FIELD NATTER

FIELD NATURALISTS ASSOCIATION OF CANBERRA

OBJECTS: To foster an interest in, an awareness and an understanding of nature.
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Meetings are held in the Division of Zoology and Botany, Building 44, in the Australian National University, on the first Thursday of each month, except January. Meetings commence at 8:00 pm and are followed by refreshments.

NEWSLETTER — July 2005

MEETING

"Bloody Funny Wasps - a new look at ant biology"

by Dr Robert (Bob) Taylor

7 July 2005 - 8 pm

Ants evolved from primitive wasps and retain many wasp-like characteristics that have greatly influenced their social evolution. The habit of wing-shedding after mating (with two exceptions) occurs nowhere else in the Hymenoptera. How did this evolve? Why do ants not act as pollinators?

You will be delighted at the novel perceptions of our guest speaker who recently contributed to a Harvard Festschrift (celebratory publication) under the title of his talk to us.

Born in NZ, educated under E O Wilson at that international bastion of ant biology - Harvard - Bob has devoted a lifetime to the study of ants and their ways. Don't miss this intriguing illustrated lecture by the former curator of ants at Australia's National Collection of Insects at the CSIRO.

OUTING: off Templeton

Percival Hill Sunday 10th July 2pm

Meet at Schow Pl Nicholls (Gungahlin). With a West facing walk Percival Hill should be quite warm in mid winter. It is an interesting Nature park between Belconnen and Gungahlin although surprisingly rarely visited. A diversity of vegetation types (ecological communities) exist, with various forest types, woodland, heathland and grassland, and a large dam, as well as tree plantings on the East side. This provides habitat for many birds. We will be walking along the Hill and then up to the summit (good view) so part of the walk will be steep. Bring good walking shoes, cameras, plant ID books, wet weather gear, water and binos. Contact Benj Whitworth 62544 556 for more info.

NEW MEMBERS

A big welcome to the following new members:

Girts Ozols from Kambah
Jenny Dibley from Bungendore

plus one previous member rejoining:
Tony & Charmian Lawson of Holder

NEWS AND EDITORIAL

FIELD NATURALISTS' PRIZE

Jacqueline Poldy, a third year student enrolled in the ANU's Bachelor of Philosophy degree, has been awarded the Field Naturalists' Association of Canberra Prize for 2004. She has obviously excelled in the courses offered by the School of Botany & Zoology that she's undertaken so far. She'll continue her studies in biology, chemistry or a related area, she says in her acceptance letter. The Prize is a $100 book voucher.

CONSERVATION COUNCIL APPEAL

Field Naturalists and other groups who are members of The Conservation Council of the South-East Region & Canberra have received letters asking for help with the dire financial position they are faced with. The Australian Government has withdrawn funding from such groups around the country, retrospectively. This means there is a large short-fall in the income of the Con. Council for administrative expenses and for keeping its functions going.

Our Con. Council has, over decades, made numerous submissions, lobbied governments, participated in public education, organised forums, supported working groups and organised campaigns. All this work has had protection of what remains of the natural environment as its *raison d'etre*. (Interpretations of this funding withdrawal range from the Federal Government no longer funding potential adversarial criticism of its policies and plans to the monies saved now being allocated to benefit on-ground workers/smaller environmental groups.)

FNAC Membership of the Con. Council has cost $30 annually in recent years.
Geoff Robertson, President of the Council suggests several fund-raising measures for our consideration:

1. Doubling the membership fees member-groups pay i.e.$60 in our case.
2. Promoting I-Membership. i.e. Individual membership.
3. Encouraging sympathetic businesses & individuals to make tax deductable donations to the Council through the Bogong Fund.
4. Promoting fund-raising events such as the recently-held World Environment Day Dinner.
5. Groups to make a special contribution of $300-$2000 to help fund project officer positions.

Your FNAC committee would welcome your opinions on how FNAC should help. roseble@tpg.com.au and 6258 4724 or as listed in *Field Natter*

There's no doubt FNAC has relied on the Con Council to research & promote issues on our behalf as have our co-member groups. As individuals we have participated in Con. Council events over many years and appreciated the tenacity, expertise and dedication of Con Council staff & volunteers.

