

RESEARCH NEWS

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

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MESSAGE FROM THE DIRECTOR

This financial year is a difficult one for us all because of the cuts in funding for both staff and research. Unfortunately, I see little chance of things getting better in the short term.

The cut in funds for salaries has resulted in several Research Division positions that have become vacant having to remain so, and in less funds being available for overtime. The cut in funds for running the Division has resulted in a cut of around 21% (plus inflation) to the Research Programs. Some Programs have been harder hit than others - this reflects RDPG priorities. The cut of 21% (rather than the 13.5% which was the average overall cut) resulted from a decision by RDPG that we would not cut funds for overheads, i.e. running the Research Centres, servicing the Herbarium and paying for scientific publishing - these, like most of our budget allocations, have not grown for several years and have, therefore, not kept pace with inflation. With staff spending less time in the field we believed it even more important that there be no cut in Research Centre administrative overheads.

I am most grateful to all staff for the constructive way that they have accepted the realities of our financial position and adapted their work schedules accordingly.

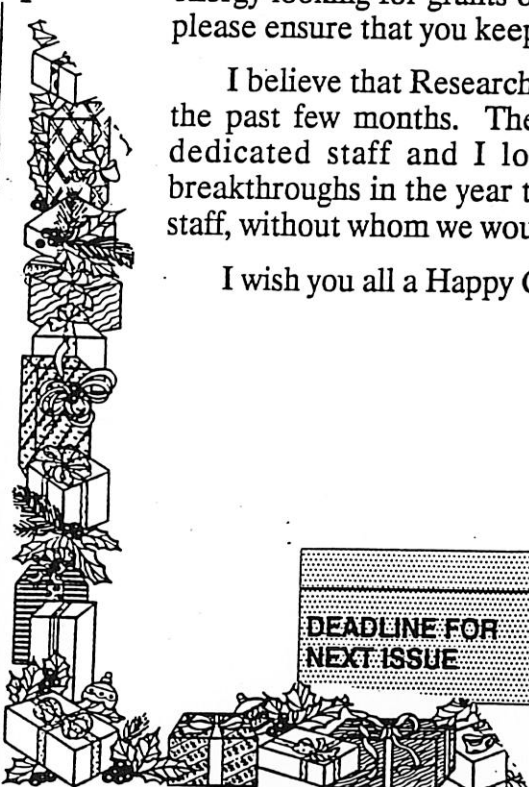
Research Division already obtains significant funds from external sources. The current public sector financial climate means that we must spend even more time and energy looking for grants or sponsorship. If you do find new ways of raising money please ensure that you keep your SPRS in the picture.

I believe that Research Division has made many remarkable achievements over the past few months. These achievements result from having hard-working and dedicated staff and I look forward with confidence to seeing many more breakthroughs in the year to come. Special thanks go to our administrative support staff, without whom we would get nowhere!

I wish you all a Happy Christmas and a rewarding and productive New Year.

Andrew Burbidge

| | ISSUE | DEADLINE | DISTRIBUTION |
|-------------------------|------------|------------|----------------|
| DEADLINE FOR NEXT ISSUE | JANUARY 91 | 25 JANUARY | EARLY FEBRUARY |



INFORMATION FROM RDPG'S NOVEMBER MEETING

The November RDPG was held at Como Research Centre.

The following is a summary of that meeting.

Budget

Andrew Burbidge reported that we are in a very difficult situation as the economic downturn is looking worse and it is possible that we may incur another cut. It is very important that programs do not go over this year.

With regard to Research Division's allocation for 1990/91 after 21% cut, with 31% of the year completed we are 30% spent. Andrew commented that this looked relatively good as people were being careful.

Overtime

Research Division has received an allocation of \$65,000 (\$23,000 less than last year) and \$28,000 is already spent.

Corporate Credit Cards

RDPG agreed to the use of the Corporate Credit Card. Account codes could be written on the slips when signing so as to indicate what chart or program it is to be charged to.

Research Project Plans

Only RPPs without numbers (historical) are to be completed by 31 March 1991.

Contingency Funding for Fireproof Safe

M Choo's request of \$9,000 for the purchase of fireproof safes was approved in principle. RDPG agreed that original software should be left out and data back-ups only kept in the safe.

Illegal Software

All personal computers must be checked thoroughly to ensure that there is no illegal software on them.

Query on Computer Funds

It was suggested that a sub allocation for purchase and repairs be made to Research Centres and a draft replacement policy is currently being prepared.

Jarrah Forest Nature Conservation Values Workshop

It is important to establish what research has gone on in the Jarrah area as well as what has been done in the past and a small workshop will be held in mid December for half a day to look at these issues.

