Echidna
(Tachyglossus aculeatus)

RESEARCH NEWS

The newsletter of the Research Division of the Department of Conservation and Land Management

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OUTSIDE COVER

Report on my visit to the Toolara Nursery in Queensland and my participation in a Pythiaceous Fungi Workshop and the 8th Australasian Plant Pathology Society Conference held at the Sydney University, New South Wales in October 1991.

I was fortunate to be given an opportunity to attend the Pythiaceous Fungi Workshop and the 8th APPS Conference held at the Sydney University in October this year.

Since I was attending the conference in Sydney it was decided that it would be a good opportunity for me to visit a reputable pine nursery in the eastern states to gain more knowledge of nursery hygiene in practice. The Toolara Nursery in Queensland was nominated. Dr Bruce Brown, a Senior Forest Pathologist with the Department of Primary Industries kindly hosted my visit. We spent an interesting and informative morning driving to the nursery near Gympie. While at the nursery Mr Malcolm Baxter, the Nursery Manager, showed me around and explained the various activities and equipment which occur in the nursery. I felt privileged to be presented with a copy of their nursery manual. I was impressed with what I saw and heard about the nursery, in particular, I was very impressed with the importance with which nursery hygiene was given and the methods through which it was maintained.

During my first two days in Sydney, I attended the *Phytophthora* and *Pythium* Workshop. The session on *Phytophthora* identification was run by Dr Franz Arentz, ANUTECH Pty Ltd Canberra. Dr Arentz worked in Papua New Guinea for more than a decade and while there, carried out extensive surveys of the *Phytophthora* flora. The session on *Pythium* identification was run by Mr Len Teseriero, Biological and Chemical Research Institute, Rydalmere. Mr Teseriero has extensive working on *Pythium* disease of vegetable and cereal crops. This workshop was held in a laboratory in the Botany School of Sydney University and was attended by 37 participants who came from all over Australia, including one from New Zealand. Personally I found it challenging and rewarding and it has given me the opportunity to make personal contacts with people who have a special interest in *Phytophthora* and *Pythium* diseases. More importantly, I now feel more confident in the identification of these organisms, and I also have the personal contact with others who are more competent in their identification.

During the next three days I attended the 8th Australasian Plant Pathology Society Conference. At the conference I had the opportunity, on behalf of Dr Elaine Davison and myself, to present a poster entitled ''Rot and incipient rot in regrowth *Eucalyptus diversicolor*''. From the interest generated and the comments made by the participants who had interest in wood rot, wood rotting fungi and tree diseases, I believe I can safely say it was well received.

The entire conference consisted of 29 sessions. In each of these sessions, papers were presented in a 15 minute time frame and posters were presented in a 5 minute time frame. The sessions covered topics such as:
Virus diseases; Rust diseases of cereals; Phytophthora; Field crop diseases; Pythium and downy mildews; Taxonomy methods and information; Nematology; Fusarium and tree diseases; Taxonomy: molecular methods; Symposium on pollen-borne viruses; Pasture diseases; Fruit diseases; Biological control; and Grain legume diseases.

The conference not only gave me the opportunity to present a poster but also to learn from some of the papers presented by other research workers. The highlight of this conference for me was the contacts made with very senior forest pathologists from NSW, Victoria, Queensland and New Zealand. I believe most, if not all, of the information and ideas I gained from their vast experience could be used to facilitate my work for CALM.

Francis Tay
Senior Technical Officer
Como Research

Mignonette orchid
(Microtis)

Dragon lizard
(Amphibolurus ornatus)

RDPG MINUTES

Extracts from RDPG Minutes of meeting held on 17 October 1991.

Budget

The budget report covers 27% of the financial year and the Research Division is currently 18% spent.

Salary Allocation

In relation to the above, it was agreed that anyone who is in more than one Program should be filling out a salary allocation form. Some staff are not doing so, and it was agreed to clarify the situation with J Dorlandt.

