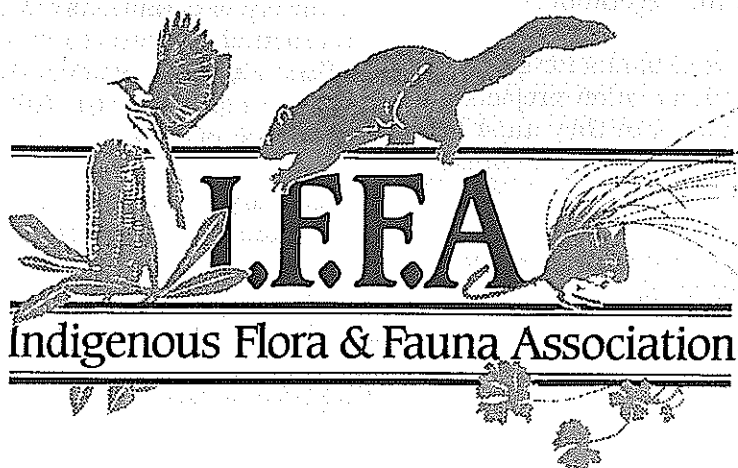
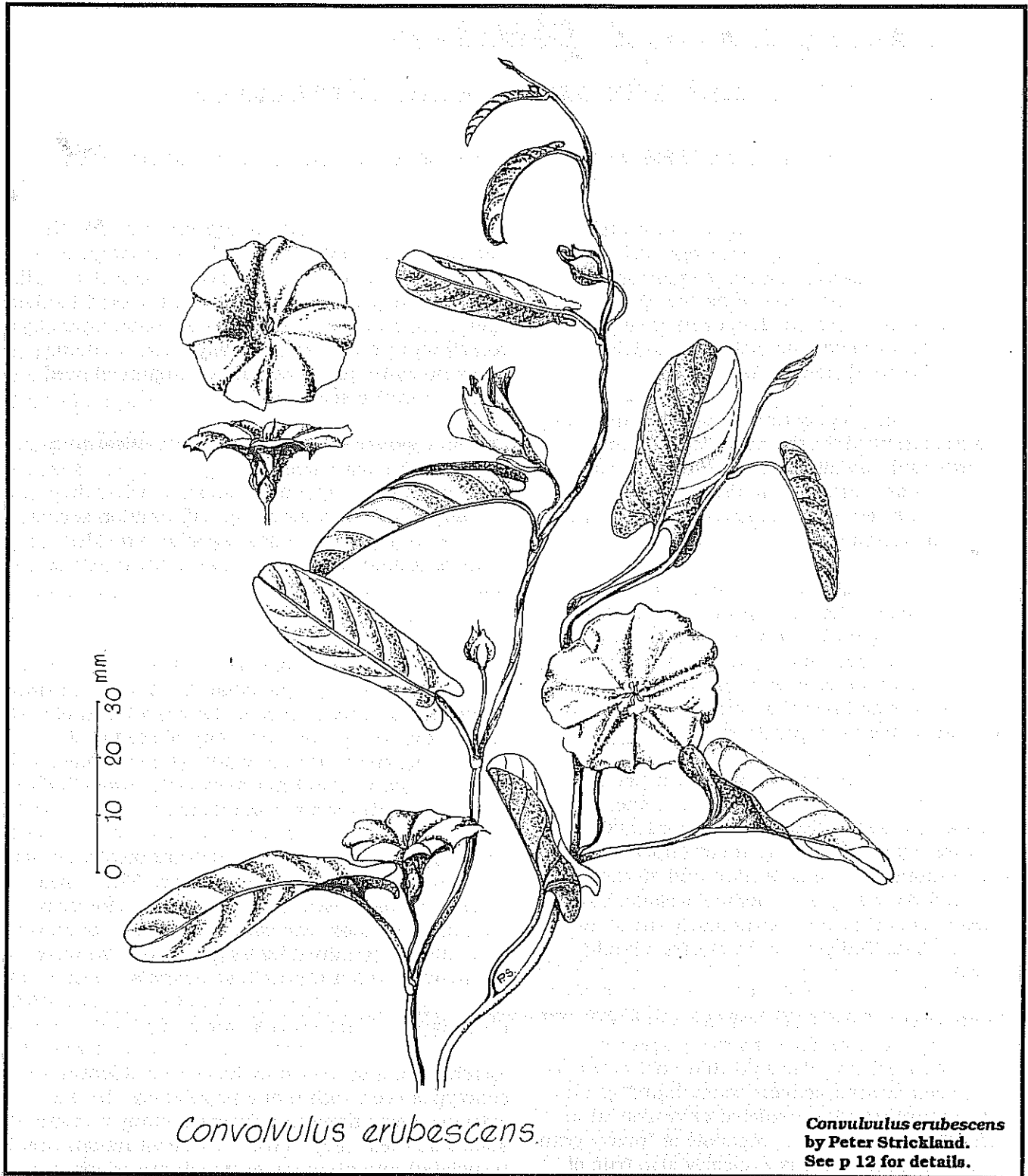


INDIGENOTES



Seed collection & horticulture of indigenous plants

- Strategies, standards and future directions.

A report on lectures at an IFFA workshop on 9/2/91 from Graeme Lorimer*

The slogan, "Part of conservation is growing" appeared on T-shirts many years ago with a picture of a *Callistemon* flower. Conservation imperatives for horticulture of native plants have grown ever since, and this has been greatly furthered by problems like salination, global warming and rural tree decline.

The clamour for propagation of native plants has overtaken the need for the establishment of standards and guidelines for how the propagating stock (seeds or cuttings) should be collected, marketed, curated, documented or supported by government funding.

In some areas revegetation cowboys are raping the natural vegetation of its seed; genetic time-bombs are being set by growers with no understanding of genetics; money is being wasted on plants of the wrong species or provenance; and the industry is getting a bad name in some quarters because of sloppy practices.

