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June 1997

DIRECTORATE

Contributed by: Neil Burrows

An update on S.I.D. NEWSfax 1/97

Since announcing the proposed modifications to the Division's structure and the way we operate (NEWSfax 1/97), SIMC have visited Research Centres seeking feedback. As you will recall from the Newsfax, SIMC felt that these changes were necessary to enable the Division to be more responsive and flexible to meet the changing needs of the Department (without losing sight of the need for long term, strategic research). This is to be facilitated by :

a) replacing the Section structure with a Project Team structure, where focussed project teams will be assembled to address CALM's research priorities and

b) by adopting a more comprehensive and inclusive process for setting research priorities.

I was very encouraged by the general support from staff at the centres for these proposals. Clearly, this support is essential for any structure or organisation to work. Discussions with staff mostly centred around the detail of how the project teams would be assembled/dismantled and administered, and the process of broader consultation when setting research priorities.

Following the visit to research centres, Group Managers consulted with staff about the nature and composition of project teams within the Group (based on current research priorities). The outcome of this process was discussed by SIMC recently. It was my view that initially many of the proposed project teams were in fact "core functions", rather than project teams to support these core functions. For example, fauna conservation is a core function, and the projects we resource to support this include feral predator research, reintroductions, biological studies, etc. Core functions are unlikely to change (quickly) with time, but the projects we put in place to service these functions will change, sometimes rapidly! Thus, the distinction between core functions, or goals, and projects. SIMC are in the process of finalising Project Teams, which should be completed by early August. I envisage that the next step will be for Group Managers to discuss these teams with their staff and once finalised, team leaders will be nominated/appointed!

When the project teams are established, relevant staff and SPP's will be incorporated in the team. An over-arching "Project Team Plan" (PTP?) will be developed which integrates the SPP's. The PTP will be brief (4-6 pages) consisting of an introduction/background, general methods/approach, outcomes, resources/funding, and milestones.

I am proposing to formally review the Division's research priorities (hence the project teams) and to prepare a detailed Divisional report, every three years. Between the formal review periods, new issues and priorities will undoubtable emerge at short notice. We must retain a capacity to pick some of these up. The review process will

have several elements:

Firstly, it will involve formal discussions about existing research and other research priorities between SIMC and the Primary Program Directors (and senior staff), i.e., Nature Conservation, Forest Resources and Parks, Recreation, Planning and Tourism.

Secondly, SIMC will hold similar discussions with Regional Services including Regional Leaders. SIMC will take to the table a summary of existing research projects and a list of proposed new projects generated by staff within S.I.D.

Thirdly, SIMC will then synthesise the outcomes of this rather demanding but necessary process, arranging research projects in priority order using already established criteria. The future of existing research will be addressed, as will the need for long term research. Where appropriate, new Project Teams will be formed and resourced. Obviously, research priorities identified by this process which cannot be resourced will not be adopted.

The triennial review of research priorities will take place towards the end of the calendar year in readiness for the budget preparation process which is usually about February of each year.

Technology transfer is an important part of this process, including the need to write and publish. It is absolutely crucial that we publish our work and not allow an unacceptable backlog to develop. Our management policies must be underpinned by sound science; our policy makers expect it, our field managers expect it and the W.A. public expect it. Peer review and publication in reputable journals are important to the credibility or "soundness" of our science. SIMC will take a greater role in maintaining publication schedules and fostering other forms of technology transfer such as field days, workshops, etc.

If you have any concerns, criticisms or constructive comments about this process, or about your Division in general, please discuss them with your Group Manager, or with me.

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June 1997

GROUP UPDATE

Biological Information Group

W.A. Herbarium

Contributed by: Pam Burgoyne

I'm still not comfortable with our new group name, but trying hard! It certainly was good to see Neil go around to all the centres with the other S.I.M.C. members, giving us all a chance to raise some questions.

With the end of the financial year behind us and the blood mopped up, things were somewhat calmer around our centre for awhile. However, not for long! With the R.F.A. program beginning to accelerate, the Herbarium bods are feeling the tension mounting. The present estimate is that we can expect to receive 15,500 specimens (118 taxa x 138 sites) to be mounted and processed, but don't ask me where we are going to be housing them as we've totally run out of room. Neville's slipped away overseas for a few weeks, so Nicholas Lander is "acting" Group Managerfor Bio-information and feeling some of the heat.

We do want to say "congratulations" to our volunteer, Brian Best, for winning the 1995 award for outstanding voluntary services for his role in the curation of the mosses and liverworts. Brian received his award from the Minister for the Environment, the Hon. Cheryl Edwardes MLA at a breakfast occasion at the Wildflower Restaurant, John Forrest Tavern in John Forrest National Park. Brian's work exemplifies the effort that volunteers contribute to the work at the Herbarium. We are very proud to have him!

