

INDIGENOTES

See Back Cover for more information.

THE PLAINS WANDERER

A regular series by botanist Ian Lunt* on endangered native grasslands and grassy woodlands with a special contribution from naturalist Damien Cook.

Seeds in the balance

As I remember, a pivotal scene in the schmalzy film, *Local Hero*, features a yuppie businessman, trying to buy a beach from a hermit. After much discussion, the wise old hermit offers the beach for sale, the price being a dollar for every grain of sand that he can hold in his hand. As such obscure forms of currency were never discussed at Harvard Business School, the young professional declines the offer. The hermit shakes his head and gently informs the yuppie that he just missed a great business deal.

Seeds, not sand, are the currency of revegetation. I haven't a clue how many grains of sand I can hold in one hand, but I do need to know how many seeds I can collect each year, and how many I have stored in paper envelopes at home.

Weighing seeds may seem an esoteric pastime, but a knowledge of seed weights is critically important for conservation and revegetation. For instance, many government agencies provide permits to collect a set weight of seed - in most cases I'm sure the people issuing the permits haven't a clue how many seeds they have allowed to be collected.

In a recent edition of *Indigenotes*, a Greening Australia initiative, the Melbourne Indigenous Seedbank was advertised. Under this scheme people can order seeds of required indigenous plants, and need merely request how many grams of seed they want. After reading the article I wondered, how many people know how many seeds there are in a gram for different species? If seeds are such a precious resource it would seem to me to be much more sensible to have people order the number of seeds they want, not how many grams. For a quick test, how many seeds of Chocolate Lily (*Arthropodium strictum*) do you think there are in a gram: 10, 100, 1,000 or perhaps even 10,000? How about Common Everlasting (*Chrysocephalum* (or *Helichrysum*) *apiculatum*)?

Recently, John Morgan, Neville Scarlett and I, at LaTrobe University, began to compile a seed weight database for grassland and woodland herbs. Hopefully in a year or two we should be able to provide a list of comparative seed weights for a wide range of species. In the meantime, I thought it would be useful to provide some data to indicate the extraordinary range of seed sizes in the grassland flora. Seed sizes vary extraordinarily in nature, from the enormous seeds of the double coconut (*Lodoicea maldivica*), which weigh up to 27 kg each, to the tiny seeds of orchids which have millions of seeds in a gram (Fenner 1985). Obviously, Australia's grassland flora doesn't contain any seeds as heavy as the double coconut. Nevertheless, even within a single site there are undoubtedly huge variations in seed size between species, with the smallest orchid seeds being at least 1/1,000 of the weight of the largest seeded species.

The accompanying table lists seed weights for 21 common grassland and woodland herbs. The weights are expressed as the number of seeds in a gram. Seeds weights often vary between populations, so these numbers should be interpreted rather loosely. The important point is the gross order of magnitude, i.e. whether there are 100, 500 or 1000 seeds per gram, not whether there are 1238 versus 1243 seeds per gram. As you can see, the weights vary dramatically. One seed of Pink Bindweed weighs as much as 140 seeds of Common Everlasting.

Putting a price on the much-loved seeds of endangered plants is a risky venture. The innovative Melbourne Indigenous Seedbank offers seeds of the endangered Button Wrinklewort (*Rutidosia leptorrhynchoides*) at \$600/kg (the fine print reads, "to approved purchasers only"). Weighing in at about 620 seeds per gram, this means that you can buy 100 seeds for 10 cents, the price of a musk stick, which seems quite a bargain to me.

Perhaps this might help our "green economists" calculate the value of threatened populations of Button Wrinkleworts. Picture the scene. A popular Melbourne art-house film, "Local Remnant" (di-

* Botany Department, LaTrobe University, Bundoora, 3083.

rected by Nadia Tass, with guitar soundtrack by Nathan Cavelleri), features a yuppie economist, driving home from the annual dinner of the H.G. Nicholls Society. As he drives he calculates how much he might need to pay to build a “development” on a remnant population of Button Wrinkleworts. If the greenies sell 100 seeds for 10 cents, then each seed is worth 0.1 cents. If only 1% of the seeds that are produced each year in

the wild survive, then each plant is worth 100 times as much as a seed, which means 10 cents each. There are only 200 plants in the remnant, so we can take the lot for just twenty bucks. Better value than a handful of sand!

Reference

Fenner, M. (1985). “Seed Ecology”. (Chapman and Hall, London).

Red Gum Grassy Woodlands South-east of Melbourne

By Damien Cook

Huge, gnarled trunks of scattered ancient River Red Gums rise above swaying fields of purplish Kangaroo Grass, which extend across the gently undulating plain to the horizon. Among the Red Gums are clumps of Blackwood, Black Wattle and Kangaroo Thorn, while the ground is carpeted with the blues and purples of Chocolate Lilies and Donkey Orchids, the yellows of Scaly Buttons and Rush-lilies and the white of Milkmaids.

Mobs of Eastern Grey Kangaroos graze contentedly and a small family of Kori Bustards strut in the soft light of dusk.

Bright green patches among the Kangaroo Grass bely the presence of small swamps filled with Spike-rush and Swamp Wallaby-grass. Here Snipe and Buff-banded Rails move cautiously through

patches of Swamp Daisies, bright yellow Marsh-flowers and Billy Buttons, and a chorus of Banjo Frogs call frantically.

Such a late spring vista could well describe many areas of the River Red Gum grassy woodlands which covered some of Victoria’s lowland plains 170 years ago, or BWI (Before White Invasion). This particular reconstruction, however, specifically refers to the plains south east of Melbourne, extending from St. Kilda, through parts of Brighton, Sandringham, Caulfield, Oakleigh, Springvale, Mordialloc and Dandenong and into some areas of Hallam, Cranbourne and Frankston.

It is a common mis-conception that this area was exclusively covered by heathland vegetation. This

Red Gum Grassy Woodlands Southeast of Melbourne

Continued from page 3.

is not surprising given the early botanical history of the area. Many articles in the early issues of the Victorian Naturalist describe the spectacularly diverse heathlands around Cheltenham, Sandringham and Oakleigh, including two much celebrated papers by Sutton, "Notes and Supplementary Notes on the Sandringham Flora" (Sutton 1911 and 1912).

In these articles Sutton describes in detail the coastal, wet and dry heathland communities and provides a fairly comprehensive species list for the vascular plants of the region. Although he does not mention anything specific about grassy woodlands his list contains species such as Blue Devil and Cut-leaf Goodenia, which obviously must have grown in such a community.

This oversight is probably due to the fact that grassy woodlands were the first ecosystem to be disturbed in the region, as they provided the best grazing land for the European invaders, who arrived in the area around the late 1830's. By the time naturalists started visiting the district in droves at the turn of the century much of the original grassy woodland vegetation had probably been significantly disturbed.

The naturalists, dazzled by the brilliance of the spring wildflowers in the heathlands, probably didn't bother too much with disturbed grassy woodland remnants. You can hardly blame them when there were more or less intact heathland communities to explore in the less fertile sandy country. The lack of investigation of the more fertile plains was acknowledged by Hart (1939) when he wrote "our general idea of the district is largely influenced by the poorer land".

The wet and dry heathland communities everyone got so excited about were confined to areas of sandy dunes, which are relatively recent in origin and are composed of aeolian (wind-blown) sand. These dunes are most extensive in Sandringham, Cheltenham, Moorabbin, Clarinda and central Springvale, become smaller and more scattered to the south and east and finally end around Dandenong and south Springvale. Around these dunes are extensive plains of Tertiary sediments and Quaternary swamp deposits traversed by quaternary alluvium along creeks (GSV 1981).