Acting Arrangements for Director of Research during January

| | |
|-----------------------|--------------|
| Steve Hopper, SPRS | 2-4 January |
| Tony Start, PRS | 7-8 January |
| Per Christensen, SPRS | 9-18 January |

INFORMATION FROM RDPG'S DECEMBER MEETING

The last meeting of RDPG was held on the 14 December, 1990 at Como Research Centre.

The following is a summary of that meeting.

Budget

With 46% of the year completed the Research Division is currently 43% spent.

Overtime

Overtime budget is now 57% spent. The General Manager allocated us an additional \$4000 to allow fox work to proceed but the cut to the remainder of Research Division overtime budget remains 26%

RDPG Travel Budget 1990/91

It was agreed by RDPG members that all RDPG travel costs should be cut back during the current financial crisis.

Interstate Travel

Interstate travel is currently paid for from Program budgets if a scientist is attending a scientific conference or doing something associated with a research project.

RDPG has agreed that all CONCOM and AFC travel be met by the appropriate program and dealt with on a priority basis in comparison with other program expenditure.

Executive should meet travel to DORC (AFC Directors of Research Committee) and CHAH (Council of Heads of Australian Herbaria) and WWF- SAC (World Wide Fund for Nature Australia, Scientific Advisory Committee) or otherwise as approved by the Director.

Schedule of Proposed Interstate Travel

A proposed schedule of Interstate travel (for the next eight months) is currently being prepared for the General Manager's information.

Research Division Seminar/Symposium 1991

A proposal to hold a Research Division Seminar/Symposium in '91 was discussed by RDPG. The proposal was agreed to and the suggested topic of the Seminar is to be "Remnant Vegetation and Tree Planting".

Criteria Progression (Technical Officers)

On 20 November 1990 the PSC met with Jan Sutton, Human Resources and Tony Start, Research Division to discuss problems elsewhere in the public sector that derive from provisions for experience in lieu of Diplomas or Certificates. The "experience alternative" was incorporated into the Criteria to meet the needs of CALM. RDPG discussed various proposed solutions and asked Tony Start to follow the matter up bearing in mind that (a) We must retain our flexibility to employ people best fitted to vacant positions and (b) Career opportunities for Technical Officers must not be compromised.

The next meeting of the RDPG will be held at the Herbarium on 14 February 1991.



RDPG LEAVE ARRANGEMENTS

| | |
|------------------|--------------------------|
| Jim Armstrong | 7 - 18 January |
| Neville Marchant | 21 January - 8 February |
| Per Christensen | 2 - 8 January |
| Ian Abbott | 20 December - 15 January |
| Steve Hopper | 7 - 25 January |
| Tony Start | 27 December - 4 January |

TRAVEL ALLOWANCE ADVANCES AND OVERTIME. TWO TIPS from Tony Start

1. Travel Allowance Advances

Most people are not aware that T/A advances are paid from a suspense account and NOT from your CRF account. There is an adjustment to both accounts when your T/A claim form is processed. Of course you don't put the claim in until after the trip ... So What? Technical stuff that keeps "accounts" busy? Well it could affect you.

Suppose you take a nice big advance for a long field trip in say, May when the temperature in the Pilbara is again bearable. You know that you are safe; you have kept a close eye on your expenditure and there was just enough in your T/A account to cover it.

You are away a month so you don't have time to put in your T/A claim until the books are closed for the year. But that's OK. The advance ensured most of it was paid last year and it will not eat up half of this year's allocation. Good management! Or so you thought!

You are furious when you find you were under spent last year and half this year's meagre allocation is gone and you haven't even left the office for a day! "They've" stuffed it up again!! Never mind there is enough ammo in the store to shoot "accounts".

"Accounts" are in fact innocent. Remember that advances on T/A are not charged directly to your CRF account. they are charged to a suspense account. The suspense account is cleared and your account is debited the whole of your claim when your T/A claim form is processed; that is after your trip.

2. Overtime.

"There isn't much money for overtime this year." We can't manage on what we have -- No Way!" Well I'm sorry but we will have to manage on what we've got as there is no more!

Have you considered weekends? Most people who can claim overtime and commonly work weekends are on the Commuted Overtime Agreement. They can claim time in lieu of cash but where cash is claimed it is paid at 150% for each day worked. In other words one

weekend pays the same as 10 days (that's Two whole 5-day weeks) at the extended hours rate of 30%.

When you plan field trips think carefully about avoiding weekends. If you can't avoid them, discuss the option of time in lieu. If it is acceptable all round, use it. One thing is sure. This year all the funds available for overtime will be paid out to those eligible to claim them. Indeed overtime funds will be a factor limiting field work.

