

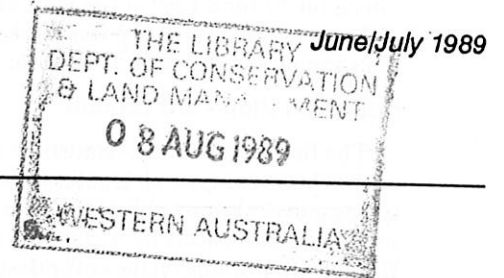
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RESEARCH NEWS

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

Editor:
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No. 6/89



Editorial:

For those that have been awaiting the June issue of Research News and for others who may have thought I forgot to send it to their Centre - the wait is over. We are finally back in print after a months delay. Following the advice of Frank Hubbard - "Don't make excuses - make good", its now time to concentrate on combining two months news into one issue. The June issue was unfortunately delayed due to illness of the staff behind the scenes who bring this to you plus the deadlines imposed on secretarial staff for the typing and desk-top publishing of a hundred and seventy page document on the "Nature Conservation, Landscape and Recreation Values of the Proposed Lesueur National Park". Needless to say, readers should not let this deter them from sending in their contributions - we hope to run on schedule for the rest of the year.

Jeanette



	ISSUE	DEADLINE	DISTRIBUTION
DEADLINE FOR NEXT ISSUE	AUGUST '89	25 AUGUST	EARLY SEPTEMBER (we promise!)





Information from recent Research Division Policy Group Meetings

The RDPG has met on two occasions since the last issue - once on 29 June 1989 at the Herbarium and the other on 21 July 1989 at Dwellingup Research Centre. The following is a summary of discussions from these meetings.

Research Plan - 3rd Edition

The final compilation - statistics - summary of resources etc has been completed. Quotes have been received for the typing and desk-top publishing of the document. Typing has recently commenced by a contract typist. Public Affairs Branch are working on the cover design. RDPG has recently given consideration to the title of the document and agreement has been reached that it will be re-titled to Department of Conservation and Land Management Research Plan 1989-1990.

Library Committee

During the absence earlier in the year of Ian Abbott on Long Service Leave, Elaine Davison took over the role of Research Division's representative on CALM's Library Committee. Due to her valuable input over this period Elaine has been asked to be a permanent member on this committee.

Budget 1988/89

At the culmination of the 1988/89 fiscal year the Division as a whole had spent 99.02% of its total budget. This was an excellent effort and within 0.02% of the target set by the General Manager. Appreciation was extended to John Dorlandt for an excellent job in controlling and collating the 1988/89 budget.

Priorities within Research Division

Research Division priorities which were established at the RDPG retreat have now been endorsed by Policy Directorate. A separate article in this newsletter outlines these priorities.

Proposal for a major synthesis of research

Ian Abbott introduced an idea for the writing and publication of a book to discuss research in terms of the impact and changes on various components of the ecological system, rather than conventional scientific headings generally applied. The book would be aimed at a wide range of readers - not just the scientific community. A separate article detailing the concept can be found in this newsletter.

CALM News Liaison Officer

Following the circulation of CALM Briefing Paper 2/89 Centre Managers have been asked to nominate a Liaison Officer with the responsibility of ensuring any noteworthy story is forwarded to CALM News.

Overtime Budget

The Division has received a preliminary 1989/90 overtime budget which represents a 25% cut on what was originally asked for. The situation is being looked at in greater depth.

Performance Appraisals

A new Performance Appraisal and Career Development Form has been introduced into the Department. This replaces the previous form and the Public Service Confidential Staff Report (PS 85). A detailed article on the new system and its application to Research Division can be found in this newsletter.

Tree Decline and Revegetation Newsletter

Publication costs for this newsletter (Elaine Davison, Penny Hussey and Patrick Pigott - editors) has been supported by RDPG to the tune of \$1000.

Vacancy - Manjimup

RDPG has decided to recommend that the vacancy arising from Yvonne Wood's promotion be retained in Research Computing and Research Methods but be transferred to Perth primarily to service the Herbarium and Como Research. This recommendation still has to be considered by the Department's Vacancy Committee.

