



Northern Tablelands Dung Beetle Express

AUTUMN 2003

STILL BEETLING - after all this time

Dung Beetle Benefits

- Improved nutrient recycling
- Reduced bush fly populations
- Reduced buffalo fly populations
- Reduced water contamination
- Better water infiltration
- Cleaner pastures



Inside this issue

Still Beetling after all this time	1
It's Raining Beetles	1
The claw that rocks the cradle	2
Freebies - for a price	2
Site Monitor Reports	2
www.dungbeetles.com.au	3
If you go down to the yards today	3
The Great Doggy Doo Debate	3
The Far Side	4
Judging a Book by its cover	4

The Northern Tablelands Dung Beetle Express project looks set to continue into the future. This is due to the generous support being offered by the Northern New England Rural Lands Protection Board. Their assistance with employment costs and office facilities for the Project Officer is helping the project continue to move forward and build on the achievements made thus far.

While we are still trying to attract funds from other sources it is heartening to know that an organisation such as the Rural Lands Protection Board can see the benefits of our project to their ratepayers and are putting their financial support behind our project.

We can now plan for more harvests and releases over the coming months - hopefully next Spring/Summer will be warm and wet so that we can catch up on the harvests which were delayed this year by the widespread drought conditions.

As well as working on harvest techniques we have also purchased dung beetles from John Feehan, Soilcam, Canberra. So far we have purchased 23 colonies and released 25. The math doesn't add up, does it? This is because John wanted to support our project and very generously gave us two colonies of beetles - we are very grateful for his support.

The dung beetle colonies purchased include the following species which are not abundant or common across the Northern Tablelands; *Onthophagus taurus*, *Onthophagus binodis* and *Geotrupes spiniger*. These releases have occurred at monitoring sites across the region from Liston in the north to Tia in the south.

IT'S RAINING BEETLES!

With most areas experiencing rainfall during February dung beetle activity has rapidly increased. This is due, in part, to the biology of dung beetles - many requiring rainfall to trigger events such as pupation and emergence.

Now that this has occurred the beetles are out there frantically burying dung to utilise as either food for themselves or brood balls for their eggs. In most species females spend some time consuming dung fluids in order to become reproductively active.

The current beetle population explosion does not appear to be confined to any one species. In fact, all species seem to be equally abundant. So while they may have been a bit slow off the mark this year they are around and likely to appear in a paddock near you.



Natural Heritage Trust
Helping Communities Help the Australia

THE CLAW THAT ROCKS THE CRADLE

While it is not unusual for beetles to engage in some form of parental care (usually providing food for larval development or some form of nest protection) it is unusual in telocoprid (ball rolling) dung beetles. A study by Penny Edwards and Hartmut Aschenborn found that a South African ball roller, *Kheper nigroaeneus*, “exhibited the highest level of parental investment possible for an insect, short of self sacrifice”.

Kheper nigroaeneus is a large ball roller (3cm long) which lives for two or more years. The adult population over-winters underground, usually emerging in October. After one to three weeks of feeding the adults begin to breed. The male generally provides the female with the brood ball and selects the nesting site. Having invested all this time the male will then leave the female and re-join the flying population several days before oviposition (egg laying) occurs.

The brood ball provided by the male has an average size of 3 to 4 cm. Before oviposition the female grazes on the ball reducing it by as much as 60%. She then re-coats the egg at varying intervals with a combination of beetle excrement and soil. This possibly reduces desiccation and prevents microbial growth. A kidney shaped patch is always left uncoated and this may be to aid gas exchange and allow chemical communication between the offspring and the mother. The female then remains with the developing offspring until emergence (12 weeks). This allows the female to guard the developing young from predators. If the offspring dies within three weeks the female will usually make another ball and deposit a second oocyte which is held in an advanced state of development. If not deposited the second oocyte is resorbed. The female may have two offspring per year providing that the first offspring is raised in time for a second reproductive event to occur.

The consequences of such extreme maternal care are that, in the event of offspring mortality, the female may never successfully reproduce. This study showed that the average survival rate from egg to adult was between 58% to 84% - this must be acceptable otherwise the species would not survive.

*Discover new
frontiers,
venture into
uncharted
territory,
become a site
monitor*

THERE IS NO SUCH THING AS A FREE LUNCH!

However we can give you the opportunity to find out more about your dung beetle population and you could also be in with a good chance of releasing species new to your area.

Many of our previous site monitors are ready, after 18 months of monthly trapping, to hand over the reins to someone new. We would also like to see monitoring sites in new and uncharted territories. If you are interested in taking over these extremely rewarding, totally unpaid positions please phone the Project Officer on 02 67321200.

Who knows – the next beetle batch may be yours!

