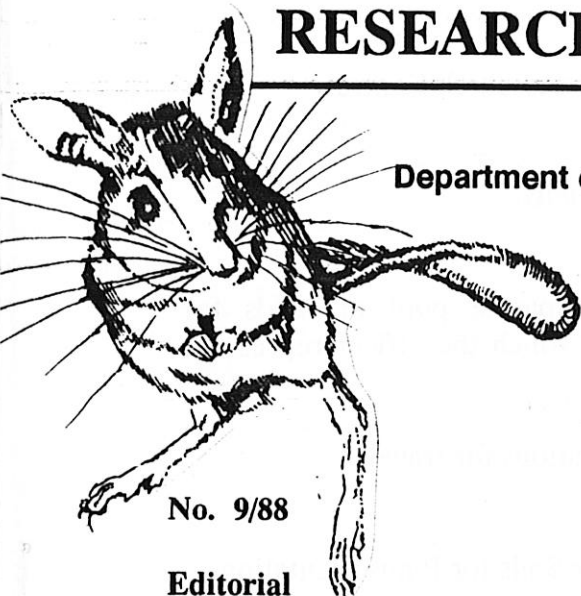
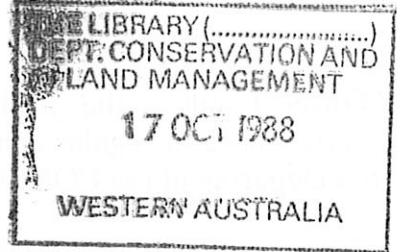


# RESEARCH INFORMATION NEWS

Department of Conservation and Land Management

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No. 9/88

Editorial

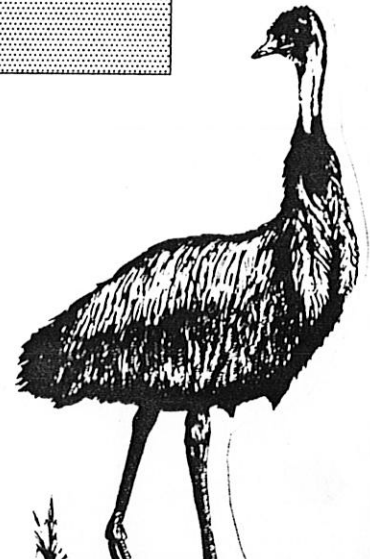
September 1988

Research Division staff who were involved in last month's prescribed aerial burning experiments in the Gibson Desert Nature Reserve have returned with news of a successful burn. For those that remained behind we have endeavoured to bring you closer to the action by reproducing a print. Please see back page. No names have been mentioned of either the "subject" or the "donator" for fear of hostility!

Thanks to all contributors to this our ninth edition of the "Newsletter".

....Ed

	ISSUE	DEADLINE	DISTRIBUTION
DEADLINE FOR NEXT ISSUE	OCTOBER '88	26 OCTOBER '88	EARLY NOVEMBER



# Information from the Research Division Policy Group Meeting

The meeting was held on 22 September 1988 at the Manjimup Research Centre.

## INFORMATION FROM THE MEETING.

**T**ransport Funds - the RDPG is investigating forming a separate pool of funds for attendance at regular committee meetings i.e. meetings in which the officer represents the Department (eg CONCOM, CHAH, RWG).

**T**ransport Requests - The RDPG supported the following applications for travel.

Neville Marchant - Meeting of Plant Taxonomists, Indonesia

Elaine Davison - Workshop on Forest Health, New Zealand

Peter Jenkins - Training course in 'Technical Classification for Soils for Pinus Plantations in Australia', Creswick, Victoria.

All officers who are granted approval for travel must submit a report on the course/conference to the RDPG on their return.

**M**anagement Courses - The possibility of running an "in-house" time management course is being investigated.

**T**echnical Staff Matters - A meeting will be arranged with Human Resources to discuss latest developments in relation to criteria progression for technical staff. An update on the current situation is supplied at page 3.