The next meeting of the RDPG will be held on Friday 25 August 1989 at the Wildlife Research Centre, Woodvale. The meeting will be followed by a meeting with Woodvale staff.

Proposal for a major synthesis of research done into conservation and land management in Western Australia

RDPG is considering this proposal, but before deciding whether it should be further pursued, it seeks feedback from all research scientists. Would all scientists contact Ian Abbott about the topics that they wish to write on

- Title: (tentative)** The scientific basis of conservation and land management in Western Australia.
- Target audience:** The educated layperson, including upper Secondary and lower Tertiary levels.
- Publisher:** Executive Director, CALM
- Cost:** No more than \$20/copy
- Scope:** An impartial, balanced review of the accomplishments (and failures) of 150 years of research into conservation and land management in Western Australia. Not just CALM's research effort. The book is to emphasize processes behind the patterns observed, and not

description. The book is about change, impacts, fluxes and dynamics and not about statics, cataloguing and inventories of species and vegetation types present in the state. Obviously, a certain amount of description is necessary in order to discuss processes. The aim is to get away from the conventional formula of organizing a book in chapters, headed soils, landforms, climate, fungi, invertebrates, hydrology etc. RDPG's vision is of a well-integrated treatment of a vast, important subject.

Organization:

Chapter titles and topics (not necessarily complete) follow. Please suggest further items.

1. Introduction
2. Impact of weather and climatic change on conservation and land management in Western Australia
 - droughts, floods;
 - lakes, waterfowl, insects, plants, vertebrates;
 - Greenhouse effect;
3. Impact of fire on conservation and land management in WA.
 - species responses
 - community responses
 - regimes (intensity, season, frequency)
4. Impact of aboriginal occupation on conservation and land management in WA
 - islands vs mainland
 - dingo
 - hunting/gathering life style
 - burning
 - species extinction/abundance
5. Impact of European settlement on conservation and land management in WA
 - clearance of native vegetation - mining, agriculture, urbanization, softwood forestry, introduced hardwoods, wood utilization, salinization
 - hunting - kangaroo, turtle, seabird populations
 - species extinctions/abundance
 - use and management of natural resources - streams (purity, salinity), forests (nutrition, thinning, protection), soil
 - conservation through reserves - size, shape, location
 - mainland vs islands
 - native pests (JLM, GLS, kangaroos, Crown of Thorns)
6. Impact of introduced flora and fauna
 - insects (honeybee, Ips, Sirex, Phylacteophaga, Chermes, Lyctus)

- earthworms, snails
 - fungi (P.C)
 - plants (weeds, pines)
 - vertebrates (fox, cat, mouse, rats, dog, pig, camel, donkey, Kookaburra, Rainbow Lorikeet, Doves, domestic waterfowl)
 - importance of quarantine
7. How WA ecosystems function - a case history
 - the forest is the only one properly studied
 - integrate the topics 2-6 above for this example
 - nutrient fluxes

Editor:

Ian Abbott

Contributors:

RDPG invites all Professionals in Research Division to be involved. Such a synthesis fits the last of the overall primary objectives of the Division (see p35 of the 5 Year Plan).

The Education Department would be asked to become involved, especially for syllabus and plain English requirements.

Each professional should nominate the topics they wish to write on, rather than have one person responsible for a single chapter. This spreads the workload.

The Editor's role is to link the narrative together and write any missing links. It is somewhat like putting an Encyclopaedia together. No jargon but authoritative. Use of graphs, tables, figures quite acceptable. Few colour pictures (the aim is not to compete with "Landscape"). Full reference list. All contributions to be acknowledged at the end of each chapter.

Approach:

Timing:

Writing would begin in July 1990. Publication should be in time for Christmas 1991.



PRIORITIES WITHIN RESEARCH DIVISION

The RDPG has reviewed priorities for the allocation of staff and resources within Research Division. These priorities will be used to guide decisions on vacancies when they arise.

We graded each Program into one of three categories:

- I Increased resources required
 M Maintain at or near existing level
 R Re-allocate some resources

The following are the proposed priorities for 1989/90.

