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Australasian Wildlife Management Newsletter

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Dubbo here we come

It doesn't seem like almost a year has past since the last AWMS conference in spectacular Queenstown. But yes folks, it's conference time again and this years instalment will be held in the lovely city of Dubbo in New South Wales between the 3rd and 5th of December.

All members of the Society and others with an interest in this area are invited to participate. NSW National Parks and Wildlife Service, Western Directorate, is a major sponsor for this conference.

Symposium 1. Threatened Species Management.

Chair: *Robyn Molsher*
Email: robyn.molsher@npws.nsw.gov.au

Symposium 2. Clearing and fragmentation effects on native and introduced fauna.

Chair: *Joshua Gilroy*
Email: joshua.gilroy@npws.nsw.gov.au

Symposium 3. Wetland Management.

Chair: *Terry Korn*
Email: cathy.vandermaal@npws.nsw.gov.au

Open Sessions

Chair: *Liz Mazzer*
Email: liz.mazzer@npws.nsw.gov.au

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New Newsletter Format—Do you like it?

The electronic age is upon us and we would like AWMS members to decide whether they are in favour of electronic delivery of the new letter. This edition of the newsletter has been sent to you electronically so that you can offer suggestions/comments prior to the Dubbo AGM.

If members like electronic delivery, future editions of the newsletter will be emailed as PDF format. I assume most people have Adobe Acrobat Reader on their computers, if not it can be downloaded for free from <http://www.adobe.com/products/acrobat/readstep.html>

Some members will obviously need to be sent copies if they are not on email, but in general we are hoping most members like this format.

Advantages.

- Cheaper for AWMS to produce (no printing and mailing costs)
- Can be sent more frequently (information will be more up to date)
- The newsletter will be in colour

Disadvantages

- You won't get a copy in the mail
- May take time to download (but it will arrive close to time of completion)



**Proceedings of the 12th
Australasian Vertebrate Pest
Conference held in Melbourne
May 21 - 25 2001.**



**Copies available for
\$A30.00 including
postage.**

**To request your copy contact: David
Fairbridge, Vertebrate Pest Research
Department, Victorian Institute of Animal
Science PO Box 48 Frankston 3199. PH
(03) 97850146 o remail david.
fairbridge@nre.vic.gov.au**

Greetings from the editor

I send my greetings for the last time as Editor. John White will be filling my shoes from now onwards, and it is he who has designed this new wide eye-catching format. Please forward your comments should you have suggestions or comments on the new system and its suitability for your purposes. Saving the paper that we use to print the newsletters in the past would have to be a benefit that is support.

I would first like to thank the various Committees that I have been associated with over the past four years for their support and input, particularly the Presidents for continuing to provide the first impression article for each edition of the newsletter. I would like to thank all the members who submitted articles to the Newsletter in my time as Editor, particularly the unsolicited ones – you made my job that much easier. I would also like to thank the University of New England Printery for the services they have provided over that time. Last but not least, I would like to thank my co-editors – John Seebeck and John Parkes (interesting how this newsletter attracts those named John) for their support and assistance in the preparation of each edition.

It has been an interesting and mostly enjoyable experience and I offer my sincerest hopes that John (White) enjoys it as much as I have done. I look forward to seeing you at the Conference in Dubbo.

Happy Reading (& farewell)!

Sally Radford
Newsletter Editor

**Thank You Sally for
your great work as
Newsletter editor,
and good luck in the
future. Now go and
write that PhD!!**

Genetic Modification – a very sensitive issue

Last June, AWMS was spectacularly unsuccessful in trying to have an issues debate, via the list server, on biotech control through genetic manipulation. While there have been several papers presented at recent conferences both for and against aspects of this, there has been insufficient time to appropriately debate the issue. The AWMS committee thought it would be timely to try and provide a forum to be able to discuss the issues, but only a handful of responses were ever posted. We also tried to organise a debate at the conference in Dubbo, and this was looking good but we have had to cancel this as well. I don't think we were being naïve and we

certainly were not out to cause trouble – something to discuss further at the AGM.

The New Zealand government recently announced their response to the Royal Commission that was held on Genetic Modification. The government has largely adopted the recommendations from the commission, and is proceeding with caution. There will be a legislated two-year constraint period during which time no applications can be lodged for release of GMOs, except those that provided direct benefits to human or animal health. However, contained field trials under strict conditions will be allowed. A Bioethics Council will be established to advise, provide guidelines and promote dialogue on the cultural, ethical and spiritual issues associated with biotechnology. A biotechnology strategy will also be developed, with a mechanism to ensure ongoing balance between benefits and risks.

The GM debate brought out the best and worst of both sides. At some meetings, I cringed at the arrogance and shallowness of the statements made by some of the scientists – but on the other hand, I was equally disappointed at the scare mongering from some of the proponents on the other side. Personally (& it is a very personal issue), I think the NZ government has got it right. Some scientists may complain at the layers of bureaucracy, time and cost involved in any application – but there is obviously a lot of disquiet and lack of trust out there. Something for us all to work on.

Elaine Murphy
AWMS President

Book Review

Feral Future - The untold story of Australia's exotic invaders by Tim Low. 1999.

Viking Penguin books, Ringwood, Australia 380p. RRP \$19.00

Review by Tom Montague (tmontague@bigpond.com)

This book is a gem box full of little pearls of information for anyone interested in invasion biology, biosecurity and conservation. It's an interesting, worrying, but easy read about how exotic animals and apparently humble garden plants are changing the face of Australia.

It takes Eric Roll's 1966 classic 'Theyal Iran wild' several steps further by updating information on Australia's peststo include recent records of insect and plant invaders and even ferals below the waterline. With guppies, gambusia, guava and stemmates of greater than 2000 exotic insects now living wild in Australia it's hard to see how our land will ever be the same again. Low looks at biocontrol, there's a chapter on cats titled 'Scoundrels or Scapegoats' and a chapter on Australians behaving badly abroad.

After 38 chapters there are some closing remarks on Quarantine and 7 pages on what to do. If you haven't slashed your wrists after reading most of the book, and can manage it, have a look at the Appendices as they contain useful lists of the known weeds and pests. No doubt there's plenty not listed.

This is a thoughtful but saddening book that serves to highlight our carelessness and what some call the beginning of the homogenocene.

Announcement of the 2001 Annual General Meeting of AWMS

Notice of AGM.

The 2001 Annual General Meeting of AWMS will be held at the end of the first day of the AWMS conference in Dubbo. The current committee looks forward to seeing you all at the AGM, as well as at the rest of the conference.

Date: Monday Dec 3rd 2001
Time: 5-6pm
Venue: Civic Centre Dubbo.

