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Entry No: 068488I

SEMINAR

Thursday 15 September 1988

Uraba lugens in South Australia:
Biology and performance in relation to Nitrogen Nutrition

Presented by Dr Janet Farr

Two main hypotheses exist on the relationships between food quality and quantity to insect performance and past population dynamics.

1. Plants are usually an adequate sources of nitrogen for herbivores (Fraenkel, 1953, 1959).

2. Plants are generally inadequate sources of nitrogen for herbivores (White 1978).

Uraba lugens Walk. (the gum leaf skeletonizer moth) is an oligophagous insect, feeding and performing differentially on a wide range of Eucalyptus species. Outbreak populations of U. lugens have been recorded in all Australian states. These hypotheses are therefore discussed in relation to the biology and performance of U. lugens fed fresh and artificial diets and the variation of chemical components within the insect food plant. The implication of these results in relation to the potential for insect outbreak is also discussed. It is considered that nitrogen is not a limiting nutrient for insect herbivores but may be rendered more "assimilable" by the impact of environmental stress on the plant's capability to produce chemical defense against insect attack. Mention is also made of the life cycle of the South Australian form of this insect and comparisons are made with the Western Australian form of U. lugens.

Venue: Training Centre
CALM SOHQ
50 Hayman Road
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Time 3.00pm

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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 Time: 3.00pm
Como Research Centre
CALM
50 Hayman Road
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Research Centre Manager
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SEMINAR

Thursday 17 November 1988

**The Small Eucalypt Processing Study:
a mid-term report**

Presented by Dr Graeme Siemon

The Wood Utilisation Research Centre at Harvey is over halfway in a four year study on processing of small eucalypts. The research is funded jointly by the Commonwealth through a Public Interest Project, by the State, and by the WA timber industry.
The major objective is to maximize the value-added benefits by developing processes of sawing, seasoning, and manufacturing of regrowth and short mature logs which are currently unutilizable.

The research includes:

stockpiling
sawmilling
seasoning
wood properties assessment
product development (eg furniture panels)
management ("Gumtree" model)
marketing surveys

There is close liaison with industry to ensure that the research program is "needs based" while being objective.

This is resulting in successful vertical integration between forest growers, timber producers and manufacturers.

Venue: Training Centre
CALM SOHQ
50 Hayman Rd
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Time: 3.00pm

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SEMINAR

Friday 2 December 1988

Conservation of Forrest's Mouse *Leggadina forresti* on Thevenard Island

Presented by Keith Morris

Since the introduction of the House Mouse *Mus musculus* to Thevenard Island in 1986, the population of Forrest's Mouse on the island has been monitored. This is the only known island population of this species and it was believed that the presence of *Mus* may have a detrimental affect on this native rodent population. Preliminary dietary analysis has shown some overlap in diet. This study has confirmed that both *Mus* and *Leggadina* are distributed throughout the island, and that *Mus* are in significantly greater numbers. Trap success rates of *Mus* have increased throughout the study. While *Leggadina* are spring breeders, *Mus* have been shown to breed throughout the year with a peak in activity during spring.

Although *Leggadina* have survived two years in the presence of *Mus*, it is proposed to relocate some *Leggadina* to another island to ensure the survival of this species.

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Venue: Wildlife Research Centre
Ocean Reef Road
Woodvale

Time: 3.00pm

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SEMINAR

Thursday 15 December 1988

Biological survey of Yanchep National Park:
how is it useful?

Presented by Allan Burbidge

Major aims of this survey were to:
1) enable the conservation values of Yanchep National Park and the adjoining Ridges area to be placed in a regional context;
2) allow an assessment of management problems and priorities concerning the conservation values of the Park; and
3) provide as "benchmark" data for monitoring purposes.

Vegetation in the Park is fairly diverse in terms of structure and floristics, providing a good representation of the plant communities and species of the Swan Coastal Plain as well as including a number of rare species and unusual occurrences, but also including many weed species, due to past disturbance.

A number of bird and mammal species are now rare or locally extinct in the Park, but the reptile fauna appears intact.

Some difficulties were experienced in making an objective assessment of the regional importance of the Park, but these will be lessened as comparable data becomes available for other areas. Some difficulties will also be encountered in utilizing the available data set for monitoring purposes. Careful thought will be required from both managers and researchers in order to adequately assess priorities and success within our managememt programs.

Venue: Training Centre
CALM SOHQ
5Ø Hayman Road
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Time: 3.ØØpm

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Entry No: 020189I

SEMINAR

Friday 3 March 1989

Silviculture for Water Production in the Jarrah Forest

Presented by Geoff Stoneman

The development of new surface water sources to meet the growing demand for water of the Perth Metropolitan Area is becoming increasingly costly because most of the readily available surface water sources in the jarrah forest have been utilised. There is also growing concern that the Greenhouse Effect will significantly reduce streamflow from existing water supply catchments over the next 50 years. One method of increasing streamflow is to reduce the density of forest on the catchment areas.

