

# New Zealand dotterel (*Charadrius obscurus*) recovery plan, 2004-14

John E. Dowding and Alison M. Davis

THREATENED SPECIES RECOVERY PLAN 58

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# New Zealand dotterel (*Charadrius obscurus*) recovery plan, 2004–14

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## ABSTRACT

The New Zealand dotterel (*Charadrius obscurus*) is a threatened endemic shorebird that is classified internationally as Endangered. There are two widely separated subspecies. The northern subspecies (*C. o. aquilonius*) breeds on or near the coast of the North Island (mainly north of 39°S) and numbered c. 1700 individuals in October 2004. It is classified in New Zealand as Nationally Vulnerable. The southern subspecies (*C. o. obscurus*) was once widespread in the South Island, but now breeds only inland on Stewart Island/Rakiura. In April 2005, it numbered c. 250 individuals, and it is classified in New Zealand as Nationally Critical. The present plan replaces the first recovery plan for the species, which was published in 1993. This new plan expires in 2014. Summaries are provided of the ecology of the species, its past and present distributions, the threats it faces, and the history of management and research. Long-term and short-term goals for both subspecies are given. Proposed objectives for the northern subspecies include continuing existing protection programmes, expanding protection to new sites, and increasing community involvement and other-agency partnerships in management. There is also a need to identify and protect important breeding, roosting and feeding habitat from degradation using advocacy and statutory protection. Proposed objectives for the southern subspecies include continuing current management on Stewart Island/Rakiura, maintaining the mustelid-free status of the island, and investigating more cost-effective methods of cat (*Felis catus*) control. A review of the first recovery plan, details of management techniques used at North Island sites and a timeline for the actions proposed in this plan are included in appendices.

Keywords: New Zealand dotterel, *Charadrius obscurus*, shorebird, threatened species, recovery programme, conservation management, New Zealand

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# 1. Introduction

The New Zealand dotterel (tuturiwhatu pukunui, rako, *Charadrius obscurus*) is a threatened endemic shorebird. It is the largest member of the cosmopolitan plover genus *Charadrius*, and has predominantly brown upper parts, a heavy black bill and grey legs. Underparts are off-white in late summer and autumn, becoming a characteristic orange-red in winter and spring. Adults typically weigh 130–170 g.

There are two distinct subspecies, which have ranges that are widely separated geographically. Their status is very different, the threats they face are largely different and the management actions required for their recovery are distinct. Consequently, in most parts of this plan, the two subspecies are considered separately.

The northern subspecies (*C. o. aquilonius*) numbered c. 1700 individuals in 2004 and is a characteristic bird of sandy beaches in the northern part of the North Island. The southern subspecies (*C. o. obscurus*) was once widespread in the South Island, but currently only breeds on herb-fields and exposed hilltops on Stewart Island/Rakiura. It numbered c. 250 individuals in autumn 2005. Southern New Zealand dotterels are larger and darker than birds of the northern subspecies.

The main threat to both subspecies is predation, mostly by introduced mammals. However, in the North Island, there are increasing impacts from disturbance (caused by human recreational use of beaches), and from habitat loss and degradation caused by development.

This is the second recovery plan for the New Zealand dotterel. The first plan (Dowding 1993) was approved in 1993 and covered a 5-year period. The present plan outlines actions required to improve the status of the species over the next 10 years. Achievements in the recovery programme since 1993 are assessed in Appendix 1 of this plan, where progress in the objectives and tasks listed in the first plan is reviewed. Recommendations from the New Zealand Dotterel Recovery Group will be used to update this plan during its operation.

## 2. Plan term and review date

Term of the plan: 10 years, from June 2004 to June 2014.

Review date: 30 June 2014.

## 3. Context

### 3.1 OVERVIEW OF SPECIES

#### 3.1.1 Species ecology and biology

Based on substantial morphological, ecological and behavioural differences, two subspecies have been described (Dowding 1994).

The northern New Zealand dotterel is almost entirely coastal and typically breeds on sandy beaches, sand spits and shell banks. In urban or developed areas it will also nest on grassed areas or bare earth (e.g. building sites, spoil heaps, quarries, golf courses and airport margins) (Dowding & Moore 2006). Pairs disperse along the coastline to breed. The core period for breeding is between September and January (Pye & Dowding 2002), after which most birds gather at traditional post-breeding flock sites (usually at tidal estuaries) for several months (Dowding & Chamberlin 1991). Although adult survival is high (average adult life-expectancy is c. 13 years), productivity at unmanaged sites is low (Dowding 1997b, 1998) and is the main factor limiting population growth.