Proxy forms are available from the Secretary (and will be available from our website), any enquiries to norc@landcare.cri.nz

Nomination of committee members

Remember ALL committee positions are open for re-election. We currently have no nominations for Vice president and one ordinary committee member.

Special resolutions to be proposed at AGM

The current committee intend to propose four special resolutions at the AGM. These are procedural changes to the Committee's rules with the overall aim of ensuring the AWMS 'rulebook' (its constitution) is workable in practice. Details of the proposed special resolutions follow. They concern:

- Inclusion of the immediate past president on the AWMS Committee.
- Procedure for becoming a member of AWMS
- Meetings by phone, video or internet conference and sending notices by email.
- Meeting notices and committee nominations

Explanatory note: Special resolution 1: Immediate past president

The 2000 AGM endorsed a proposal to include the immediate past president of AWMS as a member of the Management Committee, to provide some continuity in leadership. This special resolution seeks to amend the constitution accordingly.

Special resolution 1: Immediate past president:

In Section 12 (Constitution and membership) replace Paragraph (1) with the following:

"(1) The committee shall consist of -
 (a) the office-bearers of the association; and
 (b) the immediate past president of the association, and
 (b) 2 ordinary committee members;
 each of whom shall be elected pursuant to rule 13 or appointed in accordance with subrule (4), other than the immediate past president who shall be the person who held the office of president prior to the election of the incumbent president."

Explanatory note: Special resolution 2: Membership qualifications

The current constitution requires that a person who wants to join AWMS is nominated by another member, and their application then needs to be approved by the committee. After approval, the person then forwards their membership dues. However, this is not a very efficient or workable system - approval is delayed until the next committee

meeting and double handling is needed to secure repayment of dues.

This special resolution seeks to change the rules to bring in a more workable system. That is, a person applies to be a member, and forwards their membership fees with their application. They are accepted as a member unless the committee disallows membership which it may do at its next meeting if it has reason to believe the membership would be prejudicial to AWMS aims. In that case membership dues are refunded.

Special resolution 2: Membership qualifications

A) Replace Paragraph (b) in Section 2 of the constitution with the following section:

"(b) the person -
 (i) applies for membership in accordance with subrule 3(1); and
 (ii) is not disallowed as a member by a resolution of the committee of the association under Rule (3) Subrule (5)."

B) Replace Section 3 of the constitution with the following Section:

"3 Applications for membership

- (1) An application for membership of the association -
 (a) shall be made by the person applying in writing in the application form set out in Appendix 1 to these rules;
 (b) shall be lodged with the treasurer or other committee member whose name and address appears on the application form; and
 (c) shall be accompanied by the sum payable under these rules as the entrance fee and the first year's annual subscription.
- (2) The treasurer or other committee member whose name appears on the application form shall forward the application form to the membership secretary as soon as practicable after it is received.
- (3) The membership secretary shall enter the applicant's name in the register of members and, upon the name being so entered, the nominee shall become a member of the association, subject to subrule (5).
- (4) At each meeting of the committee, the membership secretary shall notify the committee of the names of the new members, being people admitted to membership of the association since the last meeting of the committee.
- (5) The committee may pass a motion of disallowance in relation to any new member where the committee has reason to believe that the person's membership would be prejudicial to the objects of the association.
- (6) Where a person's membership is disallowed under subrule (5), the treasurer shall forthwith refund in full the monies paid by that person under subrule (1)(c)."

Explanatory note: Special resolution 3: Meeting formats

Several changes to the constitution are proposed to allow the committee and AWMS generally to meet other than in a face-to-face format. It has been the practice of the committee to meet by phone conference. There may also be occasions where a telephone conference or internet conference is the most effective way for a general meeting to be held. These amendments clarify the constitutional validity of these meeting formats. They also include some safeguards about notification to ensure people with a right to attend such meetings are not excluded; and clarification of how people 'vote' at telephone and internet meetings.

Special resolution 3: Meeting formats

A) Add the following words to the end of Section 18 (Committee Meetings), Paragraph (1):

"and may meet by telephone, video or internet conference."

B) Add the following new Paragraph to the end of Section 18

(Committee Meetings):

"(9) Where a meeting is convened by telephone, video or internet conference, a committee member must notify the secretary at least 24 hours prior to the start of the meeting that they expect to be in attendance and the secretary must make all reasonable arrangements for the member to access the meeting."

C) Add the following new Paragraph to the end of Section 23 (General Meetings -calling of)

"(6) A general meeting may be convened in the form of a telephone, video or internet conference.

(7) Where a general meeting is convened by telephone, video or internet conference, a member must notify the secretary at least 24 hours prior to the start of the meeting that they expect to be in attendance and the secretary must make all reasonable arrangements for the member to access the meeting."

D) Add the following paragraph after Paragraph (1) in Section 28 (Making of decisions), and renumber the following paragraphs so that current paragraph (2) becomes (3) and (3) becomes (4).

"(2) A reference to a show of hands in subrule (1) shall be taken to mean an oral expression of assent or dissent to the question in the case of a meeting that is held by telephone conference, and it shall be taken to mean a written expression of assent or dissent to the question in the case of a meeting that is held by internet conference and where video or audio facilities are not in use."

Explanatory note: Special Resolution 4: Meeting Notices and Committee Nominations

These amendments provide for meeting notices to be sent by email where a member has provided an email address to the membership secretary, and also allow for nominations for committee membership to be submitted by email.

Special Resolution 4: Meeting Notices and Committee Nominations

A) In Section 13 (Election of Committee members) replace Paragraph 1 (a) with the following wording:

"shall be made in writing, or by email, by 2 members of the association and with the consent of the candidate; and"

B) In Section 24 (Notice), Paragraph (1), add the following words after the words "register of members" (in mid paragraph):

"or by email to a member's email address appearing in the register of members,"

C) Add the following words at the end of Section 37 (Service of Notices), Paragraph (1):

"or by sending it by email to the member at the member's email"

By-line for AWMS—Suggestions?

The AWMS committee has been trying to come up with a by-line which summarizes what we are about. A number of suggestions have been made and we would like everyone to have some input by either suggesting more options or selecting a preference from the list below. We will discuss the suggestions at the AGM.