Is it worth losing two weeks in the field for the sake of taking one weekend? You will have to make that judgment.

Research Project Plans

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

No: 33/90
 Title: Field inoculation of jarrah clones selected for tolerance to *Phytophthora cinnamomi*
 Officer in Charge: M. Stukely

Scientific and Technical Publications

The following have recently been approved for submission for publication:

Author(s): Serena, M., Soderquist, T.R. and Morris, K.
 Title: The Chuditch
 For submission to: CALM Wildlife Management Program

Author(s): Fullard, J.H., Koehler, C. Surlykke, A and McKenzie, N.L.
 Title: Echolocation ecology and flight morphology of insectivorous bats (Chiroptera) in South Western Australia
 For submission to: Australian Journal Zoology

Author(s): McGrath, J.F.
 Title: Site assessment for *Pinus radiata* plantations in the Blackwood
 For submission to: Australian Forest Development Institute, Biennial Conf Proceedings

Author(s): McCaw, W.L., Maher, T and Gillen, K.
 Title: Wildfires in the Fitzgerald River National Park
 For submission to: CALM Technical Report

Author(s): Wong, D.H., Kinnear, J.E.,
Runham, C.F. and Denhollander,
L.C.

Title: A preliminary report on the
bacteriological assay for
compound 1080 (sodium
monofluoracetate)

For submission to: Letters in Applied Microbiology

Author(s): Kinnear, J.E.

Title: A note on the Depuch Island
Rock-wallaby extinction

For submission to: Australian Wildlife Research

Author(s): Wardell-Johnson, G., and Nichols,
O.

Title: Forest wildlife and habitat
management in south-western
Australia; knowledge, research
and direction

For submission to: Australian Zoologist

MOVING NEWS

David Coates, Anne Kelly, Steve Carstairs and Franz Mollemans are all moving to the Herbarium as from 17th December. Woodvale staff wish you well and look forward to seeing you at Woodvale for "Wine Club".

CHANGES AT THE WESTERN AUSTRALIAN HERBARIUM

Alterations to the Western Australian Herbarium building are now almost completed.

This includes enclosure of the area beneath the South Wing to provide a third specimen storage wing known as the South Wing Undercroft, where the Cryptogamic Collections have been united at last from various storage areas all over the building and which also includes accommodation for the database entry staff. The removal of some of the vascular plant families from the other wings to this area has helped alleviate the cramped storage conditions. This task was accomplished by the Herbarium Volunteers.

A larger Receiving Room beneath the West Wing has provided extra space for the specimen dryers and for another deep freeze for sterilisation of incoming specimens.

The Library is in the process of extending into the former Seminar Room, where there will be provision for a larger reading area and extra shelving.

The new Reception area beneath the North Wing has given us a much larger area for the Community Reference Herbarium. There is now much more working space than when it was housed in the basement so that several individuals are able to use the collection

at one time. The transfer of the collection was another project carried out by the Volunteers. The wing also includes two offices and the Duty Officer's room as well as the Reception Desk.

Last but not least! the West Wing has been altered to accommodate laboratory and office space for the Flora Conservation Program to transfer from the Wildlife Research Centre at Woodvale. This will be accomplished on 17th December. Several staff at the WA. Herbarium are part of this program and we all look forward to welcoming David Coates, Anne Kelly, Steve Carstairs and Franz Mollemans.

Sue Patrick

ECOLOGICAL METHODOLOGY

Some of you may have come across a recent text book named *Ecological Methodology* by Charles Krebs (Harper and Row Publishers, 1989). In an Appendix to the book there are 43 Fortran programs that can be used to conduct a variety of statistical and other routines, such as population estimates from mark and recapture data.

CALM has purchased a copy of these programs. The diskettes contain the Fortran source codes of the programs, along with executable versions compiled under the MS-DOS operating system by the Microsoft FORTRAN (Version 4.0) compiler. Sample data sets are included for each program.

Unfortunately the Library has not purchased this important book because of lack of funds! I am trying to arrange a loan!

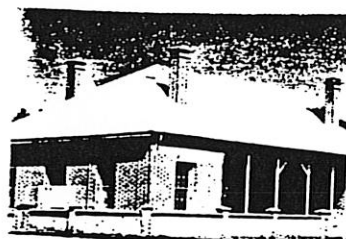
If you would like a copy of the software, please get in touch with Paul Gioia.

Andrew Burbidge

NEW POLICY STATEMENTS

The following new policies are available and copies can be obtained from your Research Centre Manager or Christine Farrell, Admin Assistant at Woodvale:

1. Policy Statement No 20, A Marine and Estuarine Reserves System in Western Australia.
2. Policy Statement No 37, Filling Vacancies by Promotion and Transfer;
3. Associated Administrative Instruction No 47, Transfer Policy - Field Staff with Certificate in Conservation and Land Management or Equivalent.