The southern New Zealand dotterel breeds inland on Stewart Island/Rakiura, mainly on subalpine herb-fields or rocky areas. The entire population gathers in three coastal post-breeding flocks over autumn and winter (Dowding & Murphy 1993). In the absence of predator control, average adult life-expectancy is c. 5 years (Dowding 1997b).

#### 3.1.2 Status and threat categories

Internationally, the New Zealand dotterel is currently classified as Endangered (BirdLife International 2005). According to national criteria (Molloy et al. 2002; Hitchmough et al. in press), both subspecies are considered threatened.

In 2004, the northern subspecies numbered c. 1700 individuals, including c. 700 pairs (Dowding 2005). Nationally, it is ranked Nationally Vulnerable, with the qualifiers CD (Conservation Dependent) and ST (Stable) (Hitchmough et al. in press).

The southern New Zealand dotterel probably numbered c. 350 individuals in the 1950s (with breeding almost certainly confined to Stewart Island/Rakiura) but had declined to c. 62 by 1992 (Dowding & Murphy 1993). Following intensive management since 1995, the subspecies currently numbers c. 250 individuals (Dobbins 2005). Nationally it is ranked Nationally Critical, with the qualifiers CD (Conservation Dependent), HI (Human Induced) and OL (One Location) (Hitchmough et al. in press).

### 3.1.3 Past and present distribution

The past distribution of the northern New Zealand dotterel is not clear. It currently breeds in coastal areas of the North Island, north of a line between Taranaki and northern Hawke's Bay, although it is most common on the east coast of Northland, Auckland, Coromandel and Bay of Plenty (Dowding & Moore 2006). Its range has recently expanded into the Gisborne area; however, the North Island west coast population is fragmenting and range is being lost there (Dowding 2001, 2005).

Until the early 20th century, the southern New Zealand dotterel bred widely in the South Island (Dowding 1999). Breeding is now confined to Stewart Island/Rakiura, but there is a post-breeding flock site at Awarua Bay, Southland. Juvenile birds are occasionally seen elsewhere in the South Island (Dowding & Moore 2006).

### 3.1.4 Agents of decline and threats

Like many of New Zealand's endemic birds, the New Zealand dotterel shows a number of life-history and behavioural traits that make it susceptible to predation, particularly by introduced mammals (Dowding & Murphy 2001).

Predation (mainly of eggs and chicks) is the major threat to the northern subspecies. Important mammalian predators include stoats (*Mustela erminea*) (Dowding & Murphy 1996), cats (*Felis catus*) and hedgehogs (*Erinaceus europaeus*) (Dowding 1998). Where native avian predators are numerous (particularly the Australasian harrier *Circus approximans*, black-backed gull *Larus dominicanus*, and red-billed gull *Larus novaehollandiae scopulinus*), they also cause losses (Dowding 1993; Wills et al. 2003). Other factors that reduce breeding success are flooding and crushing of nests, and disturbance during breeding caused by the recreational use of beaches by people, vehicles and dogs (Lord 1996; Dowding 1998). There is ongoing loss or degradation of breeding habitat by coastal development, particularly on the North Island east coast (Cumming 1991).

Predation (mainly of breeding adults) by cats and possibly rats (*Rattus* spp.) is the main threat to the southern subspecies. Males undertake most of the night-time incubation and are more at risk. During the early 1990s, when numbers were very low, this led to a marked gender imbalance in the population (Dowding 1997b).

### 3.1.5 Past and current management and research

The first attempt at a North Island-wide census, using counts collected over many years, was made by Edgar (1969). The first complete census of the northern subspecies was undertaken in October 1989. A recovery group for the species was set up in 1991 and the first recovery plan was published in 1993 (Dowding 1993). A second complete census was undertaken by Ornithological Society of New Zealand (OSNZ) members, Department of Conservation (DOC) staff and others in October 1996 (Dowding 1997a), and a third in October 2004 (Dowding 2005).