Our Reference Herbarium continues to grow physically as well as in popularity. The new extensions went quite smoothly. We now have more space for the volunteers, for visitors, and even a spot for holding small group meetings, something we've sadly lacked at our centre in the past.

The Imaging team is now ensconced in another room with better desks and space to continue with the beautiful work they've been doing. In their "old" room now sits Simon Woodman, and we expect to have Mike Choo in there as well very soon. By the way, the Bio-information Group officially welcomes the I.S. section into its fold, so to speak.

Anne Cochrane is away in England on her Churchill Fellowship trip, due back mid-October. Kate Brown is ably managing things at the Seed Centre in her absence.

Marilyn Mawkes joined us as a permanent staff appointee starting on 14 July. She will be on the reception station on Monday to Wednesdays, job sharing with Angie Walker (Thursdays and Fridays). I am thrilled to have them both on our Admin team, although I've been warned that they might be snagged later on to do some R.F.A. databasing and I'll be back at the front desk again. Things never change in that they never remain the same! Anyway, we'll just have to carry on as best we can.

I've been told that we'll be seeing Diana Papenfus' cheery face back at the Herbarium

very shortly, which is great news. She's been doing good work over at SOHQ at Wildlife Branch but her secondment has finished and we look forward to having her back with us again.

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June 1997 issue

GROUP UPDATE

Biodiversity Conservation Group

Contributed by: Keith Morris

The end of the financial year has seen the usual flurry of activity with the cleansing of accounts etc., but we have managed to once again come in within a few hundred dollars of our budget. Well done to everyone, particularly Rod Mell and Lois Cade for their efforts. The budget for 1997/98 is likely to be similar to last year, however we will not have as much salary savings to put into the operating budgets as we did last year because we will have filled two-and-a-half of the vacant positions. The Forest Ecologist (the replacement for Gordon Friend) should be in place at Manjimup by early August. Adrian Wayne has been doing this work under contract for the last 5 months. A Plant Ecologist (the replacement for Grant Wardell-Johnson) will be appointed in late August and will be involved in the exciting new flora conservation initiative being developed by C.A.L.M.. A Computer Support Officer, David Gibson, will commence work under contract at Woodvale on July 7. He will be under the supervision of Rod Mell and be involved in assisting staff with database and spreadsheet applications, software training, developing an inventory of Group databases and providing advice on software and hardware purchases. Nicole Dennis and Marilyn Mawkes have left us for greener pastures (with Marilyn transferring to the Herbarium). We are in the process of seeking expressions of interest for a Receptionist at Woodvale.

There have been a few significant staff moves recently within the Group. Anne Cochrane took off to the U.K. and the rest of the world on a Churchill Fellowship. She will be advertising CALM's Seed Store as well as picking up on other advances in germplasm storage while she is away. Tony Friend also took off on 'long service leave' to the U.K. (at about the same time I think !). As usual he will be mixing a bit of work with pleasure and visiting the Museum of Natural History. Congratulations to Tony for being awarded a Churchill Fellowship for 1998. Neil Thomas will be managing Tony's Numbat, RT Phascogale and Quenda projects while he is away. David Pearson is also visiting the Museum of Natural History in August while he is in the U.K. on 'long service leave'. He will be attending the *International Herpetological Conference* in Prague as he helps carry his wife's bags around Europe. Tony Start will also be taking 'long service leave' in July/August (this compressed leave is very popular) but wants to spend more time at work during this time than normal.

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June 1997 issue

GROUP UPDATE

Native Forest and Tree Farm Group

Joint C.A.L.M./ARC project

Contributed by: John McGrath

A new project jointly funded by the Australian Research Council and C.A.L.M. under the ARC Cooperative Research Grant scheme has commenced. The project will examine the water and nutrient requirements of a range of tree species in the medium rainfall areas (400-600 mm). The first series of trials will concentrate on the response to changes in water and nutrient supply by Maritime pine (*Pinus pinaster).* The project aims to use a range of new techniques to characterise the water and nutrient status of tree growing in the medium rainfall zone. Central to this is the use of stable isotope analyses to characterise the water and nutrient status of trees.

The project aims to develop a better understanding of the sources of ground and soil water used by trees in this zone. This information will lead to a better understanding of the site requirements and potential growth rates of trees in the medium rainfall zone.

Ian Dumbrell, Stuart Crombie, Keith Mungham and John McGrath will be the main S.I.D. staff involved in the project. Due to the wide geographical location of the plots staff from the Plantations group will also be involved in setting up the trial sites across the south west.