IFFA has addressed these problems at two special meetings this summer. At the second one, on 9th. February at the Melbourne Botanical Gardens, three speakers talked about important considerations of seed collection and storage. This was followed by a 'workshop' session covering more general issues, particularly the standards to which 'Indigenous Nurseries' should conform.

IFFA president, Geoff Carr, set the scene by underlining the need for conserving species through horticulture. He said that 45% of Victoria has been cleared, leaving many plant species and communities rare, depleted or restricted in range. The conservation prognosis is "pretty grim indeed", he said, and this is clearly also true of the fauna which rely on the vegetation.

Geoff Carr believes that seed banks for storage of seed for use in applied conservation projects have a very important role to play, but they must be as providers of seed for propagation, not as museums.

Correct documentation of seed collections is critically important, Geoff says.

This theme was picked up and expanded by the curator of the Melbourne Herbarium indigenous seed bank (and IFFA secretary), Michele Arundell. This has been the first summer of the seed bank's operation, and the standard of documentation by contributors has been generally poor. In some cases no collection data has accompanied seed lodged with the seed bank.

The provisional seed collecting data sheet published in the last issue of *Indigenotes* (vol. 4 no. 2) should help to guide collectors in what they should record. If some of the information seems unnecessary, then the next speaker provided some little-known genetic reasons for why it is not.

Genetics and Seed Collection

La Trobe University Geneticist, Dr. Yvonne Fripp, impressed on those present the importance of maximizing the genetic diversity of seeds collected for conservation of plant species. There were also some important and useful hints for minimum collection requirements.

Dr. Fripp explained that species are mostly defined by their visual characteristics. The appearance of a plant, together with features like flowering time and habit, are called the plant's phenotype. It is determined by its genes and the environment in which it grows, so scientists write

Phenotype = Genotype + Environment.

Members of a species may have very different genotypes even within one population. In the extreme, some may have twice as many chromosomes as their neighbours. These variations are translated into phenotypes which are adapted to a variety of conditions. With the massive environmental changes such as the Greenhouse Effect which we see occurring, it's vital that we conserve genes for the full range of environmental adaptations.

A primary aim of conservation horticulture must therefore be to propagate the maximum genetic diversity, and that means collecting from as many plants as possible. To know how many is

enough, we need to understand breeding systems. Dr. Fripp explained:

Some species rely on asexual reproduction (e.g. Dandelions and some Cassias by seed, or Wandering Jew by plant fragments). This produces minimum genetic diversity in the progeny of any individual plant.

Most species use sexual reproduction, and these can be categorized according to pollination methods. 'Out-crossing' is the term used for pollination of one plant by another, and 'selfing' is when a flower is fertilized by pollen from the same plant. 'Obligate out-crossers' are plants which cannot 'self' and must receive pollen from a genetically different plant in order to produce viable seed. At the other extreme, 'obligate selfers' always self-pollinate, and there are many plants which rely to varying degrees on both out-crossing and selfing.

Plants which are predominantly out-crossers suffer from loss of vigour or other problems if they are inbred. Collecting seed from many plants is extremely important for long-term conservation of such species.

It's clear that the breeding strategy affects how many plants you need to collect seed from in order to adequately maintain a gene pool, but we do not know which category most Australian plants fit into. In any case, not enough mathematical research has been done to fix a minimum number even when we do know the breeding strategy.

So what should we do when we collect seed? Dr. Fripp makes these suggestions:

- 1) Collect small numbers of seeds from as many plants as possible.
- 2) Avoid collecting from neighbouring plants because they are most likely to be related.
- 3) Collect seeds from as many locations as possible (but don't mix them!)
- 4) Include seed from plants which differ as much as possible in their appearance or environmental preferences.

Of course, there is always a trade-off between pursuing these goals and pursuing collections of as many species as possible, or meeting other demands on your time. Ultimately, 'common sense' has to be relied upon, and Dr. Fripp agrees that collecting seed from a dozen plants of a species which is difficult to collect 'sounds about right'. However, seeds from a dozen plants will often encompass only a poor cross section of a whole gene pool, so you should always try to do better.

More research is clearly required if we are to have simple criteria for deciding what our collecting targets should be.

Should we mix genes from different populations?

Introducing new genes to a population of inbred plants may be highly desirable in certain circumstances. On the other hand, mixing genes between two substantially different populations of a species can cause serious declines or even extinctions. (We say that the populations are 'not co-adapted'). This may be particularly dangerous with a species like River Red Gum which occurs from one side of Australia to the other in different environments.

Unless you know whether two populations of a species are co-adapted, you have to assume that taking seed from one site to another can cause a disaster within a few generations.

Two things are clear from Dr. Fripp's talk: We need more information from geneticists; and genetic time bombs are probably being laid in revegetation projects which, due to commercial reasons or ignorance, are violating important genetic requirements.

The three speakers were then followed by a 'workshop' session to map future directions for 'indigenous nurseries'. (An 'Indigenous nursery' is basically one specializing in plants whose provenance is guaranteed to be from known sites within the nursery's district).

Proceedings of the workshop will be described in the next issue of Indigenotes.

Some new records of weed species in Victoria

By Geoff Carr*

New records of naturalized plant species are continually being made in Victoria and the list is steadily growing. At the moment about 27% of the Victorian flora is exotic (Ross 1990; Carr 1988 in press). I report here several new records of exotic species made in the last six months or so. The species clearly show potential to become environmental weeds in particular ecological situations or plant communities. They will be included in the forthcoming list of serious or potentially serious environmental weeds (Carr et al. in prep.). Taxonomic nomenclature follows Ross (1990) and Smith (1987).