SITE MONITOR REPORTS

We are still compiling final reports on the species found and their relative abundance from data collected over the past 18 months - please be patient. This is a fairly large undertaking and we feel that it's important to produce a comprehensive document which will assist both Site Monitors and future projects to make decisions regarding beetle releases. The reports will also aim to give Site Monitors explanations for apparent variations in dung beetle species diversity and abundance throughout the trapping period.

It may not happen overnight, but it will happen.

www.dungbeetles.com.au

Our website, www.dungbeetles.com.au, continues to average 400 “hits” per month. The site is very informative and is constantly being updated. While the content of the site is primarily aimed at landholders and students seeking relatively non-technical information, it does contain links to other sites of interest.

If you haven't visited the site yet, you really should. After all 400 internet users a month can't be that wrong.

We are still seeking a site sponsor. In return for a small fee the sponsor(s) would be given advertising space on the web page and will be able to change their information on occasion (ie seasonal offers, new products etc.).

If you know of anyone who might be interested please have them contact the Project Officer on 02 67321200.

This site could suit producers who wish to advertise their involvement with organic growing groups, holistic farming etc.. It might also tie in well with companies which produce products for strip grazing as anything that reduces chemical use should be good for dung beetle populations.

IF YOU GO DOWN TO THE YARDS TODAY . . .

Chances are that if you are going into the yards today you'll be planning on using some form of parasiticide, and if you're reading this newsletter there is a good chance that you are concerned about what you're using. While the jury is still out on the effect of many parasiticides on dung beetles, some facts are known.

At the present time the best guide, in our opinion, is Contracted Report No. 56 “Parasiticides registered for use in cattle in Australia - an annotated bibliography and literature guide prepared for the National Dung Beetle Planning Forum”. This report was prepared by K.G. Wardhaugh, CSIRO Entomology, Canberra and contains some very good information on the likely toxicity of the most common parasiticides.

At field days there have been concerns raised about the possibility that agricultural herbicides might have some negative affect on dung beetles. As dung beetles live exclusively on dung (either fluids or fibre depending on development) it seems unlikely that chemical sprays would prove lethal unless sprayed directly onto the beetles or onto the dung pads. More research needed.

THE GREAT DOGGY DOO DEBATE

Every week our email brings at least one query from someone wanting to purchase dung beetles to combat the problem of canine excrement (commonly known as doggy doo) in their backyards. Having discussed this problem with both John Feehan (Soilcam) and Dr. Angus Macqueen (Queensland Dung Beetle Project) it would appear that most dog owners will have to shelve this under the heading “great ideas that won't work”.

If you are located in a rural area with livestock in the general vicinity, then dung beetles might work for you. Sadly this is not likely in a suburban situation. Problems for dung beetles relying on dog dung are:

- Dog Diet - varied - so may be low in protein, too dry, too chalky or generally unpalatable
- Collection by owners on occasion means that there are no suitable piles for breeding or for consistent feeding
- Systemic chemicals (heartworm and worm treatments) may be lethal to dung beetles.

In the words of Angus Macqueen “dung beetles bury some of the dog dung some of the time”.

Northern Tablelands Dung Beetle Express

Pam Wilson.
Project Officer
Northern New England Rural
Lands Protection Board,
Grey Street,
GLEN INNES. 2370

P.O. Box 108, Glen Innes. 2370
Phone: 67321200
Fax: 67321420
Email:
dungbeetles@northnet.com.au

www.dungbeetles.com.au



JUDGING A BOOK BY ITS COVER

They said you couldn't do it - but they were wrong! Having just finished reading a book given to me by Alan Marsh who selected it purely because of the artwork on the cover I can attest that the old adage does not always apply.

The book is entitled "Confessing to a Murder" and was written by Nicholas Drayson. It is an unusual tale involving an element of fantasy (strange creatures, with stranger habits) and a smattering of known facts. Set in the times of Charles Darwin it captures the ways in which men, with no formal training, became great naturalists through observation and imagination. As was pointed out to me by Dr. George Bornemizza "knowledge is nothing without imagination". These early naturalists certainly had plenty of both and Drayson has managed to portray this in an informative and entertaining fashion.

While the novel is unlikely to be a number 1 best seller, both Alan and myself thoroughly enjoyed it and I would recommend it to anyone seeking a bit of light reading.

Oh, and what was on the cover? A dung beetle of course! Actually a large, diamond studded, golden Scarab beetle which had a number of features associated with a species called *Copris lunaris*. However, before you get out there digging in the dung, a word to the wise. This book is fantasy - if a golden, be-jewelled dung beetle really existed I would be on a tropical island sipping whatever it is you sip on tropical islands.

Cheers,

Pam