Financial Management Programs 91/92

The possibility of restructuring the Research Plan to fit the above system was discussed and Ian agreed to initiate a proposal.

Contingency Fund Applications

At the last RDPG meeting it was agreed that submissions could be made for the Contingency Fund with applications not to exceed $10,000 - 21 proposals were received. It was agreed that SPRSs would analyse each submission more closely and report back to the Director by Tuesday 29 October, 1991. The Director will then notify SPRSs of the outcome.

Greg Herberle's paper on Overheads

RDPG discussed the above and agreed that since the paper varied to a certain extent from Research Division's, we keep this in mind when overheads are being considered.

Landscope Expeditions

Ideas concerning the possibility of developing an expeditions program for CALM (similar to "Scientific Tourists" in EARTH 2000 recently) were discussed and it was agreed by members as having great possibilities.

CALM Uniform

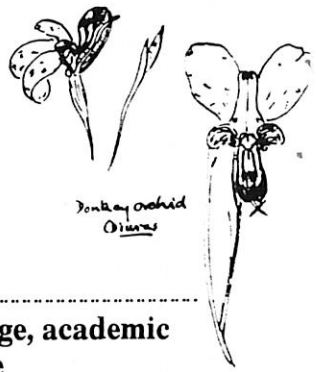
It was generally felt that although uniforms are not compulsory staff should be encouraged to purchase the appropriate uniform and a memo will be circulated to Research staff in the near future.

Information Technology Committee

It was noted that the Department's Executive IT Committee has been re-convened and met recently for the first time.

Special Allowances for PLs and RCMs

The above issue was put to the Classification Review Committee. The Committee decided that in future it would not recommend payment of special allowances to either PLs or RCMs. This decision redresses inequity between PLs and RCMs and establishes parity with other sections of CALM where administrative responsibilities well above those accepted by PLs and RCMs are carried out by officers classified well under Level 6.



Donkey orchid
Diuris

RESEARCH TECHNIQUES

by Mike Choo

Paradox - complete package, academic version & runtime module

Users of PARADOX are familiar with both the Academic and complete versions of the product. In addition, there is also a runtime module which allows users to execute systems written using the PARADOX applications language (PAL).

Complete Package

The complete package comes with the menu system, PARADOX Application Language (PAL), personal programmer and toolkit.

Used by programmers and sophisticated users.

Academic Version

This comes with the menu system and PAL. The personal programmer and toolkit does not come with it but systems developed using these are executable under this version.

Used by the competent users (research staff?)

The cost to Research is $195.

Runtime Module

The PARADOX screen menus are absent but systems (scripts) written in PAL (& the personal programmer) are executable. This allows non PARADOX users to run PARADOX developed systems.

Can be used by anyone without PARADOX.

Research Techniques can legally distribute as many copies as required to our users.

For more information, contact Mike Choo or Paul Gioia.

Paradox tips - special keys & their assignments

PARADOX users are aware that certain special keys are used by the system to represent certain functions (eg. F1 - Help, ctrlZ - search etc..). In addition to these keys, it is possible for the user to customise the system by assigning keys to various functions (generally written by the user).

This is done by using the **INIT.SC** script and assigning keys using the **SETKEY** function. At the start of each session, PARADOX will play the **INIT.SC** script and customise the keys according to the SETKEY commands.

Research Techniques (RT) has set up an **INIT.SC** with the following functions:

Ctrl[F1] - additional Help; provides a menu of additional functions (Part of field, Uppercase, Lowercase, Proper case, Sort, Carry, increase by 1 & bottom by 1).

Alt[1] - increment current field by 1.

Alt[B] - append record, increment current field by 1.

Alt[C] - carry; create new record & carry into it current record.

Alt[D] - move current record down.

Alt[U] - move current record up.

Alt[S] - sort on current field.

To use these functions, simply get a copy of the scripts from RT and copy them into your current directory. When you fire up PARADOX, all the above functions will be available!

