Application summary

Application number:	ERMA200599
Application type:	Notified, Non-GM release, Full Release
Applicant contact:	Shaun Forgie
Applicant:	Landcare Research New Zealand Limited PO Box 40 Lincoln 7640 New Zealand
Purpose:	To import and release up to 11 species of dung beetles to overcome the many adverse effects caused by animal dung in New Zealand pastures
Date formally received:	13 September 2010

Application summary prepared by Landcare Research

The Dung Beetle Release Strategy Group comprises farmers, interest groups and the MAF Sustainable Farming Fund. Scientific support is provided by Landcare Research. The Dung Beetle Release Strategy Group was established by a group of farmers and other interested parties with the objective of importing and releasing dung beetles for the biological control of pastoral dung of agricultural livestock in New Zealand. There are over 90 members although we have intentionally tried to remain low key in order not to create too many expectations prior to being given the green light by ERMA.

John Pearce (Chairman) summarises the thoughts of many in our group when he said "….New Zealand wasn't ready for mammals ... this is a very young land. It's been good to us, but we have to be good back to it now. Dung beetles should have come to New Zealand 150 years ago with the first cows and sheep, but they didn't. It's part of a whole package of which we only got a part of. Now we can make it right. Introducing dung beetles is the first step in making it right."

New Zealand's pastoral environment is a low diversity assemblage of grasses and forbes, and associated benefial organisms, pests and weeds. While some of these organisms were deliberately introduced, such as rye grass, white clover and earth worms, many were incidental or accidental. This is an unnatural pastoral assemblage that has been, over the last 170 years, deliberately added to to make it more sustainable and to compensate for the accidental arrival of pests and weeds. Examples of the addition of beneficial organisms are the introduction of bumble bees to pollinate red clover and biological control agents for weeds.

Dung beetles have evolved to process dung by burying it and then utilising it as a food source and breeding site. Sheep, cattle, deer, goats and other domesticated livestock have been brought to New Zealand without the beetles that naturally process their dung. Unprocessed dung adversely affects the environmental quality and productivity of pastoral ecosystems in New Zealand. At least 5% of all pastoral farmland is covered in cattle dung at any one time. Depending on the time of year and climate, it may take dung pats up to 6 months to break down. Accumulated contamination of pastures reduces the amount of forage available for grazing, and has other economic, environmental, ecological and social effects.

The Dung Beetle Release Strategy Group proposes to import and release up to 11 species of dung beetles to overcome the many adverse effects caused by animal dung in New Zealand pastures. All species have similar biology and risk profiles, but differ in climatic, soil and host dung preferences. More than one species is required to deal with livestock dung across the New Zealand pastoral landscape. The benefits to be gained from dung beetle activity, once established, include:

- Improved soil health, structure, and fertility.
- Improved water infiltration and reduced flooding.
- Reduced nutrient runoff and waterway pollution.
- Reduced greenhouse gas emissions from dung and urine.
- Increased biomass and activity of earthworms.
- Increased availability and yield of forage plants.
- Reduced re-infection of livestock by parasitic worms.
- Reduced use of animal drenches.
- Improved sustainability of pastoral production.

The introduction of dung beetles is expected to enhance soil biodiversity and increase the numbers of other beneficial organisms such as earthworms as well as reduce the incidence of infective stages of livestock diseases in pastures. The benefits of this application are considered to outweigh the risks.

No significant adverse environmental effects have been forecast. We do not expect any impact of exotic dung beetles on native dung beetle as the native species only live in deep forest, while the introduced beetles are limited to open grassland. Thus their habitat are clearly separated and any interaction will be rare and limited to forest margins where livestock dung is present.