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NZ scientists work on worldwide 'barcodes' for species

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New Zealand scientists are participating in a landmark international research project to label every living creature in the world using genetic "barcodes".

The project to develop an electronic inventory will use a molecular "barcode" to identify every living organism.

The technique of using a sequence of a short stretch of DNA - a so-called DNA barcode - to genetically identify known species and to find new ones has been promoted as complementary to existing systems of taxonomy - dividing organisms into groups that can be identified as individual species.

Because it requires only a small sample of tissue, wildlife biologists are expected to eventually use the system to identify the stomach contents of animals and reconstruct food cycles.

Other uses include identifying birds that fly into airplane engines and testing for protected fish species that sometimes make their way to market.

It also works for identifying organisms at different stages of life, such as the eggs and larvae of insects. And it can easily distinguish between species that look alike.

At the forefront of the project is a group of Massey University scientists led by Professor David Lambert, of Palmerston North, who said the practical benefits would be far-reaching.

Data for each species will be stored for fast and easy retrieval and is expected to be useful in health, border control, conservation management, food safety and environmental monitoring, as well as combating bio-terrorism.

Prof Lambert's researchers at the university's Allan Wilson Centre for Molecular Ecology and Evolution will sample the genetic barcodes from every New Zealand bird species and use them to assist the conservation of endangered species, including the kiwi, the north island saddleback, and black robins.

The ID labels will also be created for animals, plants, insects and fungi, and the information will be combined with that of other research groups from around the world to create a standardised electronic database.

The international DNA barcoding project is expected to be completed in 2025, at a cost of about \$3.6 billion.

Some other New Zealand scientists have said an inventory of indigenous species could be relatively simple for the mammals (just two species of bats) and birds, reptiles, fish and amphibians.

But they have raised questions over the sheer volume of invertebrates and lower plants, algae, fungi, sponges and bacteria to be identified - tens of thousands of them so far not even described scientifically.

According to Prof Lambert, the project will likely help the development of hand-held "sequencers", which could enable any living animal to be identified on the spot, by using a link to an internet database.

Internationally, the project is being led by Paul Hebert, of the University of Guelph in Canada, helped by a worldwide team of researchers.

It has already found four new species of North American birds.

The International Consortium for the Barcode of Life arose from two American conferences on DNA and taxonomy held in 2003.