Databases - integration with pictures

Good news for researchers who have a need to integrate databases with images. Technology is slowly coming to age and multimedia is already here with us.

On the database management side, there are products that are cheap, versatile and easy to use.

Using such a product, it is possible to store pictures, scanned images, graphs & charts etc.. and associate these with the database. The standard data base management facilities will be available for interrogating the database. Systems could be developed (expert!) that will not only respond to queries but will be able to, at any point in time, display the stored images. Hard copies will also be available.

We have a trial copy of one such product (superbase4) and are using it to enable our research staff to examine their requirements in this area.

Anyone interested for a preview should contact Mike Choo or Paul Gioia.

ATTENDANCE AT RESEARCH DIVISION SEMINARS

I have noticed a gradual decline this year in attendance by RD staff at Research Seminars. I realize that everyone has more to do in less time. However, if we are not careful, the Division will end up as a collection of solipsists.

Seminars should be seen as an opportunity to exchange freely ideas on some topic. The presenter goes to some trouble to organize results of recent investigations; it must be disheartening when few colleagues make the effort to attend, or preferably contribute.

The purpose of circulating a list of the year's seminars each January is to enable research and technical staff to mark their diaries and where possible plan attendance of meetings and field trips around these important events in the Division. This includes visits by country scientific staff to the metropolitan area to coincide with seminar days.

Attendance/contribution to discussions by scientists will in future be considered during the annual appraisals.

..... *I Abbott*

TORTOISE AT TUTANNING

The normally unflappable Gordon Friend did a quick-step backwards when presented with a large tortoise at Tutanning Nature Reserve last month.

Those familiar with the geography of Tutanning might be just as surprised as Gordon was, rest assured that the animal was not found on the reserve. Narrogin Technical Officer Rodney Clifton produced the tortoise from an esky inside his Landcruiser and was seeking expert advice from the assembled fauna experts as to where to release the reptile.

The oblong tortoise (*Chelodina oblonga*) had been handed in at the nearby CALM office at Pingelly after being found in a creek behind the hospital. All agreed that the Hotham River just south of Pingelly would be the appropriate place for release as the species was known to occur there. Shame I didn't have my camera ready!

..... *Patrick Pigott, Narrogin*

WINDOWS - a glimpse of future GUIs!

The success of Windows 3.0

The phenomenal success of Windows 3.0 as an all purpose graphical user interface (GUI) has surprised both advocates and critics alike. Unlike previous versions of Windows and OS/2 (a difficult to use but better alternative to DOS) Windows 3.0 has rapidly become entrenched in the marketplace. About 25% of DOS users are now estimated to be using Windows. Why??? because among other reasons it provides a "pleasant and aesthetic computer environment to work in. I discussed some of these other Windows advantages in the January edition of *Research News*.

The development of software for Windows 3.0 has grown to match the demand for the environment. The developers of most leading brands of wordprocessers, spreadsheets and other applications have rewritten their products for Windows 3.0. Out new statistical package Systat, is currently being re-written for Windows. A new programming style has been spawned because of Windows' success. Object orientated languages use Icons, radio buttons, pictures and active text (hot words) to support programming script for new application such as front-ends for spreadsheet forms. A wide range of Windows share-ware is also available as an alternative to the corporate product. Many useful utilities are only available in this manner and require paying the author a small fee for his creation. Shareware is becoming more important to PC users at all levels.

Windows 3.1 is coming

A new version of Windows (3.1) has been released worldwide to a select few for *beta* testing and more recently to software developers in the US. After many postponements the commercial release date is now believed to be around March/April 1992. The major delay is reported to be the incorporation of multi-media features such as audio and display controls. Some critics are more concerned about the instability of the GUI; ie the frequent application handling errors when running many applications, and left the multimedia extras for a later addition. Microsoft appear to be keeping up with the capabilities in this field with Macintosh. Other features of Windows 3.1 are reported to be the expanding of Control Panel and improving the performance of File Manager. All of these features will be useful.