**D**iscussions with Acting District Manager, Manjimup.

**S**cott Wood was invited to join the latter part of the meeting. Discussion concentrated on the outcome of Greg Strelein's work, pest problems in the Southern Forest region, weed control and the publication of a major research bulletin on *Phytophthora cinnamomi*.

**T**he RDPG will endeavor talking to District and Regional Managers when they are in country locations.

**T**he formal part of the meeting was followed by a meeting with the Manjimup Research Centre staff. Janet Farr briefed the group on developments with her work and then took members of the RDPG on an inspection of the Entomology Lab.

# CRITERIA PROGRESSION, PROGRESSION

For sometime the Division has been trying to establish criteria progression for two groups of officers, Senior Research Scientists and Technical Officers employed under the CALM Act. Progress is being made although it is sometimes frustratingly slow.

## Senior Research Scientists

The Public Service Commission has almost completed a review of the guidelines for criteria progression of Scientific Officers up to Level 6. This is still the ceiling (but not for Agricultural Scientists who can progress to Level 8). However the Commission tells us, in a letter couched in encouraging terms, that as soon as the new guidelines are in place it will consider adopting progression criteria to Level 8 for Scientific Officers.

The RDPG will continue to press for this important development so that the contributions of our Senior Research Scientists to Conservation and Land Management can be recognised in their career development. Furthermore it is only equitable that there is parity with Agricultural Scientists. The disparity was emphasised when Botanists at the Herbarium (employed as Agricultural Scientists) joined us.

## Technical Officers

Negotiations with Technical Officers employed under the CALM Act for progression criteria equivalent to those enjoyed by officers employed by the PSC were advancing well when we learned that the PSC is about to introduce new criteria across the service.

A meeting was held on 30 September at which the Divisional Manager, some RDPG members and representatives of the Technical Officers employed under both the CALM Act and the Public Service Act discussed the new criteria with representatives of the Human Resources Branch and the Public Service Commission. The proposal to include academic qualifications to the criteria is not acceptable to the Division. Negotiations aimed at providing criteria acceptable to us will be arranged shortly. They will include RDPG and Technical Officers as well as the CSA and the PSC.



# SEMINAR

Thursday 20 October 1988

**Influence of nitrogen supply on the growth of *Pinus radiata* and the development of water stress**

**Presented by Dr John McGrath**

The effects of nitrogen supply on seasonal variation in growth rates, nitrogen concentrations in needles and leaf water potentials were studied to determine if nitrogen concentrations in needles could be used as a reliable guide to the nitrogen status of young *P. radiata*.

Irrespective of nitrogen supply concentrations of nitrogen in needles were highest in winter and spring and declined to a minimum in late summer. Younger needles had higher nitrogen concentrations than older needles, while the position of needles on the tree had little effect on nitrogen concentrations. Increasing the nitrogen supply increased both nitrogen concentrations in needles and tree growth. These increases were greatest during winter and spring and least during summer, As trees became larger and approached canopy closure, growth during summer appeared to be limited more by the availability of water than by the nitrogen status of the trees. This effect was greatest in the faster growing trees, fertilized with high rates of nitrogen.

These results will be discussed in relation to the use of foliar analysis for the prediction of tree nutrient status.

**Venue: Research Auditorium  
Como Research Centre  
CALM  
50 Hayman Road  
Como**

**Time: 3.00pm**

**\*\*\*Please note the changed venue of this seminar\*\*\***

# **SEMINAR**

**Friday 4 November 1988**

**Western Australian Wetlands of International Importance**

**Presented by Dr Stuart Halse**

I will be talking about the Wetlands of International Importance or "RAMSAR" convention, why it exists and the criteria to be used when selecting wetlands to be listed under the Convention.

