RAT ON THE RUN

We congratulate Allan Wilson Centre (AWC) affiliate, Dr James Russell, for winning the 2012 Prime Minister's MacDiarmid Emerging Scientist Prize. This prestigious prize for a scientist starting out in their career is one of five Prime Minister's Science Prizes introduced in 2009 to raise the profile and prestige of science in New Zealand. The prizes recognise and reward five individuals each year, including a science teacher and a secondary school student, for their outstanding work in science.

James went to Auckland Grammar School where biology was his worst subject, which he blames on a lack of ecology at the time. This didn't put him off further study, and he completed his PhD at The University of Auckland in 2007, and returned in 2010 as a lecturer in a shared appointment between the School of Biological Sciences and the Department of Statistics. James's PhD research focused on ways of stopping rats re-invading protected islands once pests had been eradicated. Methods devised by James included releasing and monitoring rats using tracking devices, and using genetic identification techniques to track the likely sources of trapped rats.

One of his experimental rat subjects made news around the world, proving just how evasive the animals can be. It avoided all intensive efforts to trap it, and James lost the signal from its radio collar. After swimming 400m to a neighboring island it was finally caught after four months on the run. As James and co-authors put it in their *Nature* article, 'our findings confirm that eliminating a single invading rat is disproportionately difficult', and quite a different problem to the initial eradication of a population from an island. James's work gave him both a respect for rats, which he says are intelligent creatures that learn to avoid poison and traps, and a determination to outsmart them using all the scientific tools and analyses available.

The Department of Conservation (DOC) now uses the results of James's PhD research in their management plans for risk analyses of rat re-invasions of protected islands, and James is currently working on ways to extend the methods to mainland sanctuaries and larger predator-free areas across New Zealand. His knowledge and expertise is sought after internationally, as conservation organisations overseas face difficulties dealing with rats and other mammalian pests. James's fieldwork has taken him to many fascinating and remote locations in the past few years, including the Faroe Islands, the Tibetan Plateau, the Antipodes Islands and Tetiaroa, the atoll north of Tahiti in French Polynesia that Marlon Brando found so beautiful in the 1960s he bought it.

James has also worked on Hauturu (Little Barrier Island) recently, as a member of the AWC's *Hidden Treasures* project team. His plans this year include spending time in France working on conservation projects, and working with DOC and philanthropist Gareth Morgan on the *Million Dollar Mouse* eradication project on the Antipodes Islands. A new Year 13 Biology textbook *Continuing Life Processes: Ecology and Evolution* by Heeney and Shepherd quotes James in its opening pages. He advises students to 'Do what you love', just as he is doing.

Dr James Russell – MacDiarmid Emerging Scientist 2012

Teaching suggestions

Predator eradication is a vital factor in conservation management in New Zealand.

- **DOC** has lots of information on rat eradication projects in NZ on their website
- **LEARNZ** is running several virtual field trips this year focusing on conservation issues
- **Curriculum links:** Nature of Science: Understanding about science (L1-8), Living World: Ecology (L4-8, particularly L6)