The DOS 5.0 upgrade and OS/2 v2.0

The best product release in 1991 to enhance Windows performance has been the DOS 5.0 upgrade. At least for my Compaq 386's anyway. I noticed a definite improvement in redraw and response times. This may not be so apparent on full 386 machines. DOS 5.0's new code is faster and requires less operating memory in the real zone of 640k. It loads itself (when required) and any other TSR drivers into high memory to save that precious space for operations.

As with Windows 3.0 there appear to be no major bugs in DOS 5.0 unlike its infamous predecessor DOS 4.0. It's well worth the $125 and loads over the top of the existing DOS version without affecting the contents of your hard disk (better check with a Research Techniques person first). For those PC users who don't have a menu system and aren't interested in Windows, DOS 5.0 includes a new version of DOSShell. This is a good file handler with a host of useful features and a new editor. The Quickbasic language replaces GW Basic for those who like to tinker with batch files. The only snag is that you have to buy your own Quickbasic manual.

Despite the new version, DOS still has drawbacks as an operating system for todays very powerful PCs. DOS does not fully exploit the capabilities of the 386 chip and large areas of memory. The 1992 release of IBM 's OS/2 V2.0m will be a blessing for those of us who might wish to step to a more sophisticated operating system and indulge in true multi-tasking. This platform is reputed to handle Windows and DOS applications beautifully!

A Window users Group???

I'm interested in a CALM Window users newsletter/group similar to the Macintosh newsletter set up by Ray Wills earlier this year. However I have little time to do this and would need support from others. Any Windows officionados are welcome to express interest on 098 910233.

. . . . . *Patrick Pigott, Narrogin*

Elaine Davison attended the same seminar in Sydney as Francis Tay, here is her report.

REPORT ON A VISIT TO CANBERRA AND SYDNEY

3 October to 11 October 1991
Elaine Davison

This visit had three aims:

i. To work with Ken Old (CSIRO Forestry, Canberra) on a chapter on eucalypt cankers for a forthcoming book on Eucalypt Diseases.

ii. To attend a workshop on pythiaceous fungi at the University of Sydney.

iii. To attend the 8th conference of the Australasian Plant Pathology Society at the University of Sydney.

1. Canberra Visit

Australian forest pathologists are preparing for a forthcoming book on eucalypt diseases. The book was conceived by Geoff Marks (D.C. and E. Victoria) and was to have been edited jointly with Phil Keane (La Trobe University). With Geoff's unexpected death, Frank Podger (CSIRO, Forestry, Hobart) took over as co-editor. Unfor-

tunately Frank's recent illness and uncertain prospects at CSIRO have meant another change of editors, with Glen Kile (CSIRO Forestry, Hobart) taking over from Frank.

Ken Old and I are writing a chapter on eucalypt cankers which covers canker diseases in Australia and overseas. Following our discussions on 4 and 5 October the chapter is about three quarters written, outstanding sections depend on responses to a questionnaire sent to forestry institutes world-wide which have an interest in plantation eucaplypts.

2. Workshop on Pythiaceous Fungi, University of Sydney.

The workshop was held over two days with the first day devoted to *Phytophthora* whilst *Pythium* and related fungi were covered on the second day. The *Phytophthora* material was prepared by Franz Arentz (ANUTECH, Canberra) and was rather disappointing as it did not cover a wide range of species and much of the material was immature. Two interesting items, however were a video of zoospore release in *Saprolegnia, Aphanidermatum, Pythium* and *Phytophthora*, presented by Anne Lawrie (Victorian University of Technology) and *Phytophthora* on mangrove leaves. I had not realised that *Phytophthora* spp. from mangroves are considered as a separate group within the genus. It would be interesting to see whether they occur in W.A.

The second day of the workshop was presented by Len Teseriero (NSW Department of Agriculture and Fisheries) and covered *Pythium* and its relatives.