The ideas we have so far

- 'Advancing new concepts in wildlife management'
- 'Facilitating information exchange and debate'
- 'Wildlife management through scientific endeavour'
- 'Scientific principles for wildlife management'
- 'Promoting an understanding of wildlife management'

- 'Practical applications from scientific solutions'
- 'Improving the understanding and practice of wildlife management'
- 'Facilitating the better understanding and practice of wildlife management'
- 'Building and promoting the wildlife management profession'
- 'Understanding and managing our wildlife'
- 'Advancing understanding about wildlife management'
- 'Applying Science to the Management of Wildlife'
- 'Meeting the challenges of Wildlife Management.'
- 'Advancing wildlife management'
- 'Wildlife Management in Theory and Practice'

Research investment on exotic mammals in New Zealand

John Parkes
Landcare Research, New Zealand

The Vertebrate Pest Committee is a sub-committee of a standing Ministerial committee on agriculture and resource management. The sub-committee comprises representatives from Australian State, Territory, and Federal agencies involved with pest management, plus New Zealand. In 2000, they asked John Parkes to summarize what was spent on research on exotic pests in Australia and New Zealand. This was not possible for Australian research, as there is no completed database of what research is done and no common currency to judge how much is invested. Some agencies record only the operating costs of research, others operating costs plus direct salary costs, and yet others the full costs with appropriate overheads. However, most agency research in New Zealand accounts for these full costs and there were accessible databases of research projects available.

In total in 2000/01, New Zealand invested NZ\$14 million in research on exotic mammalsto support an annual expenditure (at least by the main government agencies) of perhaps \$60 million dollars and an unknown private expenditure. The Central Government agency, the Foundation for Research, Science and Technology was the main funding agency, followed by two departments (MAF and the Department of Conservation), and the Animal Health Board which is partly government funded and partly funded by levies on farmers interested in controlling bovine Tb. Most of the research was done by the two Crown research Institutes (Landcare Research and Ag Research), and by their house scientists in DOC.

There were some interesting results in how this research budget was divided between the pest species and between the types of research. Broken down by mammal species, the ranking for research dollars was possums (71%), stoats (9%), rodents, mostly shiprats (7%), ferrets (6%), rabbits (3%), and all the other 23 species (4%). The focus on possums must be because of their role as the primary vector of bovine TB rather than their role as a conservation pest – significant though this latter may be.

Broken down by the type of research, most of the investment (61%) was spent on "better mouse traps". The new high technology fields of reproductive control (nearly all for possums in

New Zealand) and vaccines for wild vectors of Tb plus their search underpin these potential control tactics accounted for 49% of the total investment. This was a surprise (at least to me) and has some implications for the future. The technologies have a risk of technical failure, and in New Zealand the GMO components have a risk of political failure. However, Government has recently approved policy and is developing legislation to allow for the cautious ongoing development and testing of GMOs in New Zealand, but with a decision point for any field use of the technologies delayed for two years. Despite these uncertainties the new technologies promise large rewards.

The investment in the new technologies is of necessity a long-term and at least partly precludes other research options. This of course is only a problem if the new technologies fail completely or fail to deliver more than would have been engaged by investing in the more traditional areas of pest research. Time will tell.

Studies on the ecology of pests accounted for 9% of the total investment, on the impacts (3%), and on adverse consequences of control (3%). Interestingly, more strategic research (i.e., underpinning decisions on how, when, where to apply control) accounts for 10% of the total and is probably growing.

Of course the difficult question we have yet to address is whether this balance of species and research type is optimal to achieve New Zealand's long-term biodiversity and animal health goals, whether the apparent distortions are a problem that has arisen by the *ad hoc* evolution of the research portfolio, and if so, whether we can do anything about it via the various instruments responsible for research investments and strategies.

Interested in the environment, conservation and biotechnology?

The Cooperative Research Centre for the Biological Control of Pest Animals is looking to fund postgraduate students to join our premier research group. We are a national organisation that develops new technologies and approaches to reduce the devastating environmental and economic impacts of pest animals.

Some of the projects now available include:

- The impact of foxes on marsupial populations in eastern Australia
- Rabbit control to improve sustainable grain and grazing production
- Biotechnology to control the effect of stoats on kiwis

Many other projects aim to develop biological controls for vertebrate pest animals including foxes, mice, rabbits, feral pigs, rats in SE Asia and Brandt's vole in China.

For postgraduate students who have an Australian Postgraduate Award or another postgraduate scholarship we give an **annual top-up** of \$5000. The Centre has industry partners that have **fully funded postgraduate scholarships** for particular projects. For all of our postgraduate students we also provide \$5000 per year contribution to **operating costs**. These funds may be used, at a supervisor's discretion, for laboratory costs, field trips, travel or conference attendance.

For more information please contact Dr Barbara van Leeuwen, our Education Program Manager (Barbara.vanLeeuwen@anu.edu.au), or Dr Tony Peacock, our Chief Executive Officer (Tony.Peacock@pestanimal.crc.org.au).

Photo Caption Competition

A new and hopefully fun addition to the AWMS newsletter will be a photo caption competition. The success of such a competition will be somewhat dependent on the provision of interesting photos from AWMS members.

The Rules:

In each edition of the AWMS newsletter, readers will be provided with an interesting image of AWMS members "working hard". Your challenge is to provide a witty caption which summarizes the picture. All entries will be added to a list and voted on by the AWMS council. The winning entry will be featured in the next edition of the Newsletter. Hopefully we can negotiate to have some prizes for the year's winners at the conference dinner.

Entries for the competition can be sent to John White at jwhite@deakin.edu.au.

Photos:

Do you have a photo that maybe appropriate for this section? Why not send it in?

If possible scanned images in JPEG or TIFF format would be appreciated. These images can then be manipulated for clarity and inserted into the newsletter.

If you have a scanned image please send it to John White (jwhite@deakin.edu.au) with a brief description of who is in the photo and where it may have been taken.

The First Instalment:

The first picture has been provided by Mike Braysher depicting Dave Choquenot, Cheryl O'Connor and Arthur Georges enjoying a "quiet" moment. If you have a caption for this picture please send it in.



8th International Theriological Congress Sun City, South Africa. August 2001

Contributors:

Andrea Byrom, Phil Cowan, Murray Efford, John Parkes, Dave Ramsey, Deb Wilson

Introduction

Every 4 years, the International Theriological Committee, along with the American Society of Mammalogists, organises an international congress to enable mammalogists from around the world to meet, discuss and hear about the latest research on mammals. This report summarises attendance at the 8th ITC in South Africa in August 2001 by six of us from Landcare Research, New Zealand.

With six concurrent symposia spanning a wider range of topics of interest to mammalogists, it was not possible to cover all that was on offer at the conference. Instead in this report we highlight talks and/or posters that each of us found to be of interest or relevance. In addition, a copy of the abstracts booklet is available in the Landcare Research library at Lincoln. We also report on useful contacts made.

As with many large international conferences, personal contacts and discussions were probably the greatest benefit. Most of the conference talks were only 15 min including questions, which severely limits what could be presented. The various symposia were also quite variable, in the amount of effort that the organisers had put into organization, in the allocation of time to them (eg. large mammals as neuroendocrinology models got 1.5 days, linking foraging decisions of mammalian herbivores got about 0.6 days), and in the quality of the presentations.