I have compiled a list of possible nominations for Western Australia. They are: Ord River Floodplain, Lakes Argyle and Kununurra, Roebuck Bay, Eighty-mile Beach, Forrestdale and Thomsons Lakes, Peel-Harvey and Yalgorup System, Lake Toolibin, Vasse-Wonnerup System, Lake Warden System. In the longer term it should be possible to nominate Lake Gregory as well.

Wetlands on the list will be described briefly, the reasons they are internationally important will be outlined and future management requirements will be discussed.

**Venue: Wildlife Research Centre  
Ocean Reef Road  
Woodvale**

**Time: 3.00pm**



# OPERATIONALIZING RESEARCH FINDINGS; PUBLISH OR PERISH??

N. BURROWS

How do you measure your success as a Research Scientist with CALM? Perhaps its your publication rate? Perhaps its how often you are cited by other scientists? Perhaps its a complex formula relating both these measures of greatness?

While publications and citations are important measures of productivity (and even they can be misleading - like all descriptive statistics!) I propose that as applied researchers, we should also be judged on our direct contribution to land management and on our contribution to achieving corporate goals. Perhaps we should tally the operational prescriptions resulting from our work? Or savings to the community (in tangible dollar terms or less tangible conservation terms) as measures of our success as researchers?

It is vital that we develop criteria for measuring our success and these should include all of the above and not simply rate of publication. For example, one of the greatest contributions made to forest management was by George Peet with his development of prescribed fuel reduction burning techniques. This now routine operation has saved the community millions of dollars (plus human lives). However, George's publication record would have him ranked as a mediocre contributor if publication rate alone was the measure of success.

Applied research scientists have not finished the job until findings or results become routine operations or have policy acceptance. This is the most challenging phase of our research and one which must be worked at with all the enthusiasm and dedication normally associated with doing the field work. A good applied scientist is not one who only publishes complex, confounding technical papers, but one who can communicate findings at various levels and who follows his/her work through to the operational phase. To see your research come to fruition as a routine operation is far more rewarding than being published in the "Journal of Indian Forestry" or some other internationally famous journal.

How do you get research results into operations? Personal commitment is the short answer. You must be the salesperson of your research. Generally, operations staff will not queue to get a glimpse of your results. You must convince them that what you have discovered, or thought of, is good for them and for land management. Arrogant researchers are lame ducks and will be despised by operations staff, regardless of publications list.

The one time Research Inspector, now General Manager, Roger Underwood, produced what he called a "Fire Point Plan For Implementing Research Findings". Before re-introducing Roger's Plan, I would like to present what I have found to be useful things to do BEFORE you get results to implement. From my experience, research results are easier to implement (using the 5 point plan) if the research has operational "stake holders".

Here are a few ideas on how to attract stake holders or "operational investors" into your research.

Do involve operational staff at all levels, both District and Regional staff, at the conceptual stage of your research. Do this preferably by personal contact. Most managers are also trained scientists (many are closeted researchers!) and are keen to discuss concepts, ideas and scientific procedures. It is important to allow operations staff to contribute to the formulation of your research project, over and above the Research Project Plan. Engender enthusiasm about the project and you will find this contagious. Be willing to philosophize about your research or about anything else with District or Regional Managers,

preferably on a log under a karri tree in Strickland Block or in the shade of a gidgee tree in the Gibson Desert. Work at developing friendships with operations people, including the bulldozer operator who will be constructing your plots. Don't hesitate to hop up on the bulldozer and have a go at plot construction yourself! - you will get a better appreciation of that man's job and how important he is to the success of your project. Inform him as to why he is constructing the breaks - this applies to everyone involved on your project. Like you, others like to know why they are doing certain jobs.

After personal contact and a field trip to the intended research site, follow up with a written summary of discussions, what was agreed to, who would do what etc. (over and above formal RPP pro-forma). Ask that this summary be pinned on the District or Regional notice-board. On some occasions, I have had copies sent out to wages personnel with their pays.

