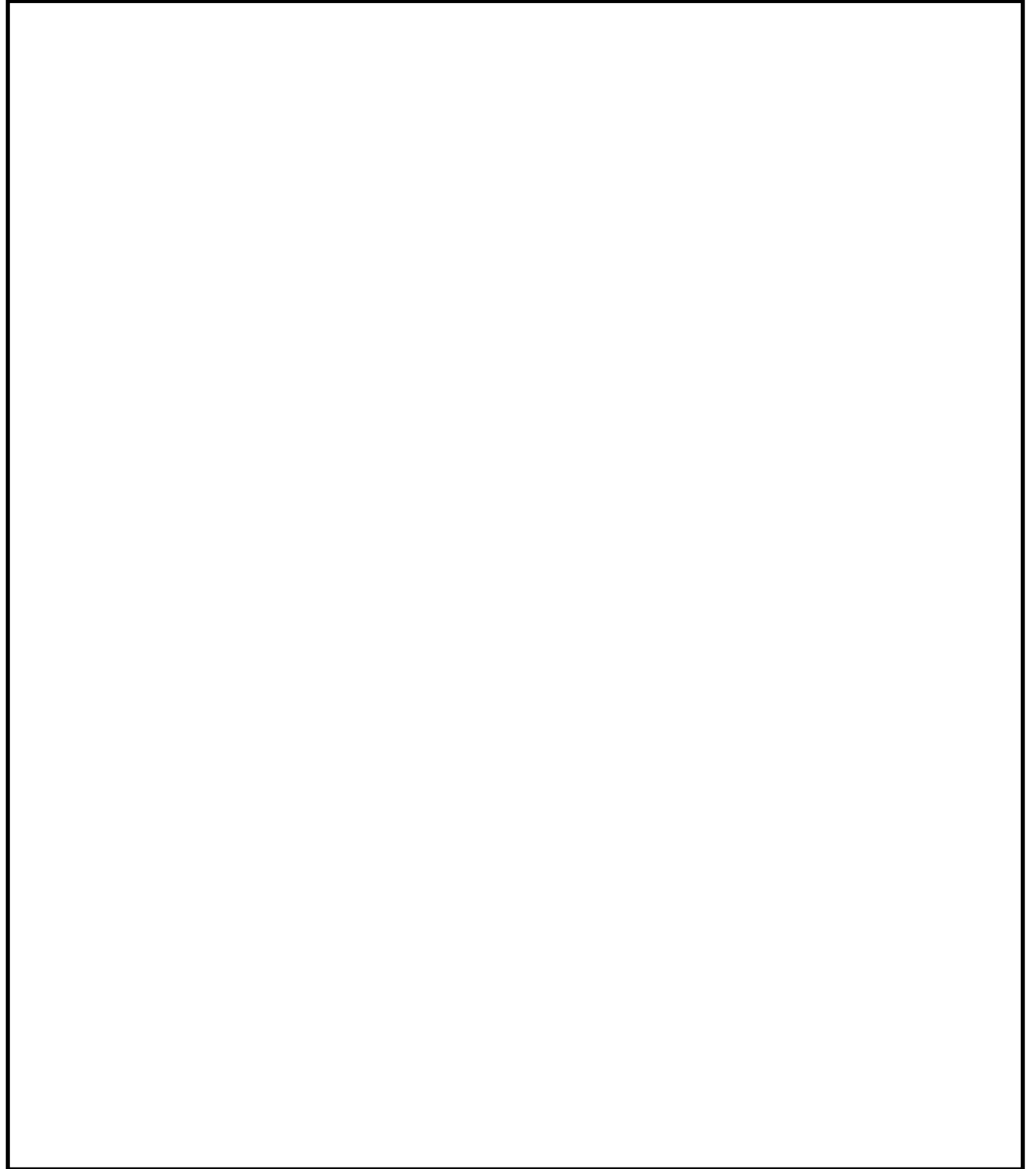


INDIGENOTES



Indigenous Nurseries in Victoria - a Profile

by Sue Mills with thanks to Murray Ralph and Judy Allan

1. Introduction

The following report has been produced by the Indigenous Nurseries Network, (a sub group of IFFA) which currently represents approximately one third of indigenous plant producers and seed collectors in Victoria.

This research was undertaken primarily to gain a 'snapshot' insight into the production of indigenous plants in Victoria with a view to increasing information and co-operation amongst producers, to provide baseline figures for the industry for future comparison and as a guide to further research (given time and support). The information contained within the report has been compiled from questionnaires which were mailed out to 74 organisations identified as growers of indigenous plants or seed collectors. 33 questionnaires were returned.

This article contains a summary of the most relevant information obtained from the questionnaire. A full report will be available soon and can be ordered from Sue Mills on (03)383 2937.

1. Year of Establishment

Nurseries growing indigenous plants have been established from as long ago as 1968 to as recently as 1992. Over half (17) of the 33 respondent nurseries were established within the last five years, that is, since 1987. It is unclear whether this has occurred in response to a general increase in demand for indigenous plants in the wider community. Alternatively, nurseries may be hoping to stimulate a demand for indigenous plants in the light of increasing recognition of the revegetation imperative.

2. Type of nursery

19 respondents described their nurseries as straightforward 'commercial' operations while the other 14 placed themselves in mixed categories with differing emphases on commercial, community, training, non-profit and hobby growing activities. These nurseries have been set up for other needs and interests than purely commercial. They will therefore presumably require different services from an industry body than those nurseries who are commercial in orientation.

3. Number of indigenous plants grown

The total number of indigenous plants produced in the 1991/1992 season by 31 of the 33 respondents was 1,261,000¹. I believe that given the variety and scope of respondent nurseries (in terms of the diversity of the range of plants grown by respondents) it is reasonable to extrapolate from the results obtained to the Victorian indigenous plant industry as a whole. At the time of the survey there were 74 nurseries known to be producing indigenous plants in Victoria. The number of indigenous plants produced by 31 of the 33 respondents therefore constitute 41% of total known production.

Thus the total number of indigenous plants grown in Victoria can be conservatively estimated at around 3m. Recent market research² based on Western Australian figures indicates that the rural farm and revegetation plant demand is in the order of 20m. plants per annum within Victoria. Of these, 4m. are produced by Vicflora, 3m. by known indigenous nurseries and the remaining 13m. by other commercial nurseries and backyard suppliers. A number of surveys³ indicated that around 50% of Vicflora nursery customers were buying plants for wildlife and environment reasons and an additional 20% for shelter belts. In addition, these surveys showed that "over 50% of customers are looking for locally grown native plant material.". Thus the potential for expansion of the indigenous plant industry, if marketed properly, is enormous.