Analysis of unbalanced factorial designs using SAS

By Matthew Williams

In analysing factorial ANOVA-type experiments using the SAS procedure GLM, the researcher is presented with four methods of estimating treatment effects. For balanced designs specified in correct sequence, the choice of method is irrelevant as all give the same result. However, for unbalanced (also called nonorthogonal, or unequal n) designs, the type of estimation employed can have a profound effect upon the conclusions drawn from the analysis.

The four types of estimable function and sums of squares (SS) are labelled by SAS as TYPE I, TYPE II, TYPE III and TYPE IV. TYPE II and TYPE IV SS are only provided by SAS if requested as an option. Only TYPE I SS have the property that the sum of all effects SS and the error SS, equal the total SS. The terminology applied by various authors to each type is confusing (Table 1). Under certain circumstances, equivalencies exist between the types:

Balanced data: I = II = III = IV

Unbalanced data, all cells filled: III = IV

No-interaction models: II = III = IV

Table 1. Terminology applied to the four types of estimable functions, their resulting SS or means.

| SAS name | Preferred term | Other terms used |
|----------|--|--|
| TYPE I | Weighted means analysis (when applied to unbalanced data) | Sequential SS |
| TYPE II | - | Each after all others |
| TYPE III | Weighted squares of means or, Yates (1934) weighted squares of means | Method of least squares Least squares means Unweighted means analysis Analysis of population marginal means d-restricted SS or estimates |
| TYPE IV | Cell means analysis (Searle 1987) | Hypotheses SS or estimates |

The analysis of unbalanced factorial designs can be divided into two types: those with data for all treatment combinations (all cells filled), and those with no data for some treatment combinations (some cells empty).¹ The latter can be analysed using the TYPE IV SS; however the hypotheses tested depend upon the pattern of empty cells, and upon the order in which the

data is entered(!). When analysing data of this form, the TYPE IV estimable functions (option E4 in SAS GLM) should be checked in order to establish the nature of the hypotheses being tested. Searle (1987) gives a detailed discussion of the analysis of some cells empty data, and it would be wise to consult this work prior to contemplating such an experimental design. In my opinion, such designs are for the bold.

For all cells filled data, most authorities support the weighted squares of means approach due to Yates (1934). This is the TYPE III SS output from SAS. The hypothesis tested is H_0 : unweighted treatment means all equal. This corresponds to the usual null hypothesis for balanced designs. Where imbalance arises because of a few missing values, an alternative approach is to estimate the missing values (see e.g. Steel and Torrie (1980)). However, in these circumstances the results are unlikely to be altered. Hence the extra effort is probably not worthwhile, and clearly the power of the experiment is unchanged.

The TYPE I SS test the hypothesis that the treatment means, weighted by the data, are all equal; hence the exact nature of the hypothesis tested by TYPE I SS depend upon the data. TYPE II SS test a similar hypothesis, but attempt to compensate for the model-order dependencies in TYPE I SS (i.e. TYPE I SS depend upon the order in which the treatments are specified in the model). According to Searle (1987), the hypotheses tested by TYPE I and TYPE II SS in unbalanced designs are in general "useless", "clearly not of interest" and "to be despised". Nonetheless, circumstances may arise where a weighted means analysis is considered appropriate (Keppel 1983). An example is the situation where the data reflect the proportionality of the treatments in the population. In such cases, restrictions on the proportion of cases within each treatment combination should be satisfied (see e.g. Winer 1971).

In conclusion, the weighted squares of means approach is the generally accepted method of estimating treatment effects in unbalanced factorial ANOVA-type designs, with all cells filled. This corresponds to the TYPE III estimators in SAS. Indeed, some computer packages (e.g. BMDP) provide only TYPE III SS for such designs. For some cells empty data, the TYPE IV SS test certain hypotheses; the researcher should confirm what these hypotheses are during analysis of such data. These conclusions are summarized in Table 2.