***Ageratina adenophora* (Sprengel) R. King et H. Robinson (Crofton Weed)**

Crofton Weed is a major weed species in Queensland and New South Wales (Auld and Medd 1987, Buchanan 1981, Kleinschmidt and Johnson 1977(?)) and we may have hitherto been led to believe that this tropical or sub-tropical shrub would not find the Victorian climate amenable. That is not the case however and the species is well established in inner suburban Melbourne.

On 27 January 1991 I found three populations in Prahran and Armadale. The largest, in Commercial Road behind a service station (Melways reference: Map 58, D5) contained about 30 plants to about two metres in height. The other populations were of single plants - in Greville Street, Prahran and in the railway reserve along Osment St., between High and Mt. Pleasant Gv., Armadale (Melways ref: Map 58, D6 and map 58, J7 respectively).

Seed of Crofton Weed is dispersed by wind and we can predict that additional populations will soon appear. Given this dispersal mechanism, the species has the capacity to travel great distances. The populations could easily be eradicated now.

I have never seen *A. adenophora* in cultivation but this showy shrub originally escaped from cultivation in Australia (Auld and Medd 1987). Are the Armadale and or the Prahran populations derived from garden-grown material or has the species been accidentally introduced from the north?

A. adenophora naturally occurs in Mexico (Auld and Medd 1987) and was formerly known as *Eupatorium adenophorum* Sprengel.

***Oxalis obtusa* Jacq. (Suring - South African name)**

This small herb is abundant on moderate to steep slopes and cliffs (growing in volcanic loams) at Buckley Falls, Geelong (Melways ref: Map 227, A3) where I collected it in October 1990. The population has been known for several years (M. Trengrove pers. comm.) but was not recorded by Carr (1987). It was either overlooked or the population is expanding very rapidly.

The form naturalised at Buckley Falls has small stemmed rosettes of hairy leaves and large showy pale orange-fawn flowers with perianths strongly veined with darker orange-brown. The hard tunics covering the bulbs are very dark brown, shiny and longitudinally strongly ribbed or winged.

In common with most exotic *Oxalis* species in Victoria *O. obtusa* appears not to set seed, apparently being out-crossing. Thus, all plants in the population, which covers an area of about two hectares, have evidently arisen vegetatively; numerous subterranean and aerial bulbs are borne by plants of all ages. The vegetation invaded by *O. obtusa* includes a basalt escarpment shrubby/grassy complex, degraded *Themeda triandra* (Kangaroo Grass) grassland and wholly exotic community dominated by *Bromus* sp (Bromes), *Sporobolus indicus* (Rat-tail Grass), *Romulea rosea* (Onion Grass) and many other herbs (see Carr 1987).

O. obtusa is obviously a 'garden escape' weed which reproduces only by vegetative means as are at least 11 other species naturalized in the area - mostly it is assumed from the dumping of garden rubbish. These include the disastrous *O. pescaprae* (Soursob). *O. obtusa* is by no means as robust as *O. pescaprae* but clearly has the reproductive potential to match its cousin.

The population of *O. obtusa* is thinly dispersed over a large area. In the regionally significant vegetation (Carr 1987) in which it partly occurs, control or eradication would be impossible.

* Ecological Horticulture Pty Ltd, 69 Spensley Street, Clifton Hill, Victoria 3068.

O. obtusa is indigenous in South Africa - the south west Cape region (Karoo, Namaqualand and Namibia) (Bond and Goldblatt 1984). It is rarely cultivated in Victoria.

***Prunus spinosa* L. (Sloe)**

A very large series of populations of this shrub have been found on the Plenty River, south-east of Mernda on the Carome Stud property and its neighbour on the east side of Plenty River (Melways ref: map 183, A1). The first population was found on 3 March 1991 and several have been seen subsequently. We are currently surveying and documenting the vegetation of Plenty Gorge Metropolitan Park (Ecological Horticulture Pty Ltd unpubl. data).

By suckering *P. spinosa* forms very dense thickets of rather upright spiny shrubs to four metres high. The largest population covers about half of one hectare and populations are dispersed over at least two kilometres of the river.

The habitat occupied by *P. spinosa* ranges from upper alluvial terraces to low basalt escarpments and slopes. Numerous other 'garden escape' species occur in the area and associated species include *Ligustrum vulgare* (Privet), *Lycium ferocissimum* (Boxthorn), *Crataegus monogyna* (Hawthorn), *Salix fragilis* (Willow), *Prunus cerasifera* (Cherry Plum), and an unidentified suckering *Prunus* resembling the prune.

Willis (1970) and Ross (1990) list only *P. cerasifera* as naturalised in Victoria but I have recorded seven naturalised species - the above three, an unidentified yellow-fruited species (see Carr et al. 1991), *P. persica* (Peach), *P. armeniaca* (Apricot), and *P. laurocerasus* (Cherry-laurel). The genus is in need of study in Victoria in the light of the recent valuable taxonomic contribution by Smith (1988) who does not record *P. spinosa* as naturalised in New South Wales.

In Victoria *P. cerasifera* (and its cultivar *P. cerasifera* 'Nigra') are widespread and serious environmental weeds (Carr and Yugovic 1989, McMahon et al. 1989) and *P. laurocerasus* is a serious weed in the Dandenong Ranges (McMahon et al. 1991). *P. spinosa* must be regarded as a serious weed along the Plenty River.

How far *P. spinosa* is capable of dispersal is uncertain. *P. cerasifera* is dispersed by several avian and mammal vectors (e.g. Fox, Emu and Blackbird (Carr in press) and Pied Currawong (H. Mason pers. comm.)) over relatively long distances. The fruit of *P. spinosa* do not appear to be very attractive to birds locally and there was no evidence (e.g. damaged fruit) of visits by Blackbirds or others. The small (10-15 mm) globose smoky-blue (glaucous) fruits remain on the tree and do not drop to the ground. It is from the ground that foxes largely gain access to the fruits of *P. cerasifera*. Fruit of *P. laurocerasus* are presumably dispersed by Blackbirds.