4. Categories and types of plants grown

Four nurseries produced plants for retail sales only while fourteen nurseries reported solely wholesale operations. Twelve nurseries produced indigenous plants only (38%), nine produced indigenous and 'native' plants (29%), and eleven produced indigenous, 'native' and exotic plants (35%). The smallest number of indigenous plants produced by any one nursery was 3,000 wholesale and 2,000 retail. The largest number was 200,000 wholesale and 150,000 retail.

Approximately 60% of indigenous plants were grown on speculation and 40% on contract. This highlights the necessity for a good understanding of customers needs - especially for newly established or establishing nurseries who are unable to extrapolate from the sales patterns of previous years.

The low level of assured or contract sales also indicates that financial uncertainty within the industry is likely to be high, rendering current business and forward planning difficult. This is also perhaps adversely affecting the potential of industry expansion.

The majority of plant types grown and sold were trees (47%) and shrubs (31.3%). Grasses (7.4%), herbs (12%) and aquatic plants (2%) comprise the remainder. These figures reflect customer demand and one which is arguably overly focussed on trees and shrubs. They show that those attempting to comprehensively revegetate utilising the full range of flora are a small component of nursery customers. It appears that either client emphasis is on planting for aesthetics and utility rather than ecology or that regional ecology is little understood despite best intentions.

5. Seed and plant labelling

5.1 Seed

Respondents were asked to describe the level of detail

with which they labelled seed collected. Overall 19 different labelling categories were listed. Most respondents reported labelling with genus and species, site or provenance collected from and date of collection. The other most reported categories with four or five responses each were number of parent plants collected from, collector's name and soil type or geology.

If these responses are compared with labelling details required by the Greening Australia (Victoria) seed bank, it appears that seed labelling in general is not up to scratch. Greening Australia (Victoria) ask that the following details be provided with all seed collected for the seed bank: date, collector, locality code and description, aspect, slope, position in landscape, geology/soil type, dominant vegetation and one of Australian Map Grid Reference, Lat./Long, or Melways/Firemap Ref.

This level of seed labelling, if kept as a permanent record, could provide not only individual nurseries but eventually the industry and government with details of the changing environment and perhaps pinpoint remnants at risk.

5.2 Plants

22 of 33 nurseries (66%) labelled plants with provenance or location details. A further 3 nurseries gave verbal information as required by the customer. If, as our results suggest, around 30% of nurseries growing indigenous plants are not supplying clients with plant provenance details, their raison d'être as an indigenous nursery is questionable. Many nurseries reported that clients were not interested in this detail. This appears to conflict with research undertaken by Vicflora (1992) which suggests that over 50% of customers are looking for provenance material. In any case, public education could only be enhanced by prominently displaying and encouraging client interest in provenance details.

7. Definition of 'indigenous'

The responses to the question of how 'indigenous' can be defined "for the purpose of your business" showed a remarkable level of awareness and consistency, although the question was answered in a general way rather than as an indication of the way in which the particular nursery would treat customer requests for plants.

Responses included 'seeds and cuttings collected locally', collection from 'local remnant vegetation', 'local species naturally distributed' and plant material

'naturally locally occurring'. While these responses emphasised seed source, others focussed on plants grown for a particular area - for example 'plants grown and supplied as close to their site and soil type as possible'. Some respondents definitions were allied to a certain radius of collection while others supplied a more comprehensive response mentioning topographical and ecological factors. One nursery actually gave an indication of their business practise along with a general definition of indigenous. This is worth quoting in full for wider consideration:

(Indigenous plants are) Plants native to a particular geographic area. (For sales purposes) We distinguish between:

- i) Private gardens - not so fussy (re provenance) unless near reserve, remnants.
- ii) Land with remnants - only sell plants from close by and encourage seed collection from the same area.
- iii) Revegetation from scratch - sell plants from as close as possible.

8. Conclusions

8.1 It appears that both the demand for and supply of indigenous plants is increasing fairly rapidly. If the figures from research undertaken by the (then) Department of Conservation and Environment are correct, the overall market for plants in Victoria is in the order of 20m. This means that the potential for further expansion of the indigenous plant industry even into current markets is enormous. This can either take place through the establishment of nurseries in areas where none exist (or where demand is greater than supply), or established nurseries could expand. It is difficult in the first instance to pinpoint potential areas of expansion without further market research.

8.2 Although there is generally a good understanding of and commitment to issues of provenance, it appears that more detailed follow through is necessary as regards seed and plant labelling for educational and long term record keeping purposes.

8.3 Not surprisingly, trees and shrubs dominate the indigenous plant market. It would be encouraging in the future to see an expansion into the grass, herb and aquatic plant areas.

1 One nursery did not provide any information and another was not producing plants in '91/'92 but expected to be in production for the '92/'93 season.

2 Department of Conservation and Environment (Aug.1992) Vicflora Marketing Plan, John Stanley Associates, Melbourne.

3 Ibid

THE PLAINS WANDERER

John Morgan replies to some issues raised by Ian Lunt in an earlier Plains Wanderer.

Are small grassland remnants bad?

Ian Lunt¹ posed the question “Are small remnants intrinsically bad?” I don’t know the answer to that and given there is so little data on the subject of reserve size and its effects on grassland integrity, I can only offer a few insights gained from field observations. However, I do know that it is important that we come to some conclusions very quickly if we want to carry our small grassland remnants successfully into the 21st century.

Firstly, what are the arguments that suggest that small remnants are bad? The main criticism of small remnants is that they are a headache to manage. It is far easier to burn 50 hectares of one grassland than to burn 2 hectares of 25 remnants. DCNR certainly doesn’t have the resources to do this at the moment. However, given that most of the significant remnants along roadsides have been managed as strategic fire-breaks by local CFA brigades for decades, there is no reason why they can’t be encouraged (perhaps financially) to do so in the future. They should be encouraged to maintain the nth best grassland in western Victoria and take pride in that fact whilst achieving their fire protection aims.

Linear remnants, many only 5-30m wide, are surrounded by a sea of agricultural plants. It is almost accepted as dogma that because of the high edge to area ratio of many remnant grasslands, they will invariably become weed invaded and worthless. Yet the field evidence suggests that there has not been a one-way conversion of intertussock spaces to exotic species. Quite the opposite is seen - most rail reserve grasslands contain many native species that persist in the presence of very few weeds. Whether disturbance is a precursor to invasion or frequent burning has kept the exotic species in check is not known but it does suggest that small remnants can co-exist in a modified landscape.

Small remnants are also easily destroyed by inadvertent damage. This is one of the reasons that such sites have been seen as unconservable in the past. The greatest threat to grasslands along roadsides in western Victoria is the plough. It doesn’t take long to plough a 200m x 15m roadside remnant because the adjacent landowner feels the need to improve the firebreak outside his property. Much more education in rural areas is required to prevent unintentional damage to grassland remnants if they are to become secure in the short to medium term.