1 The implied third type, ie models with no data for all cells, will not be dealt with here.

Table 2. Appropriate applications of the four types of estimable function in SAS.

| Type | Used for: |
|------|---|
| I | Balanced designs. Weighted means analysis of unbalanced designs with no empty cells, but sample size proportionality restrictions should be met. |
| II | - |
| III | Unbalanced factorial designs with no empty cells. |
| IV | Unbalanced factorial designs with empty cells, but the nature and validity of hypotheses tested should be checked. |

References

- Keppel, G. (1983). *Design and Analysis: a Researcher's Handbook*. 2nd. ed. Prentice-Hall, NJ USA.
- Searle, S.R. (1987). *Linear Models for Unbalanced Data*. John Wiley & Sons, NY USA.
- Steel, R.G.D. and Torrie, J.H. (1980). *Principles and Procedures of Statistics: A Biometrical Approach*. 2nd. ed. McGraw-Hill, NY USA.
- Winer, B.J. (1971). *Statistical Principles in Experimental Design*. 2nd. ed. McGraw-Hill, NY USA.
- Yates, F. (1934). The analysis of multiple classifications with unequal numbers in the different classes. *J. Amer. Stat. Assoc.* 29:51-66.

RESEARCH ADMIN ASSISTANTS' MEETING

Admin Assistants met recently at Como Research Centre to exchange ideas and discussion took place on the introduction of the Corporate Credit Card, Oracle implications, vehicle control and Shell Card usage, control of O/T payments and the preparation of grants and consultancies.

**. CONGRATULATIONS TO THE
TORTOISE BREEDING
PROJECT
Recently short listed for the
Eureka awards and the IBM
Conservation Award.**

CAB Abstracts available on CD-ROM at the WA Department of Agriculture

Commonwealth Agricultural Bureaux Abstracts (Forestry Abstracts, Crop Physiology Abstracts, Horticultural Abstracts, Soil and Fertilizers, Agroforestry Abstracts, Review of Agricultural Entomology, Review of Plant Pathology, Weed Abstracts, Leisure Recreation and Tourism Abstracts, and many more) are now available on CD-ROM (Compact Disc Read Only Memory) at the W.A. Department of Agriculture library in south Perth. Jill Maughan, Chief Librarian for WADA has kindly

agreed to allow CALM staff to use this facility on condition that firstly, the facilities are available (phone 368 3201 before you intend going) and that secondly CALM staff use their own floppy discs for information retrieval.

Volume 1 of CAB Abstracts on compact disc contains bibliographic citations and abstracts for 1984 - 86, the second volume covers 1987 - 89. the 1990 volume will be available in early 1991.

Many thanks to Jill Maughan for offering this service to CALM staff and to High Clift for finalizing the arrangements

Elaine Davison
Principal Research Scientist



RESEARCH TECHNIQUES

M. Choo

Audit of Softwares

Concern about pirating softwares has been expressed, and at the last RDPG meeting, a decision was made to have regular audits of softwares on Research Division computers.

The Research Techniques Program is maintaining a register of hardwares and softwares within the Division. Program members will be checking every machine to ensure that no illegal copies of softwares have been installed. Pirated softwares found will be irretrievably removed and the OIC of the computer reported to the Director.

Please provide the program member/s at your centre with a list of all legal softwares on your computer so that we can check against our inventory.

Note on laptops - Rechargeable batteries

The rechargeable batteries of three of our laptops have failed on us. The problem could be that they use **NICAD** batteries and these have to be run down on a regular basis until there is no charge left in them. Failure to do so seems to shorten the life of a battery and reduce its ability to hold charge.

We suggest that once a fortnight (or month), do not connect your laptop to the power supply, but use battery power until the battery has exhausted its charge. To do this, it may be advisable to deactivate the laptop's power conservation mode and use it in this mode. It is also possible to run a **.BAT** file to call itself continuously until the battery is flat.

When the battery is flat, connect the laptop to the power supply and recharge the battery. You will have to reactivate the power conservation mode.



To deactivate power conservation

1. Power on laptop, run **SETUP.EXE**. This comes with the setup/diagnostic diskette. If you do not have this, contact M Choo or P Gioia for a copy.
2. Press **F4** to invoke the change option, choose the **POWER CONSERVATION** option.
3. Choose **POWER CONSERVATION STATE**; select **DESIRED POWER-ON-STATE**; choose option **OFF**.
4. Choose **SYSTEM INACTIVITY TIMEOUT**; enter **0**.
5. Choose **FIXED DISK INACTIVITY TIMEOUT**; enter **0**.
6. Choose **EXIT** this menu option.
7. Press **ESCAPE**.
8. Press **F3 - EXIT SETUP** option.
9. Choose **EXIT & RESET** system option.

To reset settings to the systems default setting

1. Power on laptop, run **SETUP.EXE**. This comes with the setup/diagnostic diskette. If you do not have this, contact M Choo or P Gioia for a copy.
2. Press **F4** to invoke the change option, choose the **SET DEFAULT CONFIGURATION** option; enter **Y**.
6. Press **F3 - EXIT SETUP** option.
7. Choose **EXIT & RESET** system option.

If the above procedures are performed regularly, then your laptop's battery should last for years.