The next ITC will be held in Japan in 2005.

Highlights of talks and posters

PLENARY PAPERS

Humans are mammals: the changing face of human evolution in Africa

Each morning of the conference opened with an hour-long plenary session. The first plenary paper was presented by **Lee Berger** (University of Witwatersrand, Johannesburg, South Africa), who presented a fascinating overview of the latest research on evolution of humans in Africa. He emphasised that the hominid fossil record is "one of the best for any mammal in Africa" and reminded the audience that this fossil record has allowed researchers to examine the complexities of human evolution in detail. He presented some interesting details of human migrations, not only *out of* Africa, but also *within* Africa and *back into* Africa from the Middle East.

Species conservation and the new genetic technologies

This second plenary paper was presented by **Stephen O'Brien** (Laboratory of Genomic Diversity, National Cancer Institute Frederick, Maryland, USA) who described conclusions from population genetic analyses of cougars (a.k.a. mountain lion, puma and panther) in the Americas. In North America, cougars were once widespread but are now restricted to the west, with the exception of an isolated remnant population known as the Florida Panther. This population was at very low numbers and was suffering from inbreeding problems like holes in the heart, bent tails, low sperm count, etc. After much controversy a decision was made to attempt to rescue this population by introducing

ing a small number of cougars from further west. This worked and the Florida population is reproducing better and producing healthier offspring. Subsequently, a genetic study was carried out on cougars in both N. and S. America. Genetic diversity is high among S. American populations but extremely low in N. America (hence the so-called Florida panthers are really not a distinct group). This pattern suggests that the N. American population became extinct and was then recolonised from the south.

The potential impact of infectious disease on free-roaming mammal populations in Africa

Dewald Keet gave the third plenary paper that discussed the impact of various zoonotic diseases on the wildlife of southern Africa, principally in Kruger National Park. Apart from a brief discussion on the acute diseases that periodically reach epidemic proportions and cause high mortality (e.g. rinderpest in buffalo; anthrax in kudu/elephants/wild dog; canine distemper in lions; encephalomyocarditis in elephants), the talk mainly covered aspects of research on the effects of bovine TB. The main wildlife host for TB is Cape buffalo and the principal spillover host is lion through predation on infected buffalo. TB prevalence in lions in the Kruger park has been estimated at 78% in the southern area of the park (south of the Sabie river). TB in lions affects fecundity due to lesions in the reproductive tract and causes a high turnover and smaller size of lionesses. It is difficult to see how they will bring the problem under control as culling the principal host is not really an option. Vaccination holds the only real promise for eradication of TB in the park.

Cooperative breeding in meerkats

Tim Clutton-Brock (Cambridge University) gave the final plenary paper, an excellent multi-year study of sociobiology of meerkats, testing a range of hypotheses about the basis of cooperative breeding. For those who have read any of his red deer work, the approaches (detailed observation, habituation and training of the animals, careful and systematic experimentation) would have been very familiar. The slides of meerkats using the observer as "observation posts" and climbing onto the balancer to be weighed at the end of the day's foraging were quite memorable. I don't fancy your chances with stoats or possums!

GENERAL PAPERS

The eruptive dynamics of house mice in Australia: can fertility control prevent plagues?

Steve Davis and colleagues (CSIRO Sustainable Ecosystems, Canberra) examined the importance of different demographic processes (births, deaths, and movements) in reproductive fluctuations (plague outbreaks) of house mice *Mus domesticus*. With particular emphasis on an outbreak that occurred in 1984, they were able to model the predicted effects of a new immunoreceptive vaccine, and establish specifications for the vaccine and its delivery mechanism. For example, they were able to show that local recruitment in the mouse population occurred over a short 9-week period, so any fertility control agent would have had to be established in the population before the increase in local recruitment, and last at least 9 weeks (the duration of the outbreak).

A new system of automatic radiotracking

Tom Briner, a student at the University of Berne, in Switzerland, examined the spatial behaviour of common voles using

an automatic radiotracking system. At present there is no automatic radiotracking system available commercially anywhere in the world, although Landcare Research is currently developing a system. The voles system was therefore of interest. They use a PC station as the system controller, with three fixed antennae. A central trigger activates each transmitter (transmitters can therefore also receive the signal). Each transmitter has a predetermined time lag to send a signal so that they don't all send signals back to the controllers simultaneously. The system is very accurate (vole locations can be pinpointed to <1 m) and can track 200 voles within 5 minutes.

The role of field experimentation in population and community ecology of small mammals

Several workers presented summaries of their latest research on population dynamics of small mammals in a symposium with the above title. **George Batzli** (University of Illinois) covered the why, advantages and problems with field experiments including the difficulty of testing multiple hypotheses. **Erkki Ko-**

pimäki (University of Turku, Finland) presented results from his latest research on the causes of vole cycles in Fennoscandia. He was able to show that predation is insufficient to generate cyclic fluctuations of voles in northern Europe, with winter food supply also a limiting factor in a predator-free environment.

Harry Andreassen (University of Oslo, Norway) summarised several years of research on the vole *Microtus oeconomus* by concluding that, from their experimental work, males disperse to avoid inbreeding with female relatives, whereas females disperse to avoid competition for resources. In addition, dispersal of juveniles was negatively density-dependent (low rates of dispersal at high densities), with variation between years being correlated with high rates of predation on vole populations.

Hannu Ylönen (University of Jyväskylä, Finland) examined the sub-lethal effects of predation risk by weasels on vole populations, including effects on breeding suppression. He concluded that predation risk effects arise additively together with other effects, particularly during winter, in heterogeneous habitats, or in less productive habitats. Providing a "down-under" perspective, **Tony Arthur** (CSIRO Sustainable Ecosystems, Australia) summarised the results from his PhD research on the influence of habitat structure on the sub-lethal effects of predation. He found that provision of refuge for mice resulted in strong behavioural selection for the refuge habitat, as well as higher body weights and earlier onset of breeding in mice with refuge available. **Roger Pech** (CSIRO Sustainable Ecosystems, Australia) took these results a step further and discussed the need to turn a Type II functional response into a Type III functional response if threatened secondary prey are to survive the effects of predation. He argued, therefore, that the interaction between predation and habitat is crucial.