There is a perception that small remnants contain small (read not viable) populations of species. This need not be the case (large remnants can still support critically low populations of species) although it is certainly true in some instances. What is possibly more important is that small, fragmented reserves may be less viable than large reserves because of the effect that fragmentation has on pollinator populations and dispersal agents. Much more work is required to determine just how much seed set and recruitment occurs in these small remnants if we are to say anything constructive about their worth to the maintenance of species populations.

Whilst there is little information on the subject, the available data suggests that many small remnants do not necessarily conserve a greater range of a plant’s genetic diversity than do a few large remnants. Prober and Thiele² found little genetic differentiation between 25 populations of White Box (*Eucalyptus albens*). Similarly, genetic studies of the rare Button Wrinklewort (*Rutidosia leptorrhynchoidea*) found that a high proportion of the genetic variation in this species exists within populations with little variation between widely dispersed populations³. How well a plant’s genetic diversity is conserved in a remnant, however, will depend on its population size within that remnant. We know next to nothing about this to ensure that we adequately conserve species and reduce their risk of inbreeding.

Whilst there are a few perceived arguments against small reserves, what are the arguments for the retention of these tiny remnants? The greatest reason for conserving small grassland sites is to maintain biodiversity that cannot be saved by any other means (other than perhaps in garden beds). All large *Themeda*-dominated grasslands in western Victoria have a history of grazing. They are therefore not representative of the original communities as some of the more palatable species are likely to have been lost long ago. Given we don’t know how to reintroduce 90% of species into reserves (and for the ones that we have reintroduced, we have very few that are self-perpetuating), the small remnants that we do have are essential to maintain all **species** of the grassland **community**. One of the greatest fears I have is that the common and widespread species of the grassland community (eg, *Chrysocephalum apiculatum*, *Eryngium ovinum*, *Leptorrhynchos squamatus*) will become the rare plants of the next generation as all our efforts to date have been expended on saving today’s rare and threatened flora (ie, concentrating on preventing the extinction event).

*John Morgan, Botany Department, La Trobe University, Bundoora 3083

We will not have addressed one of the major reasons of grassland extinction in south-eastern Australia if we do not save small remnants today (ie, if we ignore long-term habitat destruction events that lead to species rarity).

The preoccupation with the concept of 'naturalness' has also clouded our judgement about grassland conservation. A few large 'natural looking' grasslands must be conserved so that, amongst other things, the visual impact of the vast open plains that are a feature of these communities can be preserved. Imagine if all the North American prairie remnants were on roadsides - they would hardly inspire a person to visions of the early settlers trekking across the Great Plains. The film *Dances With Wolves* would also have looked mighty claustrophobic if shot along a rail reserve. However, naturalness, either rightly or wrongly, often determines what is worthy of protection. One of the best roadside remnants in western Victoria is an artefact of man - its topsoil was scalped off 40 years ago and it has been burnt almost every year since - yet it contains over 70 native species (including many undescribed taxa). It is hardly natural, yet probably has more value as a conservation reserve than 100 hectares of intact *Themeda* grassland with a few associated common species although this may appear to be the more natural remnant. Biodiversity preservation and the maintenance of community processes should be seen as the major goal of grassland conservation rather than the protection of *Themeda* dominated paddocks that will serve as useful sites (ie, arks) in which to reintroduce species. This latter aim, however, is a worthy conservation goal in its own right, particularly where fauna are concerned.

Conserving species can be achieved by maintaining as many small reserves as possible, despite the problems that are likely to be encountered. It does require, however, a commitment from the community. We will never have the resources, the technology nor the political will to save all species in large conservation reserves. Whilst most of the attraction, care and money goes to saving VROT's, the grassland as a plant community will be lost soon if we fail to act to protect roadsides and other small remnants that contain the best examples of the ecosystem in this state.

1. Lunt, I.D. (1993). The Plains Wanderer: Who says "small is beautiful"? *Indigenotes* **6(3)**: 2-3.
2. Prober, S.M. and Thiele, K.R. (1993). The ecology and genetics of remnant grassy White Box woodlands in relation to their conservation. *Victorian Naturalist* **110**: 30-37.
3. Leeton, P. and Fripp, Y.J. (1991). Breeding system, karyotype and variation within and between populations of *Rutidosia leptorrhynchoides* F. Muell. (Asteraceae:Inuleae). *Australian Journal of Botany* **39**: 85-96.

What is IFFA?

The Indigenous Flora and Fauna Association (IFFA) is an organisation dedicated to the conservation of the indigenous Australasian biota. Its members, comprising both amateur and professional workers come from diverse backgrounds including botany, zoology, ecology, horticulture, environmental management, education and other fields.

The organization believes that conservation of plants, animals and the communities they form, must be based on sound knowledge of their biology, ecology, distribution, status and management requirements. To achieve these ends, we aim to foster a broad multidisciplinary approach, bringing together expertise from a wide range of professions which are too often independent and narrowly focussed. We believe this approach is necessary to maximise the conservation, social and economic benefits of responsible resource management.

In particular we wish to encourage participation and involvement in the important emerging disciplines of conservation and restoration biology, habitat reconstruction, revegetation and the active management of vegetation and fauna - on public and private lands.

It is a primary objective of the Association to research, collect and disseminate information concerning conservation matters to relevant agencies, groups and individuals through *Indigenotes* and our new journal *Advances in Nature Conservation*, and a miscellaneous paper series. We also aim to participate on debate in environmental issues and help in the formation of conservation policies at the local, state or national levels.

The resources of IFFA are available to both the public and private sectors of the community to help establish appropriate conservation and management strategies.

Membership

IFFA membership costs
\$40 for non-profit organizations,
\$50 for corporations,
\$25 for individuals and families,
or \$20 concession.

Membership includes 11 issues of *Indigenotes* per year.

Memberships should be sent to the Secretary.
Include your name, address and phone numbers,
and a bit about yourself.

IFFA positions vacant in June:

At the 1993 IFFA (Vic) Annual General Meeting to be held in June, elections will be held for Office-bearers, and various duties allotted to interested members.