Academic pricing for Softwares & Software Evaluations

We have been evaluating two softwares that are marketed by the BORLAND group and have been negotiating for academic pricing for Research Division. To date, both the evaluations and negotiations have progressed well.

The softwares and a summary of the evaluation results are given below.

QUATRO PRO - a spreadsheet which is a LOTUS competitor, and PARADOX - a database management which is a DBASE competitor.

Borland have extended their academic pricing to cover CALM - Research (we are the only research institution in Australia to be covered by this pricing!), and has nominated their Perth supplier (PC Solutions) to deal with us. We can now purchase academic copies of their softwares at special prices. For instance, quatro-pro will cost us only \$175 and paradox costs \$195. The catch is that it academic versions are not full blown versions but these will not affect most of our users. For paradox, there is also currently a DBASE upgrade special where we can purchase a copy for \$260 for every copy of

dbase that we have (contact David Loughead at Borland on 02 4187330).

QUATRO-PRO

Advantages

- It will directly read LOTUS 123 files and is a good alternative to LOTUS. It is easier to use, more functional and can be tailored to look and feel like LOTUS. It operates using its own 'windows like' environment and has the ability to operate on a number of spreadsheets at any one time. It does not have the memory problems that LOTUS version 3 has!

Disadvantages

- It does not operate in a true WINDOWS/3 environment and as such does not support the WINDOWS DDE option.

Recommendation

- If you need a spreadsheet, buy QUATRO PRO (dont buy LOTUS).

Current users who recommends it

- J. Rolfe, M. Onus & M. Choo.

PARADOX

Advantages

- It is menu driven and has a comprehensive on screen help system. The software is fourth generation (4GL) compared to DBASE which is third generation (3GL). 4GLs are non procedural (programs are not required) and very powerful. They are friendlier, easier to use and is more functional. Files are treated as tables and queries are by example. Query outputs can be directed to screen, printer or other tables. Paradox offers the following features not available in DBASE III.
- **Input validation:** The user can define validation rules for each input field (required, lookup tables, default, minimum & maximum etc..)
- **cross tabulation:** The system will cross tabulate data in a file (sum, count, minimum & maximum).
- **Graphics:** data can be displayed in graphics form (bar, line, pie, etc..).
- **Views:** A number of tables may be displayed on screen at any one time and the user may go from table to table by using the F3/F4 function keys. Each column of a table may be 'rotated' by using the *control + R* keys.
- **Relationship between tables:** tables may be related to each other on a *one to many* or a *many to many* basis.
- **text searches:** can easily be made on any field for any character, word or string of words.

Disadvantages

- It does not support a mouse nor operate in a WINDOWS environment. It is not compatible with DBASE but will easily *import/export* DBASE files.

Recommendation

- If you need a database management software and do not like programming, then PARADOX is what you need. If you have done a fair amount of dbase programming and have developed sophisticated DBASE systems, then you will have to evaluate PARADOX before deciding on which to adopt.

Current users who recommends it

- Currently no users, but P. Gioia and M Choo have evaluated the product and are happy with it. We are now looking for users to help in the evaluation.

Notes:

These two products are designed to work with each other and works well together. Quatro pro can directly access and operate on paradox files.

M Choo will be happy to give demonstrations and conduct PARADOX workshops at any Research Centre provided there are sufficient attendees.

M. Choo

VIDEO-TAPING OF SEMINARS

There is a strong demand for our seminar series to be available to CALM staff in the country.

One method of achieving this may be to video-tape the Perth seminars and send the tape around country centres. I am seeking volunteers who would be willing to video-tape three or four seminars on a trial basis. If this is successful I will be looking for a pool of three or four people who can do this on a routine basis.

Training and equipment will be available.

Andrew Burbidge



REPORT ON TRAVEL TO MELBOURNE FOR ECOLOGICAL SOCIETY SYMPOSIUM

I recently attended the national symposium on "Ecological Interactions" organized by the Ecological Society of Australia, and presented a paper entitled "The ecological impact of *Phytophthora cinnamomi* in the Stirling Range National Park. The paper was based on a manuscript which has been submitted to the Australian Journal of Ecology for publication.

I also presented a poster on dieback research in the Stirling Range and on the South Coast, and including some of CALM's dieback awareness information, "Clean your Machine - Mud Spreads Dieback" bumper stickers, and a copy of the Landscape article "The fight

against jarrah dieback" by Bryan Shearer and Ray Bailey.