Within the major Perth Metropolitan Water Supply catchments there are an estimated 1000km^2 of State forest suitable for thinning. The lowest of four indirect estimates of streamflow increase due to thinning indicates that reservoir inflows could be augmented by 49 per cent or 127 million m^3 yr^{-1}. Of this 48 million m^3 yr^{-1} could be harnessed by the present water supply system.

I will present the basis for these estimates and describe progress in transferring the research into forest management practice.

Venue: Seminar Room
Wildlife Research Centre
Ocean Reef Road
WOODVALE

Time: 3pm

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Research Centre Manager
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SEMINAR

THURSDAY 16 MARCH 1989

THE IMPLEMENTATION OF CALM'S FIRE POLICY

Presented by Roger Underwood

When CALM was being formed five years ago, one of the first fears was that the new Department would introduce inappropriate fire regimes in the State's national parks, nature reserves and forests.

A fire management policy was one of the first policies developed by the New Department. It is now widely accepted.

On the other hand, implementation of the policy, specifically the use of fire to reduce fuel levels in areas where there is a high wildfire threat, continues to be controversial. Decision making by CALM managers (will fire be used and if so how?) is the fundemental question.

I will look at how CALM's field managers use fire; the options which are considered; and the regimes adopted in the implementation of the fire policy.

I will also indicate the new developments which I think are likely to stem from complementary policy development, and from current research and operational trials.

Venue: Training Centre
CALM SOHQ
50 Hayman Road
Como

Time: 3.00pm

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SEMINAR

Friday 7 April 1989

Aero patch burning in the Gibson Desert Nature Reserve

Presented by Neil Burrows

Current fire management of desert conservation reserves in W.A. aims to recreate the fire induced diversity of vegetation that was likely to have existed for thousands of years during Aboriginal occupation. Since Aboriginal people abandoned a nomadic lifestyle, large areas of the landscape have been subjected to uniform fire disturbances; there are vast areas long unburnt and vast areas burnt uniformly.

In order to restore fire induced diversity on the large, remote and inaccessible reserves, the effectiveness of prescribed patch burning using aircraft ignition techniques was evaluated on the 1.89mill. ha Gibson Desert Nature Reserve. Fuel on a 75 000 ha trial area was initially classified on the basis of physiography and vegetation characteristics and mapped using Landsat imagery. Four major spinifex fuel types were recognised and measured using a wheelpoint transect technique. A fire behaviour model was developed from experimental fire. Prescription for burning patches on the spinifex plains using an aircraft were prepared on the basis of this model.

Aircraft burning was conducted in September 1988. Analysis of historical weather data from Giles revealed that the weather conditions best suited to the patch burn prescriptions were most likely to occur in September. Colour aerial photographs and Landsat imagery were used to evaluate the results of aircraft ignition. The technique proved to be highly successful and cost-effective for implementing patch burns. Of the 75 000 ha, flown, some 15% was burnt, with patches ranging from a few hectares to several thousand hectares. Most patches were less than 300 ha. Fire behaviour and patch sizes were within acceptable limits of predictions. The total cost of the operation was about $0.18/ha.

Venue: Wildlife Research Centre
Ocean Reef road
Woodvale

Time: 3.00pm

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SEMINAR

Thursday 20 April 1989

Equations for the Forest Fire Behaviour Tables for Western Australia

Presented by Judi Beck

Sneeuwjagt and Peet's forest fire behaviour tables for Western Australia are used to predict forest fire danger and as a guide to fire behaviour. This system provides for predictions for six forest types that are common throughout the southwest of the State. This work presents equations that have been derived from the data within these tables in conjunction with the bounds of the original research data and the bounds to which the tables have been extrapolated and applied successfully.

A new structure is presented for the methodology of the system to clarify and simplify its use. The equations and the prediction methodology presented provide a succinct and modular system that can be applied to automate the process of predicting fire danger or fire behaviour using a computer.

Venue
Training Centre
CALM SOHQ
50 Hayman Road
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Time: 3.00pm

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SEMINAR

Friday 5 May 1989

Species complexes, concepts and conservation in Western Australian spider orchids (Caladenia)

Presented by Dr Stephen Hopper

To preserve genetic diversity is one of four main objectives of the Western Australian State Conservation Strategy. This begs the questions of 'what is genetic diversity?' and 'how do we preserve it?' In practical terms, taxonomic descriptions will remain our primary means of identifying genetic diversity for the vast majority of organisms we want to conserve. In this seminar I wish to demonstrate the critical importance of seemingly academic and innocuous decisions taken by taxonomists on the wider activities of organisations such as CALM and of the volunteer conservation movement.