Cyclic dynamics of arctic lemmings along the Siberian and Canadian tundra

Sam Erlinge (Lund University, Sweden) and colleagues reported conclusions about causes of cyclic lemming population dynamics, based on data collected during trips by icebreaker in arctic Siberia and arctic Canada. Although two genera of lemmings are circumpolar, one (*Lemmus*) predominated in Siberia and another (*Dicrostonyx*) in Canada. This difference reflects their relative abundance of the habitat types preferred by the two genera: wet grass/sedgeland by *Lemmus*, and dry, often rocky shrublands by *Dicrostonyx*. *Lemmus* populations in different locations tended to cycle out of phase with each other, whereas *Dicrostonyx* were in phase, perhaps reflecting a greater influence of climate in the harsh habitats favoured by the latter. Collectively, data supported the hypothesis that cycles are caused by multiple factors – predation, food availability, and social interactions – that lead to differences in mortality, age structure and reproduction between increasing and declining

populations.

Small mammal population genetics through 3000 years in the Northern Rocky Mountains, USA

Liz Hadly (Stanford University, California) described some fascinating new approaches to the study of ecology. Working "at the interface of neontology and paleontology", she studies the period from 3000 b.p. (before present) by examining rodent bones and teeth found in caves. There remains were cached in and by the carnivores themselves, and are considered representative samples of surrounding populations. In the past 3000 years as climate and fire frequency have changed, the relative abundance of 4 generalist species has remained constant, but abundance of habitat specialists has depended on climate. Tooth size varies significantly between extant populations of pocket gophers (*Thomomys talpoides*), but not significantly between present and past at this location (although bone size was generally smaller in the past). DNA from teeth shows the same pattern. In contrast, DNA from teeth of montane voles (*Microtus montanus*) differs little among extant populations, but greatly between the present and the "medieval warm period" about 1300–600 b.p. Analysis of haplotypes suggests that the local population went extinct and was recolonised in this period. Among the conclusions were that differences in habitat specialisation and phenotypic plasticity affect the ability of populations to survive environmental change. Genetic diversity of both species was altered during climatic change and in conjunction with declines in abundance.

Climate change and human health: atrophic cascade to a zoonotic disease

T.L. Yates (University of New Mexico, USA) described the emerging phylogeny of hantaviruses, which mirrors that of their rodent hosts. Some of these viruses are highly pathogenic to humans; until recently few were known outside Eurasia but are now known to be widespread in N. and S. America. A "trophic cascade hypothesis" was outlined as follows. Outbreaks of hantavirus disease in North America may be linked to El Niño weather events, which lead to increases in precipitation, plant growth, rodent numbers, exposure of humans, and hence numbers of human infections. This hypothesis can be tested by predicting numbers of human cases from proportions of infected deer mice (*Peromyscus maniculatus*) in different locations. It may also be possible to make predictions based on weather, although other factors such as the prevalence of other mouse diseases are likely to also be involved.

Per Lundberg (University of Lund, Sweden) gave two interesting theoretical talks on population dynamics, particularly in regard to spatially and temporally invariant dynamics and problems associated with fitting population dynamical models to data. He stressed the importance of formulating good prior models of population dynamics so that the intrinsic mechanisms affecting population change may be better identified. For example, he showed that autocorrelated environmental variation ("red" as opposed to "white" noise) can generate 2nd order density dependent processes indicating that the density dependent process identified is not endogenous. He also attempted to explain processes driving synchrony between the dynamics of local populations by examining processes that were scale invariant. These seemed to be spatial structure? and distance which were invariant to local population dynamics. Shared environmental variability was not necessary to drive synchrony between local populations. If you find yourself scratching your head about some peculiar pattern in your data, remember these sage words from Per

"reality is nothing but a special case, and often not a very interesting one at that". enough said.

Applying general population theory to cervid dynamics

Peter Turchin (University of Connecticut, USA) discussed results from general trophic interactive models for cervids (principally moose), their food supply and predators. Apart from the observation that the logistic model was not a good proxy for regrowth of vegetation, preferring $dv/dt = V_0(1 - V/K)$ instead of $V(1 - V/K)$ his "general theory" didn't seem to offer much more than had already been done by Graeme Caughley and others.

Behaviour and conservation

Joel Brown (with Wendy Jackson & Burt Kotler) proposed that 'Animal behaviour is an under-utilized tool in conservation', specifically because behavioural indicators may provide leading indicators of change in habitat suitability and population size. For rodent species such as squirrels, 'giving up densities' as artificial food sources are depleted provide an easy measure of the trade-off between nutritional needs and predation risk. Tony Arthur (above) applied the same method in his study of predator avoidance by mice, with very clear results.

More theoretical talk by **Bob Holt** stressed the potential effect of predator foraging decisions on prey persistence in a changing landscape. Two different movement rules (*adaptive plasticity* i.e. emigration decision prompted by declining hunting success vs *conditional dispersal* i.e. emigration rate constant within a habitat type) both lead to an 'ideal free distribution' of animals in a constant landscape, but once things start changing their effects are radically different. 'Adaptive plasticity' tends to buffer prey populations from predator-induced extinction, whereas 'conditional dispersal' amplifies the effect of predation.

Tom DiLiberto (who had given a paper on that Landcare Research in 2000) gave a paper on the role of secondary plant compounds and nutrients in the coevolution of plant biodiversity, nutrient/toxin balances, and herbivore abundance. They used the foraging efficiency parameters of the functional response to predict the amount of browse on rare plants within a sagebrush ecosystem. Their hypothesis was that plant species will be eaten more than others when they are less common and there is a threshold of abundance at which their chemical defence is taken by a herbivore. Above this threshold, the plant chemotype will increase the presence of herbivores, below it the plant will decline and extinction risk increase. A prediction they could have made (but did not) was that the individual plant variation of defence/nutrients should be greater when the plant species is within a monotypic stand than when the species is within mixed-species stands. This was treated to some extent in a paper about associational resistance by **Joakin Hjaltén** (Swedish University of Agricultural Sciences).

Ben Moore (Botany/Zoology, ANU, Australia) gave an interesting talk on secondary compounds in eucalypts (particularly phoroglucinol (FPC) compounds) and selection of trees for browsing by marsupial using NIRS as the main assay tool. Although there was some evidence of tree selection based on palatability (= FPC content), that was not the whole story.

Patrick Zoller's (USDA Forest Service) paper on spatially explicit, individually based population models had some interesting insights into movements/dispersal, with some experimental testing of perception range in small mammals. His movement/dispersal models were most sensitive to percent suitable habitat and perception range (see *Ecology* 80:1019-30).

Pat Doncaster's (University of Southampton) paper on the behaviour and movements of translocated hedgehogs in the UK had some interesting parallels to recent work on possum translocation. Main area of interest was use of simulated random walks model to test hypotheses about hedgehog movements.