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Joint Tree Crops Section and Plantations Group Meeting

Contributed by: John McGrath

A meeting between the Plantations Group and the Tree Crops Section to discuss the progress of research projects, possible new areas of research and priorities for funding in the 1997/98 financial year was held in early April. Each scientist within the Section had the opportunity to present the results of their research projects. The results of the discussions have been summarised and have aided in the formulation of new projects in the tree crops area.

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Australian Groundwater School

Contributed by: Ian Dumbrell

Ian Dumbrell attended the 15th Australian Groundwater School in late November. The school is an intensive week long course dealing with the fundamentals of groundwater science, technology, and management. It is run by the Centre for Groundwater Studies, which is a joint venture of nine organisations led by CSIRO Division of Water

Resources.

The fundamentals of groundwater science complements our existing knowledge of tree water use and movement. It has provided an overall view of processes within the hydrological cycle that influence, or are influenced by, tree water use. I have two volumes of detailed course notes if anyone is interested in looking at them or discussing the topics with me. A follow up course dealing with dryland salinity is being programmed for Western Australia in October 1997. I will be notified of details at a later date if anyone is interested in attending.

Comparative responses of *Pinus radiata* and *Pinus pinaster* to thinning and fertilization on the Swan Coastal Plain near Harvey.

Contributed by: Ian Dumbrell

Over the past three years, Busselton and Dwellingup S.I.D. staff have been involved in an intensive study examining the comparative responses of *Pinus radiata* and *Pinus pinaster* to thinning and fertilization on the Swan Coastal Plain near Harvey. The main focus of the study was on tree growth and water use. Parameters studied included tree heights and diameters, pre-dawn needle water potential's sap flow velocities, soil moisture contents, and local weather conditions.

The more important findings to date have been:

- given adequate fertilizer and under the same growing conditions, *P. pinaster* and *P. radiata* have produced similiar volume increments.

- for any growing season, *P. pinaster* did not become severely water stressed, nor did it become as water stressed as *P. radiata.*

- *P. pinaster* appears to use less water than *P. radiata* in producing the same volume of wood

- in both *P. pinaster and P. radiata,* annual rainfall appears to be fully utlilised under the stands with moderate to high stocking levels, allowing no recharge to groundwater

The intensive monitoring of this trial and a similiar one for *P. radiata* in the Sunklands near Busselton concluded recently. The focus now will be on duplicating these trials on *P. pinaster* in the wheatbelt. Three new trials are currently being established at Dandaragan, Harrismith and South Stirlings.

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Drought tolerance of *Eucalyptus globulus*

Contributed by: Stuart Crombie

An honours student, Kim Brooksbank, being supervised by Stuart Crombie, has been working on the physical measurement of drought tolerance of *Eucalyptus globulus* at Moodiarrup and Nannup. This is a continuation of work established by Trevor Butcher and Stuart Crombie. The results have been so encouraging that Kim is to present the results at the *IUFRO Conference on Silviculture and Improvement of Eucalypts* at Salvador in Brazil in August, 1997.

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Trevor Butcher's Churchill study tour to South Africa, Morocco, Spain, Portugal, Oxford and the U.S.A.

Contributed by: Kathryn Lee

According to Trevor some of the highlights of his "marvellous experience" were:

- discovering that no other country has a similar database management system to TBIMS (Tree Breeding Information Management System) and finding that there is a lot of interest in the system in other countries

- learning that Dick Perry and Eric Hopkins are well remembered in Portugal and France (Trevor got to visit the site of Dick's original *Pinus pinaster* selections in Portugal)

- learning of useful research into the drought effects on *Pinus pinaster* in France and visiting Morocco after it had experienced a serious drought

- inspecting the pitch canker disease in *Pinus radiata* plantations in California, which Trevor says "has the potential to wipe out the plantations"

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June 1997 issue

NEW DISCOVERIES

First record of *Phytophthora boehmeriae* in Western Australia

Contributed by: The Vegetation Health Service - Nola D'Souza, Janet Webster and Francis Tay

C.A.L.M.'s Vegetation Health Service (VHS) has identified a species of *Phytophthora* never before recorded in Western Australia. This is the 16th species of *Phytophthora* recorded in the state. It is generally agreed that all *Phytophthora* have been introduced since European settlement.

Soil samples were sent into the VHS for routine *Phytophthora* testing by Mike Wright, of C.A.L.M. Busselton District, in July 1996. Included was a sample collected from Workman's Pool in St. John's Conservation Park near the south west town of Nannup. Laboratory staff became aware that routine screening revealed a subculture that was not a species regularly encountered in samples from natural vegetation. The most common species in the south west are *P. cinnamomi, P. citricola, P. cryptogea, P. drechsleri and P. megasperma.*

Traditional morphological charts and the electronic *Phytophthora* identification key (INTKEY), established by C.A.L.M.'s Nicholas Lander and Helen Coleman, were used to identify the species tentatively as *P. boehmeriae.* Isoenzyme profiles of the new culture and a known *P. boehmeriae* isolate were then compared. Results indicated that the two cultures were 'isozymically' similiar.