Western Australian spider orchids were first described by European botanists dealing with fragmentary dried specimens collected by explorers and interested naturalists. A typological approach was used, where species were recognised if they looked different enough (a matter very much in the eye of the beholder). This approach persisted until the 1970s, when a knowledge of fresh flowers and field observations was brought into the arena of taxonomic judgement. More recently, explicitly biological and population concepts have been applied to the taxonomy of these orchids. This has led from the interesting claim of one European botanist last century that Caladenia filamentosa, C. patersonii and C. dilatata are all one species, to my current view that each of these is a complex of many species.

The outcome of this philosophical shift in species concepts, combined with increasingly thorough exploration and collections, is that many rare and vulnerable species have been identified recently. The schedule of Declared Rare Flora had one Caladenia on it in 1980, four in 1981, 19 in 1987 and 18 in 1988. Two thirds of those now listed are unnamed members of species complexes. Many are the subject of active management programs within CALM, as well as attracting considerable interest in the national orchid fraternity.

Venue:Wildlife Research Centre
Ocean Reef Road
Woodvale

Time 3.00pm

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Entry No: 035889I

SEMINAR

Thursday 18 May 1989

The importance of Phytophthora in indigenous forests in Australia

Presented by Elaine Davison and Bryan Shearer

In 1965 Podger, Doepel and Zentmyer showed that jarrah dieback in Western Australia was associated with forests sites infested with the soil-borne, pathogenic fungus Phytophthora cinnamomi Since that time, particularly during the 1970s investigations of Phytophthora have dominated forest pathology in Australia.

Indigenous forests are managed primarily for timber production, water production and conservation. Soil infestation by Phytophthora has the potential to affect each of these. Effects on timber and water production can be quantified in monetary terms, effects on conservation, of course, cannot. We will present a review of published and unpublished data from State Government departments on the effects of Phytophthora on both commercial production and conservation values.

Venue: Training Centre
CALM SOHQ
50 Hayman Road
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Time: 3.00pm

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SEMINAR

Friday 2 June 1989

THE USE OF TRIANGLES FOR ASSESSING THE DENSITY OF PLANTS, ANIMALS AND LITTLE WRIGGLY THINGS

Presented by David Ward

Foresters were among the first biologists to grapple with the task of estimating the density of organisms, in their case trees. The initial approach was to count stems within fixed area plots or quadrats (Lowdermilk 1927). Ecologists adopted this method, but found some problems with it (Greig-Smith 1964). What size quadrat, how to place them? To avoid these problems plotless methods were developed (Cottam and Curtis 1949, Morisita 1954), but these have problems of statistical bias (Pielou 1959). Simple geometry leads us to a method based on triangles which seems to avoid these difficulties, whilst clearly relating distance, area and density. The method can be extended to three-dimensional densities, such as shoals of fish, or swarms of insects.

Venue: Wildlife Research Centre
Ocean Reef Road
Woodvale

Time: 3.00pm

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SEMINAR

Thursday 15 June 1989

The impact of Phytophthora cinnamomi in the Stirling Range National Park

Presented by Ray Wills

Field work to assess the effects of dieback on the plant communities of the Stirling Range were carried out between December 1988 and April 1989. During this time, 520 plant species were collected. The Myrtaceae and the Proteaceae were the two largest families in the study region. Of the 281 species examined for susceptibility to dieback, one third were recorded as being affected by the disease, with 30% of these highly sensitive to the pathogen. Species susceptibility paralleled species phylogeny with the result that some families had large numbers of susceptible species while others were apparently unaffected by the pathogen. Notably, 80% of proteaceous species assessed for susceptibility to dieback were at least partially affected by the disease. Proteaceous elements contributed substantially to projective foliage cover in healthy plant communities, but were less important at sites which had been invaded by dieback. In contrast, species which showed low levels of susceptibility to dieback, such as some monocotyledonous species, were found to have a greater relative abundance at diseased sites. Changes in the floristic structure of plant communities may influence the composition of associated animal communities.

While some areas of healthy vegetation still remain within the park, no one section of the Stirling Range is free from dieback. Despite having had knowledge of how the disease is dispersed for almost two decades, man is still the major vector of dieback. Education of land managers and researchers from all fields as well as the public is urgently required to prevent the further spread of the disease. Any under-estimate of the importance of this problem will ensure the loss of significant components of the flora and associated fauna of the south west of Western Australia.

Venue: Training Centre
CALM SOHQ
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Time 3.00pm

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SEMINAR

Friday 7 July 1989

Habitat preferences of Ground Parrots : implications for conservation

Presented by Allan Burbidge

The Ground Parrot has undergone a drastic decline in numbers and range in Western Australia but until recently, there have been few data available concerning the basic biology and habitat requirements of the species in this State. Recent work has shown that Western Australian Ground Parrots

1) are at much lower densities than in eastern Australia,
2) occur in species rich low heaths,
3) prefer long unburnt heaths; and
4) breed much earlier than was previously thought.

