

**IN THE MATTER OF**      The Resource  
Management Act 1991

**AND**

**IN THE MATTER OF**      An application by the  
Director-General of  
Conservation for the  
aerial discharge of cereal  
baits Pestoff 20R  
containing 20ppm  
brodifacoum to the coastal  
marine area, air, land and  
water of Rangitoto and  
Motutapu Islands and  
adjacent rock stacks to  
eradicate pests.

## **EVIDENCE OF DR JOHN EDWARD DOWDING**

### **INTRODUCTION**

1. My name is John Edward Dowding. I have a PhD in Biological Sciences and more than 20 years of experience surveying and undertaking research on New Zealand birds, particularly coastal and riverbed species. I also specialise in the ecology of introduced mammalian predators and their impacts on native birds.
2. I have undertaken detailed research on a number of threatened New Zealand shorebirds, including New Zealand dotterels, shore plovers, wrybills and variable oystercatchers. I have also participated in recovery programmes for the Chatham Island oystercatcher and the New Zealand fairy tern. I have studied the ecology of ship rats, feral cats and stoats in different parts of New Zealand at various times over the past 15 years. I am the author of more than 30 scientific papers and about 130 unpublished reports, popular articles and statements of evidence.
3. Since 1986 I have undertaken extensive research on the North Island population of the New Zealand dotterel. This has included studies of movement patterns and site-fidelity (Dowding & Chamberlin 1991), the impact of predation (Dowding 1998), dispersal (Dowding 2001), and aspects of breeding biology (Dowding, Wills & Booth 1999; Pye & Dowding 2002). In 1994, I described the North Island population as a distinct subspecies (Dowding 1994).

4. I was commissioned by the Department of Conservation (DOC) to write the two New Zealand dotterel recovery plans (Dowding 1993, Dowding & Davis 2007) and have been science advisor to the Department's New Zealand dotterel recovery group since its foundation in 1991. I run an annual training course for DOC staff, regional council staff, and members of community groups that covers the ecology of New Zealand dotterels and other shorebirds, impacts on these species, and techniques for managing those impacts. I am a member of the Department's expert panel that assesses the threat classifications of New Zealand birds.
5. I have undertaken ecological assessments for regional councils, district councils, DOC and others of the potential impacts of a range of activities and developments on threatened shorebirds throughout New Zealand. Over the past 11 years I have provided evidence on many of these matters to planning hearings and Environment Court hearings. Assessments have included the possible impacts on shorebirds of subdivisions, marinas, a heliport, filming, sand-mining, motorway construction and operation, gravel extraction, and wind farms.
6. I have been provided with a copy of the Code of Conduct for Expert Witnesses in the Environment Court Practice Note of 31 March 2005. I have read and agree to comply with that Code. Except where I state that I am relying on the specified evidence of another person, my evidence in this statement is within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions I express.

#### **SCOPE OF EVIDENCE**

7. During previous pest-eradication operations on Motuihe Island and at Tawharanui Regional Park, I have monitored the impacts of brodifacoum baits on non-target bird species (Dowding, Murphy & Veitch 1999; Dowding *et al.* 2006). At Tawharanui, New Zealand dotterels were lost to secondary poisoning, and it appeared that sandhoppers (*Talorchestia* spp.) were a significant toxin vector.
8. As a result of this experience, I was asked by DOC to:
  - (a) assess the potential risks and benefits to New Zealand dotterels of the proposed poisoning operation on Rangitoto-Motutapu, and
  - (b) evaluate methods to reduce potential impacts of this operation on New Zealand dotterels.

9. In November 2007, I visited the islands to determine current numbers and distribution of the species, to assess risks and benefits, and to band birds to assist with future monitoring. Following that visit, I prepared a report for the Department (Dowding 2007). The main points of my evidence are contained within that report, which is included as Appendix 2 in the Auckland Regional Council's planning report on these applications (ARC 2008).

### **RISKS AND BENEFITS TO DOTTERELS OF THE PROPOSED OPERATION**

10. The main findings of my report were as follows:
  - (a) in November 2007, 5 pairs of New Zealand dotterels were present on Motutapu. No pairs were present on Rangitoto at that time, but the species has nested there in the recent past;
  - (b) breeding success and adult survival currently appear to be low;
  - (c) given the mortality of dotterels that occurred following the aerial operation at Tawharanui, and the proposed bait application rate on Rangitoto-Motutapu, it seems very likely that there would be mortality of New Zealand dotterels if measures are not taken to reduce their exposure to toxin;
  - (d) for a variety of reasons, attempting to remove dotterels to captivity during the operation is unlikely to reduce overall impacts on the population significantly;
  - (e) the preferred option is to leave dotterels in situ and reduce their exposure to toxin by (i) reducing sandhopper density in dotterel territories by removing beach-cast seaweed before the operation, and (ii) removing baits from the high-water area immediately following each drop; and
  - (f) there are obvious long-term benefits to the local dotterel population from the proposed eradication of mammalian pests from Rangitoto and Motutapu.
11. I note also that predation by introduced mammals is by far the greatest threat to the New Zealand dotterel population. The species is conservation-dependant, and breeding success is consistently higher at sites where predators are either controlled or eradicated (Dowding & Murphy 2001; Wills *et al.* 2003; Dowding & Davis 2007).
12. In particular, I note that breeding success of dotterels has been significantly higher at Tawharanui Regional Park since the operation there (Dowding *et al.*, unpublished data), and was also very high on Motuihe Island during the 2007/08 season (Neate 2008).