Finally, the culture was sent to Centraalbureau Voor Schimmelcultures, at the Institute of the Royal Netherlands Academy of Arts and Sciences, to confirm its identity. Confirmation was received in January 1997.

Phytophthora boehmeriae is known to occur in Taiwan, Japan, China, Greece and Argentina. In Australia, *P. boehmeriae* was first reported in Queensland in 1962 and associated with deaths of *Pinus patula*. It was subsequently reported in New South Wales in 1976 and associated with deaths of *Eucalyptus pilularis.* In both cases it was not determined whether deaths were caused by the fungus. The isolate from W.A. was similarly associated with the death of *Persoonia longifolia* but whether death was caused by the fungus could not be ascertained.

Workman's Pool is near the site of the Barrabup Mill which operated between 1908 and 1925. The site has a plantation of eastern states *Acacia* species which may be the source of introduction for the isolate. Hence it is possible that *Phytophthora boehmeriae* has been in Western Australia for many decades.

The VHS has submitted a short paper to the Australasian Plant Pathology Societiy's journal, which is currently being reviewed. A culture of the isolate has been retained in the VHS culture collection with the culture number 3884. It has also been lodged at the Centraalbureau Voor Schimmelcultures in the Netherlands.

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Rare Tangle Wattle, *Acacia volubilis*

Contributed by: Brendan Lepschi

Some of you may have noticed a miniscule article buried deep in the pages of *The West Australian,* in late June, which mentioned the rediscovery of a rare wattle. The full story on this find will hopefully appear in *Landscope* in the not too distant future, but it is probably worth a mention in this august publication as well.

The *Acacia volubilis (*Tangle Wattle) was first collected in 1877, from a vague locality somewhere east of York. Searches over the next 100-odd years failed to find this species, and as a result it was placed on C.A.L.M.'s Priority Flora List as *Presumed Exinct.* However, in June 1996, while surveying for the equally rare *Daviesia cunderdin,* Terena Lally and myself re-located a small population of Tangle Wattle on a highly degraded road verge near Cunderdin in the central wheatbelt. We were unaware of the significance of our find (one wattle looks much the same as another !) until W.A. Herbarium volunteer Stan Webster identified the specimens, and Acacia expert Bruce Maslin confirmed Stan's identification. This material represents the first collection of Tangle Wattle in nearly 120 years, and means that yet another species can be removed from the presumed extinct species list.

Why Tangle Wattle remained undiscovered for so long in a relatively well-botanised area close to Perth is unclear, but the unusuallly early winter flowering time may be a contributing factor. Unless it is flowering, Tangle Wattle tends to blend into the surrounding vegetation, being a small 'leafless' shrub usually less than 50 cm tall.

Subsequent brief surveys in the area where the first population was discovered have revealed a few more scattered populations, all on equally precarious unreserved roadsides. More thorough surveys are planned for the next season and the Threatened Flora Seed Centre, at the Herbarium, aim to collect seed from known populations this spring.

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June 1997 issue

CONFERENCES ATTENDED

Marine Turtle Conservation and Management in Northern Australia

Contributed by: Bob Prince

I attended a workshop meeting, *Marine Turtle Conservation and Management in Northern Australia*, sponsored by the Centre for Indigenous Natural and Cultural Resource Management and the Centre for Tropical Wetlands Management, both of the Northern Territory University, in Darwin on the 3rd-4th June 1997.

I was able, subsequent to the meeting, to renew contacts with academic and government colleagues in the Northern Territory, and further discuss other matters relating to the conservation and management of indigenous exploitation of marine turtles and dugong.

A current 'die off' of juvenile green turtles in the Exmouth area is being investigated with the help of veterinary pathology colleagues at Murdoch University. A field collection of turtles for necropsy examination is being carried out by CA.L.M. Exmouth District Office staff.

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FORTHCOMING CONFERENCES

Soils '97

Contributed by: John McGrath

The biennial conference of the Australian Society of Soil Science Inc., W.A. Branch will be held in Geraldton between 30th September and the 2nd of October 1997. There will be a workshop on pottasium in Australian agriculture from the 2nd to the 4th of October.

