora and fauna vanished. This was partly due to climatic changes but also humans and the subsequent invention of modern agriculture. However, great tracts of wild grassland remained until about 200 years ago. Emigration and transport played major roles in its demise but, as Wallace points out, the exploitation of US's grasslands didn't climax until the 1930s when over-grazing and ploughing of marginal lands brought about the Dust Bowl.

Legislation in the US has helped slow down the final destruction of the US's grasslands. But, Wallace estimates, a third of the world's grassland has been so exploited by overgrazing that only very hardy annual grasses survive, and even these don't grow in drought years. The final stage of grassland deterioration is desertification and as we've all seen all too clearly on our TV screens in the past couple of years the Sahara desert is spreading into the former grasslands of the Sahel at an alarming rate.

Another refreshing chapter is the one on mountains. Here, Wallace gives a very full and interesting account of the fight to save the last wolves and grizzly bears in the western mountains of the US. And his chapter "The Skies" includes a fascinating section on the Californian condor which, despite superhuman efforts, survives only in captivity. *Life in the Balance* claims to differ from other books on conservation in emphasising the positive approach that people can take in preserving natural resources, and ultimately saving the future. However, as is the case in other good books on conservation, the message that comes through in chapter after chapter is that, despite heroic attempts to save some rare species or threatened areas of habitat, the overall trend, worldwide, is towards ever-faster environmental destruction. The message is depressing but *Life in the Balance* is well worth reading.



Adele penguins on an iceberg. Part of the intricate web of life in the arctic regions

Robert W. Henderson

## IFFA Meeting Venue

Due to size constraints and management decisions, IFFA needs to find a new venue for its meetings.

### GOT ANY IDEAS?

Bring ideas to the November meeting or ring Michele Arundell on (03) 267 4173 (a.h.)

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## Memberships

IFFA membership costs \$20 for families and groups, or \$10 for individuals. Memberships should be sent to the Treasurer, Dale Tonkinson, C/o Botany Department, La Trobe University, Bundoora 3083.

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