Program	1987/88 FTE	Category
Executive & Administrative Support	21.6	M
Biogeography	9.3	M
Entomology	5.9	M
Fauna Conservation	9.1	R
Fire	15.8	R
Flora Conservation	3.7	I
Herbarium -	15.7	
Flora Information		M
Regional Floras		M
Data Base		I
Collections		I
Systematics		M
Plant Diseases	11.2	M
Rehabilitation	6.0	R
Research Computing	3.6	M
Research Methods	2.5	M
Silviculture	23.5	R
Wetlands & Waterbirds	3.4	M
Marine Conservation	1.0	I
Environmental Weeds	0.0	I
TOTAL	132.3	

(NOTE: Herbarium Programs are at draft proposal stage only)

Growth areas were prioritised as follows:

1. Marine Conservation
2. Flora Conservation
3. Herbarium Data Base
4. Environmental Weeds
5. Herbarium Collections

Areas to be cut back are Silviculture, Fauna Conservation, Fire and Rehabilitation.

Thus, when there is a vacancy in any "R" program it will be re-allocated to a high priority area. If the vacancy occurs in a critical part of the program, internal rearrangements will be made to maintain efficiency.

If there is a vacancy in a "M" program, it will also be examined to see if it is in an area of internal high or low priority and it will be dealt with accordingly.

Comments

Procedural internal staff rearrangements have led to some programs being augmented recently, and this has influenced our decisions concerning resource reallocation. For example, the transfer of Tony Start and Keith Morris from Karratha to Perth and the consequent allocation of a new item to Karratha has led to an increase in the amount of research time allocated to Fauna Conservation and Fire Programs. On the other hand, Flora Conservation has been reduced in size because Steve Hopper was promoted to SPRS and his duties have changes with the recent RDPG reorganization of responsibilities. (Steve's old item was used to transfer Keith Morris.)

These priorities have now been endorsed by Policy Directorate.

Performance Appraisal and Career Development - the new CALM Appraisal Form and its Application

The Department has recently introduced a new Performance Appraisal and Career Development form (CLM 145). This replaces the old form (CLM 771, CLM771R) and the Public Service Confidential Staff Report (PS 85). The new form has been endorsed by the Public Service Commission and is now operable throughout the Department. The form consists of five parts. The content of parts (ii) to (v) are standard to all occupational groups. Part (i) - The job family description is, as its title implies, unique to a particular job family.

Though not wanting to bore I wish to take time here to explain the new form so when confronted with it, it will not seem too daunting a task. The objectives of the appraisal system are outlined on the first page of the form. Please remember this is a positive exercise which provides performance feedback for individuals, helps staff to identify and develop the attitudes, knowledge and skills required to perform their jobs effectively. The process requires commitment by the supervisor and employee alike.

The Form

As mentioned above the form consists of five parts.

- Part (i) The job description and performance rating - this is the only section which is designed specifically for Research Division needs and for which we have a degree of flexibility. The job description and performance rating is a list of tasks performed by officers in a defined job area. The appraisal is conducted using the documented tasks at the employee's broadbanded salary level. They are rated on a 1 - 5 scale according to their competence to perform the task at that level.
- Part (ii) Performance Improvement Plan - this is jointly completed by the employee and supervisor. Goals are set (consistent with part (i)) on areas where there is a need for performance improvement.

- Part (iii) Career Development Plan - this is also jointly completed by employee and supervisor. Goals set will relate only to career development and should not reflect poor performance.
 - Part (iv) Action Plan - this details the action required in order to achieve goals set under Parts (ii) and (iii) and is completed by the supervisor.
 - Part (v) Summary - this is the recommendation consistent with the reason for the appraisal eg. salary increment, criteria progression.
- Part (i) is the key element of the report. After discussions with officers of the Human Resources Branch it was agreed that many of the elements of the old form (CLM 771R) were appropriate as components of a Research Division job family description. These have now been redrafted, some added, some deleted and incorporated into the format needed for the new appraisal system. The final job family description was debated by RDPG at its most recent meeting and approved. It was agreed that this would be used as Part (i) for all Research Division - Scientist and Technical Officers for a six months trial. RDPG would appreciate feedback from any employee/supervisor using the form over the next six months.

Jeanette Gilmour.