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June 1997 issue

GRANTS

Applications

Dugongs and sea turtles

Contributed by Bob Prince

Grant proposals submitted to Environment Australia, Marine Wildlife Research Program 1997/98 were :

Conservation of Marine Turtles - Western Australian Region. Request for resumption of core funding of Western Australian Marine Turtle Project by the Commonwealth

Sustainable Management of Dugong and Sea Turtle Populations and Their Exploitation in the West Kimberley Region, Western Australia : development of contemporary management programs in collaboration with the Aboriginal communities

Aerial Survey of Distribution and Abundance of Dugongs and Associated Macrovertebrate Fauna - Pilbara Coastal and Offshore Region, W.A.

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Successful applications

World Heritage Area Management Program - Shark Bay

Contributed by Bob Prince

Funds were secured to maintain the Dirk Hartog Island Loggerhead Turtle Breeding Population Study for summer 1997/98. This work comprises a separate part of the Western Australian Marine Turtle Project conducted in partnership with the Mid-West Region, Gascoyne Office of C.A.L.M..

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June 1997 issue

STAFF PROFILES

Bryan Shearer

Bryan has accepted the appointment as Adjunct Associate Professor in the Division of Science at Murdoch University. The appointment will be for a period of three years starting from 1 January 1997.

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Ben Richardson

Contributed by: Terry McFarlane

A new face has appeared at the Herbarium this year, that of Ben Richardson. Ben is employed as a Consultant on botanical projects.

Ben graduated in Environmental Science from Murdoch University, and qualified further with a Postgraduate Diploma in Science (Botany) at the University of Western Australia in 1994. Two years of varied work followed, including botanical consulting involving field surveys, research assisting at U.W.A. Botany Department in the genetics lab. and laboratory demonstrating.

Botany was more than a job to Ben. A keen interest in the local flora found expression in photography, and the establishment of a World Wide Web site containing the beginnings of a photo gallery of W.A. flora. This lead to contact with the Herbarium, where his mix of skills in botany, computer technology, images and the Internet are being employed in the development of flora information systems. The processing of images and descriptions of Proteaceae accessible from the WACENSUS on the Calm Web was Ben's work. Currently he is one of the team developing the WAGENERA botanical information system, a database of W.A. flowering plant genera.

A native West Australian, Ben's interests apart from botany and computers involve the outdoors, namely cycling and orienteering.

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Janet Farr

Contributed by: Janet Farr

On March 18 this year I went under the surgeon's knife to have a cataract operation on my right eye. The operation was reasonably successful excepting the surgeon was unable to remove some obstructive plaque from the back of my eye. This may be removed later with laser treatment, I have a choice of 100% clear vision, with an increased chance of retinal displacement, or slightly blurry vision (particularly in bright light) with a normal chance of retinal displacement. At present I am enjoying much improved vision and looking forward to the time when I can have the correct prescription lenses for my adjusted sight. Then I may play the occasional game of

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snooker again.

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June 1997 issue

CENTRE NOTES

Busselton Research Centre

Contributed by: Ian Dumbrell

Congratulations first up to Keith and Megan Mungham who are expecting their second child in September, and to Justine Edwards. No, she is not pregnant, she was successful in obtaining an Australian Post Graduate Award Scholarship and C.A.L.M. Executive Director's Scholarship allowing her to commence her PhD at U.W.A. in July this year. She will be studying "Site selection and potential water uptake of *Pinus pinaster* and endemic eucalypts in the wheatbelt". We all wish her well in her studies.

Many great love affairs commence on Valentine's Day and John McGrath's affair is no exception. On this day 20 years ago John joined the Forests Department here in Busselton.

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Manjimup Reseach Centre

Contributed by: Richard Mazanec

Congratulations to Ian and Jane Wheeler on the arrival of Sophie Emma Elise Wheeler. Sophie was born on the 7th of June at Bridgetown.

Congratulations are also due to Michelle Vellios on her permanent appointment as Clerical Officer at Manjimup S.I.D.

Adrian Wayne has been working out of Manjimup S.I.D. on contract since February 1997, filling the Forest Ecologist position. Since his arrival Adrian has been involved in the Kingston project and has started a study on the impact of logging on Ringtail possums. At present some 25 Ringtails are being radio tracked. Early results suggest that 50% of refuge sites consist of tree hollows, 27% are in tall multi-headed blackboys and 20% are found in dreys constructed in trees as well as underground in old rabbit burrows and root channels under stumps.

Murdoch student Kylie Thomson is on an Independent Study Contract and is assisting with the Ringtail possum study.

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Como Research Centre

Contributed by: Kathryn Lee

The Centre has been refurbished with some painting, a new pergola and the installation of a smoke detecting system. One highlight of the lengthy installation of the smoke detectors was watching the testing of the detectors on the very high ceiling in

the library. This involved an apprentice, a lit cigarette and a long piece of p.v.c. pipe. In case there really is some smoke we recently had a fire-fighting demonstration from a representative from Chubbs. After we had all practised putting out fires there was an inspection tour of the centre's fire extinguishers and alarms. It is still unclear whose keen fingers set off an alarm but we all got to practice our fire drill. It was interesting to note that the instructor from Chubbs ignored the fire alarm - he was in the tearoom enjoying the first piece of our chocolate cake for morning tea while we were out on the lawn waiting for the fire trucks.