Only about six groups of birds are known - one in Cape Arid National Park and about five in Fitzgerald River National Park.

The major approach for management of Ground Parrots in W.A. at the present time must be one of total fire exclusion from known habitat. All areas known to be occupied by Ground Parrots should be managed primarily for this species.

Venue:
Wildlife Research Centre
Ocean Reef Road
WOODVALE

Time 3.00pm

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SEMINAR

Thursday 20 July 1989

Management of Australian Islands for Mammal Conservation

Prepared by Andrew A Burbidge and Ian Abbott

Seminar presented by Andrew Burbidge

At least 91 terrestrial indigenous mammal species (excluding bats) occurred on at least 198 Australian islands; 164 islands had populations of 70 species of Critical Weight Range (CWR, 35 to 5 500 g mean adult body weight) species. 39 island populations are locally extinct, while 23 introduced populations exist. Eight species now occur only on islands and 7 species that are endangered on the mainland have secure island populations. 190 islands, including 65 which have or had indigenous mammals, have populations of exotic mammals. An analysis of European-caused disturbances on W.A. islands showed that predators can eliminate CWR species under certain circumstances and that other disturbances have not caused declines or extinctions. The introduction of dingoes to islands by Aborigines in prehistoric times appears to have had a similar effect. The outcome of other disturbers can be tested with an accurate data base on mammals on Australian islands; such a data base is being developed and will be of value to both scientists developing conservation theory and techniques, and conservation policy makers and land managers.

Venue: Training Centre
CALM SOHQ
50 Hayman Road
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Time: 3.00pm

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SEMINAR

Friday 4 August 1989

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

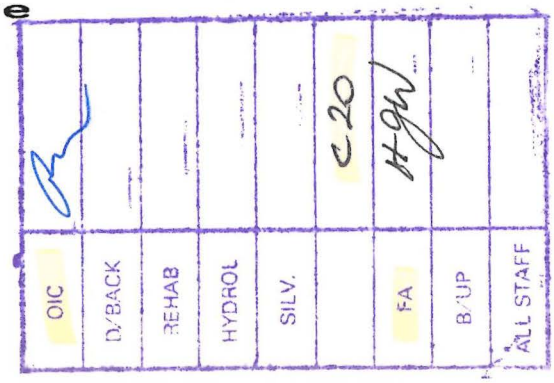
Presented by Grant Wardell-Johnson

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



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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 diseases 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 on 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 seedlings 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 trails 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 for Pc resistance in the jarrah population has now commenced in conjunction with the jarrah provenance trails being conducted by CALM.

In a collaborative project with Murdoch University, tissue-cultured jarrah plantlets produced from selected seedlings from our trials are being tested further. A field trial of some 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.

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Venue: Como SOHQ Training Centre
50 Hayman Road,
Como

Time: 3.00pm

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT

Please address all enquiries to:

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SEMINAR

FRIDAY 1 September 1989

FIRE STUDIES IN THE STIRLING RANGE NATIONAL PARK

Presented by Lachlan McCaw

Fire is a key management issue in the shrubland and heathland communities of south-western Australia due to the flammable nature of the vegetation and the characteristic mediterranean climate. The behaviour and ecological effects of fire are being investigated simultaneously in a study commenced at the Stirling Range National Park in 1989. This seminar will focus on studies of fire behaviour and vegetation response being undertaken by staff from the Manjimup Research Centre.

Fire behaviour will be monitored during a series (25 approx) of experimental fires conducted within 4 ha plots under a range of weather conditions. Fire variables to be monitored include fuel type and moisture content, forward rate of spread, flame characteristics and intensity. Techniques for measuring spread rate using electronic timers, and for measuring flame characteristics from stereo photo pairs have been specially developed for the study. Data will be used to examine relationships between fire behaviour and weather parameters, and to evaluate the applicability of existing fire behaviour guides. Greater understanding of fire behaviour in shrubland fuel types should lead to improved fire management planning and more reliable prescriptions for field application.

Vegetation responses to fire are being studied within the same plots used for fire behaviour experiments. This aspect of the work involves the assessment of species composition and vegetation structure before and after burning. More detailed studies of seed dynamics and post-fire recruitment are being undertaken for selected species. Post-fire responses of populations of small vertebrates and of some invertebrate groups is being examined by staff from Woodvale Research Centre.

Venue: Wildlife Research Centre
Ocean Reef Road
Woodvale

Time: 3.00pm

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Entry No: 065289I

11 SEP 1989

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SEMINAR

Thursday 21 September 1989

What Truly Counts Can't be Counted

Presented by Nicholas Lander

The introduction of performance indicators into scientific research is essentially pragmatic. It can be traced to a decline in the availability of financial resources together with ever-increasing demands for assessment of "performance" from within and outside institutions, and the development of more "qualitative" or "formal" tools for improving the quality of decision making in the management of science.