Australian Systematic Botany Society Symposium on Plant Systematics and Molecular Biology

David Coates recently attended the above symposium in Sydney. David presented a paper at the symposium which will later be published as a paper, with the other conference contributions in a special volume of Australian Systematics Botany. The following is an abstract from David's presentation.

¹COATES, DAVID J. and ²HNATIUK, ROGER ¹Department of Conservation and Land Management, Wildlife Research Centre, Wanneroo, W.A. 6065, ²Bureau of Flora and Fauna, Department of The Arts, Sport, The Environment, Tourism and Territories, Canberra, ACT, 2601.

Systematic and evolutionary inferences from isozyme studies in the genus *Eremaea* (Myrtaceae)

Eremaea is a genus of woody shrubs endemic to the southwest of Australia. The majority of species are found on sandy soils in heathlands and shrublands north of Perth. Forty four populations covering the seven recognized species and a further ten putative taxa were examined for allozyme variation at 15 polymorphic loci. The allozyme data supports preliminary morphological studies which indicate four species complexes. Phylogenetic relationships between and within species complexes were examined using genetic distance and gene frequency data. The average genetic distance (Neil's D) among populations within species ranges from 0.011 for *E. acutifolia* to 0.098 for *E. ebracteata*. Within species complexes the average genetic distance between taxa ranges from 0.050 for the *E. violaceae* complex to 0.157 for *E. ebracteata* complex while between complexes it ranges from 0.164 to 0.579. The lack of genetic differentiation between various taxa within the *E. pauciflora* and *E. violaceae* complexes made it difficult to resolve species boundaries. Indeed it is likely that a number of taxa although morphologically divergent are conspecific. Hybridisation between species in different complexes was confirmed allozymically and indicates that although it does occur between distantly related species it is likely to be of little consequence within a complex because closely related taxa are usually allopatric and only occasionally parapatric.

ANDERSONIA LONGIFOLIA RE-APPEARS

Andersonia longifolia, a species known only from a type collection made by James Drummond in the mid Nineteenth century has been considered extinct in recent rare flora lists. Lesley Watson who revised the genus in 1962 noted its close alliance to *A. latifolia* (a Jarrah forest endemic, occurring between Perth and Nanup) and summarized that the type came from the Darling Range.

During the task force study on Mount Lesueur, Ted Griffin and myself checked all undescribed taxa endemic to the Mt. Lesueur area (usually collected and discovered by Ted). Amongst these was an *Andersonia*, which on careful comparison with the original description and illustrations appears to be the long lost *A. longifolia* which is not a Jarrah forest endemic but a Mt. Lesueur endemic.

Greg Keighery



NATCOM: Australia-wide recognition of CALM expertise in environmental research and management.

A select group of CALM officers has recently been registered on NATCOM, a nationwide database of people engaged in water-oriented research and resource management.

The officers, whose expertise covers fields as diverse as re-forestation, soil hydrology, plant diseases, wetland conservation, land management planning and librarianship, can now be easily located and their specialities identified by anyone with a personal computer or access to CSIRONET.

Just as importantly, CALM staff can quickly find whether there are experts on a particular topic anywhere in Australia. This is a considerable advance beyond the "oldboy network" through which many professionals come to know of each other and their work at present.

CALM researchers will be among the first to benefit from the new system, especially when setting up new projects in unfamiliar areas.

Later, environmental managers will also appreciate the benefits of this sort of database as their need for rapid assessment of complex environmental matters increases.

Copies of the database, and later of the six-monthly updates, will be held at the Woodvale library and will also be distributed to the research stations as soon as they become available. Officers from any branch of CALM may obtain copies of the database by contacting the CALM Library at Woodvale.

Stuart Crombie, Dwellingup Research

PS The library has received 5 x 5 1/4" discs and 3 x 3 1/2" discs, which must be retained at Woodvale as masters. Anyone wanting to copy these discs will have to supply their own discs (5 or 3 respectively).

Hugh Clift, Librarian.

Equal Employment Opportunity and You!

"While walking along the road a father and son were involved in a heated argument. Suddenly the son pulled out a gun and shot the father, critically injuring him.

While the gun was still in the son's hand the police arrived and arrested him, charging him with grievous bodily harm.