Observers who are aware of the threats to withdraw Tax-deductable status from organisations which participate in political action or comment OR *who read of the Environment Minister's attitude to Victoria's attempt to ban summer grazing from Alpine areas may see the funding withdrawal as yet another "threatening process" aimed at the environment and 'ordinary citizens'.*

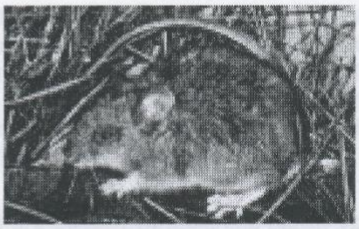
Rosemary Blemings

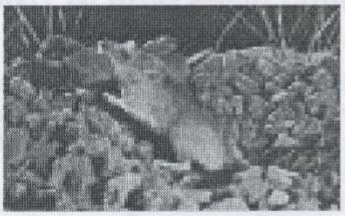
Editor's comment – I have belonged to natural history clubs since the age of 13 and on occasions people think that if raised conservation issues are party political, but more often the issues involve illogical mindless bureaucratic processes. If you have any comments please drop me a note

MEETING REPORT

PEBBLE MOUND MICE
(SUMMARY OF THE JUNE TALK)

Fred Ford hinted that his urge to see more distant areas of Australia was a strong reason to study these tiny rodents. Pebble Mound mice are in a genus by themselves and their skulls and teeth show the typical rodent patterns familiar from knowledge of Old World rodents. Compared to house mice, however, they have "bulging" eyes, are half house-mouse size and weigh between 12-14 grams. Pebble mice (syn. Sandy Inland Mice), belong to the order Conilurines and specialise in adaptation to dry areas of the continent.
Four species *Pseudomys johnsonii, P.calabyi, P.chapmanii and P. patrius* were known from various regions of northern Australia but until Fred visited, studied and researched them the distinctions between each popuation were blurred. Now the isolation of the 4 species is at least documented, if not entirely explained.





No other mammals have such built mounds associated with their burrows. The burrows leading away from entrances may reach depths of 50-60 centimetres. The tunnels have 'polished floors' from the constant movement of small feet. The mounds last for decades, if not centuries, as generations use them in succession. Female pebble mice live for about a year whereas males may live for just six months. Looking for females in suitable rocky territory may involve journeys of up to 2 km in the breeding seasons. This, and the fact that males move such large quantities of pebbles using their mouths and feet may explain their short, but obviously energetic, lives. Weighing the pebbles from mounds can bring results between 20-40kg. (Will we southerners look differently at ants' nests now?)

Photos of cracks in tree bark being shored-up with pebbles and sheets of pebbles covering rocks added to our ideas of mound variants although grasses are used inside to construct nests for the young. Theories for the mound building ranged from the pebbles providing insulation or allowing for the collection of water or being a defence mechanism. Fred has concluded that the strongest reason for the structures is that quality mounds attract females. The presence of the pebbles doesn't seem to affect in-ground temperature and water will seep into rock crevices or the ground regardless of above-ground structures. Entrance holes are carefully plugged-up as the mice are predated by Antechinus and Dunnarts. Spiders may take-over sections of mounds.

Several habitat types are suitable Pebble Mound country though sometimes mounds of charcoal have been found. New females may alter the structures when they move in. Fred particularly enjoyed working at Hidden Valley within reach of Townsville where there were various habitat-types.

Irruptions are dependent on rainfall and seasons for these seed and insect eaters. There doesn't seem to be population cycles, populations don't move about and fire doesn't affect them. Observations of these Australian rodents has been accumulated gradually over decades. Fred has been instrumental in analysing earlier records and especially those since 1995. His research, based on extensive travels, has clarified and augmented knowledge of a fascinating quartet of species. We have a new edition of ***Rodents of Australia*** to look forward to and it'll increase our appreciation still further.

Rosemary Blemings

Coming in July:

This is one activity from the ACT Environment occurring in July. More details can be found at http://www.environment.act.gov.au/bushparksandreserves/thingstodoandsee.html.

Sunday 19 July	**10 am–12 noon** 	Namadgi National Park	**WINTER IN THE VALLEY** Wear your winter woollies for a wander along the Orroral Valley to the Orroral Valley Homestead. Discover the early pioneer heritage of the valley. Learn about the fascinating building techniques and intriguing lifestyles of past occupants of this remote and beautiful mountain valley. Bookings: 6207 2900

Salmon gives birth to Trout

Endangered fish could be produced inside their more common counterparts after a breakthrough that allows scientists to implant the reproductive tissue of one species inside another.

A team from the Tokyo University of Marine Science and Technology, wrote recently in an issue of Nature that they had successfully implanted sexual primordial germ cells (PGCs) from a North American rainbow trout into an east Asian masu salmon.

The implanted cells then caused the salmon to produce trout sperm and trout eggs, thereby creating a trout offspring.

The two fish are both salmonids, but they are separated by 8 million years of evolution. While PGCs have successfully been implanted into the fruit fly Drosophila, and birds, offspring derived from the donor species have never been produced.

Of the total 2,332 embryos fertilised by the first male fish to have the PGCs implanted, 0.4% hatched early and were complete trout, and the remainder hatched late and were hybrids between salmon and trout.

One of the main benefits of the technique is that it can make fish production much more efficient. Masu salmon normally reach sexual maturity two years after birth and usually die after their first spawning. However the altered fish adopted trout reproductive traits, allowing them multiple spawnings and bringing them to sexual maturity in just one year.