Whenever you are in the District to do field work, call in at the District office (preferably around smoko time) and say g'day. Let the District Manager know you are in his/her district, what you will be doing and for how long. Communicate developments/findings. Personal contact with operations people throughout the duration of your project is important when you come to the phase of implementing your research findings. This will grease the way for the implementation of Roger Underwood's 5 Point Plan, which is as follows:

#### The Five Point Plan For Implementing Research Findings (after Roger Underwood).

- Step 1. Research findings are first presented to colleagues in the Research Division. The purpose is to confirm the validity of the work, in terms of design, analysis and conclusions and to agree upon the implications to management.
- Step 2. Research findings are then written in non-scientific language and presented to operations staff in the form of new, substitute or amended policies or prescriptions.  
This is accompanied by an appreciation of the expected benefits and likely costs of the innovation proposed.
- Step 3. Where necessary, work is then scaled up in field level demonstration trials. These are organized collaborative projects between research and operations staff, and are so designed as to ensure proposals can be properly evaluated for cost, practicality and safety.
- Step 4. The original research staff participate in the training of operators and early implementation. This ensures rapid attention to teething problems and avoid serious misinterpretation as well as highlighting the areas where research is incomplete.
- Step 5. Research staff contribute to review of procedures and prescriptions. This ensures the incorporation of the most recent findings and first-hand experience of management problems and concerns.

Perhaps the motto for applied scientists might be: People, Prescriptions and Publications or Perish

# RESEARCH METHODS NOTE NO. 3

## QUESTION MAPPING by David Ward

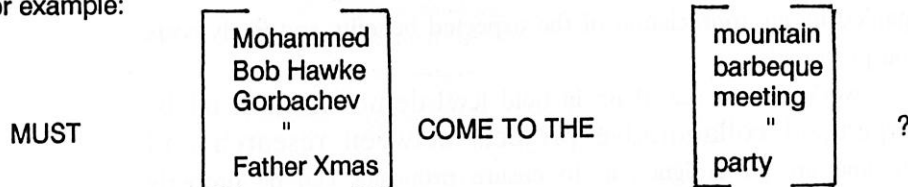
"A prudent question is, as it were, half of wisdom...."  
Francis Bacon

In ecological research we should not be so bedazzled by the status of more exact sciences such as physics and chemistry that we rush to mathematics as the only possible logical tool. Mathematics has an important part to play, but there are other approaches to logic. Before we can use statistical techniques it is vital that we frame a clear, unambiguous research question, and this is more a matter of linguistic analysis.

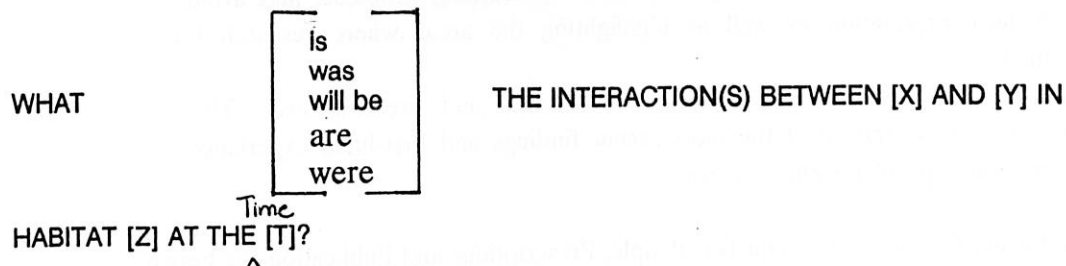
Linguists recognize two dimensions to sentence structure. In their jargon they use the terms "paradigmatic" and "syntagmatic". Simpler terms are "chain" and "choice". Suppose, from the large store of words in our memory, we select the six words TO, THE, COME, MUST, MOUNTAIN and MOHAMMED. We have made our "choice". and now we can form them into six factorial, or 720 possible "chains". Most of these will be nonsense, but those that make sense as English sentences may have very different meanings, for example:

**MOHAMMED MUST COME TO THE MOUNTAIN**  
**THE MOUNTAIN MUST COME TO MOHAMMED**  
**MUST THE MOUNTAIN COME TO MOHAMMED?**  
**MUST MOHAMMED COME TO THE MOUNTAIN?**

If we accept, say, the last as our "chain", or syntax, we could then return to the word-store in our brain and retrieve whole sets of substitutes for the paradigms represented by MOHAMMED and MOUNTAIN. For example:



If ecology is about the interactions that determine the distribution and abundance of organisms through space and time, then a useful general model for an ecological research question might be:



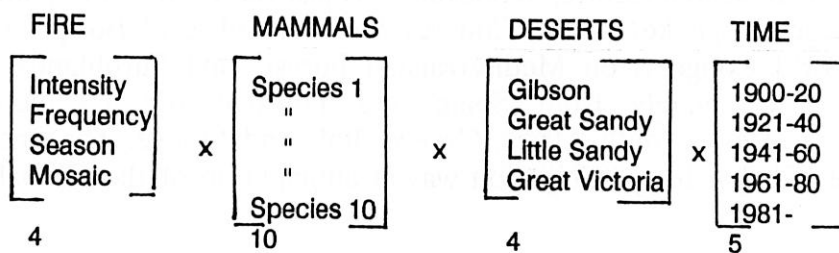
(Where X and Y are sets of organisms or environmental factors, Z is a set of habitats, and T a set of time periods)

A specific example of question mapping might be as follows:

WHAT <sup>are</sup> THE INTERACTIONS BETWEEN [FIRE] AND [MAMMALS] IN THE  
<sub>were</sub>  
 [WA DESERTS] IN THE PERIOD [1900 TO PRESENT]?



The paradigms of this question might be expanded as follows:



Clearly within our single question lurk at least 800 more specific ones, each possibly, although not necessarily, needing a different design and analysis.

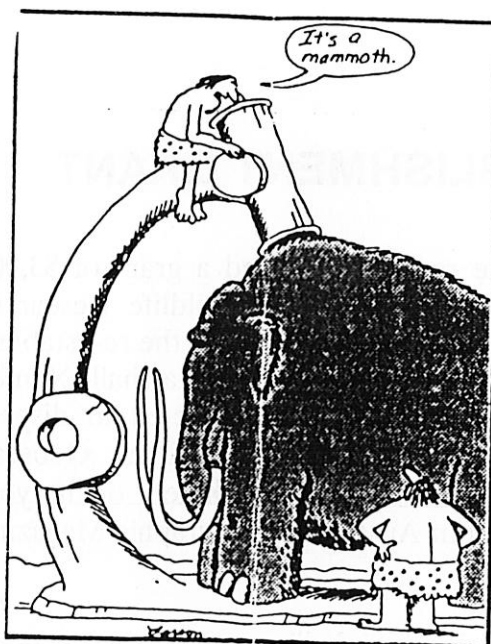
In ecological research, inventories of organisms are an essential first step, but as we move toward more sophisticated studies of interactions, scientists may find systematic question expansion a useful tool for mapping the unknown, exploring the dimensions of their project, and keying their project into the overall research program. Besides, as Francis pointed out, a good sharp question is half the battle.

Something on experimental and survey design in the next issue....

PS Those interested in teleological precision in research may care to browse through the series of 538 articles on the subject that I have submitted to the Peruvian Journal of Applied Philosophy.

Many more citations will be found in the Russian language in the KGB Journal of Interrogation.

Note: Ian Abbott please add these to my publication count.



Early microscope

## **WORLD CONGRESS ON MEDITERRANEAN FORESTS & SHRUBLANDS**

**A**ngas Hopkins of the Wildlife Research Centre, Woodvale, has just returned from Spain where he was a principal guest speaker at the Congreso Mundial Sobre el Bosque y Matorral Mediterráneos (World Congress on Mediterranean Forests and Shrublands). The ca. 450 participants were mainly from Spain and Portugal but included representatives from California, Chile, South Africa, Greece, Italy and France. The one person from Germany suggested that his participation was in anticipation of the Global climate-change!