Management of northern New Zealand dotterels was first undertaken at Ruakaka, Waipu, Mangawhai and Papakanui Spit by the New Zealand Wildlife Service in 1983, but did not include control of mammalian predators (G.R. Parrish, OSNZ, pers. comm.). Intensive management (including predator control) was first undertaken at Opoutere, Coromandel Peninsula, in 1986. Similar management programmes have since been initiated at other sites in Northland, Auckland, Coromandel and Bay of Plenty (Dowding 2006). The intensity and duration of management have varied, but 'full' management (see Appendix 2) includes appointing a warden, controlling predators, fencing off nesting areas, advocacy, reducing disturbance and reducing losses to flooding. Wardens monitor breeding success and produce a written report. These programmes primarily aim to increase productivity and have been largely successful (e.g. Wills et al. 2003).

Research has been carried out on the impacts of human disturbance on nesting, chick rearing and flocking (Lord 1996). Continuing research on juvenile dispersal has identified at least two sub-populations in the North Island, one in Auckland and Northland, the other in Coromandel and Bay of Plenty. There is currently little or no interchange between these sub-populations and they are treated as separate management units (Dowding 2001).

Research on the southern subspecies began in 1988 and revealed that the Stewart Island/Rakiura population was smaller than expected and in rapid decline (Dowding & Murphy 1993). Following trials in the early 1990s, predator control (by poisoning of cats and rats) has been undertaken around important breeding sites since 1995 (Dowding & Murphy 2001). The population size is estimated annually by staff of DOC's Southland Conservancy.

### **3.1.6 Preferred option for recovery**

The preferred option for the recovery of the New Zealand dotterel is as follows (justification of each point can be found in section 5 (Implementation) under the 'Topic' and 'Issue' headings):

- Continue predator control at key breeding sites on Stewart Island/Rakiura for the duration of this plan. Monitor numbers of the southern subspecies annually.
- Maintain the mustelid-free status of Stewart Island/Rakiura.
- Investigate more cost-effective methods of cat control and assess the feasibility of eradicating cats from Stewart Island/Rakiura.
- Continue existing protection programmes at North Island breeding sites and expand protection to areas that do not benefit from existing programmes.
- Increase community involvement and partnerships with other agencies in North Island protection programmes.
- Undertake research and management to maintain and expand the breeding range of the northern subspecies.
- Protect important breeding, roosting and feeding habitat in the North Island from destruction or degradation by means of advocacy, statutory protection and by opposing planning applications that will adversely affect such areas.

### 3.2 STRATEGIC DIRECTIVES

This plan is consistent with Goal Three of the New Zealand Biodiversity Strategy (Anon. 2000):

- Goal Three: Halt the decline in New Zealand's indigenous biodiversity.  
Maintain and restore viable populations of all indigenous species and subspecies across their natural range and maintain their genetic diversity.

The plan is also consistent with DOC's Statement of Intent (DOC 2003), particularly Key Steps 1 and 5:

- Key Step 1: Protect and restore New Zealand's natural heritage.  
Outcome 1: Halting the loss of natural heritage in New Zealand's terrestrial, freshwater and marine Environments within areas managed by the Department.  
Outcome 2: No human-induced extinctions of indigenous terrestrial, freshwater and marine species have occurred and, where practicable, representative populations of all indigenous species have long-term security in predominantly natural habitats within their natural range.  
Outcome 3: Ensuring a more comprehensive range of terrestrial, freshwater and marine environments is legally protected.
- Key Step 5: Engage the community in conservation.  
Outcome 3: Community groups, agencies and others participate in conservation and undertake their own conservation initiatives supported by the Department.

The control of cats and rats on Stewart Island/Rakiura around New Zealand dotterel breeding sites is consistent with DOC's draft 5-year strategy for managing pests on the island (DOC 2001).

### 3.3 CULTURAL IMPORTANCE

Tuturiwhatu pukunui or rako was and remains culturally significant to Maori. The bird features in a range of stories and sayings. According to Ngati Awa tradition, the slaying of Taukata caused his sister Tuturiwhatu such grief that she accidentally fell into an earth oven and had her breast burnt. This led to her representing the dotterel (K. Merito, Ngati Awa, pers. comm.). The appearance of dotterels was believed to herald the arrival of important visitors (J. Murray, Ngaiterangi, pers. comm.). Some bones of the dotterel were highly prized as tattooing needles (Williams 1985).

