Tracking the Irish pine marten: WIT and the IRCSET Embark Initiative

A personal experience by Embark scholar Jacinta Mullins, Department of Chemical & Life Sciences

The closing date for applications to the Irish Research Council for Science, Engineering & Technology (IRCSET) Embark Initiative Postgraduate Research Scholarship scheme has passed, but do not give up hope, there have been second calls for proposals every year to date! I finished my degree in May 2004, and was not sure if I wanted to commit to postgraduate research, so I decided to try a job in industry. By the end of the summer, my now supervisor, Dr. Catherine O' Reilly alerted me to the second call for the IRCSET scholarship. It is directed towards students who graduated with a 1:1 or 2:1 from Science, Engineering or Technology degrees. Having graduated from the WIT Applied Biology with Quality Management degree, I applied for the award and started my PhD study in October 2004.

The Embark scholarship is different to many others in the sense that the person, not the research, is funded. In other words, you can study at any institute or university in Ireland as long as a proposal and letter of support is included in the application (part of your research can also be carried out internationally). Initially, the value of the award was not much different to other PhD funding but this year it has increased by 26%. An additional €1500 is specifically allocated for transferable skills training, which will allow me to attend a statistical genetics course in the United States, which is not available in Ireland.

The IRCSET committee is very co-operative and the scholarship is flexible. Extra funding after the standard 3 years is often granted if needed. Personally, the award has allowed me to attend conferences nationally and internationally, but more importantly it allows the purchase of high quality research materials especially in the area of molecular biology where reagents are becoming increasingly expensive,

My research involves the use of DNA-based laboratory techniques to find out more about the population size, distribution and relatedness of the pine marten (Latin name: *Martes martes*) in Ireland. For those of you who may not know what a pine marten (pictured) is, it is a relative of the stoat and weasel, close to the size of a domestic cat, and is an elusive omnivore that often dens in trees, old abandoned buildings or rock crevices such as those in The Burren, Co. Clare. Our study population is in Portlaw, Co. Waterford (where we have been collecting DNA samples over the last couple of years) and we have tissue samples from around the country.

Jacinta Mullins, Molecular Ecology Research Group, Lee Coffey, Bioremediation Research Group and Siobhan Moran, Molecular Ecology Research Group.

Population counts by observation is not an option as the pine marten is rarely seen in the wild and live trapping is too stressful for the animal and may change their natural behaviour. Therefore non-invasive sampling is used, a bit like forensics, where hair tubes are set up to pluck hair from the animal (stoats, red squirrels and rodents may also enter the tubes) and faeces are collected in the forest and sampled for DNA.

The DNA is extracted from the sample and used in a polymerase chain reaction (PCR) which essentially makes copies of a defined region of the DNA. Different reactions are carried out on a sample to determine the species and sex of the animal it came from. With the samples positive for pine marten DNA, a "DNA fingerprint" can be obtained using another set of PCR reactions, to differentiate one individual from another. I am currently at this "fingerprint" stage of the research.

When possible to discriminate between individual pine martens, the aim is to carry out a census of the Portlaw population. Furthermore, known populations closeby such as Inistiogue, Co. Kilkenny can be compared with the Waterford individuals to estimate relatedness and migration between populations.

This can give an indication of the long term viability of the species as isolated populations may not survive independently. Hunting for fur was historically the biggest threat to the pine marten. Since it has become a protected species, habitat loss and fragmentation reduce the hunting area of the marten and make it vunerable to predators. This study will give an indication of the health of the pine marten population in Ireland. If it is endangered, conservation strategies can then be put in place to prevent its extinction.

This work is following on from the work of Dr. Mark Statham. Other members of the Molecular Ecology Research Group include Dr. Catherine O'Reilly and Dr. Peter Turner, and postgraduate students Tom Roche and Siobhan Moran.

Think you have spotted a pine marten?
Please contact Ms. Jacinta Mullins, E-mail: jmullins@wit.ie