MARSDEN FUND
TE PŪTEA RANGAHAU A MARSDEN
NO. 41. MARCH 2008

MARSDEN FUND UPDATE

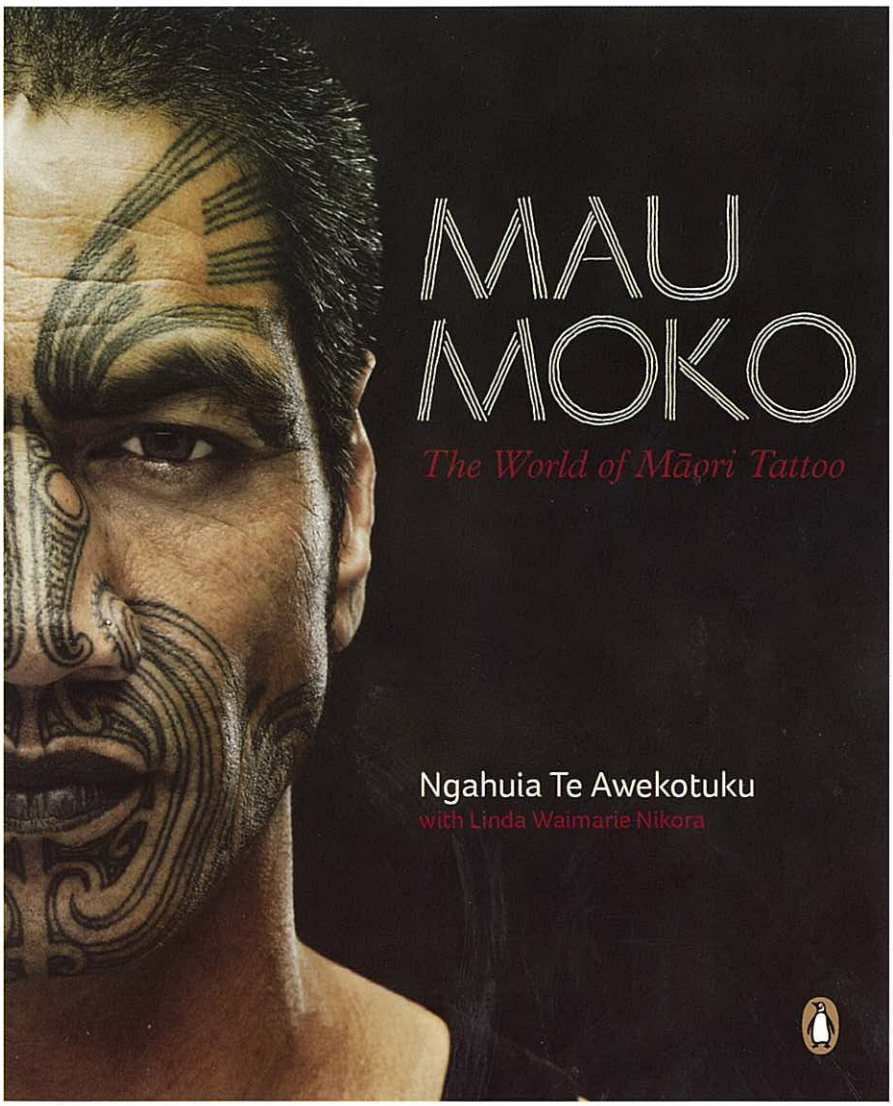
In the traditional Māori world, the moko, or facial and body tattoo, was part of everyday life; everyone had some patterning on their skin. Men wore elaborate designs on their faces; women's were usually less complex but elegant, and both sexes had extensive body work. After almost dying out in the twentieth century, Māori skin art is now experiencing a powerful revival, with many young urban Māori displaying the moko as a gesture of ethnic pride and identity.

A group of Māori scholars from the University of Waikato has recently published an illustrated book on moko, which stems from a Marsden-funded project. The study involved looking at the origins, significance, technology and practice of tā moko from the pre-contact period to contemporary times, and to explore how this important art form has become a dynamic and positive assertion of being Māori in our changing world.

Mau Moko: the world of Māori tattoo examines the use of moko by traditional Māori, notes historical material including manuscripts and unpublished oral sources, and links the art from the present day. It explores the cultural and spiritual issues surrounding moko and relates dozens of stories from wearers and artists.

The research team, based in the Māori and Psychology Research Unit at the University of Waikato, included Professor Ngāhuia Te Awekōtuku, Dr Linda Waimārie Nikora, Mohi Rua and Rolinda Karapu, and a significant number of community members, active practitioners, and emerging scholars. Once Penguin agreed to publish the team's work as a book, Becky Nunes brought in her skills as a portrait photographer. Fittingly, moko colours the lives, and the skins, of all the people involved in the making of the book.

