

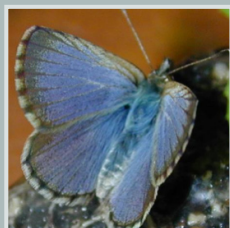
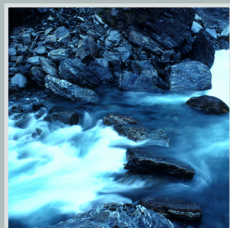
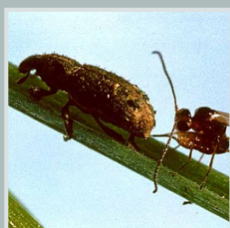
FURTHER INFORMATION //

Louise Malone
Gene-based Insect Science

120 Mt Albert Road
Sandringham, Auckland 1025

Private Bag 92 169
Auckland Mail Centre
Auckland 1142

p. 09 815 4200
f. 09 815 4201
lmalone@hortresearch.co.nz



PASTURE INVERTEBRATES

- » test systems for investigating the potential impacts of transgenic clover and ryegrass on the native weevil, *Nicaeana cervina*, and the Southern blue butterfly, *Zizina oxleyi* are now available
- » experiments with analog (non-GM but modified) clovers, with altered levels of carbohydrates or hydrogen cyanide, and with ryegrass plants carrying various strains of an endophytic fungus (which protects against weevil attack) have revealed high variability in insect responses, with no clearly significant adverse effects that could be attributed to the plant modifications

ROLE OF INVERTEBRATES IN DIETS OF NATIVE BIRDS

- » field work is continuing in the Hunua Ranges for a PhD study of the role of invertebrates in the diets of tomtits in pine forests and adjacent native forest
- » preliminary results show that North Island tomtits feed on a wide variety of invertebrates in both types of forest, including beetles, caterpillars, earthworms, millipedes, crane flies and some species of wasps

MĀORI CONCEPTS OF VALUED SPECIES

- » a list of Māori insect species names compiled from published historical information has been given to ERMANZ's Kaupapa Kura Taiao Māori Unit, who have shared it with their National Maori Network at their annual hui
- » a summer studentship has been offered to extend the list and to ensure that the species on it are entered into our invertebrate database

Plans beyond 2008

We are now preparing a new research proposal to take our findings from this programme further.

THE PROPOSED NEW PROGRAMME WILL

- » extend the invertebrate database to cover horticulture and vegetable systems
- » refine the selection model further so it can be used with a range of new technologies
- » develop other computer-based tools to help decide which tests should be done on the selected species
- » develop new methods to make non-target species testing more effective and efficient
- » build new capability in environmental impacts research with nanotechnologies

If you would like to know more about this, please contact Louise Malone, lmalone@hortresearch.co.nz

Selecting Non-Target Invertebrates for Biosafety Testing of New Technologies

Fifth Annual Report to Stakeholders & End Users



FURTHER INFORMATION //

Louise Malone
Gene-based Insect Science

120 Mt Albert Road
Sandringham, Auckland 1025

Private Bag 92 169
Auckland Mail Centre
Auckland 1142

p. 09 815 4200
f. 09 815 4201
lmalone@hortresearch.co.nz



There is considerable public concern about the impacts of genetically modified (GM) crops (and other emerging technologies) on the New Zealand environment. Here we are studying effects on beneficial non-target organisms such as native insects, which may form the basis of food webs supporting native birds or be of special significance to Māori, natural enemy insects that suppress pest insects, and pollinating bees.

This programme provides knowledge and tools to assist environmental risk assessment of new agri-technologies for NZ, specifically tailored to NZ's unique biota and major agro-ecosystems.

By June 2008, we will have produced a science-based procedure for selecting the best non-target invertebrate species for biosafety testing and some methods for carrying out the tests.

- » This programme is a FRST-funded collaboration between HortResearch, AgResearch, Scion, Landcare, Massey University and ERMANZ
- » Participants: Louise Malone, Barbara Barratt, Kim Crook, Colin Ferguson, Christian Walter, Jo Berry, Jo Peace, Dianne Brunton, Geoff Ridley, Emma Barraclough, Bruce Philip, Jacqui Todd, Libby Burgess, Padmaja Ramankutty

Progress 2007

A SCREENING MODEL FOR SELECTING SPECIES

- » a mathematical model for selecting non-target invertebrate species for biosafety testing has been developed and submitted for publication
- » an underpinning database of NZ invertebrates now holds biological and ecological information on 400 species from pastures and pine plantations
- » the model is being tested using GM Bt-pines resistant to insect attack as an example

PINE FOREST INVERTEBRATES

- » a contained test system for assessing the effects of transgenic pines on a beneficial natural enemy species, a parasitoid which attacks looper caterpillars, is now available
- » laboratory tests with GM Bt-pine have shown that even though some plant lines can inhibit the growth of the pest caterpillar, *Pseudocoremia suavis*, its natural enemy, *Meteorus pulchricornis*, is not harmed by the GM plants