**T**he Congress was held in a converted monastery in the city of Cáceres, about 250 km southwest of Madrid and close to the Portuguese border. The general region (Extremadura) is perhaps the least developed in the whole of the Iberian Peninsula and so has much of its original wildlife. There are still wild deer, lynx and wolves and conspicuous birds including Imperial eagles, Bustards and Black and Griffin vultures. Many of the buildings in Cáceres have massive nests of the black and white stork on spires and chimneys. Nearby to Cáceres is the Monfragüe National Park of about 18 000 ha but much of the landscape of the region is important for nature conservation since it still has its traditional vegetation and land-use practices. Rural production includes cork, lamb (merino) some beef and ham and cereals. Interestingly, the major environmental issue on the Iberian Peninsula seems to be the replacement of the oak woodlands by plantations of *Eucalyptus globulus*.

**P**apers presented at the Congress provided a comprehensive review of knowledge about Mediterranean ecosystems around the world and management of them. As well there was some effort made to identify management problems (and for the Mediterranean, most of these are predominantly socio-economic) and to propose solutions to these problems.

## **NUMBAT RE-ESTABLISHMENT GRANT**

**A**ustralian Geographic magazine recently awarded a grant of \$3,000 from its Research and Exploration Fund to Tony Friend of the Wildlife Research Centre, Woodvale. These funds are to be used to support further work on the re-establishment of numbats at Karroun Hill Nature Reserve in the Shire of Mount Marshall. Numbats released there in December 1987 have bred and the young are expected to disperse in November or December this year. The funds from Australian Geographic will provide radio-transmitters so that the dispersal and establishment of the young can be followed. Progress reports will be published in Australian Geographic Magazine (so let's hope it all goes well!)

## RESEARCH PROJECT PLANS

The following Research Project Plans have been approved this month.

No: 40/88  
Title: *Survey of pathogens of Pinus radiata in the Blackwood Valley*  
Officer in Charge: *Elaine Davison*

No: 41/88  
Title: *Fecundity of Gum Leaf Skeletonizer in relation to pupal mass*  
Officer in Charge: *Janet Farr*

No: 42/88  
Title: *Spatial distribution of Uraba lugens pupae in relation to its Jarrah host*  
Officer in Charge: *Janet Farr*

No: 43/88  
Title: *Blackwood Valley Pine Drought Death Survey*  
Officer in Charge: *John McGrath*

No: 46/88  
Title: *Brown wood in Karri*  
Officer in Charge: *Elaine Davison*

## SCIENTIFIC AND TECHNICAL PUBLICATIONS

The following have been approved for submission for publication this month.

Author(s): *S A Halse*  
Title: *Wetlands of the Swan Coastal Plain - past and present*  
For submission to: *Proceedings of a W.A. Water Research Council Workshop (October 1988)*

Author(s): *B G Ward, N D Burrows and A R Robinson*  
Title: *The contribution of bark on standing trees to fuel weight in jarrah-marri forests*  
For submission to: *Research paper (internal)*

Author(s): *J R Wheeler*  
Title: *A new species of Hibbertia (Dilleniaceae) from the Kimberley Region*  
For submission to: *Nuytsia*

### SILVICULTURAL DEFINITIONS:

*(courtesy of the Sierra Club and borrowed from one of our Research Scientists' notice board (unbeknown to him))*

**Commercial timber** - another name for trees

**Multiple Use** - using our forests for a wide variety of purposes. Multiple use is mandated by law to ensure that our forests are managed for the benefit and enjoyment of all people. Examples of the multiple uses to which our forests can be put include logging, timber cutting, tree harvesting, clearcutting and cutting down trees.

**Allowable Cut** - the number of trees that can be cut during a single harvesting period. The ideal allowable cut is a number equal to the total number of trees available.