Papers by **P. Lindsay (wild dogs in Africa)** and **Rodney Jackson** (Snow Leopard Conservancy CA, USA) (snow leopard in Ladakh) focussed on issues relating to economic incentives and community involvement for conservation of endangered mammals. Much of the wild dog population lives outside reserves and is very vulnerable to illegal killing by farmers (who consider them the most unpopular predator) in addition, the increasing move to wildlife ranching for tourism has made predation of any kind less acceptable. For snow leopard the situation was much simpler, provision of better protection for livestock combined with a range of projects to get community buy-in (mainly through increased tourism opportunities) reduced hunting pressure on snow leopards.

AWMS 2002—Cairns?

The committee has been discussing options for the AWMS conference in 2002. As some members may be aware the Australian and New Zealand Ecological Societies are having a joint conference in Cairns in the first week of December in 2002.

It would make sense for AWMSto try and tie in with this in some way and ESA/NZES are interested. There are various options and we will discuss them at the AGM in Dubbo, but in case you cannot attend and would like to put your ideas/thoughts forward, this information is being provided so that you can!

The ESA/NZES conference runs from Monday - Friday with a break on the Wednesday for field trips. It will be held at the Cairns Convention Centre.

One option is to run the meetings in combination, with several AWMS-organised sessions during the main Ecol Soc meeting and maybe another on the weekend (before or after though?).

Another option is to run two separate meetings with some overlap, but in two separate venues. That would be easier in some ways from an organisational viewpoint (separate regos etc) but maybe of less benefit to members in terms of attending some sessions of each meeting, especially since there are no venues within close walking distance.

The AWMS conference in 2003 will be a joint one with the Wildlife Society (USA) and Landcare Research (NZ) - 3rd International Wildlife Management Congress, Christchurch, 1-5 Dec 2003.

Do members feel that AWMS would miss out by having two joint conferences in a row?

Anyway, your thoughts/suggestions would be most welcome! Also, if we do have it in Cairns, are there any offers of help with the organisation????

Elaine Murphy (AWMS President)

Report on 5th International Symposium on Fertility Control in Wildlife, Kruger National Park: 19-22 August 2001

Elaine Murphy
 Department of Conservation,
 Christchurch, New Zealand.

About 50 people attended the conference, with strong representation from America, Australia and New Zealand. Speakers reviewed developments in hormonal methods of fertility control, immunocontraception, delivery systems and ecological implications. The ethical and social issues related to the management of wildlife were also discussed. Overabundant mammals (whether introduced or indigenous) often cause problems and trapping, shooting and poisoning are often used to control their numbers. There are increasing numbers of circumstances however, where these methods are not socially acceptable and as a result, there is a growing interest in the use of fertility control.

What struck me most at this conference was the difference in the scale of mammal pest problems being tackled in New Zealand and Australia, compared to America and Africa and this was reflected in the type of research being undertaken. Australia and New Zealand are investigating both disseminating and bait delivered systems for wide scale delivery to introduced pest species, whereas the other countries are mainly using reversible contraception in indigenous species, and targeting individual animals through darting or surgical implantation.

Approaches discussed at the conference:

- Immunological e.g. Zona Pellucida vaccine such as porcine ZP – these provoke an immune response to block fertilisation (the zona pellucida is an extracellular coat around mammalian eggs and plays an essential role during fertilisation and early development of the embryo). Currently delivery of these vaccines relies on repeated darting of individual animals. Delivery by baits and disseminating viruses are being investigated.
- Gonadotrophin releasing hormone (GnRH) analogues e.g. deslorelin, leuprolide – these suppress pituitary LH and FSH secretion and render the gonads inactive. The practicality of GnRH agonists as a contraceptive approach for free-ranging wildlife is dependent on development of a reliable remote delivery system – currently it relies on slow release subcutaneous implants.
- Steroid hormones: Progestin contraceptives (e.g. melengesterol acetate, Depo-Provera) and synthetic gestagens (e.g. levonorgestrel). These block ovulation and affect sperm penetration. Can have profound effects on the reproductive health of some species, particularly carnivores. Levonorgestrel, has been used successfully in some kangaroo species and the implants lasted for at least four years.
- GnRH-cytotoxin complex e.g. GnRH-PAP – targets toxin to LH and FSH secreting cells in the anterior pituitary, to prevent gamete production by the ovaries and testes. GnRH is highly conserved across species, so a single GnRH-toxin conjugate has the potential to affect reproduction in both sexes of numerous species. It is not known how long the effects will last and species-specific delivery mechanisms will need to be developed.
- Dopamine agonist e.g. cabergoline and bromocriptine. Results in prolonged lowered prolactin, causing abortions and inhibiting lactation. Can be delivered orally in bait.

The most contentious talk was by John Grandy from the H

mane Society of the United States. The Society has funded research into fertility control for wildlife for over 10 years, however there is some research they don't support because they view it as 'ethically suspect'. They do not support fertility control for predator species (e.g. canids, wolves, coyotes, seals and sea lions), as the control method could be misused. They are against transmissible delivery systems – they feel that no problem is that bad to justify it, and are also against oral contraception (using baits), as they do not think it is economically feasible. A number of people expressed concern at these views but unfortunately there was not time to discuss the society's position in an open forum. Glen Saunders (NSW Agriculture, Orange, Australia) felt so strongly about the Humane Society's position, that he changed the beginning of his talk to outline the damage that foxes have done, and are still doing, to Australian wildlife. He pointed out that unless wide-scale sustainable control methods for foxes were developed, more species were likely to go extinct in Australia.

Bonnie Dunbar (Baylor College of Medicine, Houston, USA) gave a strongly felt talk and said that the FDA in America would never approve transmissible delivery systems. She was also passionately against the use of immunocontraceptive vaccines, because of problems with some current human vaccines leading to autoimmune disease in some people (eg Hepatitis B vaccine).

A success story for immunocontraception was given by Jay Kirkpatrick – however this is on a carefully managed, accessible population. Wild horses have been darted annually with porcine Zona Pellucida (PZP) over a 13-year period (1988 - 2001) on Assateague Island National Seashore. Adult mares are only treated for three consecutive years and are then taken off until they foal, to maintain the gene pool. The population has been kept at about 170, and the programme only costs about US\$2,000/year. They have failed to reduce the herd further, largely from the increased longevity among older mares and from high rates of foal survival.