In the South Island during the 19th century, the New Zealand dotterel was considered a delicacy by European settlers and was shot for food (see Dowding 1999).

In many coastal areas of the North Island, the species is now highly valued as a characteristic and important part of the ecological community. Because the New Zealand dotterel is endemic, in low numbers, and is vulnerable to predators and development, many people (particularly residents of the North Island coast) are increasingly advocating its protection.

### 3.4 PUBLIC AWARENESS

There is a moderate level of public awareness of the northern subspecies in the northern part of the North Island, where New Zealand dotterels are most numerous. Elsewhere in the country, however, public awareness is generally low. Recent media coverage of the potential impacts of the North Shore Busway construction on the species has greatly increased public awareness in the Auckland urban area. Other than on Stewart Island/Rakiura, awareness of the southern subspecies is very low.

For many years, research on New Zealand dotterels and promotion of the species' threatened status were primarily undertaken by members of two non-government organisations (NGOs). Members of OSNZ have been responsible (since 1950) for much of the research undertaken on the species. The Royal Forest & Bird Protection Society (RFBPS) has promoted and funded research, management and advocacy initiatives at a number of sites. Members of both organisations have made major contributions to the three national censuses, and are regularly active in monitoring, data collection and advocacy at other times.

Management of New Zealand dotterels is increasingly being undertaken by organisations, groups and individuals outside DOC. In particular, management of the species in regional parks by the Auckland Regional Council has raised public awareness in the Greater Auckland area.

## 4. Goals

### 4.1 LONG-TERM RECOVERY GOALS

The long-term recovery goals for New Zealand dotterels are for:

- A population of 400 southern New Zealand dotterels that is self-sustaining or requires minimal/sustainable management to exist on Stewart Island/Rakiura by 2030
- Threats to northern New Zealand dotterels to be managed and habitat protected so that the present distribution is secured, the breeding range has expanded and the population has increased to at least 2200 birds by 2030

### 4.2 GOALS FOR THE TERM OF THIS PLAN

#### 4.2.1 Management

- The southern subspecies to number at least 300 birds by 2014
- The population of the northern subspecies to have increased in size to 1900 birds and there to have been no loss of range by the 2011 census (see Action 2.2 below)

#### 4.2.2 Community relations

- Protection and management of northern New Zealand dotterels by statutory bodies, NGOs, community groups and individuals outside DOC to have been coordinated and supported, so that they manage at least 15% of the breeding population effectively by 2014

#### 4.2.3 Research

- Alternative and/or additional techniques to make predator control on Stewart Island/Rakiura more cost-effective and sustainable over a longer period and a wider area to have been identified by the end of 2006
- A full understanding of the structure of the northern population (number and range of sub-populations) to have been achieved by 2008

## 5. Implementation

A timeline for the following objectives and actions is outlined in Appendix 3.

### 5.1 MANAGEMENT

#### 5.1.1 Topic 1—Management of threats

Both subspecies of New Zealand dotterel are conservation dependent, i.e. they will decline without management.

##### *Issues*

- The population of the southern subspecies is still very small and not yet secure. Therefore, it is essential that current levels of predator (cat and rat) control around important breeding sites on Stewart Island/Rakiura be maintained for the duration of this plan.
- Southern New Zealand dotterels appear to be particularly susceptible to mustelids (Dowding 1999), so it is vital that Stewart Island/Rakiura be kept free of them.

##### *Objectives and actions*

**Objective 1.1:** Continue current management on Stewart Island/Rakiura for the duration of this plan and prevent mustelids from reaching the island.

ACTION	RESPONSIBILITY	PRIORITY
1.1 Maintain predator control at important New Zealand dotterel breeding sites on Stewart Island/Rakiura each season (Table Hill/SH464, Mt Rakeahua, SH511 and Rocky Mountain)	Stewart Island Field Centre (FC)	Essential
1.2 Maintain the mustelid-free status of Stewart Island/Rakiura in perpetuity	Stewart Island FC and Southland Conservancy	Essential

### ***Issue***

- There has been a rapid decline in numbers on the North Island west coast in recent years. This may, in part, be due to nearly all of the existing managed sites being on the North Island east coast (Dowding 2001). There is currently one large managed site on the Auckland west coast (South Kaipara Head), but management is urgently required on Waikato west coast and Northland west coast to ensure that the range of the taxon is preserved. Since remaining sites in these two areas all have few pairs, a cost-effective management unit will need to consist of several separated sites.