In order to meet these demands Government and the research community itself will increasingly require quite specific information on the research activities of institutions, and also on those of individuals. In the current climate of accountability the need for explicit and systematic evaluation of research performance by one means or another is inevitable.

How should the research performance of biologists like ourselves be assessed? What can we learn from the experiences of other scientists and academics and from the extensive and growing literature addressing this controversial issue?

This seminar will consider the most commonly applied indicators of research performance against the background of the Research Classification Scheme, Research Project and the Performance Indicators currently under development by the Commonwealth Department of Employment, Education and Training (DEET) for use in tertiary institutions.

Venue: *Time: 3.00pm*

Como SOHQ Training Centre

50 Hayman Road

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26 SEP 1989

Research Centre Manager
Dwellingup Research Centre
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Entry No: 068289 L

SEMINAR

Friday 6 October 1989

THE USE OF INVERTEBRATES TO MONITOR POST-MINING REHABILITATION SUCCESS

Presented by guest speaker : John Allan, Manager - Environment, Canning Resources Pty Ltd

At the end of a mining operation the mining company wishes to vacate the area as quickly as possible to minimise costs which cannot be set against the production of the mine. On the other hand the community, usually in the form of the relevant regulatory body, wishes to be assured that the abandoned area will not require ongoing maintenance to maintain its integrity. In order to satisfy both parties it is necessary to establish a clear and verifiable set of rehabilitation criteria, which once satisfied will define the point of legal 'mine abandonment'.

In order to assess compliance of a mining company with rehabilitation criteria it is necessary to determine whether the recreated ecosystem is self-sustaining, and will mature into the desired end product. Thus the two essential elements of the assessment procedure are that it has a sound ecological base and that it be capable of objective measurement.

In view of their dependence upon the physical and biological characteristics of their habitat, and also their great diversity, invertebrates may act as excellent indicators of environmental quality, or of the success of minesite rehabilitation. As a group, ants have a number of characteristics which make them suitable for the monitoring of rehabilitation success.

It is proposed to undertake a detailed study of the ant fauna of a proposed minesite in arid Australia, and to relate this to the development of criteria to assess rehabilitation success.

Venue:
Training Centre
CALM SOHQ
50 Hayman Road, Como

Time : 3.00pm

(Regular seminar attendees should note the changed venue for this presentation).

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SEMINAR

Friday 3 November 1989

Why Ducks Don't Mind Being Shot

Presented by Dr Stuart Halse

The results of duck-banding in the 1960s and 1970s have recently been analysed. Grey Teal and Pacific Black Duck have an annual adult survival rate of 65-70%. Juvenile survival is about 55% for Pacific Black Duck but much lower for Grey Teal.

Work in North America has shown that for many species of duck, shooting does not affect overall survival rates because shooting mortality is "compensated for" by a reduction in natural mortality. Data on shooting mortality of Pacific Black Duck and Grey Teal will be presented that suggest compensation occurs in these species so that shooting does not affect survival rates at the population level. It will be argued that, in view of the historical benefits for conservation of duck shooting, shooting should be seen as an activity that helps maintain population numbers rather than being a cause of decline.

Venue: Wildlife Research Centre
Ocean Reef Road
Woodvale

Time: 3.00 pm

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SEMINAR

Thursday 16 November 1989

A Fresh Look at the Classification of Australian Species of Helichrysum and Helipterum

presented by Paul Wilson

The Australian species of Everlastings or Immortelles are, for the most part, placed in *Helipterum* and *Helichrysum* (Asteraceae). The species on which these two genera were initially based are from South Africa (*Helipterum*) and Europe (*Helichrysum*). The Australian species differ considerably from those in South Africa and Europe and are certainly generically distinct.

Helichrysum and *Helipterum* are separated on the basis of the shape of their pappus bristles which are toothed in the former and feathery in the latter. This distinction has long been recognised as artificial and work is in progress to develop improved methods by which to classify the complex. With the use of a number of micro-characters, such as those found in the fruit, it has been possible to place the species in about 20 groups which are to be recognised as distinct genera; most of these genera already have names that were applied by early nineteenth century botanists in America, England, and Russia but which have long been ignored.

The study has shown that species in several other Australian genera have characters that overlap those found in the *Helichrysum* complex; these genera must also be considered in order that a satisfactory classification can be constructed.

Venue: Training Centre
CALM, SOHQ
50 Hayman Road
Como

Time 3.00pm

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29 NOV 1989

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SEMINAR

Entry No: 089289I

Friday 1 December 1989

THE BARROW ISLAND GREEN TURTLE ROOKERY

presented by Keith Morris

Most Green Turtle *(Chelonia mydas)* populations in the world are now regarded as depleted or endangered. Until recently little was known of marine turtle populations off the north-west coast of WA. The Green Turtle rookery on Barrow Island was investigated as part of an ongoing study into the distribution and reproductive biology of marine turtles in WA.