These plains once supported a mosaic of grassy woodland and various wetland communities. Evidence to support this assertion comes in the form of historic accounts and remnants of the original vegetation. Historic accounts of the vegetation of these plains are generally not very

detailed or botanically descriptive, such as "open-forest land, covered with a good coat of grass" (Hovell 1827) and "open forest land, timbered with Gum, Oak, Cherry and Honeysuckle" (Townsend 1841).

A few more botanically detailed accounts do exist, including Harts description of a grassy woodland in Highett (Hart 1939) and Hannifords description of the "grassy pastures" around Brighton (Hanniford 1856).

Perhaps the most convincing evidence are the small, scattered remnants which are all that remain of these once extensive communities. Typical of remnants of lowland grassy woodlands most occur on linear reserves such road, rail and creek reservations and on private land which has escaped heavy grazing, such as racecourses and golf courses. Some of these remnants are very diverse and support rare species including the Purple Diuris (or Donkey Orchid) and River Swamp Wallaby-grass.

Approximately 190 taxa of indigenous plants have been found in remnants of grassy woodland throughout the area. At least a further 40 taxa were recorded historically in the area's grassy woodlands but are presumed to be locally extinct.

The most diverse families are the grasses (Poaceae) with 30 species and the sedges (Cyperaceae) with 22 species. Daisies (Asteraceae) were once more diverse than sedges with a total of 28 species, although 11 of these are apparently locally extinct. Lilies (Liliaceae) and Rushes (Juncaceae) are also well represented with 14 and 8 surviving species respectively. Woody species, trees and shrubs, made up only 9% of the total grassy woodland flora of the region.

The most common dominant eucalypt was and still is the River Red Gum. This species either grows in pure stands, in association with Yellow Box, Swamp Gum and Rough-barked Manna Gum on low ridges (Hart 1939) or with Swamp Gum in low lying areas.

Small trees and tall shrubs which remain common include Blackwood, Black Wattle, Sweet Bursaria and Native Cherry. Drooping and Black Sheokes were historically common, as was tree-form Silver Banksia, but these are now rare in this type of vegetation. Lower shrubs include Kangaroo Thorn, Golden Spray, Prickly Tea-tree and Grey Parrot-pea.

The driest areas of grassy woodland occurred on a few low ridges which are scattered through Brighton, Highett, Oakleigh and Springvale. The field-layer on these ridges was probably dominated by Kangaroo, Wallaby and Spear-grasses. There are very few remnants of this type of grassy woodland and unfortunately T.S. Hart did not name the species of grass in the article in which he described this vegetation (Hart 1939).

The clay content of soils derived from the Tertiary sediments, Quaternary swamp and alluvial deposits on which most remnants of grassy woodland now grow generally causes winter and spring water-logging. In remnant areas which grow on such soil types and which are not subject to prolonged inundation Kangaroo Grass is the dominant species, although Mat Grass and Common Love-grass are often also abundant, as are small sedges including Common Bog-rush and Short-stemmed Sedge.

Depending on past management and disturbance history a range of lilies, orchids and forbs (broad-leaved herbs) may also be present in remnant areas. These include Grassland Woodsorrel, Varied Raspwort, Sheep's Burr, Narrow Plantain, Grassland Crane's-bill, Creeping Bossiaea, Milkmaids, Blue Grass-lily and at one site the vulnerable Purple Diuris. Weeds are abundant in most remnants, including Yorkshire Fog, Sweet Vernal Grass and Cat's Ear.

Low lying areas where drainage is poor are usually inundated for 3 to 6 months each year, generally from around June up to December. Such areas support a plant community analogous to the Grassy Wetlands of the basalt plains west of Melbourne.

These wetlands are usually dominated by Common Spike-rush, Swamp Wallaby-grass and, in areas of less prolonged flooding, Tasmanian Wallaby-grass or Common Tussock-grass. In the most intact remnants semi-aquatic herbs are diverse and abundant, including Joint-leaved Rush, Small Spike-rush, White Purslane, Poison Lobelia, Water Milfoil, Running Marsh-flower and a diminutive form of Water Ribbons.

Most of the plains area mentioned above probably had a field-layer dominated by Kangaroo Grass, with scattered patches of shallow grassy wetlands. However around Carrum Carrum Swamp this

situation was reversed, with Kangaroo Grass dominated areas restricted to islands of higher ground.

The best places to see remnants of Red Gum grassy woodland in the south-eastern area are at Fotheringham Reserve in Dandenong (Mel Ref 89 K4) and along the Dandenong-Cranbourne railway line at Greens Road in Cranbourne (Mel Ref 95 H3). Other interesting remnants occur at Braeside Metropolitan Park and in Sandown Racecourse, but access to these sites is restricted.

These areas have got all the right species, but are they really remnants of grassy woodland? According to the "Draft Conservation Program for Native Grasslands and Grassy Woodlands in Victoria" (DCE 1992) in order to qualify as grassy woodland, vegetation should have scattered trees with less than 30% cover.

Many remnants in the area have had their structure drastically altered by tree felling, altered grazing regimes and regular slashing. These areas often support fairly dense stands of young trees and don't really look like a good grassy woodland should.

To gain a better understanding of the original structure of these woodlands you need to drive around the paddocks of South Springvale, Dandenong and Lyndhurst. Here huge, spreading veteran Red Gums are scattered at intervals of about 50 meters. Some of these trees have crowns which spread over 900 square meters and have trunks in excess of 6 meters circumference. Prior to European invasion such trees were possibly standard rather than exceptional.

Further evidence to suggest the open nature of these woodlands are early fauna records. Horace Wheelwright was a shooter who supplied Melbourne meat markets in the 1850's. His main camp was on Mordialloc Creek. When he returned to England he published a book "Bush Wanderings of a Naturalist" which details much of the area's fauna.

Two species recorded by Wheelwright, the Kori Bustard and the Bush Thick-knee, are generally confined to areas of open grassy woodland. Of these species Wheelwright noted; "(the Bush Thick-knee) was not at all rare with us at certain seasons, in small flocks, but they did not breed with us" and "(Kori Bustard) generally came to our district as stragglers, but an odd couple or so bred" (Wheelwright 1861).

Other fauna historically associated with grassy woodlands and associated wetlands in the region include Brolga and large mobs of Eastern Grey

Red Gum Grassy Woodlands Southeast of Melbourne

Continued from page 5.

Kangaroos. Koories of the Bunurong tribe hunted extensively over the plains and gathered tubers of the lilies, orchids and Yam Daisies which grew there. Use of the area by these people is evidenced by many scarred Red Gums, which have had canoes, shields or bowls cut from their bark.

These grassy woodlands are now a highly fragmented ecosystem and all remnants have been structurally and floristically altered. Consequently fauna dependent on this habitat prior to European invasion have either adapted to drastic alterations of their habitat, become confined to small remnants, are highly mobile or have become locally extinct.

Mammals which survive in remnant stands of Red Gum grassy woodland include Sugar Gliders, Common Brushtail Possums and several species of bats, including the regionally rare Eastern Broad-nosed Bat.

Surviving birds mainly include common or highly mobile species such as Magpies, Noisy Miners and Striated Pardalotes, however small flocks of Little and Long-billed Corellas move around the area and a family of Grey-crowned Babblers survive at one site.

Common, generalist reptiles and amphibians are still present in some remnants, including Copperhead Snakes and Banjo Frogs, while in a few areas Grass Skinks and Common Spadefoot Toads persist.

The grassy woodlands described in this article are an extremely endangered ecosystem. Having once occurred over thousands of hectares grazing, agriculture, road building, housing and industrial developments have reduced them to a few known sites. Most of these sites are small and are threatened in the short term by unsympathetic management and weed invasion.