1992 Responsibilities:

At the last Annual General Election in 1992 IFFA members were nominated to take on tasks for IFFA as follows;

IFFA Finance:

SPIFFA Funding Applications - Mark Adams
I.N.N. Funding Applications - Sue Mills

IFFA Business:

IFFA Meetings:

Speaker Co-ordinators - Lincoln Kern, Jason Stewart & Anne-Marie Tenni
Executive Committee Minute Secretary - Jane Pammer
IFFA Informations Services:
Correspondent Flora & Fauna Enquiries - David Bainbridge
Library Officer - Sue Mills
Display Materials Co-ordinator - Matt Elliott

IFFA Publications:

Indigenotes: Assistant Editors;
Coming Events - Lincoln Kern
Environmental Weeds Notes- Tamzin Rollason
Advances in Nature Conservation: Assistant Editors; References - Jason Stewart
Significance Ratings - Damien Cook & Scott Watson
Other Publications:
Annual Bibliography - Anne-Marie Tenni & Jason Stewart
Conservation Reports Bibliography - Jason Stewart
Plant Taxonomic Updates - Valentino Stasjic
Gene Pools Pamphlet - Dale Tonkinson & Anne-Marie Tenni

IFFA Representation:

Roadsides Conservation Committee - Peter Tucker
Municipal Conservation Officers Association - Rob Scott
Evans St Grassland Committee of Management - Peter Tucker
Threatened Species Network - Vanessa Craigie
Victorian National Parks Association - Vanessa Craigie

Thank you to **all** the members who have taken on voluntary tasks to assist IFFA, many of whom may not be listed above.

Office bearers for IFFA 1993-94:

Nominations for the following positions are invited, and should be sent to the Secretary, Michele Arundel before the meeting. It should be noted that the present Secretary and Indigenotes Editor will not be standing for re-election, and replacements must be found.

President
Vice-President
Secretary
Treasurer
Editor (Indigenotes)
Editor (Advances in Nature Conservation)

Tasks for IFFA members 1993-94:

IFFA Finance:

IFFA Funding Applications
SPIFFA Funding Applications
I.N.N. Funding Applications

IFFA Business:

IFFA Meetings:

Meetings Co-ordinator - arranging the booking, opening & closing of Herbarium Hall.
Speaker Co-ordinator(s) - contacting speakers, arranging equipment needed and members to introduce the speakers.

IFFA Informations Services:

Correspondent(s) Flora & Fauna Enquiries - responding to requests eg. from primary, secondary students and others.
Library Officer - indexing and loans of IFFA information received.
Display Materials Co-ordinator - indexing and loans of posters, photos etc.

IFFA Publications:

Indigenotes:

Editor: Coordinating facilities, and people to ensure that deadlines and standards are met, laying out the body of the newsletter and filling in the gaps, proofreading.
Coming Events Editor: Compiling information from incoming newsletters, and contacts with organisations to produce monthly listing of events.

Snippets Editor: Summarizing and collating information from newsletters and other publications, chasing material and finding authors.

Other roles could include: IFFA activities editor, Weed Notes editor, Profiles editor, typist, and Promotion.

Mailout Co-ordinator: arranging volunteers to collect, fold and mail Indigenotes.

Advances in Nature Conservation:

Assistant Editors; writing or simply typing up articles eg. References,

Other Publications:

Compiling & arranging typing of information received for; Annual Bibliography, Conservation Reports Bibliography,

Plant Taxonomic Updates or Gene Pools Pamphlet etc.

IFFA Representation:

Liaison with **&/or** representation on committees for;

Roadsides Conservation Committee - Peter Tucker

Municipal Conservation Officers Association

Evans St Grassland Committee of Management -

Peter Tucker

Threatened Species Network

Victorian National Parks Association

Conservation Council of Victoria

The above positions are only proposed so please feel welcome to contribute other ideas for tasks which you may wish to see undertaken by IFFA OR

If **you** are interested in contributing to IFFA by offering your time and commitment to one or more of the above tasks, or in some other way, please contact me prior to the Annual General Meeting on **Tuesday 29th June**.

Yours sincerely, Michele Arundell, IFFA Secretary.

Coming events:

**For IFFA events see
back cover**

Conferences/Workshops/ Talks

- 22 May Saturday. **Threats to birds of temperate and tropical grassy woodlands.** Scientific Day and Annual General Meeting of the Royal Australasian Ornithologists Union. This day is an annual event aiming to provide both amateurs and professionals interested in birds and the environment, an opportunity to hear up-to-date information on birds and bird research. This year, speakers will focus on: patterns and processes of decline in bird populations in the rural landscape, threatened species and practical implementation and management plans. At the Marie Mill Community Centre, Maribyrnong. For further information, contact Michelle Rice at RAOU, Melbourne office (03) 370 1422.
- 5 June, Sat 7.30pm. **Mt Piper - a symbol and significant.** An illustrated talk by Dr Tim New from LaTrobe University, who will discuss the importance and value of insects to farming, a subject he has studied extensively throughout the world. He will also discuss the significance of Mt Piper and surrounding areas, and measures being undertaken to ensure its conservation. Organised by the Broadford Environmental Action Movement (BEAM). At the Shire Hall Supper Room. Alison Tomkins (057) 84 2041.
- 6 June 2pm. **Evolution of the Australian flora** by Graeme O'Neil. Part of Field Naturalists Club of Victoria (FNCV) meeting, hosted by the Botany Group. National Herbarium, Birdwood Ave, Sth Yarra. Ed Gray (03) 650 8661/ 435 9019 (AH).
- 7 June 6pm. **Beyond the roaring 40's: New Zealand's subantarctic islands"** by Philip Moors, Royal Botanic Gardens of Melbourne. Organised by the Australian Systematic Botany Society. At the National Herbarium, Birdwood Ave, Sth Yarra. Tim Entwisle (03) 655 2313.
- 16 June, Wed 8pm. **Wasp parasites of caterpillars** - presentation with slides and microscope demonstration by Ian Faithfull. Organised by the Microscopical Group of the FNCV. The Astronomer's Residence, Birdwood Ave, Sth Yarra. Elsie Graham (03) 469 2509.
- 21 June, Mon 8pm. **Management of bush in the urban environment** - an illustrated talk by Darcy Duggan. Organised by the Society for Growing Australian Plants - Victoria. National Herbarium Hall, Birdwood Ave, Sth Yarra. Enid Bowman (03) 882 5297.
- 25 June, Fri 8pm. **Koori plant uses** - an illustrated talk by Dr Bethgott (Botany Department, Monash University). At the St Kilda Town Hall. Organised by City of StKilda. Rob Scott (03) 534 3154.
- 29 June - 2 July. **Conserving biodiversity - the threats and solutions.** Organised by the NSW National Parks and Wildlife Service. Topics include habitat loss, degradation and pollution of water resources, weeds and feral animals, commercial use of native biota, changes to fire and climate and can government solve the problems. At the University of Sydney. Registration fee: \$225, includes all sessions and copies of proceedings, \$135 full-time students. Contact Lynda Wild, Conference Coordinator, NPWS, Ph: (02) 585 6417, Fax: (02) 585 6544.
- 23&24 September. **Partnerships for Change - environmental practice in the 1990's. 1993 National Conference.** Environment Institute of Australia. Looking towards environmental management and partnerships which achieve sustainable development. Sydney Convention Centre. Direct enquiries to (02) 357 2600.
- 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