Trevor Butcher has just returned from his Churchill fellowship visit to pine plantations and scientists in South Africa, Morroco, Spain, Portugal, France, Oxford and the U.S.A. and has interesting stories from his trip (see also the *Group Notes, Native Forests and Tree Farm Group* page for more information). Some of his highlights included staying in the middle of the Leiria pine plantation in Portugal, visiting the Kruger National Park in South Africa and arriving in San Francisco on the day of the Mardi Gras. Trevor maintained contact continually, with both people at work and his family, by travelling with his notebook computer and connecting into a local server to send email messages. After arriving home he discovered his computer had 'caught' 28 viruses.

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June 1997 issue

CENTRE FEATURE

W.A. Wildlife Research Centre - Woodvale

Contributed by Grant Pearson

Background

In 1973 the W.A. Wildlife Research Centre was opened by H.R.H. Prince Philip, Duke of Edinburgh, with a degree of ceremony befitting the occasion. The block of seven laboratories and a spacious seminar room drew together the various components of wildlife research of the then Department of Fisheries and Fauna. Some of the names associated with the Centre's modest beginnings are still here. Andrew Burbidge, Bob Prince and Norm McKenzie all came from the offices of 266 Hay Street. At the time Keith Morris was a student assisting Norm during holidays. Yours truly is the remnant from Tom Riggert's Wetland group at Ellam Street offices in South Perth. Jim Lane, until recently based at Woodvale, now in Busselton, is another who began at Hay Street working on waterbirds.

The Centre has changed dramatically since its beginning in those heady days when the state of the art 64 K Tektronix computer occupied space equivalent to a small car and the corridors rang to the hammering of Thelma Woodward's mechanical typewriter as she battled to keep up with the output of 20 or so researchers. The library was in the front reception area, where the photocopier is now (but 2 metres below it). It housed a comparatively meagre resource compared to the wealth of material currently hoarded by Lisa in the relatively new Library built in 1985. The latter was part of a major expansion of the Centre with the addition of another 8 laboratory/offices plus a large consultants' work-room, a computer room, meeting room and a dark-room.

With the formation of C.A.L.M. in 1985 the personalities and, to a degree, some directions have changed and up to 60 scientists, technical staff, consultants, administrative staff and contractors operate at or from the Centre. Woodvale's reputation for scientific excellence and effectiveness has become well established and the Centre looks forward each year to furthering improvements in information exchange and generation of scientific data.

At present the Biodiversity Conservation Group (B.C.G.) dominates the Centre and is headed by Acting Group Manger, Keith Morris. There is also strong representation from the Biological Information Group (B.I.G.) and staff from the W.A. Threatened Species and Communites Unit (WATSCU).

The Centre has continued to provide a high level of service to C.A.L.M. in several key conservation areas:

> The B.C.G. works towards developing protocol for the conservation of our threatened species and communities and devising means of controlling threatening processes such as foxes, cats and weeds.
>
> Staff in B.I.G. based at Woodvale are involved primarily in biological survey

programs and will be involved extensively in the Salinity Action Plan.

There is also expertise related to the management of our wetlands at Woodvale. Recent changes to the way S.I.D. will operate in the future may see many of the survey and wetland research projects managed by the B.C.G. at Woodvale.

Along with these changes, all the Information Science Services staff except Mike Yung, will transfer to the Herbarium to support the expansion of the B.I.G. role in G.I.S. database development and related research more conveniently. However, the main function of all I.S.S. staff continues to emphasize collaborative research with all other scientists in S.I.D., providing expertise in database design, statistical analysis and mathematical modelling.

With the increasing number of staff (contractors) and the significant amount of external funding that the B.C.G. receives, the Administration staff play a very important role. The management of the 39 ha reserve also requires the attention of a full-time Ranger. The prevention of fire is of particular concern to all staff at Woodvale.

The Wildlife Research Centre has long had a reputation of leading the field in wildlife conservation research in Australia and is the envy of C.A.L.M.'s sister organisations in other states. This reputation will continue because of the expertise and dedication of all staff operating out of the "patch of the bush at the end of the freeway".

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S.I.D. CHAT

Key performance indicators (KPIs)

Contributed by: Grant Pearson

Two S.I.D. staff, Francis Tay and Grant Pearson, attended the recent KPI training course. Hugh Clift participated as a WATSCU representative. The outcome of this has been that after a number of trial sessions for the Administration and Library groups it is clear that KPIs need to be developed at the Group level incorporating all the work areas within that group rather than KPIs for individual's work areas. This will result in representatives from each group participating together to develop KPIs for the division. These will then contribute to the joint C.A.L.M. submission.