Over the past few years there has been a great deal of interest and concern over the plight of the states endangered grassland and grassy woodland communities. Two documents have been produced which deal with issues of grassland and grassy woodland conservation around Melbourne, "Remnant Native Grasslands and Grassy Woodlands of the Melbourne Area" and the "Draft Conservation Program for Native Grasslands and Grassy Woodlands in Victoria" (DCE 1990 and 1992 respectively).

Unfortunately neither of these recognise the occurrence of remnants of Red Gum grassy wood-

land south-east of Melbourne. The importance of these remnants must be formally recognised. Measures need be taken to ensure their future survival, such as placing them on the grassland and grassy woodland register and the provision of funding to fence and sign-post important remnants, or yet another unique component of the states grassy woodland heritage will fade into oblivion.

ACKNOWLEDGMENTS: Thanks are due to Ian Lunt and Jason Stewart, who provided comments on a draft of this article, and to Mark Collier for the use of his computer.

REFERENCES

- DCE (1990) Remnant Native Grasslands and Grassy Woodlands of the Melbourne Area Department of Conservation and Environment, East Melbourne.
- DCE (1992) Draft Conservation Program for Native Grasslands and Grassy Woodlands in Victoria Department of Conservation and Environment, East Melbourne.
- Geological Survey of Victoria (1981) Map No. 849 Zone 7, Ringwood
- Hanniford, S (1856) Jottings in Australia
- Hart, T.S. (1939) The Yellow Box, and a Lost Vegetation Vic Nat, Vol 56 May 1939
- Hovell, W.H. (1827) Remarks on the Voyage to and at Western Port 7 Nov 1826 to 25 March 1827. M.S. Mitchell Library, Sydney.
- Lands Department (1845) Plan of Proposed County of Bourke. Melbourne
- Sutton, C.S. (1911) Notes on the Sandringham Flora Vic Nat, Vol 28: 5-20
- Sutton, C.S. (1912) Supplementary Notes on the Sandringham Flora Vic Nat, Vol 29: 79-97
- Townsend T.S. (1841) Henry Dendy's Special Survey
- Wheelwright, H.W. (1861) Bush Wanderings of a Naturalist. Oxford University Press, Oxford.

Scientific names of species mentioned in the text

Plants

Billy Buttons	<i>Craspedia</i> sp.
Black Sheoke	<i>Allocasuarina littoralis</i>
Black Wattle	<i>Acacia mearnsii</i>
Blackwood	<i>Acacia melanoxylon</i>
Blue Devil	<i>Eryngium ovinum</i>
Blue Grass-lily	<i>Caesia calliantha</i>
Cat's Ear	* <i>Hypochoeris radicata</i>
Chocolate Lily	<i>Arthropodium strictum</i>
Common Bog-rush	<i>Schoenus apogon</i>
Common Love-grass	<i>Eragrostis brownii</i>
Common Spike-rush	<i>Eleocharis acuta</i>
Common Tussock-grass	<i>Poa labillardieri</i>
Creeping Bossiaea	<i>Bossiaea prostrata</i>
Cut-leaved Goodenia	<i>Goodenia pinnatifida</i>
Donkey Orchid	<i>Diuris punctata</i>
Drooping Sheoke	<i>Allocasuarina verticillata</i>
Golden Spray	<i>Viminaria juncea</i>
Grassland Crane's-bill	<i>Geranium retrosum</i>
Grassland Woodsorrel	<i>Oxalis perennans</i>
Grey Parrot-pea	<i>Dillwynia cinerascens</i>
Joint-leaved Rush	<i>Juncus holoschoenus</i>
Kangaroo Grass	<i>Themeda triandra</i>
Kangaroo Thorn	<i>Acacia paradoxa</i>
Mat Grass	<i>Hemarthria uncinata</i>
Milkmaids	<i>Burchardia umbellata</i>
Narrow Plantain	<i>Plantago gaudichaudii</i>
Poison Lobelia	<i>Lobelia pratioides</i>
Prickly Tea-tree	<i>Leptospermum continentale</i>
River Red Gum	<i>Eucalyptus camaldulensis</i>
River Swamp Wallaby-grass	<i>Amphibromus fluitans</i>
Rough-barked Manna Gum	<i>Eucalyptus pryoriana</i>
Running Marsh Flower	<i>Villarsia reniformis</i>
Rush-lily (Yellow)	<i>Tricoryne elatior</i>
Scaly Buttons	<i>Leptorhynchus squamatus</i>
Sheep's Burr	<i>Acaena agnifolia</i>
Short-stemmed Sedge	<i>Carex breviculmis</i>

Book Review

Standing Up For Your Local Environment - an action guide.

By Jenny Barnett, published by the Victorian National Parks Assoc, May 1993. (Third edition) 129pp rrp \$15

Reviewed by Rosalind Smallgood

When zoologist Jenny Barnett was studying ants for her Masters thesis she became aware of the importance of planning issues as subdivision began to threaten the Long Forest Mallee where she was at work. After tackling that problem, she became involved with further action against inappropriate development and the illegal clearing of bushland.

As Barnett explains in this book, much valuable time was lost in coming to grips with the planning system, and she decided to compile a practical guide for others starting to fight their local conservation and planning battles. Standing Up For Your Local Environment was first published in 1987, and is now in its third (updated) edition, which is no doubt a good indication of how well it has served its purpose.

The first section explores the standard procedures of Victoria's planning system, and suggests how to

use these procedures to pursue your case. Changes to the planning scheme, and planning permits, are worked through step by step with the administrative jargon explained. If an 'as of right' land use seems inappropriate, Barnett says campaigning for a change to the planning scheme could be necessary...and shows how to go about it. The environmental effects statement (EES) is explained in detail.

Section two covers legislation and environmental issues including forms of pollution, mining, fire prevention and roadside management. The legal protection available for flora and fauna, as well as historic, archeologic and Aboriginal sites, is carefully documented.

At the time of publication, Jenny Barnett is Vice-President of the VNPA. Her hard-earned personal experience shows up in the last section of the book, where she sets out general strategies for local activists to follow. Lobbying, publicity, and non-violent direct action are discussed as well as the use of Freedom of Information, the Ombudsman and professional advisors.

The book ends with some useful appendices, including samples of official Administrative Appeals Tribunal (AAT) forms, a list of relevant Acts of Parliament, and a directory of information sources. Government and semi-government organisations, with addresses and phone numbers, are also included, although there is a warning that these may alter following the 1992 change of government.

Standing Up For Your Local Environment is a clear, well-researched combination of facts and practical advice. The book is likely to become well-thumbed by any environmental activist who owns a copy.

Rosalind Smallgood is a Melbourne journalist and writer. She is slowly developing an indigenous garden at Point Lonsdale.