## SUMMARY OF MAIN POINTS

13. The aerial application of baits containing brodifacoum on Rangitoto and Motutapu Islands is likely to result in mortality of New Zealand dotterels if measures are not taken to reduce exposure of birds to toxin.
14. In my opinion, the reduction of sandhopper density and removal of baits in dotterel territories as proposed by the Department will eliminate or reduce this risk as far as is possible.
15. The main threat to New Zealand dotterels is predation by introduced mammals. There can be little doubt that the eradication of these predators from Rangitoto and Motutapu will provide significant long-term benefits for New Zealand dotterels and many other endemic species. For these reasons, I fully support the proposed operation.

.....  
Dr J.E. Dowding

27 April 2008

## REFERENCES

- ARC 2008. Hearing papers for a joint resource consent hearing of the Auckland Regional Council and the Auckland City Council to consider applications 34295, 35021 and 35022 by the Department of Conservation for the dropping of brodifacoum on Rangitoto and Motutapu Islands. Files 19924, 20174 and 20175. Auckland Regional Council, Auckland.
- Dowding, J.E. 1993. NZ Dotterel Recovery Plan. *Threatened Species Recovery Plan Series No.10*. Department of Conservation, Wellington.
- Dowding, J.E. 1994. Morphometrics and ecology of the New Zealand Dotterel (*Charadrius obscurus*), with a description of a new subspecies. *Notornis* 41: 221-233.
- Dowding, J.E. 1998. The impact of predation on New Zealand dotterels. Unpublished report on Investigation 2051 to Science & Research Division, Department of Conservation, Wellington.
- Dowding, J.E. 2001. Natal and breeding dispersal of northern New Zealand dotterels. *Conservation Advisory Science Notes No. 338*. Department of Conservation, Wellington.
- Dowding, J.E. 2007. Potential impacts on New Zealand dotterels of a proposed aerial poisoning operation on Rangitoto and Motutapu Islands. Unpublished report to Auckland Area Office, Department of Conservation. *DM Consultants contract report number 74*. DM Consultants, Christchurch.
- Dowding, J.E.; Chamberlin, S.P. 1991. Annual movement patterns and breeding-site fidelity of the New Zealand Dotterel (*Charadrius obscurus*). *Notornis* 38: 89-102.
- Dowding, J.E.; Davis A.M. 2007. New Zealand dotterel (*Charadrius obscurus*) recovery plan, 2004-14. *Threatened Species Recovery Plan 58*. Department of Conservation, Wellington.
- Dowding, J.E.; Murphy, E.C. 2001. The impact of predation by introduced mammals on endemic shorebirds in New Zealand: a conservation perspective. *Biological Conservation* 99: 47-64.
- Dowding, J.E.; Murphy, E.C.; Veitch, C.R. 1999. Brodifacoum residues in target and non-target species following an aerial poisoning operation on Motuihe Island, Hauraki Gulf, New Zealand. *New Zealand Journal of Ecology* 23: 207-214.
- Dowding, J.E.; Wills, D.E.; Booth, A.M. 1999. Double-brooding and brood-overlap by Northern New Zealand Dotterels (*Charadrius obscurus aquilonius*). *Notornis* 46: 181-185.
- Dowding, J.E.; Lovegrove, T.G.; Ritchie, J.; Kast, S.N.; Puckett, M. 2006. Mortality of northern New Zealand dotterels (*Charadrius obscurus aquilonius*) following an aerial poisoning operation. *Notornis* 53: 235-239.
- Neate, H. 2008. Breeding success of New Zealand dotterel (*Charadrius obscurus*) on Motuihe Island. Unpublished report for BayerBoost Scholarship.
- Pye, D.A.; Dowding, J.E. 2002. Nesting period of the northern New Zealand dotterel (*Charadrius obscurus aquilonius*). *Notornis* 49: 259-260.
- Wills, D.E.; Murray, J.; Powlesland, R.G. 2003. Impact of management on the breeding success of the northern New Zealand dotterel (*Charadrius obscurus aquilonius*) on Matakana Island, Bay of Plenty. *Notornis* 50: 1-10.