

STANDARDISING BIODIVERSITY MONITORING METHODS

Supporting the New Zealand Department of Conservation national monitoring framework

Kate McNutt, Dr. Elaine Wright
Terry Greene, Dr. Colin O'Donnell
kmcnutt@doc.govt.nz

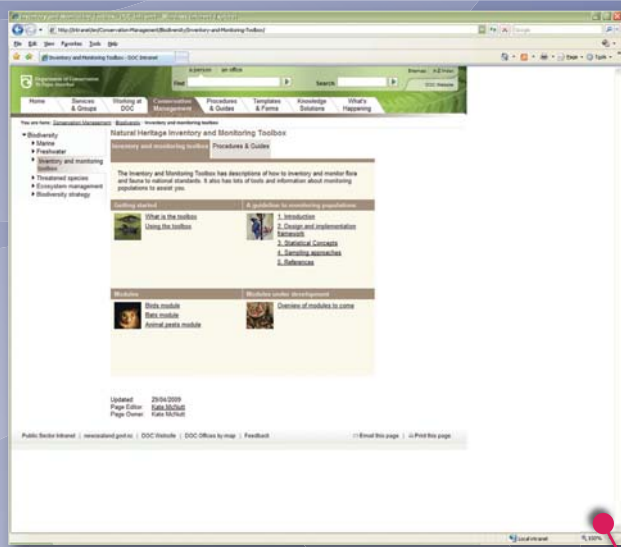
Research and Development Group
Department of Conservation
P.O. Box 13049
Christchurch 8141
New Zealand

What issues face the New Zealand Department of Conservation (DOC) in managing natural heritage?

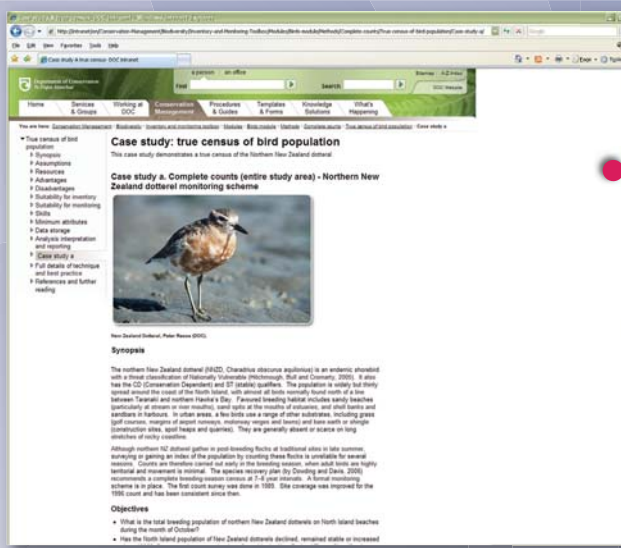
- DOC is responsible for managing, protecting and restoring natural heritage (ecosystems and species) on public conservation land (roughly one third of New Zealand) and in 33 marine reserves.
- Monitoring is essential for effective management of natural heritage. However, existing approaches to biodiversity monitoring are varied and the measurements used are inconsistent.
- Improved monitoring is essential not only for sound biodiversity management decisions, but also to ensure that stakeholders remain engaged, and to justify ongoing support for conservation.
- DOC's challenge is to develop a more comprehensive, standardised and responsive biodiversity monitoring and reporting framework.

A solution to national biodiversity monitoring and reporting

- The Natural Heritage Management System (NHMS) has been developed by DOC to prioritise natural heritage management actions and report on outcomes.
- Within NHMS, DOC has developed a national Inventory and Monitoring Framework. The Framework proposes a national sampling programme to monitor the trend and status of key biodiversity indicators.
- Central to this is the **Inventory and Monitoring Toolbox**.



Front page of Toolbox, as it appears on the DOC intranet, displaying different sections and modules



Example of a case study on a census method for counting the New Zealand dotterel

The Inventory and Monitoring Toolbox

The Inventory and Monitoring Toolbox consists of nationally approved monitoring methods that can be applied at a range of scales by DOC. It provides for a process of evaluation to allow new and/or improved methods to be adopted by DOC. The toolbox includes training courses that require staff to meet minimum competency standards for some methods, before they undertake monitoring in the field.