Silver Banksia	<i>Banksia marginata</i>	Sugar Glider	<i>Petaurus breviceps</i>
Small Spike-rush	<i>Eleocharis pusilla</i>	Birds	
Swamp Daisy	<i>Brachyscome cardiocarpa</i>	Buff-banded Rail	<i>Rallus philippensis</i>
Swamp Gum	<i>Eucalyptus ovata</i>	Bush Thick-knee	<i>Burhinus magnirostris</i>
Swamp Wallaby-grass	<i>Amphibromus nervosus</i>	Brolga	<i>Grus rubicundis</i>
Sweet Bursaria	<i>Bursaria spinosa</i> var. <i>macrophylla</i>	Grey-crowned Babbler	<i>Pomatostomus temporalis</i>
Sweet Vernal Grass	* <i>Anthoxanthum odoratum</i>	Kori Bustard	<i>Ardeotis australis</i>
Tasmanian Wallaby-grass	<i>Danthonia semiannualaris</i>	Little Corella	<i>Cacatua sanguinea</i>
Varied Raspwort	<i>Haloragis heterophylla</i>	Long-billed Corella	<i>Cacatua teuirostris</i>
Water Milfoil	<i>Myriophyllum crispatum</i>	Magpie	<i>Gymnorhina tibicen</i>
Water Ribbons	<i>Triglochin procerum</i>	Noisy Miner	<i>Manorina melanocephala</i>
White Purslane	<i>Montia australasica</i>	Striated Pardalote	<i>Pardalotus striatus</i>
Yellow Box	<i>Eucalyptus melliodora</i>	Reptiles	
Yorkshire Fog	* <i>Holcus lanatus</i>	Copperhead	<i>Austrelaps superbus</i>
Mammals		Grass Skink	<i>Pseudemoia entrecasteauxii</i> Coast Form B
Common Brushtail Possum	<i>Trichosurus vulpecular</i>	Frogs	
Eastern Broad-nosed Bat	<i>Scotorepens orion</i>	Banjo Frog	<i>Lymnodynastes dumerilii</i>
Eastern Grey Kangaroo	<i>Macropus giganteus</i>	Common Spadefoot Toad	<i>Neobatrachus pictus</i>

Coming events:

**For IFFA events
see back cover**

Conferences/Workshops/Talks

5 Oct. Thurs 8pm. The Wandering Albatross.

Ecologist Dr. Neville Nicholls will talk about his recent work in satellite tracking the intriguing Wandering Albatross. Part of a meeting of the Fauna Survey Group. National Herbarium, Birdwood Ave. Sth Yarra.

9 Oct. Sites of Natural Significance workshop.

Southern Dandenongs. Speakers will include: Andrew Bennett, Beth Gott, Darcy Duggan, Ilma Dunn, Garrique Pergl, Graham Clutterbuck. Workshop groups will include: Fire and Vegetation and Weed Control Techniques. For more information contact Jenny Francis on (03) 755 1398.

14 Oct. 8pm. Lilies.

Consultant botanist Geoff Carr, whose special interests and expertise include environmental weeds and terrestrial orchids, will discuss his research into Victorian Lilies. Part of a meeting of the botany group of the FNCV. National Herbarium, Birdwood Ave. Sth Yarra.

26 Oct. Tues 8pm. Status of the red tailed Black Cockatoo in Western Victoria. This bird is one of Victoria's most endangered. Bill Emison, a research officer at Arthur Rylah Institute will give an interesting update on its current status. Part of a meeting of the Fauna survey group of the FNCV. National Herbarium, Birdwood Ave, Sth Yarra.

3 Nov. Wednesday 7.30-9.30pm. The vegetation of Corio Bay and tributaries then and now, revegetation and landscape opportunities. A slide presentation by Mark Trengrove of the Geelong Indigenous Nursery. National Wool Museum cnr Brougham and Moorabool St, Geelong. \$6 employed, \$4 conc. Bookings (052) 222 936, Trish Edwards.

20 Nov. 11am-5pm. and 21 Nov. 10am-5pm. The South Gippsland Wildflower Show. Floral Displays, Plant Sales, Environmental Displays and Childrens activities. Adults \$2. Gippsland and Northern saleyards, South Gippsland Highway, Koonwarra. Contact Barry Hill (056) 643 259.

6-9 December. Australian network for plant conservation 1993 conference. Papers and workshops covering endangered species, germplasm storage, databasing, funding and education. Contact Australian Network for Plant Conservation, Australian National Botanic Gardens, PO Box 1777, Canberra, ACT, 2601.

Excursions and field trips

26 Sept. F.O. Helmeted Honeyeater Wildflower walk and talk. Ranger, Mick Keenan will lead Friends on a walk through Dean's Land. This has recently been acquired by the Victorian Conservation Trust to be added to Yellingbo State Nature Reserve. Meet at the Rangers office on Macclesfield Road at 12 noon.. Contact Bob Anderson (059)625 541.

3 Oct. FO the Grey-Crowned Babbler. Field trip to known Babbler site: Cannons Creek and Baxter-Somerville at 10.30 am. For further details contact David Lockwood (03) 5581 163.

3 Oct. Walk, Talk and Gawk: Langwarrin Flora and Fauna Reserve. Jane Calder. (059) 652 372.

3 Oct. 10.30 am. Excursion to Willum Buluk Flora and Fauna Reserve with naturalist and nature photographer, Ilma Dunn. Greenhoods, sun and spider orchids, leopards and pink fingers, as well as many other wildflowers will be flowering. Courtneys Rd Flora and Fauna Reserve (Mel 84 D7). Contact Dorothy Mahler (03) 435 8408.

9 Oct. Leadbeaters Possum Stag Watch. Part of ongoing survey work to establish this endangered species habitat range. Contact Ray Gibson (03) 874 4408 for details. Fauna Survey Group of the FNCV.

9 Oct and 10 Oct. 1.30 pm. The Euroa Environment Group's Spring Wildflower Walks. Two walks will observe the wildflowers of Wallaby Gully and some local roadsides. Meet at the rear of Euroa Secondary College. Contact Ray Thomas (03) 628 2373(w) or Shirley Saywell (057) 95 2300(w).

17 Oct. 10 am. FO Wright Forest and Wattle Creek. Wildflower walk. Contact Dudley Gross (059) 684 780 or Lyn Sykes (059) 681 280.

23 Oct. 10 am. Wildflower Excursion to Langwarrin. Come with botanist Geoff Carr and discover a profusion of spring wildflowers. Meet in carpark, McLellan Dve. Langwarrin. Mel 103 D9. Contact Joan Harry for details (03) 850 1347.

23 Oct. 9.30 am. FO Werribee Gorge and Long Forest Mallee social walk. Walk to the Inglis-ton Granites from the Ballan-Inglis-ton Road. Contact Janet Laversha (053) 674229.

24 Oct. 10 am. Euroa Environment Group's Wildflower Walks. Explore the wildflowers of Mt Wombat - Garden Range - Charman's Falls. This day walk covers a range of habitats from the magnificent rock gardens of Mt Wombat and Garden Range to the lush grassy understorey of Kelvin Views' peppermint forest. The views from the top of the ranges are mag-

nificent and there are many surprises as we discover new plants emerging after the bushfires. Tiger and Leopard orchids were plentiful last year and the rare *Boronia* hop leaf bush will be seen. Contact Ray Thomas (03) 628 2373(w) or Shirley Saywell (057) 95 2300(w).

23-24 Oct. FO French Island plant survey trips have now been extended to whole weekends. This will allow the group to reach more remote areas of the park and stay overnight. For details contact Clive and Fay Gordes (03) 772 5668.

Restoration Activities

September

25 1.30 pm and 26 10 am. **Mount Eliza Association for Environmental Care.** Sunday the 26th is Spring Planting Festival follow up planting and maintenance at Mooraduc Quarry Picnic Reserve followed by a walk of the Flora and Fauna Reserve. Meet Two Bays Rd Car Park. Mel 106 A7. Contact Anne Read (03) 787 2034.

26 10 am to 4 pm. **Spring Planting at Yarra Bend Park with Tree Project and Diversity Coalition.** Melways 2D F6, Park at Golf House and walk towards the river. BYO Mattock or Spade and Lunch.

26 Sun 10.30 am. **Merricks Foreshore Committee** Planting day and cutting and painting of *Pittosporum*. Meet above the cave. Mel 192 K12. Contact Jo Ferguson (03) 481 4682 or Nick Williams (03) 347 0758.