**Selective Cutting** - an enlightened system of timber management whereby the forester first selects a forest and then cuts it down.

**Sustained Yield** - a partner of multiple use. Sustained yield is a forest management system designed to generate a steady flow of money until all the trees in the forest are gone.

**Silviculture** - The science of turning trees into silver.

*(Obviously we are not the only ones with a communication problem).*



**SCIENTIFIC AND TECHNICAL COMMUNICATION**  
*(a useful reference when writing your next publication!)*

**HOW TO WIN AT WORDMANSHIP**

After years of hacking through etymological thickets at the US Public Health Service, a 63 year old official named Philip Broughton hit upon a sure-fire method for converting frustration into fulfillment (jargonwise). Euphemistically called the Systematic Buzz Phrase Projector, Broughton's system employs a lexicon of 30 carefully chosen "buzzwords":

**COLUMN 1**

0. integrated
1. total
2. systematized
3. parallel
4. functional
5. responsive
6. optional
7. synchronized
8. compatible
9. balanced

**COLUMN 2**

0. management
1. organizational
2. monitored
3. reciprocal
4. digital
5. logistical
6. transitional
7. incremental
8. third-generation
9. policy

**COLUMN 3**

0. options
1. flexibility
2. capability
3. mobility
4. programming
5. concept
6. time-phase
7. projection
8. hardware
9. contingency

The procedure is simple. Think of any three-digit number, then select the corresponding buzzword from each column. For instance, number 257 produces "systematized logistical projection", a phrase that can be dropped into virtually any report with that ring of decisive, knowledgeable authority. "No one will have the remotest idea of what you're talking about," says Broughton, "but the important thing is that they're not about to admit it."



# Philosophy Corner...

Benjamin Franklin said, "Dost thou love life? Then do not squander time, for that is the stuff that life is made of."

~ ~ ~ ~ ~

"When I was a young man I set out to change the world. When I grew older I perceived that this was too ambitious, so I set out to change my state. This, too, I realized as I grew older, was too ambitious, so I set out to change my town. When I realized that I could not do even this, I tried to change my family. Now as an old man I know that I should have started by changing myself. If I had started with myself, maybe then I would have succeeded in changing my family, the town, or even the state - who knows, maybe even the world!

~ ~ ~ ~ ~

## RESEARCH MALADY NO. 1

**The intellectual menopause : The time in one's intellectual life when one ceases to be able to produce new ideas. The symptoms are not hot flushes, but sudden desires to sit on committees or wield administrative authority over fellow scientists.**

Adapted from: Sir David Smith 1978 Mycologia 70 : 927

## HAVE YOU HEARD...

### Marine Research Scientist

*Dr James Stoddart has been appointed to the position of Marine Research Scientist (Level 6) within Research Division. Jim will be commencing duties at Woodvale in late December. He will be moving from Canberra where he is currently a Senior Research Scientist with the Fisheries Resources Branch, Bureau of Rural Science. Jim's B.Sc., M.Sc. and Ph.D. were all obtained from the University of Western Australia.*

*Pete Walsh from the Manjimup Research Centre has been promoted to a position in Computer Services Branch at SOHQ. The good wishes from all at "Manji" and in Research Division go with him.*

*Jill Pryde from the Wildlife Research Centre, Woodvale has been promoted to Personal Secretary (Level 2) to the Divisional Manager, Research.*

*Congratulations to both Jill and Pete.*

*Ray Wills will commence duties at the Manjimup Research Centre at the end of October. Ray is replacing Joanna Tippett whilst she is on maternity leave. Ray's work will concentrate on looking at dieback on the south coast region (initially the Stirling Ranges).*

**"A desert mammal surveying the destruction (and regeneration) of his habitat!"**



**(Memories of the Gibson Desert field trip. The original can be viewed on the Woodvale noticeboard.**

**Many thanks to the senior Departmental staff member for the donation of this print).**