The material was well prepared and illustrated many of the features exhibited by members of the genus. We were given one of the more recent keys to the genus and were encouraged to run down as many specimens as possible. This approach worked well because it helps build the confidence needed to tackle unknown species. This exercise also resulted in some discussion about the original identification of some isolates.

3. 8th Conference of the Australian Plant Pathology Society, University of Sydney (9-11 October).

The conference was attended by about 250 registrants, with most pathologists coming from Australia and New Zealand. There were two special lectures (the McAlpine Memorial Lecture and the Presidential Address) three plenary sessions which covered quarantine, future funding for plant pathology and release of genetically engineered organisms, as well as concurrent sessions of contributed papers.

The McAlpine Lecture was given by John Walker (recently retired from NSW Department of Agriculture and Fisheries) who discussed "Plants, diseases and pathologists in Australia". He drew attention to the paucity of knowledge about diseases of indigenous plants in Australia and discussed the implications of this for both quarantine and agriculture in this country.

The Presidential Address was given by Rob Brown (ICI Crop Care, Victoria) who spoke about the financial constraints operating on the development of agrichemicals.

A plenary session on the "Safe movement of plant materials, possibilities and limitations" examined three issues. The first, "Quarantine in relation to bacterial plant pathogens" was addressed by Sam Navaratnam (AQIS, Canberra) who questioned the basis for the restriction on movement of fruit. In an ideal world such restrictions would be unnecessary, but as was pointed out in a contributed paper, introductions of plant pathogenic bacteria do occur, and by using DNA fingerprinting, the source of the pathogens may indicate incorrect documentation. The second part of the plenary session covered two examples of the introduction and spread of plant pathogens. Fire blight was discussed by Tom Van der Zwet (USDA Kearneysville) an important local example, as it occurs in New Zealand but not in Australia.

The way Dutch elm disease spreads and can be managed in an isolated location were discussed by Robert Stack (North Dakota State University). He drew attention to public liability, and the cost of removing standing

dead trees in public places, but also mentioned that an often overlooked way in which Dutch elm disease can be spread is by domestic wood piles. Both points were reinforced in a later paper about the recent outbreaks of Dutch elm disease in New Zealand.

A plenary session on "Future Resources" covered the shift in funding for agricultural research from Government controlled agencies to commodity committees, an area which has little relevance to forestry.

The final plenary session was on "Manipulation or mutilation - the future of disease management". The speakers raised many issues including inappropriate Federal and State legislation which covers organisms which have potential for biological control (at the moment they are classed as chemicals), the implication of genetic engineering for designing new cultivars and whether or not the end product of such manipulation is different from one produced by conventional breeding techniques.

The contributed papers at the conference reflected the present state of plant pathology in Australasia. Much of the work with *Phytophthora* is on diseases of agricultural and horticultural crops, work on woody plants is mainly in WA (forestry conservation), SA (almonds) and Victoria (citrus), with the death, retirement or illness of many forest pathologists in Australasia research in forest pathology is at an extremely low level. Two papers (wood rots, Dutch elm disease) were presented by pathologists from New Zealand, one paper (*Dothistroma)* was presented by a forest pathologist in NSW, while five papers (*Phytophthora*, wood rots, conservation) were presented from W.A.

In Australia at the moment forest pathologists appear to be providing a minimum service to forestry, many of the skills and expertise acquired over the past decades will soon be lost if pathologists are not recruited into this area of forest research.

STAFF NEWS

Welcome to Ken Johnson, visiting scientist from the Conservation Commission of the Northern Territory (CCNT). Ken is currently a Principal Research Scientist based at Alice Springs and is working at Woodvale for three months. Whilst based at Woodvale Ken will be involved in work including fox ecology and control, mammal re-introduction, fire ecology and biological survey projects, and he wishes to see some of our flora conservation work. Both CALM and the CCNT should benefit greatly from this visit.