The research project involved two parts. One looked at the history and technology of moko, examining early historical records and some manuscript



Mau Moko: the world of Māori tattoo

History matters – fungal assembly

The team at Landcare Research during analysis of an experiment. From left: Rob Allen, Duckchul Park, Barbara Paulus, Aidan O'Donnell, Paula Wilkie, Karyn Hoksbergen, Peter Buchanan, Ian Dickie, Tad Fukami (Absent: Chris Morse). In front of the team are their experimental ecosystems in which the history of colonisation of wood by 10 species of fungi is being studied, and they are surrounded by their tools of trade including a power drill.

Ecologists have become increasingly aware that "assembly history", or the sequence and timing in which species join an ecological community, may profoundly influence community structure, such as species diversity and composition. Community structure can in turn control ecosystem processes, such as decomposition and turnover of nutrients – although how this occurs is not currently known.

A Marsden-funded project is using fungal species found in dead wood in New Zealand beech forests to investigate how community assembly history influences decomposition and nutrient cycling. Dead wood is an ideal model system with which to test theory around community assembly. Additionally, it is a major factor in the cycling of nutrients in forests, and plays a key role in the release of carbon from wood back into the atmosphere.

The project is led by Dr Tad Fukami from the Department of Zoology at the University of Hawaii at Manoa and Dr Peter Buchanan from Landcare Research, and involves a team at Landcare Research that includes Dr Ian Dickie, Dr Rob Allen, Dr Barbara Paulus, Paula Wilkie, Karyn Hoksbergen, Duckchul Park, Chris Morse, Aidan O'Donnell and, until May last year, Andrea Roberts.

The researchers collected over 140 samples of fungi from decaying beech logs at Craigieburn Forest, Canterbury, and isolated 94 distinct species. Ten of these species were then placed onto a series of beech wood discs. Each disc received all 10 species, but the order of introductions was varied, so that on each disc one species was placed four weeks before the others.

The results so far have been intriguing, showing that there are complex interactions between species that depend on the order of introduction. One species of fungus, *Phlebia nothofagi*, appears to be highly competitive and to dominate, regardless of whether it arrives earlier or later than other species. The important exception occurs when another species, *Trametes versicolor*, is established first. Given a head-start over other fungi,

Trametes dominates and prevents *Phlebia* from becoming abundant. Thus, the outcome of competition between *Phlebia* and *Trametes* is entirely determined by the order of arrival. Other species' interactions are equally interesting, including one species (*Daldinia* sp.) that, while never abundant itself, results in a much increased abundance of another fungus (*Sistotrema brinkmannii*).

The importance of assembly history is not limited to community species composition. Depending on which species of fungus arrives first, there are marked differences in the rate of wood decay, respiration rates, and very large effects on the chemistry of remaining wood. In one case, where *Daldinia* sp. is introduced first, the carbon to nitrogen ratio of wood is nearly three times higher than when other fungi are introduced first. This is likely to have substantial effects on the long-term fate of carbon in forest ecosystems, as the carbon to nitrogen ratio is a primary determinant of decomposition rate.

The project is providing new ecological insights by showing that historical information, though difficult to determine in nature, can be essential for explaining seemingly idiosyncratic and perplexing variation in the way that ecosystems behave.

A fungal community where two wood-decay species compete, with both able to produce reproductive structures. History of colonisation of wood is critical to the fungal community that develops.

FOR MORE INFORMATION, CONTACT
Dr Peter Buchanan
Landcare Research
Private Bag 92170, Auckland 1142
Tel: (09) 574 4166
Email: buchananp@LandcareResearch.co.nz

Research in focus *continued*

continued from p.8

Her lecture opened the Second New Zealand Food History Symposium, *Cookery Books and Culinary Traditions*, organised by the Marsden-funded research team. The lecture series included international presentations from Canada and the US on such topics as the changing times recommended for cooking peas and colonial goose and how harvest festivals were celebrated.

As well as describing five manuscript cookbooks, dating from about 1740 to 1860, Helen Leach spoke about the Edmonds' series and their transition over the first 30 years of publication from an advertising booklet to a cookbook in its own right.

Professor Leach suggested during the seminar that recipe books should be perceived as historical artifacts. She claims that recipes provide a wealth of information about how our ancestors lived, cooked and ate. She also suggests that contemporary cuisine is predominantly derived from the past and asserts that recipes are a cultural evolution which pass through many hands and are adapted, rather than created anew.

Professor Helen Leach