October

2 Sat. 1.00pm. **FO You Yangs.** Propagation, planting, weed control. Meet at the friends hut at the Visitor Centre. Contact Geoff Gaynor (052) 822 182.

2 Sat. 10am-noon **Sandringham Community Nursery** volunteers. Propagation and planting activities every Thursday and Saturday. Sandringham Council Depot Talinga Rd/Reserve Rd. Contact Lisa Carty (03) 584 5255.

2 Sat. 10 am **Green Link Box Hill** activity day. Working activities every Monday and Tuesday morning at the council nursery in Nelson St, Box Hill. Contact Minette Russell Young (03) 898 1364

2 Sat. 9 am. **Angair Regeneration Project.** It is now 10 years since Ash Wednesday and there has been amazing regrowth of the bush around Anglesea, especially in the heath woodlands. Helpers are needed for the plant surveys. 2 Oct - Pt Addis Heath, 3 Oct - Harrison Track Heath, 9 Oct Ironbarks - Angahook. Meet at Anglesea Hall, bring lunch, a windjacket and wear stout

shoes. Contact Flora Anderson (052) 722 1776.

3 Sun. 2-4pm. **Gramatan Ave Heathland Sanctuary** Beaumaris. Contact Lisa Carty (03) 5845255.

9 Sat 10-noon. **Wurundjeri Garden.** This Koori food garden by the Yarra at Yarra Bend Park has been established for three years. Planting and weeding. Contact Dorothy Sutherland (03) 818 4706.

10 Sun 3-5pm. **Green Link Camberwell.** Planting and weeding in the Welfare Pde Indigenous Flora Reserve. Meet cnr Dion and Welfare Pde. Mel 60 E7. Contact Dianne Burgess (03) 809 2092.

10 Sun 10 am. **Meander...**a group caring for the Menzies Creek and Emerald Tourist Track including weeding, planting and track work in the creek Reserve. Meet at Avarad Picnic Ground. Melways 125 F 12. For further details contact Kate Forster (059) 685 828.

10 **F.O. Helmeted Honeyeater.** Works group planting day. Contact Gaye Gadsden (059) 648350.

17 Sun 10 am. **Men of the Trees.** Deep Rock, Yarra Bend Park; Melmap 2D, ref D6. Minette Russell Young (03) 898 1364.

17 Sun 9am. **F.O. Buckley Falls.** Highton - Picnic ground lower carpark. Planting of slopes between the upper and lower tracks below the storm water drain. Contact Tony Woolford (052) 436 340.

18 10am-12 noon. **Brunswick Tree Group.** Moonee Ponds Creek. Eric Ward (03) 388 2123.

31 10 am. **FO Royal Park West.** Planting, direct seeding trials and weed control. Contact Adam Muyt (03) 350 2190.

The **Australian Trust for Conservation Volunteers** activities, contact ATCV: (053) 33 1483.

For other **Victorian National Parks Association** activities, call (03) 650 8296.

A large range of activities such as bushwalks and "Friends" activities are published by the **Victorian National Parks Association** in their newsletter. For details contact VNPA on (03) 650 8296.

Visitors/participants are welcome to all events listed in Indigenotes.

Thank you to all the people who contact us regarding on-coming events their groups are organising. If you wish to have your events covered please contact Jo Ferguson (see back cover)

IFFA (NSW) Meeting Report

Australian Frogs

IFFA (NSW) June Meeting, at the Maiden Theatre, Royal Botanic Gardens, presented a talk on "Australian Frogs" by Martyn Robinson, Education Officer for the Australian Museum. Martyn is the author of the "Frogwatch Field Guide" (1991) for N.S.W. species, and 'Field Guide to Frogs of Australia', with illustrated key.

Martyn's well-attended talk began with hints for spotting frogs. He recommended a torch light for reflecting their eyes at night, which are golden, and a tape recorder for recording their calls. This is useful for later identification. It is the males we hear, calling to attract mates.

He then gave us a well-illustrated frog tour to introduce us to some of Australia's frog population, starting with tree frogs, which have pads on their feet, acting as adhesive discs, for climbing. These included the Green and Gold Swamp Frog which used to be common but is now uncommon; the Red-eyed Tree Frog; the Bleating Tree Frog; the Desert Tree Frog, very common across Australia, including arid areas; and the two likely to be found in fruit and veggie shops, the Green Reed Frog and the Dainty Tree Frog.

Other types included burrowing frogs, such as the Water-holding Frog, which can stay underground for many years; the Sandhill Frog of W.A.; and the Giant Burrowing Frog of Eastern Australia. Other interesting frogs include the Hip-pocket Frog, where the males carry the tadpoles in pockets on their back until the froglets emerge; the Crucifix Frog which lives in the arid black soil plains around the Piliaga Scrub and eats ants; the rare, aquatic Gastric Breeding Frog whose young develop in the female's stomach; the Great Barred River Frog which gets up to 10 cm in length; and the infamous Cane Toad, poisonous as eggs, tadpoles and toads, imported as a biological control and now endangering the wildlife of tropical and sub-tropical Australia.

Some of the frogs likely to be around Sydney include the Brown Froglet, of various colors; the Striped Marsh Frog, which sounds like a tennis match; the Red-crowned Toadlet which has restricted populations; while the Spotted Marsh Frog is more common south of Sydney and sounds like machine gun fire.

Martyn also spoke about protecting existing populations of frogs. He suggested the following actions:

- * Monitoring - time of year spotted, water temperatures, calls on tape.
- * Reducing urban run-off and taking care with herbicides around waterways.
- * Not introducing non-native fish to waterways or any fish where they are not normally present. Crayfish and tortoises are also predators of frogs.
- * Protecting frog habitats from destruction and creating suitable habitats where not available. Tadpoles are omnivorous, eating weed and insects but adult frogs are carnivorous.

Some frogs can live for approximately 10 years in the wild, or up to 20 years in captivity, but problems such as an increase in radiation due to a decrease in the ozone layer may lower frogs' resistance to disease and infection. This combined with loss of habitat, introduced predators and pollution of the environment may mean loss of juvenile populations, and a steady decrease in frog numbers.

Those interested in learning more about our frogs were encouraged to contact the Frog and Tadpole Study Group, Biological Sciences, Sydney Institute of Technology, 1 Mary Ann St., Ultimo N.S.W. 2007; or the Australian Herpetological Society Inc., P.O. Box R79, Royal Exchange, Sydney 2000 or purchase the tape of frog calls and accompanying book available at the Australian Museum.
- Sally Fisher. IFFA (NSW)

Combating Waterways Pollution Conference

Friday 29 October 1993 Sydney

Total Environment Centre (TEC) in Sydney has gathered together a group of specialists, from Councils, state government and community leaders, to discuss the problems and solutions to pollution in our streams. The Conference will focus on Water Problems: Coastal and Inland, The Pollutants: Farm Chemicals, Sewage and Soil and Solutions: State of the environment reporting, Total Catchment Committees, Licensing non-point sources and Landcare. Cost is \$100 Full Rate, \$50 Concession (community, students). Make cheques out to: Waterways Pollution Conference, TEC, 1\88 Cumberland St., Sydney 2000. Register by 22 October 1993.

Snippets:

Save Our Saltmarsh

The Victorian Institute of Marine Sciences is an independent organisation which promotes marine science and technology through research, information and education. The education facilities of the institute are located in Tooradin and Queenscliff. In the past ten years they have fulfilled their mission "to increase awareness, appreciation and understanding of the marine environment with a view toward conservation". This has largely been achieved through hands-on learning in the centre's aquaria and coastal field studies. Students of all ages have been able to explore and discover the marine life of rockpools, mudflats, mangroves and saltmarsh.