### ***Objectives and actions***

**Objective 1.2:** Identify suitable North Island west coast management units by mid-2005 and establish full management programmes in those units by spring 2006, so that there is no loss of range on the North Island west coast during the term of this plan

ACTION	RESPONSIBILITY	PRIORITY
1.3 Identify at least one suitable management unit (group of sites) on Waikato west coast and at least one on Northland west coast (taking into account the criteria in Appendix 2) by mid-2005	Northland and Waikato Conservancies in conjunction with the recovery group	Essential
1.4 Establish full management (see Appendix 2) at the west-coast management units identified by Action 1.3 by the 2006/07 season, and maintain for the term of this plan	Northland and Waikato Conservancies	Essential

### ***Issues***

- Without management, the northern subspecies would decline by c. 1%–2% per year (JED, unpubl. data). Currently, c. 20% of breeding pairs are managed (by DOC and other agencies, groups and individuals) at five large ('core') sites and several smaller ones. This level of management is just sufficient to allow the population to increase slowly and therefore should continue.
- The northern subspecies population is still small, and increasing development and recreational use of the coast will impose further pressure in the near future. Therefore, additional managed sites (other than the national priority sites identified in Action 1.3 above) are required to increase growth of the population and maintain numbers and range.

### **Objectives and actions**

**Objective 1.3:** Continue existing protection programmes at North Island breeding sites and expand protection to areas that do not benefit from existing programmes, so that the population has increased to 1900 birds by 2011 and there is no loss of range

ACTION	RESPONSIBILITY	PRIORITY
1.5 Maintain full management (see Appendix 2) at existing breeding sites (Waipu, Mangawhai, South Kaipara Head, Opoutere, Waikawau and Matakana Island) each season for the term of this plan.	Northland, Auckland, Waikato and Bay of Plenty Conservancies	Essential
1.6 Establish full management (see Appendix 2) at sites not currently managed and maintain for the term of this plan. Criteria for site selection and current priority sites in each conservancy are listed in Appendix 2.	Northland, Auckland, Waikato, Bay of Plenty and East Coast/Hawke's Bay Conservancies in conjunction with the recovery group	High

#### **5.1.2 Topic 2—Monitoring**

Without periodic counts of both subspecies, changes in range and numbers cannot be detected, and the effectiveness of management is unknown. This information is required to guide further management and research, and to assist ongoing improvements in the recovery programme.

#### **Issues**

- Numbers of the southern subspecies are still very low and annual percentage changes are still relatively large. Annual autumn counts are required.
- The northern population is larger and currently numbers are not changing rapidly. Censuses have recently been undertaken every 7–8 years, and this still appears to be an appropriate interval.

### **Objectives and actions**

**Objective 2.1:** Monitor the population size of the southern subspecies annually and that of the northern subspecies at 7-year intervals

ACTION	RESPONSIBILITY	PRIORITY
2.1 Monitor numbers of the southern subspecies annually in autumn	Stewart Island FC.	Essential
2.2 Conduct a census of the entire North Island population in October 2011	Coordination and analysis by recovery group. Counts by all North Island (NI) conservancies (except Tongariro/Taupo and Wellington), OSNZ, RFBPS and other volunteers.	Essential

### **Issue**

- A few pairs have recently been found breeding on the Taranaki coast, south of the usual breeding range of the northern subspecies on the west coast. Given the overall decline on other parts of the North Island west coast, this possible range expansion should be monitored, as an increase in numbers may provide opportunities for management within the life of this plan.

### **Objectives and actions**

**Objective 2.2:** Annually monitor the possible expansion of range of the northern subspecies on the Taranaki coast

ACTION	RESPONSIBILITY	PRIORITY
2.3 Each spring, monitor numbers of pairs attempting to breed in Wanganui Conservancy. Each autumn, search for post-breeding flock sites.	Wanganui Conservancy with assistance from NGOs and volunteers	Medium

### **5.1.3 Topic 3—Legal protection**

Northern New Zealand dotterels are widely and thinly spread, with the majority of sites having few birds. Consequently, there is a perception that impacts at a particular site may be acceptable because only a few pairs are involved. However, the majority of the taxon now occurs on the east coast of the North Island, which is subject to heavy and increasing pressure from the human population.