P. spinosa is widespread in Britain, through to southern Europe, the Mediterranean to Turkey and south west Siberia (Clapham et al. 1952). It is apparently rarely cultivated in Victoria.

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Coming Events:

APRIL

- National Clean Air Month.** Part of "Every Little Bit Helps" campaign organised by ACF, Life. Be in it and ECO (Earth Communications Office).
- 25 Thurs 10am. **Propagation day, F.O. Warrandyte S.P.** Meet at the Park depot. Margaret Burke (03) 844 1060. (Prop. day every Thursday). Activity day - last Sunday of month.
- 25 Thurs 7.30pm. Earthcare St Kilda meeting. Illustrated talk on **St Kilda presettlement landscape and the present**, by Neil Blake. Minka Veal (03) 527 4670.
- 25-28 Thurs-Sun. Anzac Day weekend, Field Naturalists Club of Vic, **Fauna Survey Group campout**. Alex Kutt (03) 419 0752.
- 27 Sat. **Botany Group excursion of FNCV.** Weed eradication at **Seawinds, Dromana** (mainly Boneseed & Sollya) followed by Waterfall Gully walk. Leader: Stefanie Rennick. Margaret Potter (03) 889 2779.
- 27 Sat 12 noon. **Indigenous plant growers and nursery meeting.** For further details see back cover.
- 27 Sat 2pm. **Friends of Sherbrooke Forest project afternoon.** Ridge Track; ivy, tutsan. Meet at entrance gate in Belgrave-Ferny Creek Rd. (Melways map 75, ref E5). Margaret Finger (03) 754 3548.
- 27 Sat 4pm. **Mt. Eliza Association for Environmental Care project day.** Anne Read (03) 787 2034.
- 28 Sun 10am - 1pm. **Nunawading Indigenous Plants Project.** Seed collecting / propagation work, as required. Nunawading Council's Horticultural Centre, 82 Jolimont Rd, Forest Hill. Brian Crouch (03) 878 5053. (Also on 28 April).
- 28 Sun 10am. **Friends of the Wildlife Reserves - (LaTrobe University) working bee.** Gresswell Forest. George Paras (03) 479 2871. (Also on 26 May, but at Campus Reserve).
- 28 Sun 10am. **MEAFEC** see 27 Apr. MEAFEC also has project work on the 4th weekend of May.
- 28 Sun 11am-4pm. **FO Royal Park West project day.** Erosion control work along hilltop track or clearing weeds. Bring gloves and food. Adam Muyt (03) 386 7491. (Also on 26 May)
- 28 Sun 2 pm. **FO Victoria's 1st Settlement site - Sorrento.** Stuart Sherrin (059) 84 1953.
- 30 Tues 10am-1pm. **Greenlink Box Hill planting & maintenance.** (Every Tuesday). Fred & Fiona Cumming (03) 898 4808 (AH).
- 30 Tues 8pm. **IFFA (Vic) meeting.** Astronomer's Residence, Birdwood Ave, Sth Yarra, Melways map 2G 12 A. See back cover.

MAY

National Wilderness Month.

- 1 Wed 6.30pm. **Wilderness Action Group** meeting. The Wilderness Society, 59 Hardware Lane, Melb. Also on 8, 15, 22 & 29 May. TWS (03) 670 5229.
- 2 Thurs 6.30pm. The Australian Museum Society, Science Super Series - **An Evening with David Attenborough.** State Theatre, Market St, Sydney. AMS (02) 339 8225.
- 4 Sat. **FO Gellibrand Hill Park** activity day. Jenny Gaddaye (03) 744 6093.
- 4 Sat. **Fauna Survey Group Leadbeaters Posum Watch.** Ray Gibson (03) 874 4408.
- 4-5 Sat-Sun. **FO French Island SP.** Weekend at former Prison Farm. Fay Gordes (03) 772 9668.
- 5 Sun 9.30am. **FO Buckley Falls** working bee. South Barwon lower car park, planting along river. Tony Woolford (052) 43 6340.
- 5 Sun. **VNPA Walk, Talk & Gawk: Kinglake NP** with Jane Calder. Waterfalls and a range of vegetation communities are two of the many features of this magnificent forest with a varied and interesting terrain. Bookings: W. Morris (03) 818 6102.
- 5 Sun. Field Naturalists Club of Victoria, general excursion - **Ferns at Mt Worth** (by bus). Leader: Rod Hill. Dorothy Mahler (03) 850 9379.
- 5 Sun. **FO Warrandyte SP** community planting at Warrandyte Community Centre. Margaret Burke (03) 844 1060. (More activities on 24 & 26 May).
- 5 Sun 1pm. **FO Langwarrin Flora and Fauna Reserve** activity day. Meet at the McLelland Drive car park, Melways map 103, ref C10. Contact Ann Read (03) 787 2034.
- 7 Tues 8pm. **Some Aspects of the Identification and Ecology of Victorian Bats**, by Lindy Lumsden (Arthur Rylah Institute). Fauna Survey Group meeting. Astronomer's Residence, Birdwood Ave, Sth Yarra. Alex Kutt (03) 419 0752.
- 8 Wed 9.30am. **FO Sherbrooke Forest** project morning. Clematis Track, working on 2 isolated ivy patches - lyrebird habitat improvement. Meet on Sherbrooke Lodge Rd. at small car park before Sherbrooke Lodge. (Melways map 75, ref G4). Vivien Freshwater (03) 754 3093.
- 9 Thurs 8pm. Botany Group meeting of FNCV: **Introduction to Fungi** by Hilary Weatherhead. National Herbarium, Birdwood Ave, Sth Yarra. Margaret Potter (03) 889 2779.
- 10-12 Fri-Sun. **The Sea Has Weeds Too!** A conference on the problem of Spartina. A free conference open to all. Spartina has the capacity to aggrade sediment at the rate of about 4 cm per year, producing over a period of time, a dramatic change in the appearance and ecology of colonised areas. It is found in a number of locations in Victoria, all of which are internationally recognised significant migratory wader bird habitats. Gordon Fraser-Quick, (056) 74 1973 (H), (056) 72 1066 (W).