In Western Europe, the red fox is the principal reservoir of rabies and live non-replicating recombinant vaccinia virus bait has been successfully used for wild life rabies vaccination. However, young of the year are difficult to vaccinate, and this could compromise the success of the disease eradication. Frank Boué and co-workers (Unit of Wildlife Health and Management, France) are trying to develop a fox contraceptive vaccine and they constructed a recombinant vaccinia virus expressing in addition the fox ZP protein. The initial results were disappointing but they plan further work with combinations of antigen to try and develop a vaccine. In Australia, Gerhard Reubel and co-workers (Pest Animal Control CRC/CSIRO) also investigated recombinant vaccinia virus as a potential vaccine vector for foxes but found poor immune response to expressed ZP proteins as well. They are also investigating the use of canine herpes virus as a potential vector for an oral vaccine delivery agent, as this has already been shown to be a suitable vector to deliver foreign antigens to dogs. This research may also have relevance for fertility control in stoats.

Janine Duckworth, Phil Cowan and Dave Ramsey (Landcare Research, NZ) gave talks outlining progress with the development of immunocontraceptive vaccines for brushtail possums. Alloimmunisation with possum ZP proteins showed that self

ZPantigen elicited strong humoral immuneresponses and significantly reduced fertility of female possums. Epitope mapping is being undertaken to find specific sequences of the ZP protein to try and make the vaccine more species-specific. Issues of compensatory increases in breeding or survival, social and behavioural changes, and selection for non-response to fertility control vaccines are also being investigated.

A number of talks were given on the mouse immunisation program being undertaken by the Pest Animal Control CRC and CSIRO in Australia. Lyn Hinds reviewed recent progress on the identification of targets for use in an immunisation agent and the strategies that might be employed to increase the magnitude and longevity of the immuneresponse. Grant Singleton reviewed the ecological basis for immunisation as a method for mouse control and also presented results on the epidemiology of the candidate viral vector, mouse cytomegalovirus (MCMV). Chris Hardy and co-workers are investigating the use of combinations of mouse-specific epitopes to make any vaccine more mouse-specific and Kent Williams described the risk assessment protocol they have developed to help assess and minimise the risk of deploying a GM virus vectored immunisation. The protocol incorporates GENHAZ, an existing inductive procedure for identification and management of risks of releasing GMOs to the environment. The assessment is comprehensive and provides a good model for research being undertaken in this contentious area.

At the end of the conference, Jay Kirkpatrick (Zoo Montana, USA) gave an overview of the presented papers. He commented that little had changed over 14 years from the first conference, in that the application to real populations was still limited. Only seven of 45 papers looked at free ranging wildlife, the rest were reporting on results from the laboratory or pens. Jay referred to the "snake like progress of work". He also commented that regulatory systems in the USA would mean that some things, such as disseminating viral delivery systems, would never see the light of day in the USA - but he didn't know where Europe and Africa would fall on this issue (let alone Australia and New Zealand!).



Figure 1. High refuge treatment. Felled cypress pine, covered by wire netting, covered approximately 10% of the area in a pen.



Figure 2. Predator exclusion treatment. Predators were excluded from a 25m x 25m section of pens with an underlying low refuge structure.

The presence of a small amount of refuge covering approximately 10% of the area in a pen, resulted in mouse populations reaching significantly higher densities, relative to populations where refuge was not provided (Fig. 3). When predators were excluded from pens with an underlying low refuge structure, populations reached higher densities also, confirming that the effect of refuge was due to a reduction in the predation rate, rather than some other effect of the refuge treatment, such as the provision of additional food, or shelter from the weather. Refuge and the exclusion of predators both benefited prey populations by increasing the survival rates of prey, and also by reducing the non-lethal impacts of predation. Mice showed strong behavioural selection for refuge, and where refuge was provided they had higher growth rates and commenced breeding earlier in the year, because they had a safer access to food compared to under the low refuge treatment.

This experiment showed that, in principle, habitat structure can influence the impact of predation on a species of mammal, and hence a consideration of habitat structure may be a useful addition to management strategies dealing with the impact of introduced predators on native Australian prey. In many areas of Australia habitat has been cleared for cropping or grazing, and in other areas grazing alone greatly simplifies the structure of the habitat (The State of the Environment Advisory Council 1996). In these areas habitat restoration may be required if we are to protect native prey, not only from introduced predators, but from native predators as well. In other areas, natural habitat may not provide sufficient protection from introduced predators, and habitat enhancement may be required. However, additional work is required to show that habitat structure can influence the impact of predation by introduced predators on native Australian species, and to quantify the nature of the habitat required.

Student Spoken Paper Prize Winner AWMS 2000

Effect of Habitat Structure on the Population Dynamics of Prey - Implications for the Conservation of Native Species Threatened by Introduced Predators.

Tony Arthur

At last year's AWMS conference in Queenstown I presented the results from my PhD study on the effect of refuge on the population dynamics of prey. The series of experiments were carried out in a model, field-based system, using feral house mice as prey, enclosed in 50m x 50m pens, that allowed access to free-living predators including feral foxes and cats and native raptors. Three treatments were employed in the last experiment, which I will focus on here: a low refuge treatment, where the vegetation in the pens was maintained at < 10cm height; a high refuge treatment, where refuge was provided by adding felled cypress pine trees (~3m in length) and covering them with wire netting (Fig. 1); and a predator exclusion treatment, where predators were excluded from a 25m x 25m section of pens with an underlying low refuge structure (Fig. 2).

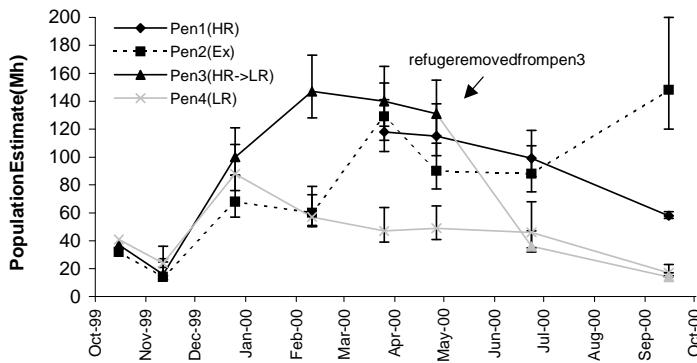


Figure 3. Population dynamics under the different habitat structure and predator exclusion treatments for oneset of pens. The population in pen 3 reached high densities under a high refuge (HR) treatment, and declined rapidly when refuge was removed (LR) after the May 2000 trapping session. Pen 1 was not available early in the experiment, but later in the experiment it was a high refuge pen, and acted as a control for the removal of refuge from pen 3. The population declined slowly over winter relative to the population in pen 3. Pen 4 was a low refuge (LR) pen, and the population remained at a relatively low density compared to all other treatments. Pen 2 was a predator exclusion (Ex) treatment, and despite the underlying low refuge structure the population reached high densities, confirming that the refuge effect in pens 1 & 3 was due to a reduction in the impact of predation, rather than some other benefit of added refuge, such as the provision of additional food, or shelter from the weather. Population size was estimated using the Jackknife estimator (Mh) in program Capture (Otis *et al.* 1978), except estimated for Sep 2000, which were estimated with the x -ploited population, catch-per-unit-effort method. 95% confidence interval estimates of population size are shown. Results from a second set of pens with replicate treatments are not shown, but were consistent with these results. Statistical analysis of the entire experiment indicated that populations reached significantly higher densities under the high refuge and predator exclusion treatments.