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Congratulations to Neil Thomas who was married last Saturday. Best wishes for the future to both Neil and Trudy from all of us.

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	ISSUE	DEADLINE	DISTRIBUTION
DEADLINE FOR NEXT ISSUE	NOV/DEC	EARLY DECEMBER	MID DECEMBER

Research Project Plans

The following Research Project Plans have been approved for this month.

No: 53/91
Title: Fire studies in shrublands at Stirling Range National Park. Part 5. Vegetation response to fire
Supervising Scientist: G Friend/S Hopper

No: 94/91
Title: To enhance the Triangulation program written in Husky Basic
Supervising Scientist: M Yung

No: 104/91
Title: Comparison of granular and liquid formulations of Hexazinone and Atrazine as pre-plant and post-plant applications to establish *Pinus radiata*
Supervising Scientist: J McGrath

of Missulena
a trapdoor spi

No: 106/91
Title: The effects of a fire on floristics and structure of major vegetation communities in Plumridge Lakes Nature Reserve
Supervising Scientist N Burrows

No: 107/91
Title: Quokka distribution
Supervising Scientist AN Start

No: 108/91
Title: Fish predation on *Drupella cornus* at Ningaloo
Supervising Scientist: S Turner

No: 109/91
Title: Post-plant control of Dock (*Rumex brownii*) amongst newly planted *Pinus radiata*
Supervising Scientist: J McGrath

Scientific and Technical Publications

The following have recently been approved for submission for publication

Authors: Halse, S.A. Vervest, R.M., Munro, D.R., Pearson, G.B. and Yung, F.H.
Title: Annual waterfowl counts in south-western Australia - 1989/90
For submission to: CALM Technical Report

Author: Kenneally, K.
Title: An introduction to the flora of the Kimberley
For submission to: Conference proceedings of Association of Societies for growing Australian Plants conference, Perth

Authors: Abbott, I, Van Heurck, P. and Burbidge, T.
Title: Impact of frequency and intensity of defoliation on growth of jarrah (*Eucalyptus marginata*): an experimental study with saplings
For submission to: Australian Journal of Ecology

Authors: Coates, D.J. and Sokolowski, R.E.S.
Title: The mating system and patterns of genetic variation in *Banksia cuneata* A.S. George (Proteaceae)
For submission to: appropriate International journal

Authors: Cranfield, R.J. Parker, C.M.
Title: Flora survey of the Moreseby Range, August 1983
For submission to: most appropriate journal in absence of *Kingia*

Author: Wills, R.
Title: Wildflower Dieback
For submission to: for tourist project

Author: Friend, G.R.
Title: Impact of fire on small vertebrates in mallee woodlands and heathlands of temperate Australia - a review and conceptual framework for a predictive model
For submission to: Biological Conservation

Author: Kenneally, K.F. and McKenzie, N.L.
Title: A conservation companion to Kimberley Rainforests
For submission to: Surrey Beatty & Co

Author:	Russell-Smith, J. McKenzie, N.L. & Woinarski J.C.Z.
Title:	Conserving vulnerable habitat in north-western Australia: The rainforest archipelago
For submission to:	Planning for Environmental Change: conservation and development in Northern Australia
Author:	Postle, A.
Title:	Incidence of termites of economic significance in Perth
For submission to:	WURC Technical Report No 40
Author:	Wilson, P.
Title:	A new species of *Acomis* from the Northern Territory and a new combination in the genus *Thiseltonia* (Asteraceae - Gnaphalieae).
For submission to:	*Nuytsia*