- 11 Sat. **Werribee Water Rat survey**. FSG excursion (of FNCV). Julian (03) 543 86277.
- 11 Sat 9-930 start. **FO Organ Pipes NP** working day. Robert Bender (03) 49 2413.
- 11 Sat 2pm. **Bush Invaders**. A special children's event. Conducted by Celia Johnston, Museum Guide, Hallstrom Theatre, Australian Museum. Part of the Australian Museum Society Program. AMS (02) 339 8225.
- 11 Sat. **F. O. Dandenong Ranges N.P.** project day. Graham Barstow (03) 758 6935.
- 12 Sun 10am. **Geelong Indigenous Nursery**, tree planting at Hovell's Creek. Mark or Trish (059) 29 8087.
- 12 Sun 10am-3pm. **FO the Yarra** activity day. Galatea Pt, Melways map 2D, ref. D7. Judy Ruth-erford 347 2252. (Also on 22 May & 9 June).
- 12 Sun 10am. **Stony Ck weeding group**. Mark Gardner (03) 844 3799.
- 12 Sun. **VNPA Walk, Talk & Gawk: Steiglitz HP** with Geoff Durham. An old gold mining area of important cultural heritage, picturesque gullies & creeks. Adjacent to Brisbane Ranges NP. G.D. (03) 523 5559.
- 12 Sun 3-5pm. **Green Link Camberwell** activity day. Dianna Burgess (03) 809 2092.
- 12 Sun. **FO Brisbane Ranges** project day. Nola Haines (052) 29 6388.
- 14 Tues 7.30pm. **FOGL** natural history program. **Fungi** with Tom May. Field trip on 18 May. Cost: \$10, Gould League: 67 High St, Prahran. Gayle Seddon (03) 510 1493.
- 15 Wed 7.30pm. **FOGL** nat. hist. program. **Reptiles** by Greg Parker. Field trip on 25 May. See 14 May.
- 18 Sat 9.30am. **FO Werribee Gorge & Long Forest Mallee** project day - Tree planting and seed collecting. Meet at Happy Valley car park. Judy Douglas (053) 67 2672.
- 18 Sat. **Friends of Churchill NP & Lysterfield Lake Park** project day. Neal Smith (03) 873 2635.
- 18 Sat. **VNPA Walk, Talk & Gawk: Moorooduc Quarry** with Chris Kenyon. An old quarry converted to passive recreation - conservation area. (03) 803 3495.
- 18 Sat 10-12. **FO Bradshaw Park** planting. Meet at gate (cnr Nepean Hwy & White St) Melway map 87 ref D10. Whitney Beadman (03) 584 4366.
- 19 Sun 10am-3.30pm. **Arbour Day** planting. Dougharty Rd, West Heidelberg. Melways map 19, ref E10. BBQ lunch provided. Darebin Ck. Coordinator: Mary Ann Boyd-Squires (03) 490 4360.
- 19 Sun. 10am-12noon. **Brunswick Tree Group** activity day. Meet at Moonee Ponds Ck at end of Union St. Melways map 29, B9. Eric Ward (03) 387 9490.
- 19 Sun 10am. **Men of the Trees**, maintenance and planting at Deep Rock. Melways map 2D, ref D6. Minette Russell-Young (03) 898 1364.
- 19 Sun 12.30pm. **VNPA project day - Warrandte SP**. Weed pulling followed by tour. Afternoon tea supplied. Pam Scott (03) 570 2909.
- 20 Mon 8pm. Society for Growing Australian Plants - Victoria, meeting. **Some Victorian Pea Flowers** - illustrated talk by Margaret Corrick. Enid Bowman (03) 882 5297.
- 25 Sat. Botany Group excursion of FNCV. **Fungi at FNCV Kinglake property**. Leader: Tom May. Margaret Potter (03) 889 2779.
- 25 Sat 10am. **FO Sherbrooke Forest** project day. Coles Ridge; ivy, pittosporum, holly etc. BYO picnic, drink, thermos etc. Vivien Freshwater (03) 754 3093.
- 26 Sun 10am. **FO Eltham Copper Butterfly** project day. Steve Anderson (03) 844 2659.
- 26 Sun 1-4pm. **Banksia Environmental Foundation** working bee - planting, propagation & weed eradication. Black's walk. Kelvin Millsom (03) 388 0672.
- 26 Sun. **VNPA Walk, Talk & Gawk: Gembrook SP** with Patrick Honan (03) 569 6275. A leisurely walk through a pleasant variety of scenery and bushland with creeks and superb fern gullies.
- 28 Tues 8pm. **IFFA meeting**. See back cover.
- 31-2 June. Fri-Sun. **All About Fungi** study weekend. Part of The Australian Museum Society program. AMS (03) 339 8225.

JUNE

- 1 Sat. **IFFA field trip**. See back cover for details.

JULY

- 14-19 Sun-Fri. **Australian Entomological Society 22nd AGM and Scientific Conference**. Prince Philip Theatre, University of Melbourne. Sessions include: The impacts of exotic insects in Australia. Posters and papers are invited on the relevant themes. For more info contact Janet Horne, (Convener) Institute of Plant Sciences, Swan St, Burnley, 3121, (03) 810 1511.

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 (03) 650 8296.

The **Australian Trust for Conservation Volunteers** coordinate plantings throughout Victoria and interstate. They take place throughout the week and on week-ends, usually a specified number of volunteers is required and most plantings are indigenous. For further information contact ATCV : National Headquarters in Ballarat: (053) 32 7490 Adelaide: (08) 365 1612. Sydney: (02) 413 5502, Tasmania: (003) 41 5429, Queensland: (07) 391 6655.