- 22 May, Sat. **Walk, Talk & Gawk: Valley Reserve.** This shady picnic area at Mt Waverley is surrounded by five distinct vegetation zones and there are pleasant easy walking tracks. W. Telcher (03) 481 3882.
- 22 May Sat. **Coastal ferns and plants** - Leader: Hilary Weatherhead. Botany Group excursion of FNCV. Joan Harry (03) 850 1347.
- 29 May Sat. **Walk, Talk & Gawk: Greens Bush.** Leader: Stefanie Rennick. The only large area of natural bushland remaining on the Mornington Peninsula, Greens Bush was purchased under controversial circumstances to become part of Pt Nepean NP. Stefanie (03) 578 1679.
- 12-14 June, Sat-Mon. **Wilson's Promontory post fire ecology study.** Fauna Survey Group field survey. Russell Thompson (03) 434 7046.
- 26 June, Sat. **Fungi at Tooradin** - Leader: Tom

May. Botany Group excursion of FNCV. Meet 10am, picnic area at Tooradin, Melways map 144, reference A3. Win Bennet (03) 435 1921.

Restoration Activities

May

- 22 Sat 9.30am. **FO Werribee Gorge & the Long Forest Mallee**. Project day: Long Forest - tree planting, tree guard maintenance and fence removal. Janet Leversha (053) 67 4229. Next Project day: 26 June.
- 22 Sat 2pm. **FO Sherbrooke Forest**. Project afternoon at Ridge Track. Pulling up ivy. Meet behind Micawber Park Tavern (Melways map 75, ref G7). Other project day on the 9th June. Vivien Freshwater (03) 754 3093.
- 22&23 Sat&Sun. **Mount Eliza Association for Environmental Care** Reserves project days. Call Anne on (03)787 2034 on the evening prior to the project day for details of proposed activity, venue and equipment required. Also on the 26th & 27th June.
- 23 Sun 9am. **BEAM** (Broadford Environmental Action Movement) working bee. Whiteman's Reserve. Alison Tomkins (057) 84 2041.
- 23 Sun 10am-1pm. **FO Braeside Park** working bee. Also on 13 June. Ron Pearson 584 7443.
- 26 Wed, 10am-3pm. **FO the Yarra** Galatea Pt, Mel 2D, D7. Judy (03) 347 2252. Also on Sun 13 June.
- 27 Thurs 10am-12noon. **Sandringham Community Nursery** - volunteers propagation activities. Sandringham Council Depot, enter Reserve Rd or Talinga Rd. This is on every Thursday and Saturday.
- 30 Sun 11am-4pm. **FO Royal Park West**. Activity day. Adam Muyt (03) 481 4682.
- 30 Sun. **FO Warrandyte SP** Whipstick Gully planting day; includes a talk by guest speaker Bruce Bence on "History of the Whipstick area". FOWSP also have propagation days every Thursday. Ian or Margaret Burke (03) 844 2659.

June

- 5 Sat, 10am. **Green Link Box Hill** activity day. These events are also held every Monday and Tuesday morning, with Monday being Nursery work. Council Nursery in Nelson Street, Box Hill, further details, contact Minette (03) 898 1364.
- 6 Sun 9am. **FO Buckley Falls**. South Barwon lower car park. Planting the slopes at east end of the park. Tony Woolford (052) 43 6340.
- 6 Sun, 10am. **FO the Helmeted Honeyeater**, works group activity day. Meet at the Yellingbo store. Mark Ashby (059)66 2681. FOHH also

hold nursery activity days on the 2nd & 16th June. For these, meet at the Healesville Sanctuary main entrance at 10am. For further details on nursery activity days contact Pat Madeley on (03)727 2359.

- 13 Sun 10am. **Meander**.....a group caring for the Menzies Creek and Emerald Tourist Track Inc. Weeding and other work in the creek reserve. Meet at A'vard Picnic Ground, Emerald (Melways map 125, ref E12). Kate Forster (059) 68 5828.
- 13 Sun 10am. **URAGE** (Upwey Regional Action Group for the Environment). Weeding to restore indigenous vegetation along Ferny Creek. Meet at cnr Dean & Morris Rd. Rob Stephen (03) 754 3792.
- 19 Sat 9.00am. **FO Organ Pipes NP**. Meet at the Park Office. Robert Bender (03)499 2413.
- 19 Sat, 10am. **FO Bradshaw Park** planting & propagation. For details on meeting location contact Dave Bainbridge (03)580 5992.
- 20 Sun. **FO Avalon Dunes**. Restoration of native plant communities at Avalon Dunes. This involves removal of bitou and other weeds and planting. Marita Macrae (02) 918 3368.
- 20 Sun 10am. **Men of the Trees**. Deep Rock, Yarra Bend Park; Melways map 2D, ref D6. Minette Russell Young 898 1364.
- 20 Sun. 10am-12noon. **Brunswick Tree Group** Moonee Ponds Ck. Eric Ward (03) 388 2123.
- 20 Sun 1.30pm. **Darling Mills Bush Regenerators (NSW)**. Meet at the corner of Westmore Drive & Range Rd, West Pennant Hills. No previous experience necessary, just enthusiasm! Robyn Becket (02)872 4510.
- 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 other people wish to have their events covered, please get in touch with Dimi Bouzalas, (03) 386 0264.**
- 9 Sun 3-5pm. **Green Link Camberwell**. Weeding and planting in the Welfare Pde. Meet at the corner of Dion St & Welfare Pde; Melways map 60, ref E7. Dianna Burgess (03) 800 2002.

Learning to care for our environment: Victoria's Environmental Education Strategy

The future of our environment depends on all, or most, citizens becoming actively and constructively involved in efforts to meet the environmental and associated economic and social challenges we face. Learning processes have a key role to play in achieving this, and Victoria's Environmental Education Strategy provides a comprehensive and forward-looking framework of guidance and support for achieving the learning which is needed. The Strategy recognises the vital role played by environment organisations in fostering environmental learning and makes a number of suggestions for furthering this role.

Developed through a process of wide consultation spanning more than two years, the Strategy takes into account the full range of ways in which people learn and the full range of settings (home, work, school, leisure etc.) in which they learn. It is guided by a vision which sees all people - of all ages, from all walks of life, in both personal and professional capacities - developing the awareness, understanding, attitudes, skills and active participation which are essential to the achievement of sustainable living.

The main features of the Strategy are laid out in a central paper, entitled *Learning to Care for Our Environment: Victoria's Environmental Education Strategy*, which was finalised in late 1992 and is currently being distributed. A series of support materials is being developed to complement the central paper. The term "care" in the title is intended to convey two fundamental ideas - care in the active sense of taking care of the environment and also care in the attitudinal sense of being concerned for the environment.