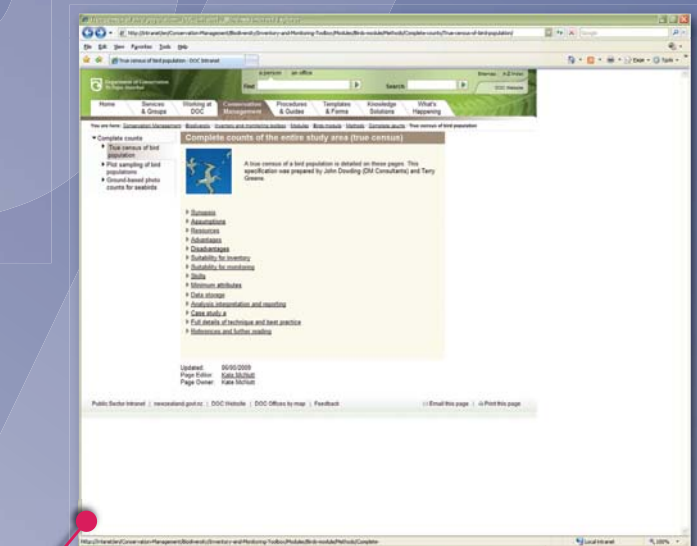
More details on the Toolbox

- It is available through DOC's internal Intranet.
- It has general reference material and guidelines on the principles of counting populations, sample design and basic statistical approaches.
- There are numerous tools to help staff to choose the methods that are most appropriate for their monitoring objectives. For example, tables summarise and compare the characteristics of methods; decision trees lead staff through a series of prompting questions to direct them towards the most appropriate method(s).
- Project Plans must be completed and approved by managers before new monitoring projects can begin. This is to ensure that Toolbox standards become embedded into DOC's every-day operational work.
- Minimum standards for each method are described and nested within modules (e.g. birds, bats, plants, animal pests, invertebrates, freshwater fish, herpetofauna).
- Specifications for each method are described, along with the method's advantages and disadvantages, assumptions, minimum attributes to record, resource and skill requirements, and data analysis procedures.

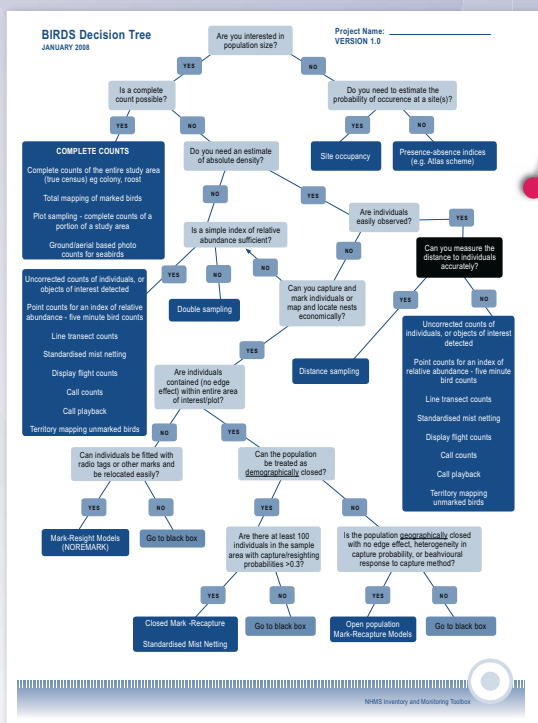
Forest and shrubland birds
Recommended techniques for the inventory and monitoring of forest and shrubland birds in New Zealand (includes warblers, silveryes, fernbirds, Mohua spp., fantails, flycatchers, honeyeaters, wattledbirds, parrots, pigeons, cuckoos). Method precision (relative to objectives): ✓✓ Good; ✓ Medium; ✓ Poor; X Not Recommended; - Not Applicable. Resources: L = Low; M = Medium; H = High. Methods that are blocked out are under development.

Method	Inventory Objectives				Monitoring Objectives ¹			Resources		
	Suitability for Inventory	Equipment costs	Personnel costs	Skills required	Surveillance ²	Status & Trend ³	Management ³	Equipment costs	Personnel costs	Skills required
Complete Counts										
Complete Counts (True Census)	X	L/M	H	H	X	✓✓	✓✓	LM	H	H
Total Mapping - individual birds	X	MH	H	H	X	✓✓	✓✓	MH	H	H

Comparative table for different methods of counting forest and shrubland birds



Example of a bird-counting specification



Example of a decision tree for bird monitoring methods



Department of Conservation
Te Papa Atawhai

The future

- New modules and methods are being added regularly.
- Research initiatives support development of new methods and improvements to methods already in the Toolbox; e.g. programmes are underway to validate and calibrate monitoring methods for some bird species.
- The Toolbox will eventually include methods for monitoring the dynamics of populations (e.g. recruitment and mortality) and broader ecosystem standards (e.g. water quality).
- Steps are underway to make the Toolbox available on the Internet so that other organisations involved in biodiversity management in New Zealand can apply its methods and standards.