Active conservation is an important part of the Centres' programs. The sand dune revegetation program at Queenscliff has been successful in revegetating and stabilising large areas of the Bellarine Peninsula with indigenous plants. With the assistance of the local councils, foreshore committees and Government grants the Marine Discovery Centre has been successfully coordinated the project with the participation of over 6000 students.

The Tooradin Marine Discovery Centre has embarked on a similar project in Westernport, supported by the Federal Government through a Save the Bush grant. The project involves the investigation and identification of degraded areas of saltmarsh with a plan to revegetate these areas with indigenous plants from local seed.

Seeds from various saltmarsh species have been collected, under a DCNR permit, and sown for germination. Areas have been targeted for planting and future monitoring but the first seeds have not germinated and it is apparent that assistance is required. We would appreciate help with information about the flowering times, best times for seed collection and germination requirements of saltmarsh plants. We would also appreciate help with collecting seed, propagation and planting. If you have the knowledge, expertise and enthusiasm to assist us, please contact Wendy Roberts at (059) 983410.

Oil in Westernport

Beginning in 1994 150,000 tonne crude oil tankers could be entering Westernport Bay. Local crude oil refineries Shell (Geelong) and Mobil (Altona) have proposed an oil terminal at Crib Point. It is proposed that the crude tankers will enter the deeper waters of Westernport to partially unload at Crib Point before they travel on to the refineries in Port Phillip Bay. Tankers will then

return for the remainder of their oil at Crib Point, double handling the oil and doubling the risks. The impact of an oil spill on a sheltered and fragile bay like Westernport would be catastrophic. The Crib Point Proposal has been fast-tracked by the Minister for Planning, Rob McLellan without an Environmental Effects Statement. If you want to do something about this ecological tragedy in the making write to Rob McLellan and Ros Kelly, Federal Environment Minister, and express your disapproval of the proposal and stress that they could at least document the potential destruction with an EES before it is done. **If you want to learn more about the issue come along to a Field Trip on October 2 to the future national park, French Island (across from Crib Point and on the middle of Westernport), and explore the amazing environment that is at risk. Contact: Karri Giles, Friends of the Earth, Fitzroy, (03) 419 8700.**

Chelsea Conservation Strategy

Chelsea Council is developing a Conservation Strategy. From the central steering committee there are six working groups: Natural Resources, Urban Living, Waterways, Environmental Contamination/Waste, Coast and Community Education/Involvement. The Natural Resource working group is involved in identifying remnant vegetation, mapping, protecting significant flora and fauna, preservation and restoration. We had our first meeting on Tuesday 7th Sept. It clear that we need lots of information, such as:

- Remnant vegetation (where it is, no matter how small)
- Significant trees (native and exotic)
- Soils and Fauna

If any readers out there know any information that may be of help, or where good information about the Chelsea area is available, please contact Adele Richardson on (03) 772 9708 as soon as possible.

New Edition: Flora of Melbourne

We have been assured that the new updated edition of the Flora of Melbourne will be released in October. Revisions and additions will include: 30 new species, 10% more plant drawings, a section of full colour photographs, a revised regional map and an updated Locality Checklist of plants in your area. It has been called a "great memory aid" as well as the "essential single volume reference for both the layperson and the horticulturist". The Greens Bookshop, 247 Flinders Lane, Melbourne, Ph. (03) 6544367, will be stocking it when it comes out and will let you reserve a copy..

Weeds in NSW

A decision taken in Sydney this week is to make NSW government departments as accountable as the private sector for the control of noxious weeds on their land. Currently farmers can be prosecuted for the presence of weeds on their land, and eradication programs are time consuming and costly.

I consider it to be an intolerable situation that farmers could go to huge lengths to eradicate noxious weeds on their land, only to have it re-infested the next season, and the next from adjoining crown land.

Source: 'Report to the electorate' by the Member for Bega, Russell Smith, Bega District News 30-4-93

Planning System Reforms

The Planning Minister, Mr. MacLellan, has announced a series of proposed reforms. A summary can be obtained free from 477 Collins St. Melbourne, Ph. 628 5061. Positive changes include simplification of planning schemes with standard layout and definitions and a reduced number of zones and planning controls. Population targets for metropolitan suburbs will be set to minimise urban sprawl. Improvements in the appeals system include simplification of the legislation, use of written submissions instead of full hearings for simple cases and possible use of mediation for some planning disputes.

On the potentially negative side, public participation will be reduced by making more uses "as of right". Other "minor applications" will not be subject to any appeal. An unknown fee will be charged for lodging appeals and appellants would have to state how "detriment" would be caused - in some documents the words "material detriment" are used. Will this mean that individuals and groups with social and environmental concerns will be excluded? Permits will also be granted that have "minor variations" from the planning scheme and there will be more Ministerial powers to fast-track "significant projects".

Whilst public submissions will be called for on the new simplified zones, it is not clear whether there will be independent panel hearings before applying the changes to planning schemes including what uses will become "as of right". It is also not clear what will constitute a "minor application" or a "minor variation" from a planning scheme.

Whilst some of the changes are reasonable, we should be concerned that planning zones and

controls could be simplified to an extent that significant local diversity is not catered for and that community participation in planning decisions will be reduced to a level that is unknown at this stage. Much will depend on the extent to which community concerns are canvassed, and listened to, before making changes. Whilst compatible development should be facilitated in suitable zones, it is also vital that public participation not be unreasonably excluded.

This legislation and apparently also new mining legislation on which there has been no community consultation, is to be placed before parliament in this session. Please write to your politicians, local MPs, the Premier, the Ministers involved (Planning and Development, R. MacLellan, 477 Collins St., Melbourne 3000, Conservation and Environment, Mark Birrell and Natural Resources, G. Coleman, both at 240 Victoria Parade, East Melbourne 3002), your local Council and spread the word to other members of the community however you. When writing letters please raise the following concerns:

- * Demand to know what is happening and object to any speedy changes to the Planning System without public scrutiny.
- * Insist that any strategic changes to planning controls involve the community and protecting the environment.
- * Make your objection known to any reduction in community participation avenues (third party rights).
- * Stress that you do not object planning being streamlined to encourage economic development but that this must not compromise planning's role in protecting the environment and native flora and fauna.

Source: VNPA Newsletter Sept. 1993 and The Keep People in Planning Committee, Contact Felicity Faris/Jenny Barnett (03) 650 8296

Plenty Gorge: The Battle Continues

By Adrian Daniell School of Biological Sciences, La Trobe University.

Just when the dust had started to settle and you thought you could get on with the real task of conservation, the State Government changes and the battle lines have to be re-drawn. The Plenty Gorge and its environs represent one of the most significant conservation areas in Victoria. The high species diversity to be found along the Plenty Gorge is the result of ancient forces of nature

(volcanic) and its location along a biogeographic junction between the wetter forest types of the eastern highlands and the dryer northern and western plains. "Nowhere else in North East Melbourne contains as many threatened and regionally threatened, rare or restricted faunal species" (Beardsell in prep).

The Plenty Gorge Park boundaries and the zoning of the adjacent areas were set on the basis of the recommendations of an Independent Panel committee in 1990, the so called RL111 amendment to the local planning scheme. Unfortunately the organisation which was involved in the park proposals, Melbourne Water, was less than considerate in their treatment of the local residents. Conservation zonings, in which the size of subdivisions was limited to minimum of 40 ha, were proposed and these were accepted by the Panel. However many locals were less than happy and a vicious guerilla war commenced. Whenever Melbourne Water attempted to smooth the waters, organised local residents would cause disruption to public meetings. The Friends of Plenty Gorge, which had been formed to fight for the establishment of the Plenty Gorge Park, became embroiled and finally folded in 1992 following the infiltration by a disruptive element.