The Strategy encompasses principles, aims, actions and resources for developing environmental education in a way such that all citizens are encouraged to feel a sense of personal involvement and responsibility. It is designed as a basis for the cooperative, ongoing development of detailed approaches to environmental education by the many sectors of society which ultimately need to be involved if community-wide environmental learning is to be achieved. In this regard, *Learning to Care for Our Environment* is recommended as a resource for anyone wishing to foster environmental education in a particular organisation or sector.

The Strategy aims to bring together all the environmental education efforts of government and communities. It is firmly based on what has been learned from the range of environmental education initiatives which are already occurring. A major focus is the provision of planned, coordinated support for the continuation and large-scale expansion of approaches which have proven successful. Equally important is an emphasis on new initiatives to fill existing gaps and foster innovation.

The Strategy focuses on seven broad areas for action, within which detailed action by organisations and individuals will be stimulated and where possible directly assisted. These areas are as follows:

- To use the everyday experiences of all Victorians as a basis for developing and reinforcing environmental

awareness, understanding, action skills, responsible attitudes and personal involvement.

- For all Victorians to be actively involved in practical activities and projects for environmental care and environmental education.
- For appropriate environmental education to be included in the curricula of all educational institutions.
- For all relevant organisations to develop and implement their own detailed environmental education strategies consistent with the state strategy.
- To substantially increase the number and diversity of people skilled in environmental education who are available to participate in environmental matters and in specific environmental education roles.
- For environmental education to be a significant and integral part of all environmental initiatives.
- For Victoria to keep in touch with, learn from and contribute to national and global developments in environmental education.

The Strategy recognises that the success of environmental education in any state or territory is influenced in many ways by events at the national level. It identifies the need for a national strategy for environmental education to complement and directly support efforts at state/territory and local levels.

Development and implementation of the Strategy is the responsibility of the Victorian Environmental Education Council (VEEC) which was established by the Victorian Government in late 1989 in response to strong community concern and demands for effective action on environmental matters. VEEC is made up of delegates from a wide range of bodies, including community organisations, schools, government agencies, business groups and the union movement. Delegates are selected to be representative of the diversity of interests and areas of expertise which environmental education encompasses. It is noteworthy that, through using an educational focus, VEEC has been able to achieve common understandings and a unified approach among its diverse membership, despite the polarised views often seen in forums on environmental matters.

Evidence of considerable interest and commitment across many sectors of society has emerged during the strategy process. There is reason for optimism that successful large-scale action for environmental learning can be achieved in a wide range of sectors. However, this must be seen in the context that environmental education is at a relatively early stage of development and that, while some visionary and inspiring initiatives already exist, much of the work still lies ahead if the entire community is to successfully embrace learning and action for sustainable living.

For information or input on Victoria's Environmental Education Strategy, contact: Steve Malcolm, Executive Officer, Victorian Environmental Education Council, Level 23 Rialto South Tower, 525 Collins St, Melbourne Victoria 3000 ph: (03) 628 2703 fax: (03) 628 3448

Conference report:

Computerised Maintenance Scheduling (CMS) for Parks and Gardens.

Report of a seminar held at the Royal Botanic Gardens, Melbourne on 25 February 1993.

What's involved in setting up a successful CMS system? On the 25th February over one hundred people crowded into the Royal Botanic Gardens Hall to find out.

At the seminar, CMS was discussed and assessed as a modern management tool. In today's business environment, the efficient management of natural resources is of the highest priority. There is a need for land managers to provide modern, flexible and efficient management by embracing new methods and new technologies such as CMS.

As the day progressed, a number of factors were highlighted. Trends influencing Local Government include compulsory competitive tendering, contracting out of non-core functions, and the maintenance of Asset values under the Australian Accounting Standard 27. There is also a necessity for keeping accurate maintenance and incident records to defend legal actions. Computers are increasingly being used with on-site data collection and with irrigation systems. All of these responsibilities require access to detailed and current information which may be available through CMS.

In order to set up a CMS system, managers and staff are required to review their current practices. This process of evaluation is a useful stage in streamlining maintenance delivery as it can reveal strengths and weaknesses in current methods and initiate the search for a more cost-effective approach.

A major lesson crystallized by the day's discussion was that CMS cannot replace intelligent management. In fact, without an existing systematic approach to maintenance scheduling computerisation cannot perform the miracle of organising staff, resources, budgets and projects. In addition to requiring quantifiable and accurate data, the system needs an active manager to analyse the works program. The questions which the computer can answer have first to be posed by the manager. The intellectual content of management must be undertaken by the manager - CMS is the tool.

The human element is crucial to the success of any system. There must be an initial commitment from the management of the organisation to re-

source and support the system. The implementation of the system must be planned in advance and should be based on an existing manual scheduling system which works! An awareness of the initial time and costs associated with data collection and entry, training, software and hardware purchases is essential. Staff must be trained to use the CMS packages, answered and reassured as concerns arise and must be encouraged to "own" the data and the system. Managers themselves have to take the initiative in working out significant elements of their individual resource and the strategic uses of CMS. From this standpoint, they need to strike a balance between the objectives of the organisation and cost-effective maintenance.

For a land manager to be able to creditably undertake their responsibilities, they must embrace new technologies such as CMS. Recent graduates and apprentices in horticulture and associated disciplines are computer literate and can be quickly familiarised with CMS packages. Computer-based courses are available for managers not yet familiar with computers. The people and packages are there already. Clarity of purpose and objectives in a climate of change is a key element in the successful use of CMS.

**Judy Carrigan,
March 1993.**

Snippets:

Exporting Australia's flora and fauna

The Australian National Parks and Wildlife Service approve or disapprove licences to export various species of flora and fauna. The public are able to put in submissions on each application, but you have to be registered for this purpose with the ANPWS. You can only register once a year, during a small advertising window in August/September. The advertisements are the next size up from microfiche and apparently only occur in "The Australian".

I registered on this list last year and have been staggered by the volume of applications to export fauna and flora. A brief list includes *Craspedia glauca*, *Nothofagus cunninghamii*, *Gahnia seiberiana*, *Caustis blakeii*, *Adiantum formosum*, *Sphagnum* spp., *Pteridium esculentum*, *Dicksonia antarctica*, *Blechnum* spp., *Xanthorrhoea johnsonii*, *X. spp.*, *Culcita dubia*, *Caustis flexuosa*, and *Macrozamia communis*.

Most of the species are being harvested for floriculture, some for resin (dead trunks only of *Xanthorrhoea* spp from Kangaroo Is) some as whole live plants, and some for potting mix.