### **Issue**

- In the medium to long term, the cumulative impact on few pairs at many sites will inevitably have an adverse effect on the taxon as a whole, by reducing numbers and range.

### **Objectives and actions**

**Objective 3.1:** Oppose consent applications for any development or activity that may have potential or actual adverse impacts on New Zealand dotterels at any site of international significance for the taxon under the Ramsar Convention (1971) (sites are considered of international significance if they regularly hold 1% of the population of a taxon)

ACTION	RESPONSIBILITY	PRIORITY
3.1 During the term of this plan, oppose applications for any activity that may have potential or actual adverse impacts on northern New Zealand dotterels at any breeding site that contains seven pairs or more, or any flocking or feeding site that regularly contains 17 birds or more	All NI conservancies except Tongariro/Taupo and Wellington	High
3.2 By mid-2006, establish a structure to collect and make available all relevant material (notably existing statements of evidence, planning hearing and Environment Court decisions), and to coordinate and support the legal action proposed in Action 3.1	Recovery group to establish, with input from all relevant conservancies	Medium

### **Issues**

- Northern New Zealand dotterels are widely spread, with the majority of sites having a small number of pairs. Management of few pairs at many sites is logistically difficult and not cost-effective. Particular emphasis should, therefore, be placed on long-term protection of sites that hold large numbers of pairs.

### **Objectives and actions**

**Objective 3.2:** Identify key breeding, flocking and feeding sites in the North Island and provide statutory or other protection

ACTION	RESPONSIBILITY	PRIORITY
3.3 By mid-2005, identify all key NI breeding sites (those regularly holding ten pairs or more) and key flocking or feeding sites (those regularly holding 30 birds or more)	Recovery group	High
3.4 During the life of this plan, seek statutory or other protection (via reserve status, local bylaws, covenants, etc.) for the key sites identified by Action 3.3	All NI conservancies except Tongariro/Taupo and Wellington	High

## 5.2 COMMUNITY RELATIONS

### 5.2.1 Topic 4—Management by agencies outside DOC

Northern New Zealand dotterels require coastal habitat, particularly sandy beaches and estuaries, for breeding, feeding and roosting. On the North Island east coast, which now holds more than 80% of the northern subspecies (Dowding 2003), these requirements are often in conflict with human activities (notably housing and marina developments, and recreational use of the coastline). Recovery of the subspecies requires resolution of these conflicts. Assistance with management by agencies outside DOC will increasingly be required.

### **Issues**

- The subspecies is very widely and thinly spread and DOC can realistically only manage a small number of key sites. The current threat category of the taxon may result in limited resources for new or existing management programmes. Consequently, although the management actions required for recovery are well known, resources to carry out these actions are likely to be limiting. To prevent the decline of the population, other agencies and groups will need to manage (or sponsor) an increasing proportion of the population. There are currently good examples of community-run protection programmes (Omaha Spit), community participation in DOC programmes (Matakana Island), local sponsorship of DOC programmes (Coromandel sites and Matakana Island) and programmes run by other agencies (Auckland Regional Council). More of these partnerships are required to achieve long-term recovery. DOC and the recovery group lack a formal structure to initiate, organise and coordinate these activities, and to provide training and support.



## ***Objectives and actions***

**Objective 4.1:** Increase community involvement and partnerships with other agencies in North Island protection programmes

ACTION	RESPONSIBILITY	PRIORITY
4.1 Compile a report by June 2005 identifying opportunities and requirements, and recommending a structure to coordinate community and other-agency management of northern New Zealand dotterels	Recovery group to commission report and set terms of reference	Essential
4.2 Promote, coordinate and support management of the northern subspecies by agencies, community groups and individuals outside DOC, so that they manage at least 15% of the current population (i.e. c. 105 pairs) 'effectively' (see Appendix 2) by 2014	As determined by Action 4.1, but likely to include recovery group overview and local support from relevant conservancy and area offices	Essential

### **5.2.2 Topic 5—Advocacy**

#### ***Issues***

- Much recreational disturbance and habitat degradation results from a lack of knowledge by the public of the species, and its problems, ecological requirements and conservation needs