The latest problems arose when the Shire of Diamond Valley, on the 16th of August, approved a rezoning of 350 ha of the conservation zone to allow the subdivision of land down to 1 to 2 ha, a change from 'conservation 1' to 'rural residential'. The total area involved is small and much of the existing subdivision is already this size, so what is the problem? Well, in part it is the involvement of a ministerial adviser who suggested the rezoning should "reflect the pattern of land use". Important decisions should be the responsibility of the Minister. It seems that the devolution of ministerial accountability continues with a non-elected person taking the decisions.

The second problem is the principle of land zoning stability, which is particularly vital in preventing the wholesale destruction of the remaining urban bushland through land speculation. The use of conservation zonings to protect land, not in public ownership, is a generally sound approach to land management, particularly where ownership can change from the conservation minded to the "development at any cost" mind-set in rapid succession. If further subdivisions take place then the pressure will be on to continue the cutting up of the large areas.

It is clear that the whole affair has been badly handled from the start, but that does not change the important conservation considerations. One would think that this area of Victorian and Australian conservation significance would be widely

known and supporters would be flocking to protest. However, this is not the case, largely because so few know the area.

What needs to be done now is to pressure the Ministers involved in local planning and conservation to maintain the status quo. Nothing is settled yet and if enough pressure is put on then we may have a chance. The pressure is needed now! If you want to have your say write to the following people:

Mark Birrell, Minister for Conservation, c/o Parliament House, Melbourne 3000.

Rob McLellan, Minister for Planning and Development, c/o Parliament House, Melbourne.

The Shire President, Shire of Diamond Valley, Civic Drive, Greensborough 3088.

Ecological Threats of Poned Pasture Grasses

The Northern Queensland Conservation Council (NQCC) is alarmed by the introduction and spread of new pasture grasses which have become major invasive weeds in waterways and wetlands of tropical Australia. Queensland's Department of Primary Industry is actively promoting the spread of new deep water pasture species for which there has been no formal assessment of potential environmental impacts. *Hymenachne amplexicaulis*, a new grass from South America can grow in standing water up to 2.5 metres in depth. This means that areas of open water in our already weed choked wetlands may soon become 'poned pasture'. Areas most prone to weed invasion will include habitats protected from grazing within National Parks and Nature Reserves.

Not only are DPI introducing new grasses of unknown deleterious potential, they are also continuing to promote grasses which have a long history of demonstrated environmental impacts e.g. Para Grass (*Brachiaria mutica*). Although Para Grass is recognised and classified as a serious invasive weed by State and Federal environmental Departments, it is still actively promoted by the Qld DPI as a suitable poned pasture grass species.

Environmental impacts caused by Para Grass include the loss of waterfowl nesting and breeding resources, prevention of native tree recruitment, loss of fish larval habitats, loss of native waterplants and deterioration of water quality. Economic impacts include blockage of irrigation channels, competition with crops (e.g. Sugar Cane) and the hindering of recreational activities.

The NQCC has been approached by Mr. Oliver Poli, a cane grower from the lower Burdekin, who

is worried by DPI releases of *Hymenachne* in wetlands adjoining his property. Mr. Poli has observed that *Hymenachne* exhibits even more vigorous growth than the already well established Para Grass. Mr. Poli is concerned by the long term economic and environmental implications of the spread of this grass.

One of the reasons why Queensland is being exposed to such potentially disastrous weed species is the poor assessment protocol that is used prior to the release of new pasture species. The Queensland Herbage Plant Liaison Committee (QHPLC) is comprised almost entirely of representatives of primary producer interest and research bodies. Only as recently as mid 1992 was one representative from the Queensland Department of Environment and Heritage added to the 15 member committee. Agronomic and economic criteria are primarily used by the QHPLC to assess new grass species. Judgements by the committee that grasses will cause 'no unacceptable detrimental affect on the natural environment' represent the only form of environmental assessment.

The NQCC believes that a three point action plan should be implemented by the Qld State Govt. with regard to introduced pasture grasses:

1. There should be a moratorium on the spread of existing introduced pasture species, pending the formulation of comprehensive environmental management guidelines.
2. The composition of the QHPLC must be changed to give greater representation of ecological management interests on the committee. The protocol used to endorse the release of new cultivars needs to be reviewed, and a formal environmental assessment trial procedure should be developed.
3. Funding must be made available to:
 - a. map the extent of existing and potential ponded pasture grass invasions and,
 - b. research the development of manipulative management techniques suitable for controlling such grasses.

In view of the history of exotic species in Australia it would be hoped that Govt. agencies would maintain the utmost vigilance against repeating the mistakes of our past. If we don't act now as a concerned community there may come a day when all that remains of Nth Queensland's wetland biota will be South American Cane Toads living in South American grasses. For more information contact Jim Tait NQCC Ph. (077) 716226.

Source: NQCC Newsletter August 1993

Vital But Perhaps Controversial/ Confronting Reading: Books

Compiled by Jason Stewart

Denton, D. (1993). The Pinnacle of Life: Consciousness and Self-awareness in Humans and Animals. Allen and Unwin. \$14.95 Soft Cover. On consciousness - vital to the philosophy of nature conservation.

Hobbs, R.J. (1992). Biodiversity in Mediterranean Ecosystems in Australia. Surrey Beatty and Sons, Chipping Norton, NSW. \$65 Hardcover.

Hobbs, R.J. and Saunders, D.A. (eds.) (1993). Reintegrating Fragmented Landscapes: Towards Sustainable Production and Nature Conservation. Springer-Verlag, New York.

Hobbs, R.J., Ehrlich, P.R. and Saunders, D.A. (1993). Nature Conservation: Reconstruction of Fragmented Ecosystems - Global and Regional Perspectives. Surrey Beatty and Sons, NSW. \$78 Hardcover.

Horne, R. (1992). Health and Survival in the 21st Century. Published by Margaret Gee. \$17.95 Hardcover. Implications and ramifications central to nature conservation and quality of life. Radical, subversive and perhaps wrong in places.

Horne, R. (1992). The Health Revolution. 4th Ed. Happy Landings Publications, NSW. Not so radical/subversive, more on practical matters.

Lefoy, E.C., Hobbs, R.J. and Atkins, L.J. (1991). Revegetation Guide to the Central Wheatbelt. Dept. of Ag., Western Australia, Bulletin 4231. Sponsored by CSIRO and Greening Aust. WA.

Saxon, E.C. (ed) (1984). Anticipating the Inevitable: A Patch-burn Strategy for Fire Management at Uluru National Park. CSIRO, Melbourne.

Weston, D. and Pearl, M. (eds) (1984). Conservation for the 21st Century. Oxford University Press, Oxford. \$29.95 softback, Dymocks.

Wilson, E.O. (1992). The Diversity of Life. Allen Lane, Penguin Press. \$50 Hardcover.

Vital But Perhaps Controversial/ Confronting Reading: Citations

Compiled by Jason Stewart

Auld, T.D. and Morrison, D.A. (1992). 'Genetic determination of erect and prostrate growth habit in five shrubs from windswept headlands in the Sydney region'. *Austral. J. Bot.* 40: 1-11. A bit of research highlighting genetic differences within species over short distances.

Charlesworth, M. (1990). 'Nature's Rights', Chapter 14, pp 176-179 in:
Webb, L.J. and Kikkawa, J. (eds). Australian Tropical Rainforest: Science - Values - Meaning. CSIRO Publication, East Melbourne, Victoria.

di Castri, F., Vernhes, J.R. and Younes, T. (1992). 'Inventorying and monitoring biodiversity: a proposal for an international network'. *Biology International*, Special Issue #27, I.U.C.N., published in the rear of *Vegetation* 103(2).