Barrow Island probably supports one of the largest rookeries in the world, and annual breeding population numbers do not appear to fluctuate as they do elsewhere. Commercial exploitation of turtles 20 to 40 years ago has not affected present breeding populations. Barrow Island Green Turtles are smaller and lay fewer eggs per clutch than eastern Australian populations. Over 1500 turtles have been tagged, however only one has been recaptured, and none have yet been found to return to the island. The ongoing tagging program will clarify movement patterns of Barrow Island turtles and the importance of this rookery for the conservation of this species. Information gained from this study has also been useful in the setting of guidelines for the environmental management of commercial developments on north-west islands.

This seminar will be followed by a 20 minute WAPET produced video on Barrow Island.

VENUE:
Wildlife Research Centre
Ocean Reef Road
WOODVALE

TIME;
3.00PM

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C 20

RESEARCH DIVISION SEMINAR SERIES

January - June 1990

The CALM Research Division Seminar Series will commence on 15 February 1990. The seminars provide a forum at which scientists and interested persons both within and outside CALM can meet informally to discuss research within CALM. The seminars scheduled for the first half of 1990 are listed below:

Please note that all seminars start at 3.00pm.

Venues are the Training centre, CALM State Operations Headquarter, 50 Hayman Road, Como - for THURSDAY seminars; and

Wildlife Research Centre, Ocean Reef Road, Woodvale - for FRIDAY seminars.

Date	Speaker	Venue	Title
15 February	John Bartle & NAP Team	Como	NAP Project Review: Integration of pulp cropping trees into farming systems
2 March	Kevin Kenneally	Woodvale	Kimberley research using volunteers
15 March	Greg Keighery	Como	Western Weeds
6 April	Jim Stoddart	Woodvale	Fact vs fantasy in conservation genetics : a fishy example
19 April	Brett Glossop	Como	Seasoning regrowth Eucalypts
4 May	Tony Friend	Woodvale	Mammal re-introductions : a WA perspective
17 May	David Pearson	Como	Is fire necessary for desert lizard communities?
1 June	Norm McKenzie	Woodvale	Kimberley rainforest communities
21 June	Mathew Williams and Ian Abbott	Como	What is the best measure of average damage caused by insect and fungi to leaves? and Impact of pest populations of Gumleaf Skeletonizer and Jarrah Leafminer on other invertebrates living in jarrah foliage

Note: Please check the abstracts that are circulated prior to the seminars for any variation to this program. A timetable for July to December seminars is being formulated and will be circulated in due course.

Any enquiries should be directed to Jeanette Gilmour on (09)405 5105

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05 FEB 1990

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SEMINAR

Thursday 15 February

NAP Project Review : Integration of pulp cropping trees into farmland systems.

Presented by

John Bartle : Principal Research Scientist (Special Projects)
Gavin Ellis : NAP project forester
Richard Silberstein : NAP project hydrologist
Bruce Mattinson : NAP project economist

The Commonwealth Government set up the National Afforestation Program (NAP) in 87/88 to stimulate increased investment in timber production on farmland. It is envisaged that timber production on farmland will reduce the pressure on native forests and provide a productive option for land rehabilitation.

CALM in conjunction with The Department of Agriculture and Western Australian Water Authority gained a grant of $1.2 m extending over three planting seasons (88, 89 & 90) for a project with the title "Demonstration of the integration of short-rotation eucalypts into agricultural systems in the SW of WA".

The project has become the major force in the technical and economic development of integrated pulpwood eucalypts/conventional agriculture farming systems. These systems offer real promise to extensively treat problems of land and water degradation while also improving farm profitability. The project has several parts:

- to develop and demonstrate improved establishment and management practices for short-rotation eucalypts in farmland. Gavin Ellis will review this aspect of the project.
- to develop optimum distribution patterns of tree crops, conventional agriculture, and to evaluate and demonstrate their hydrological performance. Richard Silberstein will present this section.
- to develop and present integrated tree crop/agriculture options to farmers in understandable economic terms. Bruce Mattinson will present this aspect.

John Bartle will introduce the seminar.

Venue:
Training Centre
CALM SOHQ
50 Hayman Rd
Como

Time: 3.00 pm

Lobby file.
JC.

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT

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SEMINAR

Friday 2 March 1990

Community Involvement : The Role of Amateurs in Kimberley Natural History Data

Presented by

Kevin Kenneally

Western Australia's northernmost region, the Kimberley covers 302 580 square kilometres, more than four times the size of Tasmania. It is remote, difficult to access and expensive to conduct field work. Also, the main flush of growth and flowering comes with the 'wet'; but this is also the season when much of the country becomes impassible by road.