#### ***Objectives and actions***

**Objective 5.1:** Increase public awareness of the species and its needs

ACTION	RESPONSIBILITY	PRIORITY
5.1 Maintain current advocacy and increase public education by means of talks, pamphlets, signage and media articles (local and national newspapers, magazines, radio and television) as appropriate throughout the term of this plan	All NI conservancies except Tongariro/Taupo and Wellington. Southland Conservancy and Stewart Island FC. Head Office where appropriate.	High

## **5.3 RESEARCH**

### **5.3.1 Topic 6—Predator control on Stewart Island/Rakiura**

Cats pose a long-term threat to New Zealand dotterels and other species on Stewart Island/Rakiura. Therefore, unless cats can be eradicated, some cat control will probably be required in perpetuity. The eradication of cats is consistent with DOC's vision of Stewart Island/Rakiura as a pest-free area, with self-sustaining ecosystems requiring minimal management (DOC 2001).

#### ***Issue***

- Ongoing cat control at current levels will be expensive. Therefore, alternative/additional techniques and methodologies are required that will allow sustainable predator control over a large area.

### ***Objectives and actions***

**Objective 6.1:** Investigate cost-effective methods of wide-scale cat and rat control and assess the feasibility of eradicating cats from Stewart Island/Rakiura

ACTION	RESPONSIBILITY	PRIORITY
6.1 Produce a report by the end of 2006 examining long-term options for predator control on Stewart Island/Rakiura, including additional techniques, pulsed management and the feasibility of cat eradication	Recovery group in conjunction with Southland Conservancy and possibly Research, Development & Improvement Division	Essential
6.2 Implement recommendations resulting from Action 6.1 by 2014 and assess outcomes	Southland Conservancy	High

### **5.3.2 Topic 7—Sub-populations of the northern subspecies**

#### ***Issue***

- The North Island population is now known to include at least two sub-populations that have little or no interchange between them (Dowding 2001). Therefore, each sub-population needs to be managed if they are not to decline. It is unknown whether other isolated sub-populations exist. If they do, they are likely to be in the Far North/Northland west coast and/or on the Waikato west coast (Dowding 2001). Such sub-populations are also likely to decline without management and range may be lost. Their identification may change future management priorities.

### ***Objectives and actions***

**Objective 7.1:** Identify any further isolated North Island sub-populations and determine population structure through research (possibly including genetic analysis). Re-assess management priorities in light of the results.

ACTION	RESPONSIBILITY	PRIORITY
7.1 Undertake research (possibly including genetic analysis) to identify any further isolated sub-populations and determine the overall structure of the North Island population. Report, with appropriate management recommendations, by the end of 2008.	Recovery group to coordinate in conjunction with relevant NI conservancies and other relevant agencies	Medium

## 6. References

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- DOC (Department of Conservation) 2003: Statement of Intent 2003–2006. Department of Conservation, Wellington. 88 p.
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- Dowding, J.E. 2006. Management of northern New Zealand dotterels on Coromandel Peninsula. *DOC Research & Development Series 252*. Department of Conservation, Wellington. 30 p.
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- Dowding, J.E.; Murphy, E.C. 1996: Predation of Northern New Zealand Dotterels (*Charadrius obscurus aquilonius*) by stoats. *Notornis 43*: 144–146.
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- Pye, D.A.; Dowding, J.E. 2002: Nesting period of the northern New Zealand dotterel (*Charadrius obscurus aquilonius*). *Notornis* 49: 259–260.
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## 7. Additional reading

The first recovery plan (Dowding 1993) contained a list of the more important references published to that date. Sources of information about or relevant to New Zealand dotterels published since then (and not shown in section 6 above) are listed here.

- Bridson, L. 2000: Minimising visitor impacts on threatened shorebirds and their habitats. *Conservation Advisory Science Notes* 301. Department of Conservation, Wellington. 21 p.
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- 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.
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Parker, K. 2001: New Zealand dotterel catches fish. *Notornis* 48: 164.