When the son went before the magistrate, the magistrate said "I cannot be involved in this case because this man is my son"

How could this be so?

In accordance with one of the strategies proposed in the CALM Equal Employment Opportunity Management Plan a network of Contact Officers have been appointed throughout Regions and Districts. This will ensure that

all CALM employees are kept up to date with EEO matters.

Many Research Division staff may not know who the Contact Officer for their region or district is as this network of officers has only just been appointed. For your information the following are EEO Contact Officers.

Busselton - Walter Montanus

Bunbury/Harvey - Dave Botrill/Susan Howell

Como - Jan Sutton/Steve Grasso

Dwellingup - Lyn Oakes/Stuart Howell

Herbarium - Jan Sutton/Steve Grasso or Jeanette Gilmour

Manjimup - Rob Hopkins/Graeme Norrish

Narrogin - Paul Daegan

Woodvale - Jeanette Gilmour

what do these people do?

Duties of Contact Officers are:

- (1) to act as a general resource person to the Region/District on equal employment opportunity matters.
- (2) liaise with the Departmental Equal Opportunity Co-ordinator
- (3) disseminate information on EEO
- (4) attend occasional seminars or regional meetings
- (5) help to arrange EEO seminars for staff if necessary
- (6) distribute an Equal Opportunity News sheet.

Please note EEO Contact Officers are NOT Grievance Officers, ie they do not counsel or take sides where a grievance is brought to their attention. Instead, the role of the Contact Officer is to ensure employees are aware of the correct procedure, or the options available, to have the grievance resolved.

EEO should not be an issue it is purely part of sound management practice.

For staff at Woodvale I will endeavour to keep you informed of developments in this area - so please check the noticeboard from time to time. If anyone has any specific queries please contact me.

Jeanette Gilmour



SEMINAR

Friday 4 August 1989

The Ecology and Taxonomy of the *Geocrinia rosea* (Anura : Myobatrachidae) complex: Biogeographical Implications.

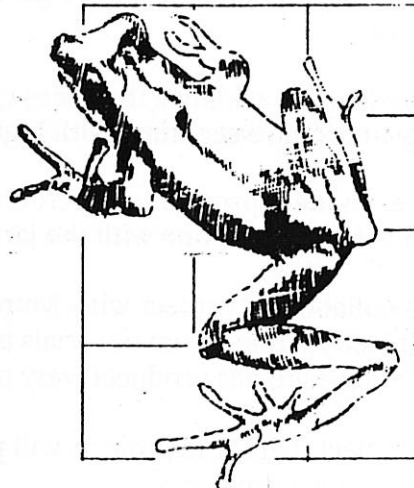
Presented by Grant Wardell-Johnson

The *Geocrinia rosea* complex includes four allopatric species exhibiting direct development and restricted to continuously damp sites in the lower south-west of Western Australia. Two of the species are considered to be rare and endangered and are amongst the most restricted vertebrates in Australia. This seminar describes the distribution, abundance and habitat of the species and the means by which their distribution and taxonomic status was determined.

Despite the subdued topography of the south west, it is possible to isolate frog populations and for them to subsequently differentiate. These species may serve as indicators of relictual groups exhibiting poor colonisation ability. Future biogeographical survey work in the high rainfall zone of the south-west should concentrate on such groups. The implications of these findings for the management of riparian strips on private and public land are introduced.

Venue: Wildlife Research Centre
Ocean Reef Road
Woodvale

Time: 3.00pm



SEMINAR

Thursday 17 August 1989

Genetic resistance of jarrah to the dieback fungus, Phytophthora cinnamomi

Presented by Mike Stukely

Prior to the commencement of this project, very little work had been done to evaluate the genetic variation in jarrah, either in terms of growth characteristics or resistance to disease and pests. Research into jarrah dieback had mostly been directed towards investigating various aspects of the activity of *Phytophthora cinnamomi* (Pc) in the forest, and seeking ways to minimise the spread of the fungus in order to protect the remaining healthy jarrah forest.

In 1984 we set out to determine whether jarrah possesses genetically-based resistance to Pc and, if so, whether it is possible to select for this character when collecting seed for use in replanting programs.