The editors will be pleased to receive information about any relevant events for listing in Indigenotes.

Profile:

Earthcare

Earthcare St. Kilda Inc. 4 Herbert Street St. Kilda 3182. (03) 489 9007

By Minka Veal*

The first evidence of penguins breeding on the St. Kilda breakwater was in 1976 when a chick was sighted in a nest. Now over 100 penguins nest there.

The St Kilda Breakwater, built in 1956 for the Melbourne Olympics, now has a thriving penguin colony. Every second Sunday, in all weathers, Professor Michael Cullen from Monash University and a group of Earthcare members walk out to the breakwater, examine the penguins for injuries, weigh them and inspect the burrows.

Some interesting observations from the team include the average weight (1.1 kg) and height (40 cm) of penguins at St Kilda. On average St Kilda penguins are heavier than the Phillip Island penguins probably because they do not have to swim long distances for their food. A large anchovy nursery is located around the pier and in Hobsons Bay, and substantial quantities of other penguin delights such as pilchards are found in Port Phillip Bay.

Eight visitors are welcome to go out with the team. The next visit to the breakwater is Sunday 28 April, and thereafter each fortnight. If you would like to see the penguins in their habitat, make a booking by phoning Minka on 527 4670. Booking is essential.

The biggest hazards to the penguins nesting on the breakwater are fishermen, unleashed dogs and the plastic six-pack-beer-rings. They have been found in their nests starved to death, a plastic beer ring round their neck or flipper. The birds are able to walk into their nests but are unable to get out again. One evening the team found a penguin with a fishing line so tightly wound around its badly swollen leg that they were unable to cut it off, as they usually do. They took it to Casualty at the Alfred Hospital. "Alfreda" as they named her is now alive and well.

Earthcare President Jim Williams has confirmed that our proposals to make the Breakwater a Wildlife Sanctuary has been approved. A more efficient barrier fence to protect wildlife will be erected when the sanctuary is formally gazetted by government.

Earthcare is concerned about oil spills affecting wildlife along the southern coastline of Australia.
Earthcare St. Kilda Inc., 4 Herbert Street, St. Kilda 3182.

Port Phillip Bay in particular. A disaster plan, DISPLAN is in place and can be implemented when necessary. Myer Eldelson is in charge of this.

The Department of Conservation and Environment agree that the penguins should be protected. Earthcare has assumed the role of management of the St Kilda Breakwater Penguin Habitat and prepared a plan which includes maintenance of the breakwater structure, community education and involvement, research on and monitoring of wildlife, habitat enhancement, and security. Anyone can choose to work on any part of any aspect of the Management Plan. Are you interested? Meetings are held once a month on a Sunday.

Earthcare has many more environmental activities as well as looking after penguins. Meetings are held on the last Thursday of each month, and visitors are welcomed.

Please do ring our Secretary Neil Blake (03) 489 9007, or Vice President Minka Veal (03)527 4670 who are happy to give any more information.

Letter:

Bush management not new.

The author of the advertisement regarding Go Green Urban Bush Management Unit (Indigenotes vol. 4, no. 1) describes the identification and rehabilitation of urban bushland areas through carefully planned and executed bush management programmes as a new and ambitious venture. This is a complete misrepresentation of the situation in New South Wales where bush management has been practised on a professional basis for over fifteen years.

There are now more than fifteen enterprises and also eight municipal councils that employ bush regeneration teams. There are also two professional organizations, courses at TAFE, several colleges, National Trust and volunteer bodies. All this started with the innovative technique devised by Joan and Eileen Bradley for bush regenerating in the 1960's, so what is new?

There is much to be achieved by Go Green, with dedicated and experienced people in rural NSW and interstate rather than concentrating on the expansion of the Sydney scene.

- E.H.C. Kelly,
Hon. Secretary,
The Bush Regenerators Society

Snippets:

Clearing controls threatened by State Opposition

On going to press, the Victorian Opposition parties were on the brink of blocking legislation to formalize the controls on the clearing of native vegetation in the upper house. Lobby any Liberals that you can! We must be a bit more vocal or else there is a real danger that we might lose on this one!

Protecting bush on private land

The Conservation Council of Victoria has begun a new stage in its on-going work to preserve remnant vegetation. An intensive community development and education programme has been launched in the Beaconsfield - Upper Beaconsfield - Officer area. The programme aims to foster community support for conserving bush on private land. Developed by the local community, the Conservation Council will coordinate the project, providing information, support and advice.

Although the new amendment to the state-wide planning scheme that bans clearing of native bush will mean* an improvement in native vegetation retention, the Conservation Council's study 'Good intentions and lost opportunities' shows that underlying community support is needed to ensure such controls work. The Conservation Council hopes that the community development education approach will increase the effectiveness of local planning schemes in protecting the bush. If the Beaconsfield Pilot Programme works, they hope to extend the project to other areas.

If you are interested in being involved in the Beaconsfield project, either as a local resident or 'outside supporter', please contact Janet Rice (03) 380 9666.

[*Assuming that these controls are not frustrated by the Opposition in the State Parliament, as they have threatened to do - see page ***]

Peatlands survey

The Victorian National Parks Association is assisting in a survey of Victoria's peatlands, important sites because they often contain threatened plant species, and remains contained in the peat are used to study past environmental change. Contact Jamie Pittock (03) 650 8296

Frogwatch

Remember that a couple of issues ago we sent you a questionnaire asking for details of changes in frog populations in your area over the last 5 years? Did you fill it in and return it?

Aust. butterfly database

Kelvyn and Laurie Dunn report in *Victorian Entomologist* (Feb 1991) that in 1983 they commenced a database project to compile records of Australian butterflies. They are now writing a major report which will provide an up-dated account of the distribution of each butterfly species accompanied by large plotted distribution maps and temporal data charts. The authors have called on butterfly collectors to contribute their records to the project. Contact Kelvyn Dunn, 1/7 James St. Dandenong Vic 3175.