Discussions will take place shortly to determine how and when. We'll keep you posted.

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ARTICLES

Microwave oven as a source of harmful radiations

Contributed by: Michael F. H. Yung

I came back from Sydney last December after seeing a family friend, who was dying of cancer of the ovary. Here are some "thoughts" for our health:

1. My friend installed a microwave oven just below the kitchen bench; thus it was a bad height (but quite common in kitchens). The oven was also facing her as she did her other cooking. It is an old model but she has it checked for radiation leakage regularly. It was pointed out by John Blyth of W.A.T.S.C.U. that some older models lack safety features. That discussion on age coincided with the replacement of the microwave oven in Woodvale last Christmas.

2. Years ago, I came across another report that two female sales demonstrators of microwave ovens developed cancer of the breast - obviously the height warrants suspicion.I thought that almost every family has an oven nowadays. To my surprise, I found that at least five of us in Woodvale have not got one yet.

3. An I.S.S. member (1996) told me that one of his school friends worked in a large city restaurant when microwave ovens first became common. He often waited in front of them while they finished cooking before he could serve the meal. After six to eight months he was diagnosed with a problem with his pancreas. Apparently the ovens had been leaking and effectively cooking his internal organs. Now, I begin to suspect that they might even not have been leaking, in light of Adam Wincza's report quoted below.

4. In an interesting physics seminar I attended about 20 years ago, a Perth medical physicist told us the following:

Radiotherapy treatment on cancer, using gamma rays, had been enjoying 60 % success rate when it was first used in the 1960's. But, this rate had dropped down to about 25 % by the 1970's due to the change of response by the world population. It was found that the response to radiotherapy treatment can be much improved if the temperature of the cancer tissue was heated up to a substantially elevated temperature while gamma rays were applied. Usually such heating methods are very tortuous, including the use of warm water baths or by bringing the patient into contact with blocks of warm wax. Then the speaker himself invented a method, which uses microwave as the heating agent, providing fine control of the temperature of the cancer tissue while traditional gamma rays were applied. This is much more comfortable to the patient and the success rate was over 60 % again. This was a respected Perth invention.

However, he found that the microwaves can also speed up cancer growth. Some slow growing cancers can go on for more than 30 years without killing the patient. That means such slow growing cancer can well speed up and kill the patient after being promoted by an accidental exposure to microwave. Microwaves were not suspected of starting cancer.

5. In short, microwave is of such a wavelength that its main effect is thermal. It can penetrate biological tissues and heat up evenly, not from outside to inside. So keep your eye balls well away from it, otherwise it will cause cataracts of your lens. It can certainly do some harm. What other harm it can do is still not too clear.

Adam Wincza of I.S.S. completed a comprehensive report (1993) on measured radiation leakage from equipment in C.A.L.M. From his measured data, I estimated that the radiation from the front of an old microwave oven (when closed and not leaking) is at least 5.76 times higher than what the safety standard recommends.

By now much literature in general radiation and health has accumulated. Adam recommends for information on radiation, and health in general, to see - **hhtp:// www.mcw.edu/gcrc/cop/static-fields-cancer-FAQ/toc.html.** Not much of the literature refers to microwaves in particular. We will keep up with this discussion.

Watch out for the wave.

References:

Wincza, Adam (1993) Electromagnetic radiation from computer screens and other electrical equipment. (I.S.S. report).

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SPP UPDATES

Contributed by: Christine Farrell

The following is a list of approved SPPs for 1997:

97/0001- J. Farr - Incidence of wood borers in 20-35 yr old regrowth Karri over a rainfall gradient.

97/0002 - G. Keighery - Weeds of WA

97/0003 - L. McCaw - Project Vesta

97/0004 - I. Dumbrell/ J McGrath - Early rotation silviculture for second rotation pines on the Swan Coastal Plain

97/0005 - P. de Tores - Fox and cat density estimates, survivorship and home range estimates in the presence of 1080 baiting within the NJF of southwest Western Australia - a pilot study

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WASPP Issues

Contributed by: Christine Farrell

Please ensure that as soon as an SPP is circulated for approval then it must also be entered on WASPP. Once the SPP is on WASPP (and I receive the approved hard copy) then an SPP number will be allocated.

If a new SPP is prepared please remember that the staff % of time allocated to other SPPs may have to be adjusted accordingly.