We collected open-pollinated seed from trees of a variety of sites in both dieback-affected and healthy jarrah stands. Seedlings were grown and subjected to a series of inoculation trials, with the performance of lines of seedling from individual parent trees being compared. These lines (families) exhibited a wide range of levels of resistance to Pc. There were highly significant differences in performance between families; furthermore, the heritability of the resistance character was surprisingly high. Glasshouse trials gave results consistent with those of a four-year field trial on a dieback site.

There is some evidence that trees visually identified in the forest as "apparently resistant to Pc" are likely to produce seedlings with higher levels of resistance than those from unselected parents.

An expanded program of screening of Pc resistance in the jarrah population has now commenced in conjunction with the jarrah provenance trials being conducted by CALM.

In a collaborate project with Murdoch University, tissue-cultured jarrah plantlets produced from selected seedling from our trials are being tested further. A field trial of cones of these clonal lines on a minesite has produced very promising results in its first year.

We expect that these projects will provide the basis of a Pc-resistant jarrah resource for use in future replanting programs.

Venue: Como SOHQ Training Centre
50 Hayman Road,
Como

Time: 3.00pm

Scientific and Technical Publications

The following have been approved for submission for publication during the last couple of months.

Author(s): Kim Whitford
 Title: Estimating the leaf area of jarrah trees (*Eucalyptus marginata* Donn ex Sm.) with allometric equations
 For submission to: Journal of Forest Science
 Author: Neil Burrows, Bruce Ward and Alex Robinson
 Title: Fire behaviour in spinifex fuels on the Gibson Desert Nature Reserve, Western Australia

For Submission to: Journal of Arid Environments
 The following have recently been published

Crombie D.S., Tippett, J.T. and Hill, T.C. Dawn water potential and root depth of trees and understorey species in South-western Australia. *Aust. J. Bot.*, 1988, 36, 621-31.

Majer, J.D. and Abbott, I., Invertebrates of the jarrah forest. The Jarrah Forest, pp 111-122. B. Dell *et al.* (eds).

Serena, M. and Soderquist, T.R., Nursery Dens of *Dasyurus geoffroii* (Marsupialia : Dasyuridae), with notes on nest building behaviour. *Australian Mammology* 12 : 35-36.

Scientific and Technical Publications - A reminder!

Research Division authors are reminded that they must provide a plain English synopsis (for CALM News) to Marianne Lewis of all published articles. In addition 3 copies or reprints of the article must be sent to the Librarian, Hugh Clift

- 1 copy/reprint to Marianne Lewis; and
- 1 copy/reprint to Jeanette Gilmour

RDPG is concerned that this obligation should not be neglected. The requirement is stipulated at the bottom of the Scientific and Technical Publications proforma which has recently been circulated to all Research Centres.

Ian Abbott, Chairman, SPEC

Research Project Plans

The following Research Project Plans have been approved over the past two months.

No: 5/89
 Title: Seasonality and sporulation of *Phytophthora cinnamomi* in mining operation soils
 Officer in Charge: Bryan Shearer/Brian Morgan
 No: 6/89
 Title: Survival of *Phytophthora*

cinnamomi encysted zoospores in ALCOA mining operation soils

Officer in Charge: Bryan Shearer/Brian Morgan
 No: 7/89
 Title: Southern Jarrah family provenance trials

Officer in Charge: Richard Mazanec
 NO: 8/89
 Title: Effect of canopy density on soil temperature in relation to *Phytophthora cinnamomi* activity

Officer in Charge: Bryan Shearer/Joe Kinal
 No: 17/89

Title: Effect of fertilizer on successful regeneration of *E. marginata* using broadcast seeding and mechanical disturbance.

Officer in Charge: Penni Hewett
 No: 20/89

Title: Verification of the field interpretations and assessments for the WA Remnant Vegetation Protection Scheme

Officer in Charge: Patrick Pigott

Recataloguing the CALM library

One of the less publicised problems of amalgamation was that the Forests Department, National Parks and Wildlife libraries were catalogued with different systems. When the libraries combined at Woodvale this posed problems on how to catalogue and locate the books, journals, maps and other items held by the department. All the library's holdings are being recatalogued using the Universal Decimal Classification (UDC) system, and the records stored on computer. This massive undertaking should be completed by the end of August.