Queens Park nature trail

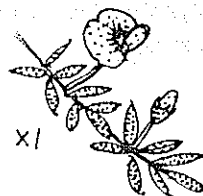
Friends of Queens Park (Lorne, Vic) have provided us with a copy of their nature trail notes and newsletter. The nature trail covers many of the trees and shrubs of the area, and a few of the herbs. Cape Broom is proving to be a problem in the park. Contact Meredith Bell.

Proposed Otway Forest Management Plan

It is expected that the Department of Conservation and Environment will soon release this document. The CCV is pushing for the full protection of the ten rainforest sites of significance identified in the Otways by the Government's own Rainforest Project team. The latest draft of the plan would still leave 5600 ha unprotected according to CCV. The Council urges those interested in the Otways to keep their eyes out for the report and to write their responses. Further info: Sharon East, Otway Campaign Officer, (03) 654 4833.

Peter Rawlinson

It is with deep regret that we announce the death of Peter Rawlinson, who passed away on Thursday 11 April at Krakatoa from a heart attack. Our deepest sympathies to his family and friends.



Matted Bush - Ba
Pultanea pedunculata
By: Andrew Paget.

Ku-ring-gai flying fox habitat restoration

The Grey-headed Flying-fox colony at Gordon is the last to survive in the Sydney region, and the largest maternity colony in southern NSW. It is located in a steep, rocky bushland valley which is surrounded by houses. During the day the bats hang on the branches of the Blackbutt, Turpentine, Cedar Wattle and Sydney Red Gum trees.

Many of the trees are dead or dying. Dense weed infestation is preventing the germination and growth of a new generation of canopy trees, and would have completely replaced the native forest. The aim of the project is to provide a new generation of native trees to replace the senescent canopy and in the long term to re-establish a self-perpetuating forest. The bush regeneration techniques used follow those generally in use in the Sydney region. Contact: Elizabeth Hartnell, Chairperson, Ku-ring-gai Bat Colony Committee Inc., (02) 498 1663.

Hodder and Tolley replies

Indigenotes last year reprinted an article from the Australian Grasses Study Group by Russell Starr criticising Hodder and Tolley's commercial production of "Hume" a cultivar of *Danthonia richardsonii*. Ian Chivers, Technical Coordinator for Hodder and Tolley P/L replied in the Spring 1990 issue of the Study Group's newsletter, defending their development of Hume.

Ian acknowledges that locally collected seed is best for restoration, but asserts that if the choice is between commercially grown varieties he asserts that 'surely plants of a variety of wallaby grass (although not necessarily locally occurring) would be preferable to the existing options of ryegrass, Phalaris and the like'.

He goes on to say that cross-pollination of Hume with local populations is unlikely, that Hume is not invasive of nearby areas, and assures readers that Hume does not create a fire hazard. Ian then points out that Hume should be seen in the context that the coming years will see the large scale production of other native grasses and herbs.

It seems that (like other Wallaby Grass species) Hume is most successful on soils with low fertility.

Parkcare (Dandenongs)

Di Ward, the Parkcare Officer for the Dandenong Ranges National Park (Vic) has collated an excellent Newsheet for local residents. It summarizes what individuals can do to help conserve the National Park, and provides information on environmental weeds, safe trees and shrubs for gardens in the Dandenongs, a booklist to help people discover more about their local flora and fauna, and details of coming parkcare activities. The newsheet is an excellent example for those running other conservation parks in and around cities. Contact Di Ward, Parkcare, Dandenong Ranges National Park, Department of Conservation and Environment, Kallista 3791 (03) 755 2726.

Hamilton grass harvest

A group of conservationists from the Australian Trust for Conservation Volunteers gathered at local roadsides to harvest Kangaroo Grass and Silver Tussock Grass. The project, run by the Hamilton Institute of Rural Learning (HIRL) with the ATCV is to collect native grasses to extend the quality of the native grasslands on the Community Parklands, one of only two large significant public native grassland areas in the whole of Western Victoria according to a survey by the Department of Conservation and Environment. The intrusion of Bent Grass and Phalaris have meant that some sections of the parklands have been reduced in significance over the last five years. This project aims to redress this decline and allow the area to regain its significance as a prime large public native grassland area.

55 wool bales of Kangaroo grass were harvested by tractor and stored until able to be spread on the Hamilton Community Parkland grassland areas. The rarer Silver Tussock Grass was cut by hand.

The Barred Bandicoot (*Perameles gunnii*), once found throughout the basalt plains but now the most endangered mammal in Victoria is finding the grasslands on the Community Grasslands a boon.

The project is being funded by a grant from the national Save the Bush Fund to HIRL. It is a recognition of the national importance of the native grasslands on the Hamilton Community Parklands. The grass collection is being coordinated by Keith Cumming and the HIRL Environment Committee. Advice on grasslands management is being gained from the Pastoral Research Institute, Department of Conservation and Environment, La Trobe University and the Arthur Rylah Institute for Environmental Research.

Preserving Native Grassland Video

This 15 minute video produced by the Flora and Fauna Survey Unit (Department of Conservation and Environment, Vic) shows Kangaroo Grass, Spear Grass and Wallaby Grass in flower and the three most common grass invaders of remnant grassland i.e. Phalaris, Fog Grass and Paspalum. It indicates how to evaluate the conservation value of a particular patch of roadside vegetation.

The video shows how to re-establish Kangaroo Grass and where such projects are occurring in Western Victoria i.e. Organ Pipes National Park, (Keith McDougall for the Department of Conservation and Environment), and at Mooramong near Skipton (La Trobe University and the National Trust), how to map significant remnant native vegetation, what councils can do if a major re-alignment of a new road is needed in an area of significant native vegetation, how Councils can organize routine maintenance jobs to lessen their impact on native remnants and how best to maintain native grassland areas.