Whilst some operations may well prove virtually ecologically benign, others may not be so. To the best of my knowledge, not much has been written on the harvesting of bush plants and plant material in Australia. An unpublished paper by ex-partners of Ecological Horticulture Robin and Robinson is available on request from the Tasmanian Environment Centre, Hobart. An article by myself ("Treeferns - are we running out? *Australian Horticulture* 83(2):26-91, 1985) should be readily obtainable but badly out of date. I urge all members of IFFA to keep their eyes on the paper for the advertisement to register on the ANPWS list.

- John Robin

Land Conservation Council Proposed Recommendations Melbourne Area District 2 need action

We brought this issue up last month in Indigenotes and I hope you've all been spending your time reading the thick volume and writing submissions. Individual submissions supporting indigenous flora and fauna on any small part of the recommendations (or the lot if you have the time) will be valuable to offset the other lobbying forces out there. I have decided to take on the task of co-ordinating a submission on behalf of IFFA. Do you have an area that you have a good knowledge of that's being considered in the recommendations? They cover public land from Flinders Shire north to Seymour, around to Mansfield, down to Moe and Warragul, around to Phillip Island and everything in-between. Some of the recommendations are quite significant, they include:

- a new (inadequate) National Park in the Central Highlands;
- downgrading Dandenong Ranges to a State Park;
- upgrading French Island to a National Park;
- a substantial addition to Kinglake National Park;
- a new State Park for Phillip Island;
- leaving 64% of public land as State forest for timber resources and
- maintaining levels for current licensed outputs of sawlogs until the end of the license period in 2001 when they anticipate increased availability of sawlogs and recommend a reappraisal of license levels at that time.

What am I looking for from all of you in your abundant spare time? Send me information and comments that you would consider worth including in a submission; any little bit will be of use. I would like them in clear language in point form if possible. I will happily accept them handwritten but I would make sure you get a blessing from the Dalai Lama the next time I see him if they came on floppy disk (in Microsoft Word would be great). In fact you'll get a blessing if you reply at all. My address is P.O Box 228, Preston 3072. My home phone is 481 4682 or work 654 1800. Time is **short!!!!!!** If you need to have a geek at my copy or need more info call **now!!!**

The address for your personal submission is still: Secretary, Land Conservation Council, 1st Floor, 477 Collins St., Melbourne 3000. We all need to get our submissions in by June 30, 1993. Thanks.

- Lincoln Kern

“Strategies for the Conservation of Rare and Endangered Species”

By Nathaniel Williams - The Nature Conservancy, USA.

A report on a Public Lecture hosted by the Victorian Conservation Trust

Anyone attending this lecture (6-5-93) expecting some new ecological or genetic considerations in the conservation of threatened species was soon the subject of some Good-old American salesmanship (make that some new American salesmanship). No apologies here as we started somewhat unusually with a video titled “A Stitch in Time - Saving Our Last Great Places” clearly indicating the direction of the Nature Conservancy’s programs. Habitat was emphasized throughout in relation to the extinction of species, whole communities and indigenous peoples. Promoting the concept of regional conservation of whole landscapes using “bioreserves” with core areas surrounded by buffers of compatible human activity incorporating local people (indigenous and otherwise) and their traditional activities clearly demonstrated a no-nonsense, get the job done approach, even if it means gradual acquisition toward a long term aim.

Nat Williams then went on to outline the 3 principles upon which the Nature Conservancy was based - identification of areas in need of protection, protecting those areas and looking after them into the future (the stewardship ethic). When assessing areas it is stated up-front what the organisations objectives are, and it is therefore clear what they will and won’t do (if only Australian organisations - government and otherwise - would follow this lead). Species under threat were the primary criteria for consideration.

Protection is achieved by whatever means possible (although I suspect only legal means are considered; however this doesn’t mean that they are the Friends of Capitalism as was clear from an anecdote about the Fringe-toed Lizard of Palm Springs). Methods range from ordinary purchase with appeal or corporate donation funds through covenants to international and national debt swaps.

Management was not forgotten amongst all this high-flying financial dealing, with a project not going ahead unless an endowment provision of 20% of the purchase price was in hand.

All in all, the Nature Conservancy with over 1300 areas now protected at home and abroad in the Eastern Pacific basin shows the utility of hard-nosed approach in a country where the tax laws reward benevolent activities significantly more than here in Australia. Let’s at least take one pointer from the experience - stop apologising for doing something a little bit different!

P.S. During questions one interesting thing came to light, in North America they have virtually no feral animal problems. Oh, if only!

Letter:

B.E.A.M.

Dear Dimi,
Broadford Environmental Action Movement Inc. is a small but active environmental group 70 km north of Melbourne.

In 1989 our local landmark Mt Piper was threatened by mineral exploration and possible mining. There was considerable outcry from locals and some people in the scientific community, as well as favourable support by our Shire Council.

Mt Piper is now a Reserve, covered by the Flora and Fauna Guarantee Act and nominated for National Heritage listing. It is a prominent mountain with a good cover of vegetation but is surrounded by farming land. It is the home of Butterfly Community No 1, which contains two varieties of Ant Blue butterflies as well as several other very rare species.

Our group is having an evening for community education, titled “Mt Piper - A symbol, and significant” on Saturday 5 June. I hope you will be able to add it to your list of coming events. I enclose the current issue of our group which has quite a bit of information regarding Mt Piper and about our evening.

I can be contacted evenings on (057) 842 041 or Bob Tomkins can be reached on (03) 524 2277. in Business hours.

Regards,
Alison Tomkins,
BEAM Publicity.

(See page 8 for details.)

Book review:

“SPIDERS commonly found in Melbourne and surrounding regions” by Ken Walker and Graham Milledge

Spiders are one of the major groups of invertebrates that have successfully adapted to life on land. They owe their success to their use of silk, not just for making protective retreats or cocoons for their eggs but more for the making of snares. Nearly all spider species have venom for killing their prey. In Australia there are only two species that are dangerous to humans - the Red-back spider and the Sydney Funnel-web.

The present publication is the revised and much improved version of Ken Walker's "Spiders Commonly Found in Melbourne" published by the Museum of Victoria in 1982.

The book deals with the 20 spiders from Melbourne and surrounding regions for which identification is most commonly sought at the Museum of Victoria. Obviously the book is aimed at anyone who encounters spiders, either inside the house, in the garden and beyond. It is a first hand source for finding out what kind of spider it is, a bit about its biology and whether it is dangerous and the normal symptoms its bite may cause.

The book opens with a brief introduction, followed by the biology of spiders including

information on webs, reproduction, dispersal and abundance. Following this is a valuable and welcome section on venomous spiders, treatment for bites, specifically for Red-back spider bite and for less venomous species. A simplified outline drawing of the structure of a spider and an interesting myths and legends is provided. There is also a list of commonly found spiders, arranged by whether they are web builders or hunters and what habitat they prefer. The foot note "The Sydney funnel-web does not occur in Melbourne" is reassuring to the large number of enquirers who fear the dreaded Sydney species occurring in their area. Under the Victorian Funnel-web spider I would have liked to see a brief description of how it differs from the Sydney species.