This is only the beginning, however, CALM and Department of Agriculture librarians hope to develop a combined library catalogue which will be networked to all departmental offices throughout the state. It is an ambitious scheme but should make the libraries' holdings much more readily available to all members of both departments. This will obviously be of enormous benefit to officers who do not work in Perth.

Elaine Davison



Research Computing - June 1989

.... Brief Note

1. Departmental Status

Database Management Software (DBMS)

CALM has tendered for a database management software (DBMS) for the VAX and responses have been received. These have been examined in detail.

Of the softwares tendered, Oracle is the most appropriate for the Research Division (& also for the Department). It is expected that Computer Services will make the recommendation to award the contract in July, after which, Departmental approval is required. The document will then have to be forwarded to State Supplies, and it will take a few weeks for them to award the contract. Following award, the software will then have to be installed and tested (ie. September at the earliest).



Geographical Information Systems (GIS)

INTEGRAPH & ARC/INFO are currently available for geographical information. P. Gioia is performing a thorough evaluation of the products.

2. Research Development Strategy

2.1 Distributed Processing

Within Research there are requirements for immediate access of data distributed between different sites. A scientist from Manjimup for example may need to have online access to Herbarium data. This forms the basis for distributed processing which is a feature offered by the ORACLE software.

Most of our data is currently being locally managed at different locations using dBASE which is ORACLE compatible. This practice will continue as DBASE is both cheaper and friendlier than ORACLE, and, will satisfy the processing requirements of each research scientist. Where necessary, dBASE systems can be compiled (using QUICKSILVER) and executed under the ORACLE environment. Corporate data arising from the DBASE data sets can also readily transferred into ORACLE and made available to Researchers at other locations (distributed processing where necessary).

2.2 Geographical Information Systems (GIS)

These ORACLE datasets will integrate with GIS systems to be developed by computer professionals within Research. Progress in this area will provide our Researchers map-based as well as database queries. High

quality distribution maps (& others) will also be generated at ease.

2.3 Herbarium

The Herbarium systems will be integrated with other Research systems. Their existing CENSUS OF WA PLANTS will be redeveloped in ORACLE and used by CALM as THE PLANT SPECIMENS LIST. The WAHERB system currently runs under TITAN and resides on the archaic UNISON will eventually be integrated with the CENSUS (and other systems). This will be done in two phases:

Phase 1

Replace the UNISON with a new machine which is maintainable and upgradable. The machine must have enough processing power to accommodate the system (400000 entries), support other applications and act as a node to the CALM's distributed processing network.

Three machines are being evaluated; IBM PS/2 SYSTEM 80, Microvax & SUN 386i. Of these, the SUN appears to be the best option, and will be referred to in the rest of this document.

In this phase, a new replacement machine (SUN) will be purchased. It will be configured to run under UNIX and to support 16 workstations (terminals & PCs). TITAN will be loaded onto this system and the WAHERB system migrated across.

ETHERNET will be used to link the nodes in the network. The sun will effectively be used as a file server and as a node to link up with CALM's network.

Phase 2

Transfer the WAHERB system from TITAN to an ORACLE based system. Integration of the CENSUS and other ORACLE based Research systems with WAHERB.

Distributed processing will be supported and with this integration the systems could reside on CALM's VAX or on the SUN. The VAX is recommended as this option leaves the day to day running of the machine to CALM's Computing Section (ie backups, maintenance, upgrades & availability).

A WORD FROM THE SCIENTIFIC EDITOR

ANNUAL REPORT 1988/89

Thirteen scientific and technical papers were published by CALM Research Division in the year 1 July 1988 to 30 June 1989: 1 Research Bulletin, 3 Technical Reports, 2 Occasional papers and 7 WURC Reports - a combined total of 476 printed pages. In addition The Guide to Authors was published and distributed.

In the same period 13 new manuscripts were submitted for Departmental publications. Of these, 8 were accepted (4 of these have been published and are included in the total published for the years), 1 was rejected and 4 are still pending a decision. Total number of typescript pages submitted: approximately 1000.

An additional 3 manuscripts intended for submission to external journals were received for editorial comments.