- Adapted from *Australian Grasses Study Group Newsletter*, Spring 1990.

Recent articles of interest:

Clarke, Peter J. and Myerscough P.S. 'Buoyancy of *Avicennia marina* Propagules in south-eastern Australia', *Australian Journal of Botany*, No 39, pp 77-83.

Observations were made of the rates the propagules of Grey Mangrove sank and then, when the seedling is released and ready to grow, refloated in water of different salinity levels, both in the field and laboratory. Propagules in brackish water were found to be more likely to refloat and therefore be stranded and established. It is suggested that most *A. marina* propagules established near their parent trees rather than dispersing widely.

Gilpin, A. 1991, **An Australian Dictionary of Environment and Planning**, Oxford University Press, Melbourne.

A comprehensive reference book covering the whole range of environmental and planning issues that have emerged in Australia in recent years.

Ashton, D.H. and Melick, D.R. 1991, 'The effects of natural disturbances on warm temperate rainforests in south-eastern Australia', *Australian Journal of Botany* No 39, pp 1-30.

The response of various rainforest communities

in East Gippsland to fire, flood and landslide were investigated. Undisturbed rainforest dominated by *Acmena smithii* seem to be regenerating. *Tristania laurina* does well in riparian habitats because of flood-resistance while *Pittosporum undulatum* is more prominent in drier sites. *A. smithii* and *T. laurina* were found to regenerate vegetatively after fire which eliminated *P. undulatum*. The article goes on to discuss environmental gradients present, the modes of regeneration and the types of successions initiated by disturbances.

Fripp, Y.J. and Leeton, P. 1991, 'Breeding system, karyotype and variation within and between populations of *Rutidosus leptorhynchoides* F. Muell (Asteraceae: Inuleae)', *Australian Journal of Botany*, No. 39, pp 85-96.

This endangered species is now known from only a few populations from two regions 500km apart in southeastern Australia, the Australian Capital Territory and the basalt plains near Melbourne. Both populations were found to be very similar genetically yet the leaf dimensions differed in plants from the two regions when germinated and raised together in a glasshouse. They also found that the species can self-fertilize but evidence indicates that they outcross with other individuals preferentially.

The Green Guide, International Public Relations, Pty Ltd, Melbourne.

The third edition of this comprehensive guide has recently been published. It is the luxury version of perhaps less comprehensive directories produced by ACF and VAAE. The entries include joint ministers, departments and other agencies, hundreds of professional and non-professional conservation groups and key contacts in media, print, radio and TV. International Public Relations Pty Ltd, 33 Walsh Street, West Melbourne Vic 3003.

Weeds of Southern Australia, Weed Science Society of Victoria Inc.

An index by scientific and common names of all weeds that appear on herbicide labels. Many environmental weeds do not have published herbicide recommendations, and so will not be listed. Nevertheless, this list should help clarify confusion between various common names of plants and relate them to their specific scientific name. Available for \$12.50 from Ms. R.C.H. Shepherd, Keith Turnbull Research Institute, P.O. Box 48, Frankston.

April IFFA meeting:

Tuesday 30 April, at the Astronomer's Residence, near the Herbarium, off Birdwood Avenue, South Yarra (Melways Map 2g Ref 12A). Please bring something to show at the meeting and tell us about it - or ask!

Indigenous plant growers and nursery meeting

Discuss issues and swap ideas on labelling, forming an association, propagation records, marketing, databases and commercial accreditation etc. Saturday 27 April at the Herbarium Hall, Birdwood Avenue, South Yarra, from 12 noon to 4 p.m. Contact Michele Arundell (03) 867 4173 (H) or (03) 650 9424 (W).

IFFA May Excursion

Saturday 1 June(!), led by Tom May. See next *Indigenotes* for details.

Cover Illustration:

Convolvulus erubescens by Peter Strickland. Derived from the latin **convulvu** turn around and **erubescens**, blushing, giving the common name Blushing Bindweed. there are 250 species of *Convolvulus* worldwide, three of which are indigenous to Victoria.

Blushing bindweed is a procumbent, creeping, pubescent herb. The very variable leaves are oblong-ovate, up to 3 cm in length by 1 to 2 cm, on petioles which can be as long as the leaf. The base of the leaf can be cordate or hastate.

The pink flowers appear on short petioles which arise on small bracts on the peduncles which are 1 to 3 cm long. The corolla is 12 to 20 mm long with stigmas almost as long as the styles.

Convolvulus erubescens can be seen in flower during spring and summer in the drier woodlands and grasslands.

- from Kathie Strickland

Losst!

IFFA has lost track of the following members - could anyone knowing the whereabouts of the following please contact Michele Arundell (last known addresses are given):

Stephen Bennet, Sandy Bay, Tasmania
Alan Noy, Warrandyte, Vic
Cameron McKinnon, VCAH Burnley Vic,
John Weiss, LaTrobe University, Vic,
Land Mark Horticultural Service

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Office Bearers:

President: Geoff Carr, 69 Spenseley Street, Clifton Hill Victoria 3068. Phone (03) 489 4191 (work), (03) 8225784 (home).

Vice-President: Graeme Lorimer, 42 Gratten Road, Montrose, 3765. Phone (03) 728 5841 (home).

Secretary: Michele Arundell, 2/81 Alexandra Ave South Yarra Victoria 3141. (03) 867 4173 (home), (03) 6509424 (work).

Treasurer: Susan Lee, (03) 427 0061 (home).

Editors: Tony Faithfull, 10 Alsace Street, Brunswick East, Victoria 3057, Phone (03) 386 0264 (home). With the assistance of Dimi Bouzalas and Lincoln Kern.

NSW IFFA contact: Judie Rawling (02) 499 2172 (after hours).

Contributions to *Indigenotes* should be sent to the editors — the deadline for the next issue will be 3 May.

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

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