There is already some anecdotal evidence that habitat structure can protect some native species from introduced predators, based on their patterns of persistence (Burbidge & McKenzie 1989; Dickman 1996; Smith & Quin 1996), but a number of additional studies would be useful. Predation rates in natural habitats of different complexity could be measured using movementsensitive radio-collars fitted to resident or introduced animal that are potential prey. Behavioural studies should be conducted to determine how native species use habitat structure in response to predation risk from introduced predators (e.g. Banks 2001). This could provide insights into appropriate habitat manipulations, but it should be noted that a behavioural response to habitat will not necessarily reduce predation rates sufficiently to produce a population level response of prey (Cox *et al.* 1997; my study). Most importantly, other studies should provide areas of refuge, or manipulate habitat complexity, and monitor subsequent population responses. Roger Pech and I currently have another collaborative experiment of this nature in progress in woodland with an open understorey, which involves manipulating the habitat with wire netting to provide areas of absolute refuge, and monitoring the resultant impact of predation on two small, native Australian mammals. Manipulating habitat complexity could involve including introduced grazing herbivores such as cattle and sheep to allow regeneration of the shrub layer. Ideally manipulative studies would involve the four treatment combinations required

to show that habitat structure benefited prey by reducing the impact of predation (2x2 factorial design with high and low predator abundance, and high and low habitat structure). However, from a conservation perspective, studies that showed that habitat manipulation benefited native species, whether by protecting them from predators and/or providing other things, would be useful, and should not be neglected just because the resources may not be available to impose the predator removal treatments.

At present, management efforts are focussed on reducing the abundance of introduced predators, and these techniques have been effective and will remain an essential component of conservation management. However, these techniques are expensive, and may not be sustainable in the long term, over large scales, in all cases (e.g. Backhouse *et al.* 1995). The results from the present studies show that a small amount of absolute refuge can generate equivalent results to removing predators, and may therefore provide a more manageable and sustainable management approach in some areas. In addition, we can never expect to eliminate introduced predators from the landscape, and small numbers of predators may still have large impacts on some species if habitat structure is ignored. It is possible that a combination of predator reduction and habitat manipulation will be required to protect some species.

A second management implication from this study is that simple experimental designs aimed at determining the cause of decline of a species (Caughley 1994), could result in an inappropriate focus of management action. For example, doing a predator removal experiment in a simplified landscape may result in an increase in the prey population (equivalent to removing predators from pens with an underlying low refuge structure), suggesting that predator removal is an unnecessary management strategy for the protection of the prey species. However, prey may only be susceptible to predation because the landscape has been modified, and a focus on predator removal may distract from the need to stop further landscape clearing, which would be a more appropriate and manageable strategy.

Finally, there may be a conflict between management strategies aimed at reducing the abundance of pest species and those aimed at conserving native prey species (Pech & Arthur 2001). Recommended management strategies for both rodents (Caughley *et al.* 1998), and rabbits (Williams *et al.* 1995), include the removal of vegetation cover and other structures that provide harbour, with possible detrimental consequences for native species threatened by predation. Conversely, increasing the structural complexity of the habitat to protect native prey may benefit vertebrate pest populations. Under these circumstances it may be necessary to prioritise management objectives, or to use management strategies that specifically target pest species, such as lethal baiting or fertility control (Tyndale & Biscoe 1994).

In summary, the results from this study suggest that habitat manipulation may provide a useful strategy to protect native prey from introduced predators, in addition to predator reduction. They highlight the potential link between habitat simplification through clearing and grazing and the impact of introduced predators, and finally they suggest that the removal of harbour, as a means of controlling introduced species such as rabbits and rodents, could have detrimental consequences for native species threatened by predation. Further studies addressing these issues would be useful.

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Australian Wildlife Health Network

Anational wildlife health network, to be known as the Australian Wildlife Health Network (AWHN), will commence operation on 1 July 2002. Core funding of \$160,000 per year, endorsed by the Standing Committee on Agriculture and Resource Management (SCARM) has been secured from the federal govern-

ment for three years to establish the network. This has been the culmination of many years of support and lobbying from people across Australia, recently gaining momentum through anational feasibility study and production of a business plan to guide investment in the network.

Anational coordinator will be appointed to manage a dedicated website and list server, as well as anational database of surveillance and diagnostic information and wildlife experts. A host agency is being sought to accommodate the network. Other activities of the network will include the development of protocols and coordination of research, surveillance, training and education.

Network's Aim:

The aim is 'to promote and facilitate collaborative links in the investigation and management of wildlife health in support of human and animal health, biodiversity and trade'. This will better prepare Australia for serious disease outbreaks in its wild and feral animal populations.

A priority of the wildlife health network will be to critically assess the risks posed by wild animals, particularly feral animals, in the advent of an exotic disease entering Australia.

Management Committee:

A two-tiered management committee will manage the network. This will involve State and Federal agriculture and pest animal management agencies forming an 'inner core' with conservation and health agencies, game meat industries, zoos, universities and community wildlife organisations forming an 'outer core'.

The inclusion of conservation agencies on the inner core of the managing committee has been discussed among the steering committee on several occasions. Attempts to enlist the involvement of Environment Australia in the development of the network will continue. Five of the states have combined agriculture/conservation departments, which should provide some level of conservation representation.

Inner core representatives (total of 9):

- CSIRO/Director of Australian Animal Health Laboratories (AAHL) 2 members
- Agriculture, Fisheries and Forestry - Australia (AFFA)/AQIS 2 members
- Vertebrate Pest Committee (primarily agriculture and conservation depts) 2 members
- Veterinary Committee - representatives of the state chief veterinary officers 2 members
- Host agency 1 member

Outer core representatives (total of 15):

- Universities - 1 veterinary, 1 wildlife biology (selected through annual conference of chancellors) 2 members
- Animal Health Australia 1 member
- State/Commonwealth conservation department 2 members
- Meat Inspection Services/AQIS 1 member
- Zoos/Wildlife Parks - nominated through ARAZPA 1 member
- Australian Veterinary Association 1 member
- Wildlife Disease Association 1 member
- Australian Wildlife Management Society 1 member
- Game meat industry 1 member
- Recreational hunters 1 member
- National Consultative Committee on Animal Welfare (NCCA) 1 member
- Commonwealth/State health department 2 members