The Kimberley has a resident population of only 25 000 people but this is boosted by tourism during the dry when some 250 000 visitors arrive annually. In Broome the revenue from tourists alone is estimated at $80 million a year. The majority of these visitors come to see the "natural wonders" of the Kimberley and seek information on the flora and fauna. For many areas this is not available. At the same time the Kimberley is one of the fastest developing areas in northern Australia with the population of Broome doubling to 8 000 in the last decade and a resergence in mining. All of these developments impact on the natural environment and require the gathering of information to assess that long term conservation requirements are met.

This is where resident naturalists can plan an important role in data gathering. In addition an innovative scheme where voluntary assistants pay to participate in Kimberley field trips has been operating for the last six years. Information gained from these trips has been used in major CALM research projects.

The seminar will illustrate areas visited and the rationale for choosing areas to be surveyed.

Venue:
Wildlife Research Centre
Ocean Reef Road
Woodvale

Time: 3.00 pm

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12 MAR 1990

Entry No: 016790 I

SEMINAR

Thursday 15 March 1990

WESTERN WEEDS

Presented by Greg Keighery

Western Australia has a vascular plant flora of *c* 8,300 species, of these, approximately 850 are naturalized aliens (10%). This is still low in comparison to New Zealand (*c* 50%) or even the long settled and disturbed Perth Region (27% of flora).

Of these species 447 have been recorded as occurring in bushland areas, or on the CALM estate. This number can be expected to rise, as further surveys are undertaken (ie : 126 species were recorded from *Banksia* woodlands on the Swan Coastal Plain).

Current weed surveys are being concentrated on vegetation communities in bushland remnants of the Swan Coastal Plain (viz: Tuart woodland with Patrick Piggott; John Forrest National Park and Bold Park).

Provision of advice (to APB and Operations), co-operative ventures (eg : slide catalogue, weed records : Herbarium), handling of biological control responses (with John Blyth) for ANPWS and correspondence with the CONCOM weeds working group are current major activities.

Aspects of these activities will be considered during the seminar.

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ALL STAFF	Lobby

Venue:

Training Centre
CALM SOHQ
50 Hayman Road
Como

Time 3.00pm

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Entry No: 023290I

SEMINAR

Friday 6 April 1990

FACT VERSUS FANTASY IN CONSERVATION GENETICS; A FISHY EXAMPLE

Presented by Dr Jim Stoddart

Population genetic theory is well developed with respect to estimating such things as population size, population subdivision and the rate of migration; although the mathematics of this depend on a number of assumptions which bear varying degrees of similarity to the real world. Unfortunately, the recent extension of this work past its numerical implications for population dynamics and into the murkier waters of conservation genetics is often fraught with subjective judgements based on jargon which has no theoretical basis. Current needs for conservation often obscure our understanding of evolutinary processes and produce unreal notions of the degree of stasis within gene pools.

A current move in many Australian States to extend the results of electrophoretic studies of barramundi, showing a well developed stock structure between river systems, into regulations which prohibit the movement of fish between rivers in an example of the above phenomenon. Within barramundi, genetic differences between stocks have been demonstrated only for populations, not for individual fish; it is the proportion of various genes present that differs bettween rivers, not the actual genes. Experimental studies of other fish species suggest that the few life history differences reported between barramundi stocks are unlikely to have a genetic basis. I conclude that there is no direct evidence to suggest that mixing gene pools per se will have deleterious effect.

Restocking programs based on current methods of hatchery-produced fry, which do not employ genetically-based breeding programs, should be discarded. Current hatcher techniques use such an inappropriately low number of broodstock that fingerlings are likely to bear little relationship to any wild gene pool. Further, under pressure from fishin and environmental modification, it is unlikely that barramundi gene pools have been, or will remain, static entities. Agents of change such as these are likely to be the beam in eye while we chase the mote of mixing stocks.

Venue:

Wildlife Research Centre
Ocean Reef Road
Woodvale

Time: 3.00pm

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT

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SEMINAR

Thursday 19 April 1990

"Seasoning of Eucalypts" - a change from art to science?

Presented by Brett Glossop

Timber seasoning or drying research is a convergence of differently qualified people using a variety of approaches. Foresters tend to use empirical methods while keeping alert to silvicultural and operational influences. Biologists favour the analytical method and drying theories of an antomical basis. This contrasts with those of engineering background who utilize diffusion and stress laws to develop deterministic models. All these approaches have provided valuable drying knowledge.

The good timber dryer "in the field" finds it necessary to use knowledge developed by all of the above researchers plus a generous amount of expert like skill.

I will outline the basics of timber drying and the problems one may encounter, such as collapse, cracking and unwanted movement.

Current research techniques include the use of chemical wetting agents, radioisotopes to determine moisture content, measurement of stress and utilization of computer controlled drying kilns. I will discuss these techniques and others, particularly those used at W.U.R.C. Harvey.

All this will lead to faster, more reliable schedules to dry a greater variety of timber species. I may even create new forest products from wood currently wasted.

