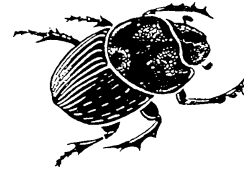


THE NORTHERN TABLELANDS DUNG BEETLE EXPRESS



SPRING, 2006

HOME ON THE RANGE

The Glen Innes office of the Northern New England Rural Land's Protection Board has moved and so have we. If you want to find the Project Officer nowadays you will need to head for 1 Greenaway Street, Glen Innes. Need another hint? Head toward Inverell and on the left hand side (across from the racecourse) you will see the building pictured below.

The new building has a lot of advantages over the old one which had been the home of the Rural Lands Protection Board (formerly the Pastures Protection Board) since the 1950s.

Firstly, it has windows! This is a good thing as it means that the Project Officer can look outside and see if it is beetle weather or not. Secondly, there is a lot more room for storing boxes of trap catches as there is a spacious shed out the back. Contrary to the beliefs of the Rangers and Field Staff this is not their shed - it is mine. Well at least one tiny corner is mine (alright - this is not official and they probably haven't noticed the boxes yet). Eviction is on the cards.

On a more serious note, the building is the culmination of a lot of hard work, not only by those involved in the design and physical construction of the building, but by the Management, Directors and Staff. It is a tribute to the vision of the Board and the late Manager, Tony Eshman.

Personal thanks to the Board of Directors for their continued support of the dung beetle project which is evidenced by their willingness to allow us office space and access to all the new facilities.



So, next time you're in town why not call in for a visit?

*Photograph by
Bob Davidson.*



COWS WITH GUNS – how about owls with dung?

The Burrowing Owl, *Athene cunicularia*, as its name suggests inhabits burrows in the ground. These burrows might be abandoned by other animals or the owls might dig their own. As if this ground dwelling habit isn't unusual enough in itself this owl has another bizarre habit.

It hoards the dung of other animals such as cattle, horse, buffalo and dog which it places in and around the entrance to the burrow. It was originally thought that the “dung art” might have been used as a deterrent for predators such as snakes and raccoons. However, research did not support this theory.



According to Douglas Levey of the University of Florida this behaviour has a very basic purpose. The owls are using the dung to attract dung beetles which, along with other insects, form a large part of their diet.

This hypothesis held when research showed that when the dung was removed from burrows and placed at others the owls provisioned with dung ate ten times more beetles consisting of six times more beetle species than those owls whose burrows had been “cleaned” by the researchers.

FUNNY BY NATURE
Owls use dung as bait for dung beetles



Preparing for the hunt...

While Douglas Levey is cautious about this being proof of “tool use” he does concede that it explains another one of the burrowing owls’ odd behaviours.

Unlike most owls these are active during daylight hours and are often spotted standing, seemingly idly, in front of their burrows. Perhaps like all good fisherman/women they know that once the line is in the water all you can do is wait quietly!

SWAMP



KLEPTOCOPROPHAGE? It's all Greek to me!

Now there's a word that sounds like something you'd say when you stubbed your big toe! However, this is not just some new curse word and I have to thank a few people who thought that, after our fascinating article on paleoscatology, we would be the best people to consult on what this word means.

In true form we did not "take a guess" but looked it up and even found the origins. "Klepto" comes from the Greek "Kleptein" meaning "to steal". "Copro" is derived from another Greek word "Kopros" which means dung and then we add "phage" from the Japanese word "Phagein meaning "to eat". All right - phagein is not a Japanese word - the Greek part was getting a bit boring.

So, in the course of finding this definition we also found some fascinating beetle habits. Some beetles practice "Kleptocoprophage" - they either actively steal other beetles food/brood balls or they engage in even sneakier behaviour.

Moczek and Cochrane from the Indiana University have been studying "Intraspecific female brood parasitism in the dung beetle, *Onthophagus taurus*" and have come up with some interesting findings.

Using some highly sophisticated equipment (dirt and vermiculite) they managed to show that female *O. taurus* had developed several forms of this insidious behaviour. The beetles let another female undertake all the work involved in making a tunnel and a brood ball then they entered the tunnel and removed the egg, replacing it with one of their own (like some housemates except they would generally be too lazy to lay an egg). Sometimes the beetles would actually add a bit of dung to brood ball and then lay an egg beside the existing egg. However, during dry conditions, females used the pilfered brood ball as a food supply thus ensuring the death of the other's egg. Nasty stuff! Let's face it - this is a bit more serious than pinching the odd glass red wine.



The researchers say that this finding probably explains some other behaviour patterns exhibited by *Onthophagus* beetles generally. The females spend a lot of time and energy back filling their tunnels - perhaps so that the brood ball is not so easily located. The larvae are apparently very aggressive (even attacking forceps) and an encounter between two larvae inevitably results in the death of one in a very short period of time. This may be necessary to ensure that the victor gets all the nutrients from the brood ball and might also serve to deter brood parasitic behaviour.

The relevance of this article? None really!

DUNG BEETLES FOR LANDCARE FARMING

The Orica Community Foundation continues to support the Australia wide "Dung Beetles for Landcare Farming" project. While plans have not been finalised it is anticipated that this year's funding will be used for several projects, many aimed at increasing our knowledge of the current status of introduced dung beetle species in terms of abundance and location.

A nation wide recovery project involving over 700 schools co-ordinated by Landcare Australia, a "spot monitoring" program aimed at gauging the success of past releases and a continuation of the redistribution of several key species are among the avenues the group is considering.

The "Dung Beetles for Landcare Farming" group would like to pass on their thanks to Jenny Quealy and Tim Cronin of Landcare Australia for their part in securing this much needed funding.

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OUT AND ABOUT

19th September - Dung Beetle

Trapping Day - Macleay

Landcare, Sherwood Hall. Phone

Natasha English on 02 65622076.

6th October - Internal parasites

in sheep - Integrated Pest

Management, Chiswick. RSVP

2/10. Phone Andrew Biddle or

Pam Wilson on 02 67321200.

www.dungbeetles.com.au

CAN THE WORM TURN?

It probably can. However, this is not really the question we are trying to answer with our Super PIRD project. Last year we began an MLA funded project to look at the effectiveness of dung beetle activity in assisting with control of internal parasites in sheep. We found 5 species of dung beetle working in sheep dung. In true research style this then led to a very important question. If worm eggs are buried in the dung can the larvae migrate back to the soil surface?

This is an important question for several reasons. Many producers use rotational grazing as part of an integrated pest management program. If dung burial allows larvae to survive underground and they can emerge later then it might be necessary to extend the rotation period to avoid re-infestation. It would also be interesting to know if eggs can survive the burial process as this is only undertaken when beetles are trying to store food or produce brood balls. Surely this level of disturbance should reduce the viability of the worm eggs?

Anyway, we are now going to embark on some research to see if we can answer these questions. There will be producer participation for paddock trials which will involve allowing the natural dung beetle population to bury pellets and the landholder will send top soil samples from the plot into us at regular intervals. We will be doing something similar but will be using several selected beetle species to do the burial and will also bury some pellets by hand. This should indicate whether burial is sufficient to prevent pasture contamination or if the beetle activity plays an important role.

Dr. Leo Le Jambre of CSIRO based at Chiswick will be undertaking larval counts and generally helping with the project.

Thanks are due to Gerald Martin of MLA for his support and help with the project.