"This technology would significantly reduce the time, cost, rearing space and intensive labour that are normally necessary for the seed production of large donor species," the researchers wrote in the Nature article.

"Gamete production for a species that has a large body size and a long generation time could be carried out in surrogate parents with a smaller body size and shorter generation time," they wrote.

The technique would be particularly useful for helping in the conservation of endangered fish, , as there has been a lack of success with research aimed at the cryopreservation of eggs.

(from a recent newspaper article)

How an Australian native helped win the war.

Chris Bunn

It is a fact that the successful military operations on D-Day could have depended on a drug extracted from an Australian native plant. The drug is hyoscine and in small amounts it alleviates motion sickness. Today in excess of 3% scolamine-hyoscine is extracted from a similar plant. This is the highest natural level in the world. Hyoscine is the active ingredient in travel sickness pills such as Kwells®.

This native plant is *Duboisia myoporoides,* a small tree often known as corkwood. It grows from the coast and tablelands districts of northern New South Wales to Cape York Peninsula in Queensland. It requires of high rainfall and sandy or loamy soils, often found on the edges of rainforests or on stabilized sand dunes. A closely related plant *Duboisia leichardtii* is found in the drier hinterland.

In the pioneering days in eastern Australia, poisoning of livestock by these plants was fairly frequent, mainly from regrowth on newly cleared land. People handling the leaves often complained of dryness of the throat, headache, impairment of vision and loss of taste.

In 1940, there was very little hyoscine in Australia and it could only be purchased from the United States at £25 an ounce (28 grams). At that time Australia needed eleven ounces. Russell Grimwade, the industrialist, took up the challenge, collecting 108 lbs (49 kilograms) of Duboisia leaves from which his company extracted seven ounces of high quality hyoscine. By the end of 1941, 1770 lb of dry leaf had yielded 91 oz of hyoscine. From 1942 onwards the production of alkaloids rose steeply, with the bulk of production being exported from Australia to all the allied countries of the world (including the United States). The products of the Duboisia leaves were utilised completely, with the extraction of alkaloids other than hyoscine; the chlorophyll was purified and marketed; and the residual leaves were given to market gardeners in Melbourne for compost.

A third plant in the group (*D. hopwoodii)* is not used commercially but recognised as a plant with its own special properties and is found in the more arid areas of the northern half of Australia, from Queensland to the Kimberly area of WA. The chief constituent of *D. hopwoodii* was found to be nicotine and nor-nicotine, constituting up to 25% of the dried weight of the plant material. The chief constituent of *D. hopwoodii* is nicotine and nor-nicotine, with content reportedly up to 25% of the dried weight of the plant material. The name 'pituri' (although there are many spelling variations) was the name used by the aborigines for the extracted drug.

Pituri was considered above all other power plants the most important in traditional aboriginal society and culture. The drug is used in the form of the leaves, which are generally dried, powdered and then mixed with ash made from species such as Acacia, Cassia or Eucalyptus. Rolled up into balls or 'quids" it is then chewed. The mixing of the alkaline ash with the plant material would have rendered the alkaloids more available when chewed or ingested. When not being chewed the 'quids' were quite commonly kept behind the ear much as people did with chewing gum for later chewing. It may also have been shared, given to others to chew similar to sharing a pipe. The aborigines have also occasionally smoked Pituri, but it is thought likely that this habit was copied from tobacco-smoking Europeans.

According to information from the internet *D myoporoides* can be found in the botanical gardens

References used

Everist S *Poisonous Plants of Australia (1974)*

Grimwade R *Duboisia – Australia's own drug plant* Walkabout June 1, 1954, 29-32

Lassak E and McCarthy T *Australian Medicinal Plants (1983)*

Poynter J, *Russell Grimwade (1967)*

Duboisia myoporoides

Artist: Kathleen O'Ryan © Australian National Botanic Gardens

Newsletter contributions welcome

Sightings, reports, travelogues, reviews, photographs, sketches, news, comments, opinions, theories — in fact anything relevant to natural history. Please forward material to chris_b@webone.com.au or 13 Burnside Street Watson ACT 2602. Any queries please phone 6272 5540

FIELD NATURALISTS ASSOCIATION OF CANBERRA INC.

The Field Naturalists Association of Canberra was formed in 1981. The aim of the club is to stimulate interest in the natural history of the ACT through regular meetings and field outings. Meetings are usually held on the first Thursday of each month. Field outings are also planned each month and range from day outings to long weekends and camping. The emphasis is on informality and fun. New members are always welcome, especially family groups and young people. Information on activities is circulated in the monthly newsletter. If you wish to join FNAC, please complete the form below and send it with the appropriate subscription to:
The Treasurer, FNAC, GPO Box 249, Canberra ACT 2601.

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