Venue: Training Centre *Time: 3.00pm*

CALM
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50 Hayman Road

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SEMINAR

Thursday 17 May 1990

IS FIRE NECESSARY FOR DESERT LIZARD ASSEMBLAGES?

Presented by David Pearson

The patch of mosaic-burning of spinifex grasslands has been widely touted as a desirable approach to the management of these areas for nature conservation. There is evidence that some "critical weight range" mammals may require the variety of seral plant communities that mosaic-burning promotes. However, for most of the spinifex biota, the benefits or otherwise of mosaic-burning are unknown.

In the nature reserves of the Great Victoria Desert there are few, if any, critical-weight mammals remaining. The management of these areas by mosaic-burning needs to be carefully evaluated to determine whether intervention in the current fire regime is beneficial for the existing biota.

The diversity of lizards in Australian deserts is exceptional, with up to 40 species co-existing in spinifex grassland. They are an important and conspicuous part of the desert biota and their relatively high abundance makes them an ideal group to study the impact of fire. This seminar reports on three years of research in Queen Victoria Spring Nature Reserve. Areas of spinifex grassland were subjected "mild" September and hot January fires. The response of lizards was monitored by mark-recapture trapping.

Mortality of some species was high during the fires and probably immediately afterwards. A pronounced species succession occurs post-fire and there is some evidence of niche switching amongst generalist species. In the absence of fire some lizard species are only present at very low densities.

Venue:Training Centre
CALM
SOHQ
50 Hayman Road Como

Time 3.00pm

22/5/90

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DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT

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S E M I N A R

Friday 1 June 1990

KIMBERLEY RAIN FORESTS

Presented by Norm McKenzie

A familiarisation with the rainforests patches scattered across the region. How many are there? Where do they occur? How big are they? What lives in them? What is happening to them?

Venue

Wildlife research Centre
Ocean Reef Road
Woodvale

Time

3.00pm

C20

LOBBY

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SEMINAR

Thursday 21 June 1990

What is the best measure of average damage caused by insect and fungi to leaves?

Presented by Mathew Williams

The average damage caused by insects and fungi to leaves can be calculated in a number of ways. Comparison of the two methods used in the literature showed that one was systematically biased: many authors had apparently fallen into the "fallacy of averages".

The fallacy of averages is discussed, and the correct method is given for calculating an average based on a set of samples of differing size.

Impact of pest populations of Gumleaf Skeletonizer and Jarrah Leafminer on other invertebrates living in jarrah foliage.

Presented by Ian Abbott

One of the most vexatious problems in forest entomology is determining the most efficient method of sampling the arthropod fauna of tree crowns. The various trade-offs in time, labour, money and safety are discussed in relation to the size of the catch and the accuracy of mean estimates.

The data collected are used to examine the impact of the two major defoliators of jarrah forest on other co-occurring invertebrates.

The prediction tested was that abundance/biomass/species richness of most invertebrate taxa would be inversely related to density/biomass of the two pest insect populations. The data do not support this prediction.

Possible reasons will be outlined.

Venue

Training Centre
CALM SOHQ
50 Hayman Road COMO

Time: 3.00pm

25-6-90

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SEMINAR

Friday 6 July

Regeneration strategies of vascular plants after disturbance

by Angas Hopkins

Increasing attention is being given to development of classification schemes based on ecological or functional characteristics. These will complement taxonomic classifications whilst facilitating ecological studies and management.

This talk will outline a classification scheme for vascular plant species which is based on mode and rate of regeneration after disturbance such as fire. The scheme has been used at a number of sites mainly in the species-rich shrublands.

The discussion will provide the opportunity to canvass approaches to classifications that relate to other functionally-important ecosystem components.

Venue **Time: 3.00pm**

Western Australian Wildlife Research Centre
Ocean Reef Road
WOODVALE

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Thursday 19th July

THE EFFICIENCY OF THE REMNANT VEGETATION PROTECTION SCHEME: CORRECT ASSESSMENT OF DEGRADED BUSHLAND IS SIGNIFICANT

Presented by Patrick Pigott

The Remnant Vegetation Protection Scheme (RVPS) is a 3 year State Government initiative, encouraging farmers to protect their bushland from stock grazing, by subsidizing the cost of fencing their farm remnants and entering into a 30 year conservation covenant. Inhouse software (VEGRANK) is used by CALM to rank nominations for fencing subsidies after 3 levels of assessing the size, vegetation type and condition of the remnant. During 1989, the first year of the scheme, 7855 ha of remnant vegetation was fenced on 110 farms in the agricultural areas of WA.

To assess the efficacy of the scheme, a random sample of 12% of applications were selected for audit. These bushland remnants were visited and reassessed by research staff and then reranked using VEGRANK. The rank, area of degradation and types of vegetation, were different in a significant number of the remnants studied. The reasons for and implications of this are discussed in the context of the schemes aims and budget.

Venue:Training Centre
CALM SOHQ
50 Hayman Road
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Time: 3.00pm.