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PUBLICATIONS

Bibliography of Scientific Publications

Progress report

Contributed by: Christine Farrell and Lisa Wright

The bibliographic database has entries for scientific publications dated from 1985 (with Herbarium entries from July 1988 and Observatory entries from January 1996). It includes all scientific publications written by staff under the auspices of Research Division (R.D.) and Science and Information Division (S.I.D.).

The bibliography is growing nicely. To date we have a total of 2584 entries. However, there are still a significant number of staff who have not responded to Neil's memo dated May 22nd. It would be appreciated if you could finalise your bibliography and return it as soon as possible.

S.I.D. Staff are reminded that a copy of all scientific reports, i.e. internal reports, reports to granting agencies, abstracts, etc. and a copy of published books and papers must be lodged in the Archives at the Wildlife Science Library, Woodvale.

The database will be a useful tool in the provision of an up-to-date reference list for scientists in either electonic or printed format.

When all responses have been received, and the database has been updated, it is intended that a published bibliography of R.D./S.I.D. scientific publications will be produced.

PLEASE NOTE:

It is most important that all scientific reports, especially reports to granting agencies, and internal reports, be put through our normal S.I.D. approval to publish process (Guideline No. 9 - Publications, Reports and Manuscripts). This will then enable us to document those reports, link them to SPPs/RPPs and include them as part of any unpublished research).

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Approved for publication - 1/03/97-26/06/97

Contributed by: Christine Farrell

Anstee, S. Start, T. and Morris, K.,Pebble mounds and their masterly makers

Baczocha, N. and Start, A.N.Status and Ecology of the Dibbler (Parantechinus

Keighery, G.J., Weeds of Garden Island - Past, present and future

Lepschi, B.J.,A taxonomic revision of Leptomeria (Santalaceae)

Lepschi, B.J. and Macfarlane, T.D.Digitaria aequiglumis (Poaceae), a new weed for Western Australia

Moore, G., Harper, R., Smettem, K. and Bartle, J.,Blue gums : soil and climate requirements

Morris, K.D.,The status and conservation of native rodents in WA

Morris, K.Strategic fox control broadscale approaches and the WA experience

Patrick, S.,Hidden treasure of the Avon Valley

Patrick, S.,How to ... Create a local herbarium

Prince, R.I.T.Conservation of Marine Turtles: Western Australian region

Prince, R.I.T.,Dirk Hartog Island Loggerhead Turtle nesting population study

Prince, R.I.T.Marine Turtle conservation: The links between populations in Western Australia and the Northern Australian region - people and turtles

Shearer, B.L., Crane, C.E., Fairman, R.G. and Grant, M.J.Susceptibility of plant species in coastal dune vegetation of south-Western Australia to infection by Armillaria luteobubalina

Start, A.N.,Rabbit Calicivirus, Report to Science Sub-committee on Intensive Monitoring:WA's intensive site on the Nullarbor

Start, A.N.,Bats, the forgotten insect eaters

Stukely, M.J.C., Shearer, B.L., Tay, F.C.S., Hart, R.M. and Hart, R.P.Phytophthora species in natural vegetation in Western Australia

van Heurck, P. and Friend, G.,P199: Conservation of Jarrah forests in WA - the impact of prescribed burning

Wheeler, J. and Keighery, G.Wildflowers of Shark Bay

Williams, A.A.E. and Williams, M.R.A new species of Trapezites Hubner (Lepidoptera:Hesperi

Williams, A.A.E., Williams, M.R. and Atkins, A.F.Notes on some Western Australian butterflies

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S.I.D. STAFF IN THE MEDIA

Recent references in the media

Contributed by: Jan Rayner

Tom Smith and Peter Birch in *Weekend Extra*, 7-9 March, Astronomy night at Mt Adelaide

Ralph Martin in *Sunday Times,* 16 March 1997, Hale-Bopp comet

Tom Smith in *The Wheatbelt Mercury,* 2 April, 1997, Astronomy night held at the Southern Cross District High School

Anne Cochrane in *The West Australian : Earth 2000,* 12 May 1997, Banking of Survival - a gene bank for seeds from endangered W.A. native plants

Adrian Wayne in *Manjimup-Bridgetown Times,* 14 May 1997, Request for information on sightings of Western Ringtail Possums

Grant Pearson in *Intersector,* Vol. 3, number 11, June 4, 1997 and *The West Australian,* 4 June 1997, Hovercraft unveiling at Kings Park

Peter Birch in *Sunday Times, 22 June 1997,* Earth in time leap

David Algar in *The Kalgoorlie Miner,* 28 June, 1997, Trial of feral cat baits

Grant Pearson in *The West Australian, Earth 2000,* 7 July, 1997, Study of invertebrates at Roebuck Bay

Keith Morris in *The West Australian,* 13 July, 1997, Bilbies

Please let us know if any reference has been inadvertently missed

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