Ehrlich, P.R. and Mooney, H.A. (April 1993). 'Extinction, Substitution, and Ecosystem Services'. *Bioscience* 33(4): 248-254.

Hobbs, R.J. (1993). 'Fragmented Landscapes in Western Australia: Introduction'. *Conservation Biology* 64:183-238. Special Issue with 6 more related chapters on fragmented landscapes in WA.

Margulis, L. (1992). 'Biodiversity: molecular biological domains, symbiosis and kingdom origins'. *Biosystems* 27: 39-51.

Martin, B. (July 1993). 'Intellectual Suppression: Why environmental scientists are afraid to speak out'. *Habitat Australia*. 20(3): 11-14.

Meffe, G.K. (1992). 'Techno-arrogance and Halfway Technologies: Salmon Hatcheries on the Pacific Coast of North America'. *Conservation Biology* 6(3): 350-354.

Noss, R.F. (1990). 'Indicators for monitoring biodiversity: a hierarchical approach'. *Conservation Biology* 4:355-364.

Reid, J., Baker, L., Morton, S.R. and Mutitjulu Community (1992). 'Traditional Knowledge and Ecological Survey = Better Land Management'. *Search* 23(8): 249-251.

Saunders, D.A., Hobbs, R.J. and Margules, C.R.

(1991). 'Biological consequences of ecosystem fragmentation: a review'. *Conservation Biology* 5:18-32.

Walker, B.H. (1992). 'Biodiversity and Ecological Redundancy'. *Conservation Biology* 6(1): 18-23. And reply:

Blake, G. (1993). 'A reply to Brian Walker'. *Conservation Biology* 7(1): 5-6.

Willers, B. (1992). 'Towards a Science of Letting Things Be'. *Conservation Biology* (Diversity Section) 6(4): 605-607. And reply:

Blumstein, D.T. (1993). 'Making humans part of the solution: a reply to Willers'. *Conservation Biology* (letter) 7(2): 223-225.

Other essential references that provide longterm and more esoteric/academic info central to the science of nature conservation.

Compiled by Jason Stewart.

Auerbach, M. and Shmida, A. (1987). 'Spatial Scale and the Determinants of Plant Species Richness'. *Trends in Ecology and Evolution* 2(8):238-242. And response:

Webb, T. (1988) 'Spatial Scale and Plant Species Richness'. *Trends in Ecology and Evolution* 3(2):54-55. And comment on response:

Auerbach, M. (1988). 'Comment from M.

Auerbach'. *Trends in Ecology and Evolution* 3(2):55.

Austin, M.P. (Dec. 1986). 'The Theoretical Basis of Vegetation Science'. *Trends in Ecology and Evolution* 1(6): 161-164.

Clark, R.L. (1990). 'Ecological history for environmental management'. *Proc. Ecol. Soc. Aust.* 16:1-21.

Collins, S.L., Glenn, S.M. and Roberts, D.W. (1993). 'The hierarchical continuum concept'. *J. Veg. Sci.* 4:149-156.

Hobbs, R.J. and Huenneke, L.F. (1992). 'Disturbance, diversity and invasion: implications for conservation'. *Conservation Biology* 6(3):324-337.

Lodge, D.M. (1993). 'Biological Invasions: Lesson for Ecology'. *Trends in Ecology and Evolution* 8(4):133-137.

Noble, I.R. and Slatyer, R.O. (1980). 'The use of vital attributes to predict successional changes in plant communities subject to recurrent disturbance'. *Vegetation* 43: 5-21.

IFFA activities:

IFFA (Vic)

Next meeting:

Tuesday 28 September at 7:30 pm at the Herbarium Hall, Birdwood Ave, South Yarra (Melways map 2G ref 12A). Speakers Will Be: Peter Horsfall on "**Underground Structures of Victorian Orchids and Lilies.**" and Lincoln Kern on "**The Trials, Tribulations and Successes of the National Trust's Save the Bush Project**" All welcome.

Please Note: All items of business raised in the General Meeting after the speakers will be limited to five minutes (additional information may be passed to members present on information sheets). All members are also welcome to attend any Committee meetings and raise issues for consideration.

Committee meeting:

Thursday 7 Oct venue to be determined. 7:00 pm onwards. Contact Dale for details.

SPIFFA

Mon Oct 4 at 7:30 pm. Waterfall Gully Cnty Centre, Cnr Bayview Rd and Nixon St, Rosebud South. Subject: "**Some Ideas on Regeneration Projects**", presented by **Jenny Robinson and Wilma Bedford of Life Be In It**, organisers of several Landcare and Environmental Action Programs (LEAP) in Westernport and the Peninsula. Contact Mark Adams (059)851122.

IFFA Field Trip

Saturday November 6, 10 AM **Red Gum Grassy Woodlands south-east of Melbourne.** Visit the most intact remnants of this endangered community. This tour will include visits to areas of Red Gum Woodland and swamp which should be carpeted with wildflowers and to some stands of ancient River Red Gums (some up to 6m in diameter). Contact: Damien Cook (03) 5438227 to make a booking.

IFFA (NSW) activities:

Next meeting:

Monday 4 October 7.30 - 10.00pm at the Maiden Theatre, Mrs Macquaries Rd, Royal Botanic Gardens Sydney. "**A Dynamic Partnership - Birds and a Native Botanic Gardens.**" Presented by **Alan Leishman**, field ornithologist and bird bander will describe his seven year study of the changes and increases in the birdlife of the gardens as they have developed. Contact: Sally Fisher (02) 970 6486 or Penny Brown (02) 913 3681.

Cover Illustration: *Pleurophyllum hookeri* is a daisy, with attractive maroon flowers which rise on solid scapes above a hairy grey-green basal rosette. It is a conspicuous part of the flora of MacQuarie Island. It was drawn by Robert Gibson of Penrith, NSW.

Contents:

<u>Plains Wanderer: Seeds in the Balance</u>	2
Red Gum Grassy Woodlands Southeast of Melbourne	3
<u>Book Review: Standing Up For Your Local Environment</u>	7
Coming Events	8
IFFA(NSW) Meeting Report:	
Australian Frogs	10
Snippets	11
Vital But Perhaps Controversial Reading: Compiled by Jason Stewart	15

Office Bearers:

President: Dale Tonkinson, 22 Stortford Ave, West Ivanhoe 3079. (03) 654 1800(work).

Vice-President: Valentino Stasjic.

Secretary: Karen Lester, (03)386 5235.

Membership Secretary: Lynlee Smith, IFFA, P.O. Box 238, Clifton Hill . (03)499 3085.

Treasurer: Marita Sydes, 18 Dresden St Heidelberg Hts 3081 (03) 458 1679

Committee members: Damien Cook, Sue Mills, Jane Robinson, Geoff Carr, Jason Stewart, David Lockwood.

Editorial team: c/o P.O. Box 228, Preston, Victoria, 3072.

Editor: Lincoln Kern, (03)481 4682 (ah)

Coming Events: Jo Ferguson (03)481 4682 (ah)

Snippets: Jane Robinson, (03)428 9573 (ah)

Contributions to Indigenotes should be sent to the editors — the deadline for the next issue will be October.

The views expressed in Indigenotes are not necessarily those of the Indigenous Flora and Fauna Association.

Before reproducing any material from Indigenotes, please ask the author and editor for permission, and please include an acknowledgement of the form "Reproduced from Indigenotes, the newsletter of the Indigenous Flora and Fauna Association".