I have received many very positive and, I am pleased to say, complimentary comments from people who attended my presentations. I was astounded at the number of people who, despite some familiarity with the fungus, were unaware that the pathogen attacked plants other than jarrah and *Banksia grandis*. I am certain that my presentations have increased the awareness of other biologists to the conservation threat posed by *Phytophthora cinnamomi* in Western Australia, and that my presence at the symposium has fostered channels of communication with several scientists from different research centres in the Eastern States. In particular, I would mention:

Dr Gretna Weste (Department of Botany, University of Melbourne) - botanist specializing in plant-pathogen interactions, especially with regard to *Phytophthora*. On the weekend after the conference, Dr Weste took me on a tour of various woodland and forest communities. On the Saturday, together with Dr Dave Ashton, Dr Peter Aides, and others, we examined the impact of *Phytophthora cinnamomi* on plant communities of the Brisbane Ranges. (Dr Ashton is a botanist at the Department of Botany, University of Melbourne, specializing in disturbance and regeneration in native plant communities, particularly in relation to Mountain Ash forest, but has also worked on *Phytophthora cinnamomi* impact with Dr Weste; Dr Peter Aides is a population geneticist with the Department of Forestry, University of Melbourne who is also interested in the impact of this pathogen.) On the Sunday, Dr Weste and I visited a number of forest communities including an area of Mountain Ash forest in the Dandenong Range. The two days with Dr Weste gave me a much broader understanding of the behaviour of *Phytophthora cinnamomi* in very different native plant communities.

Dr Jeremy Burdon is a plant physiologist/geneticist in the Division of Plant Industry CSIRO, Canberra, specializing in plant-pathogen interactions. Dr Burdon presented a paper entitled "The ecological genetics of host-pathogen interactions". Following my paper at the Symposium, Dr Burdon expressed a great interest in the impact of *Phytophthora*. He hopes to be able to visit the Manjimup Research Centre and some of my study areas in the south of Western Australia at the end of this year. Dr Burdon and I also discussed the possibility of organising a national workshop on pathogens in native plant communities. We hope that this could be undertaken at the end of next year.

Dr Barbara Wilson, Mr Graeme Newell, and Mr Scott Laidlaw (Department of Biological Sciences, Deakin University) are zoologists investigating small mammal populations in *Phytophthora cinnamomi*-infected plant communities. A paper presented by Mr Newell reported that diseased sites had up to 75% fewer small mammals (*Rattus lutreolus* and *Antechinus stuartii*) than healthy sites. They suggested that the large reductions in abundance of animals was most probably the result of structural changes in plant communities caused by the pathogen.

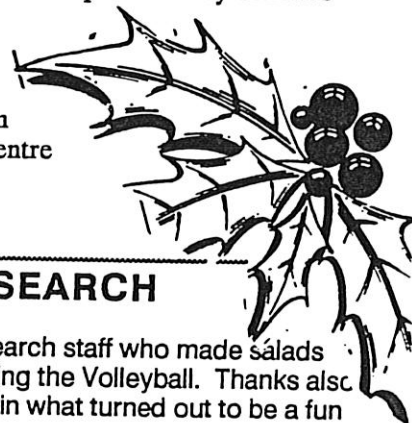
Ms Mirranie Barker (Department of Parks, Wildlife and Heritage, Hobart) - a biologist working on identifying plant species which may be susceptible to *Phytophthora cinnamomi*.

In conclusion, I believe that this conference has been a great success, allowing me to present my research to a diverse group of scientists, to interact with peers on aspects of *Phytophthora* biology and ecology and review current research, and to open new channels of communication with other scientists working on the impacts of plant diseases. All costs of attending this symposium were met by me personally.

Dr Gordon Friend also attended this conference, presenting information on his research into the impact of fire on small vertebrate communities. He also received an enthusiastic response to his paper. Dr Friend believes that his presentation will enhance the exchange of information with his peers in the Eastern

States, and will benefit the further development of his predictive model of vertebrate response to fire. I believe this demonstrates that the policy of allowing only one research scientist to attend a conference as the "Departmental Representative" is inappropriate. The function of scientists attending a conference should not be merely as a representative of CALM, but should reflect a need for the stimulation and exchange of ideas and the development of concepts by scientists in any field of research. Departmental 'representation' must be a secondary consideration; good representation will come unfailingly as a result of the high quality of research that is produced and presented by CALM's scientists.

Dr Ray Wills
Research Scientist
Plant Diseases Program
Manjimup Research Centre



PRE CHRISTMAS BBQ AT COMO RESEARCH

Special thanks go to Deanne Burton for the organizing of the BBQ and Research staff who made salads which contributed to a fabulous day of fun and merriment with Woodvale winning the Volleyball. Thanks also go to our unbiased umpire, our Volleyball players and to you for participating in what turned out to be a fun day for one and all.