The major section of the book, the description of individual species, follows with each species receiving a 2 page coverage, the right hand page the text and left hand page the b/w illustration. The text includes the accepted common name, the scientific name, the identification features, specifically noting the lengths of adults, web, colour, and form, the habitat and biology and the bites (symp-

toms etc.). The drawings are Graham Milledges' work and are of good quality. For several species, as complementary to the text and the drawings, there are quality colour plates (16 in all) occupying four pages as a centre fold. A valuable section of suggested reading and information on the major natural history societies from which the reader can "investigate further" complete the book.

All in all a neatly produced book. With the well designed eye catching cover it will be well recognised by the Melbourne public as the little red spider book! It would be valuable to any one wanting to know about the common spiders in Melbourne and surrounding regions, whether they are dangerous, the nature of symptoms of their bites and first aid.

Royal Society of Victoria, Melbourne. 1992. 64 pages. 16 colour illustrations, 20 b/w drawings, size 180 X 180 mm. Cost per copy \$9.75 including postage. Order from Royal Society of Victoria, 9 Victoria St., Melbourne, 3000.

**Reviewed by M. Malipatil
Source: Victorian Entomologist,
April 1993**

The Story of the Vegetable Caterpillar

By Pat Coupar

When I was first told, by a fellow naturalist, to look out for the vegetable caterpillars in Warrandyte, I must admit I didn't know if I should be searching for a plant or an animal! Visions flashed through my mind of a brain damaged caterpillar or some exotic vegetable. It turned out to be neither, the vegetable caterpillar is in fact a fungus. The story of how it earned this somewhat incongruous name is fascinating and macabre.

The story is set in a secluded area of the Warrandyte State Park with the evocative name of Blue-tongue Bend. It is late one Autumn evening, the moon is keeping a secret vigil behind dark, moisture-laden clouds. Shadowy trees, like silent sentinels, guard the bush; dangling leaves still drip from a recent rain shower. The scent of peppermint and eucalyptus waft in the air mingling delicately with the sweet, earthy smell of fallen leaves and humus. Fragrances of the night; a sort of pot pourri of the Warrandyte bush.

Somewhere strewn among the damp grass and leaf litter lie the spores of *Cordyceps*, the "vegetable caterpillar". The spores, which are dormant, require the presence of a particular type of caterpillar before they are able to grow into a fungus.

The heavy rain has triggered a female swift moth to emerge from her underground cocoon. Free at last from the confines of her pupal case, she expands her wings; strong, brown-scaled wings that propel her heavy body into the air. From the moment of emergence she is on a race against time: her sole endeavour, to find a mate. Possessing no functional mouth parts, she can neither eat nor drink, she must rely on stores of fat within

her body to sustain her over the next few nights. But frantic flight uses energy fast so the female swift has devised a more efficient method of finding a mate. She attracts a male by emitting a scent called a pheromone which he can detect from a considerable distance with his large, feathered antennae.

After mating, the female moth scatters thousands of eggs over the ground. In a few days they hatch, most of the tiny caterpillars will not survive, but those that do burrow deep into the rain softened soil where they construct a silk-lined tunnel. This will be their home for the next two years. They return to the surface each night to feed on grass.

In spite of these safeguards some caterpillars are attacked. Not, as you may expect by a bird or an animal, but by a fungus; none other than *Cordyceps*. It is not certain how the spores enter the caterpillar, they could be ingested along with the food plant or breathed in through small openings on either side of the body, called spiracles. The tiny spores may even penetrate the hard cuticle or 'skin' of the caterpillar. But once inside the takeover begins.

From the spores grow mycelium, hollow feeding threads, which proliferate throughout the body of the caterpillar, consuming its internal tissues. Eventually all that remains is a mummified shell filled with a dense mass of white mycelium. When conditions are favorable, usually after Autumn rains, the *Cordyceps* sends up a club-shaped fruiting body. Arising from the head of the dead caterpillar, this olive-black structure, which carries the spores, stands about 10 cm above ground.

Vegetable caterpillars are not uncommon in Warrandyte. However, they look so much like broken twigs protruding from the grass and leaf litter, they largely go unnoticed. I was fortunate enough to see them for the first time in Warrandyte only a couple of years ago. Their remarkable appearance on the surface belies the gruesome annihilation that has taken place below ground. *Cordyceps* is a curious, highly specialised fungus which owes its very existence to an unpretentious caterpillar buried deep in the soil. A simple case of parasitism, perhaps. Nevertheless, the idea of animal matter being transformed into plant matter is, I think, an intriguing one.

**Source: Friends of Warrandyte State Park Newsletter May 1993
Originally published in the Warrandyte Diary**

IFFA activities:

IFFA (Vic)

Next meeting:

Tuesday 25 May at 8 pm at the Herbarium Hall, Birdwood Ave, South Yarra (Melways map 2G ref 12A). Dennis Black from LaTrobe University Zoology Department will speak on "**An introduction to Australian millipedes**". Live specimens will be on display. All welcome.

Committee meeting:

Tuesday 1 June at Geoff Carr's, 75 Heller St, West Brunswick 3055, phone 3808582. 6.30pm onwards.

Field trip:

Western Grampians (Victoria Range) Queens Birthday Long Weekend 12-14 June. Those going will need to arrange food, water, equipment and transport themselves or by arrangement with others through the trip organizer. For more details, contact Dale Tonkinson urgently by phoning (03)499 3085

SPIFFA

Mon June 7, Waterfall Gully Community Centre, Cnr Bayview Rd & Nixon St, Rosebud Sth at 7.30 pm. Show and tell night. Contact Mark Adams (059) 851122.

Annual General Meeting

29 June at the Herbarium Hall.

Indigenous Nurseries Network:

Tuesday 29 June 6.30pm. (before main IFFA meeting). Subject: to be announced Contact Murray Ralph (03) 419 3040 or Sue Mills (03) 383 2937.

NSW activities:

Next meeting:

Monday 7 June, 7.30 - 10.00pm at the Maiden Theatre, Mrs Macquaries Rd, Royal Botanic Gardens Sydney.

Hopping Mad. Australias frogs are coming under increasing pressure from loss of habitat, pollution, intense predation and ozone depletion. Martyn Robinson, Education Officer from the Australian Museum will speak on how we can reduce our impact and assist in their conservation. Contact Sally Fisher (02)9706486 (work), Penny Brown or Andrew McGahey (02)9133681 (work)

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Contributions to Indigenotes should be sent to the editors — the deadline for the next issue will be 4 June.

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