REPORT ON THE TIME MANAGEMENT SEMINAR

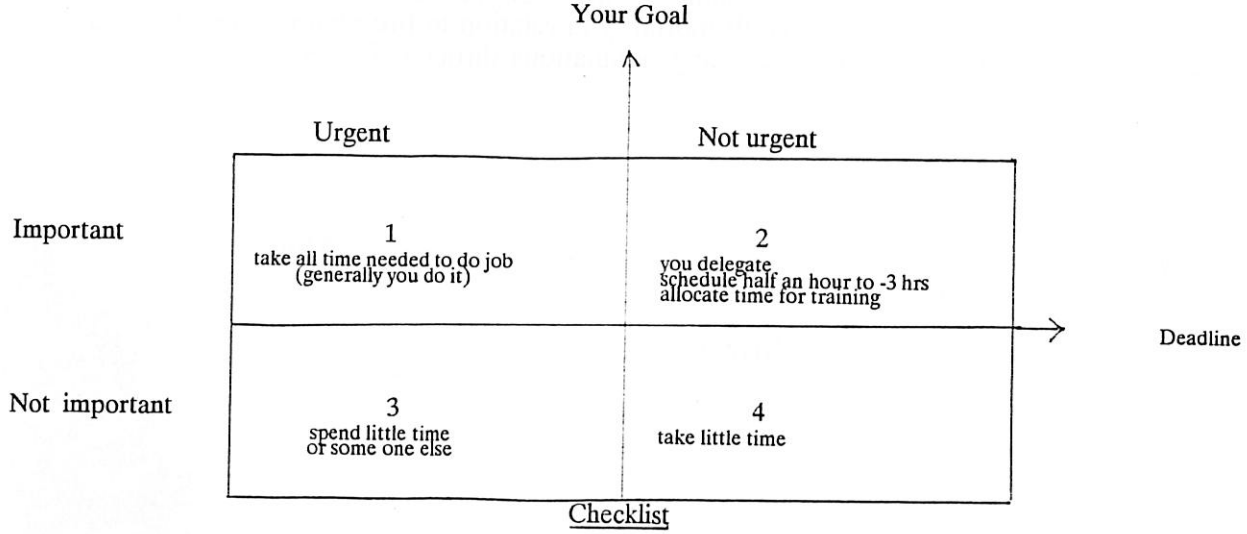
Time Management - Organizing Yourself - was held last Friday at Woodvale. Ten people attended the seminar presented by Dawn Jacobs from Australian Institute of Management (AIM).

I have spoken with some of the participants who were generally happy with the seminar, although there were a few things that some of us felt were irrelevant. A hint for persons who wish to attend one of these courses in the future. Have some time set aside to speak with the presenter prior to the seminar and give a run down of your work place situation, so that she/he can relate to your individual requirements.

One of the useful handy hints to come out of the seminar was the use of a "Time Priority Matrix" - this may help you in some way as well.

Time Priority Matrix

WHAT IS THE BEST USE OF MY TIME RIGHT NOW??



1 = crisis

2 = opportunity

3 = routine

4 = trivia

Thanks go to Christine for organizing the seminar.

.....*Jill Pryde*

SEMINAR

Friday 6 December 1991

FIRE ECOLOGY OF *BANKSIA TRICUSPIS*

presented by Stephen van Leeuwen

Knowledge of a species response to fire is fundamental in the development of practicable strategies that ensure species conservation. This is especially true when the species are restricted, rare or endangered and occur in fire prone habitats. *Banksia tricuspis* is a Declared Rare Species occurring in the fire prone heaths of the northern kwongan in the Mt Lesueur area. Although not yet part of the CALM estate the Lesueur area, by virtue of its high conservation and landscape value, is managed in part by the Department. Fire management is included in this role. The success with which the Department preserves the area's values and achieves its stated conservation objectives are dependent, in part, on a sound base of scientific knowledge.

This presentation will discuss the post-fire response and sequence of events which influence the population dynamics of *B. tricuspis*. It addresses the issues of seed release and survivorship, seedling recruitment and survivorship, and adult mortality in relation to fire regimes. Recommendations for management aimed at maintaining existing populations through fire regime manipulation will be discussed.

Venue:
Wildlife Research Centre
CALM
Ocean Reef Road (near Joondalup Drive)
WOODVALE

Time: 3.00pm