Congratulations to Trudy Hooper and Neil Thomas (Woodvale) who have recently become engaged

W.R.C. WINE CLUB ANNUAL REPORT JANUARY 1990 - NOVEMBER 1990

From humble beginnings in October 1988 with nine founding members, the W.R.C. Wine Club has now ended its second year of dedicated sampling of various vinous fluids, and comprises 21 F.T.E.s and one part-time member (Steve V.L.), with a CRF budget of NIL !! During the January-November period this year nine meetings were held and 13 members contributed wines of varying colours and qualities; eight members are left to do the next four "shows" before we start on the round robin again.

The Club became so popular and thirsty, and wine so expensive, that an executive decision was made in June to have two members running each meeting with three (or four?) styles of wine and two bottles of each available, and we've had no trouble getting rid of the lot. Below are listed the "top wines" from each meeting based on our weird and wonderful preferential voting system, and a list of almost all the wines tasted, who was responsible, no. of votes and price at the time. No votes were taken at the meeting hosted by Stuart and Mike as three different styles of whites were offered to test members' knowledge (but we didn't do too well!). Although a "top wine" doesn't emerge from such a tasting, I think it's a good idea to occasionally have different styles together for comparison to educate our palates (alright, I'm being a snob!).

THE TOP WHITES

Rosemount Estate 1989 White Burgundy
Penfolds ? 1988 Semillon Chardonnay
Houghton 1988 Fume Blanc
Wyndham Estate 19?? Rhine Riesling

THE TOP REDS

Seppelt Black Label 1986 Cabernet Sauvignon
Bailey's 1985 Shiraz
Penfold's 1985 Bin 28 Kalimna Shiraz
St Hallet's 1987 Barossa Cabernet Merlot
Wines Tasted

Steve Hopper (9/2/90)

Seppelt Black Label 1986 Cabernet Sauvignon \$11 (16 votes)
Clarevale 19?? Cabernet Sauvignon \$7 (9 votes)
Taylors 1986 Cabernet Sauvignon \$8 (1 vote)
Seppelt Black Label 1885 Cabernet Sauvignon \$11 (7 votes)
SORRY Steve - I didn't record the Champagne!!

Andy Brown (9/3/90)

Rosemount Estate 1989 White Burgundy \$8.49 (12 votes)
Taylors 1986 White Burgundy \$11.49 (8 votes)
Matthew Lang 1989 White Burgundy \$3.49 (1 vote)
Queen Adelaide 1988 White Burgundy \$6.49 (10 votes)
Houghtons 1989 White Burgundy \$8.49 (3 votes)

Neil Gibson (30/3/90)

Bailey's Shiraz 1985, 1984, 1986 and 1983, voted that order, all c.\$8

Christine Farrell (11/5/90)

Houghton 1988 Fume Blanc \$10.70 (19 votes)
Sandalford Parmelia Moselle \$5 (12 votes)
Houghton 1988 Frontignon \$5 (2 votes)
Jane Brook 1988 Nouveau?? \$6 (1 vote)
(P.S. These votes are not really valid; ed.)

Andrew Burbidge (8/6/90)

Wyndham Estate Rhine Riesling \$2.89 (won by a narrow margin)
Cape Mentelle Rhine Riesling \$10
Sandalford Rhine Riesling \$10
Something else from the eastern states, but we can't remember what!!

Gordon Friend & Dave Coates (6/7/90)

Penfolds 1985 Kalimna Bin 28 Shiraz (19 votes)
Penfolds 1987 Koonunga Hill Shiraz (9 votes)
Penfolds 1986 Bin 128 Cab/Shiraz (14 votes)

Jill Pryde & Anne Kelly (3/8/90)

Andrew Garrett 1987 Cab/Merlot \$10.95 (19 votes)
Mildara 1987 Cab/Merlot \$5.50 (2 votes)
St Hallett 1987 Barossa Cab/Merlot \$10.99 (22 votes)
Olive Farm Bin 873 Cab/Shiraz/Merlot \$9.85 (8 votes)

Keith Morris & Steve Carstairs (14/9/90)

Jacobs Ck 1989 Semillon Chardonnay \$5.75 (11 votes)
Penfolds Koonunga Hill Semillon Chardonnay \$5.95 (10 votes)
Rosemount Estate 1989 Semillon Chardonnay \$8.95 (4 votes)
Penfolds ? 1988 Semillon Chardonnay \$6.95 (14 votes)

Stuart Halse & Mike Lyons (2/11/90)

Houghtons White Burgundy
Houghtons Chardonnay
Houghtons Verdelho

Merry Christmas & Good Drinking
Gordon Friend
Chief Wine Snob