Currently 14 manuscripts are in the Editorial process (5 of these were submitted prior to 1 July 1988). Of these, 5 have been accepted and are being prepared for publication, 6 are with authors for provision and further work and 3 are with referees. Total number of typescript pages currently in the editorial process: approximately 1300.

Most authors are now preparing manuscripts on word processors and providing floppy disks. This aids the editorial process and reduces production time and costs. A new page design for scientific and technical publications, using desk top publishing, is almost finalized and should improve presentation and costs of production.

In December 1988 my position was transferred from Publications Section (now Public Affairs Branch) in Information Branch to Research Division. This has facilitated a better working arrangement with Research Division.

Thankyou to the members of SPEC for their support during the year, in particular, Steve Hopper and Ian Abbott, and thankyou to all the authors and word processing operators whose co-operation and assistance both ease and speed my task.

Marianne Lewis

Have you heard?

The title Divisional Manager, Research is no longer - in keeping up with the times and recent Departmental restructuring the title of the Divisional Manager is now Director of Research. Staff are advised to use this in all future correspondence.

Steve van Leeuwen has recently been appointed to the position of Research Scientist at Karatha. Steve has been a consultant Research Scientist/Botanist to the Flora Conservation Program since 1987 and is well known to Woodvale and Herbarium staff. Steve has a Masters in Applied Science (Biology) from Curtin University and is currently studying towards his PhD. Funding for this degree has been provided in part by a World Wildlife Fund Australia grant. Steve's primary function in his new position will be to undertake research relating to the distribution and management of fauna and flora (including rare and endangered species) of arid Western Australia. He will also be responsible for maintaining the Pilbara Regional Herbarium.

Reclassification by Criteria Progression

The Departmental Reclassification Review Committee met earlier this month. The meeting was particularly relevant to Research Division as it addressed some ten cases which had been submitted by the Director of Research for reclassification by Criteria Progression. The majority of submissions were recommended by the Committee. These decisions require endorsement by the Executive Director. Once endorsed, officers concerned will be advised of the outcome in writing by the Human Resources Branch.

Philosophy Corner

"I can see nothing," said I handing it back to my friend. "On the contrary, Watson, you can see everything. You fail, however to reason from what you see. You are too timid in drawing your inferences."

Sherlock Holmes in "The Adventure of the Blue Carbuncle"

The reward of a thing well done is to have done it. - Waldo Emerson

It is better to be brief than to be tedious. - William Shakespeare

On the lighter side!

Some research proposals which didn't quite make it to RDPG

Breeding Short-necked Long-necked Turtles : a new application for genetic engineering

Fertilizer responses to karri planted in the Gibson Desert

Fire behaviour studies in seagrass meadows at Shark Bay - a ten year approach

ACID RAIN A PROBLEM FOR BANDICOOTS

by a special correspondent

Somewhere near Wellington Dam a bandicoot is still shaking his head in disbelief. Whilst snoozing in a hollow log, he was rudely awakened by a shower of acid rain delivered by CALM biometrician Matthew Williams. The bandicoot was startled, but no more so than Matthew, who is undergoing post-trauma counselling. Despite

the shock, Matthew was able to give a detailed description to police, who are seeking a bedraggled bandicoot of medium height with shoulder length fur who may be able to help them with their enquiries. Ever alert for significant ecological data, Matthew observed that the bandicoot was in an area unburnt for eight years. A repeat of the experiment in the burnt area on the other side of the road failed to yield a result, proving that burning eradicates bandicoots. Senior CALM officials were not available for comment, but it seems that the effect of acid rain needs further investigation, possibly in the Blackwood Valley. Reports that Nifty Numbat was seeking asylum in the Chinese Embassy were denied in Canberra.

LETTER TO THE EDITOR:

TO: EDITOR RESEARCH NEWS

Could it be true that a Woodvale vehicle was recently in danger of having a dreaded yellow sticker placed on it???

Surely not and neither is the rumour true that a petite young editorial lass was responsible for the devastating crack in the Pintara's headlamp.

Funny how rumours start.....

THE SCRIBE

AND IN RESPONSE -

They say a little inaccuracy sometimes saves tons of explanation!

THE EDITOR