In addition, reports are produced each season by wardens or DOC staff describing the results of shorebird management at the main managed sites and some secondary sites. In some cases, these contain detailed information about management of northern New Zealand dotterels. They are too numerous to list here, but copies should be available from the relevant DOC conservancies, as shown below:

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CONSERVANCY	MANAGED SITE(S)
Northland	Waipu/Ruakaka/Langs Beach, Mangawhai, Whangarei Harbour
Auckland	South Kaipara Head
Waikato	Opoutere/Ohui, Waikawau
Bay of Plenty	Matakana Island
East Coast/Hawke's Bay	Waiaua/Waiotahi
Southland	Stewart Island/Rakiura

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# Appendix 1

## REVIEW OF PREVIOUS RECOVERY PLAN

TABLE A1.1. ACHIEVEMENTS OF THE NEW ZEALAND DOTTEREL (*Charadrius obscurus*) RECOVERY PROGRAMME SINCE 1993, SHOWING PROGRESS WITH THE KEY OBJECTIVES, ACTIONS AND TASKS THAT WERE LISTED IN THE FIRST RECOVERY PLAN (DOWDING 1993).

KEY OBJECTIVES	ACHIEVED?	COMMENTS
7.1.1 To increase the size of the northern population and encourage expansion of its breeding range in the North Island	Yes	The population increased by c. 4% between 1989 and 1996 (Dowding 1997). The breeding range has expanded into the Gisborne area.
7.1.2 To reverse the decline of the Stewart Island population	Yes	Numbers have increased from a low of 62 in 1992 to 250 in 2005.
<b>Actions</b>		
7.2 Establish a recovery group	Yes	
7.3 Undertake advocacy to increase public awareness and knowledge of the species and its problems	Yes	Advocacy undertaken by wardens during protection programmes. Community involvement at a number of sites (e.g. Omaha, Opoutere and Matakana). Pamphlets and videos produced. A Green Package initiative provided an advocacy and resource kit for volunteers.
<b>Tasks (northern population)</b>		
8.1.1 Provide protection at selected breeding sites each season (Waipu, Ruakaka, Mimiwhangata, Mangawhai Island, Papakanui Spit, Omaha, Opoutere and Ohope Spit)	Partially	Achieved in some or all years for all sites except Mimiwhangata and Ohope Spit (Ohope Spit has now largely eroded and has few birds).
8.1.2 Monitor the number of pairs breeding at unprotected and partially protected sites each season (Ocean Beach, Ngunguru, Whananaki, Bay of Islands, Mangawhai Spit, Wade River, Waikato Heads, Colville, Whangamata, Maketu, Matakana Island and Waiotahi Spit)	Partially	Achieved in some/all years for all sites except Ocean Beach, Ngunguru, Whananaki, Waikato Heads and Colville. Mangawhai Spit and Island now joined and considered one site. Matakana Island now fully protected.
8.1.3 Record numbers and localities of New Zealand dotterels breeding on the Hick's Bay to Hawke's Bay coastline annually, and assist colonisation attempts in this area	Yes	Monitoring and partial protection carried out at several sites between Hicks Bay and Portland Island. The population has increased.
8.1.4 Monitor post-breeding flock sites each autumn from 1992-96 (sites include Kowhai Beach, Whananaki, Ngunguru, Whangarei Harbour, Waipu Spit, Mangawhai Spit, Omaha, Wade River, Taporā, Te Matuku, Matarangi, Opoutere, Colville, Tauranga Harbour/Matakana Island, Ohope Spit and Pukehina/Maketu)	Partially	Achieved in some or all years for all sites except Kowhai Beach; also achieved at additional sites not listed.
8.1.5 Undertake a research-by-management programme to test efficacy of chick shelters [in protecting chicks from black-backed gulls ( <i>Larus dominicanus</i> )]	No	Option not pursued by recovery group; alternative strategy (gull control) now used where gulls pose a major threat.
8.1.6 Collect records from all sites and maintain a database	Yes	Flock counts held by Ornithological Society of New Zealand (OSNZ) and Department of Conservation (DOC) offices. Wardens' reports and some band sightings held by conservancies. Databases of band sightings held by JED. Census data (1989, 1996 and 2004) held by conservancies and by JED.
8.1.7 Census the entire northern population at the end of the period covered by this plan, i.e. in October 1996 and March-April 1997	Yes	

Continued on next page

Table A1.1—continued

KEY OBJECTIVES	ACHIEVED?	COMMENTS
8.2.1 Carry out research on the impact of predation on breeding New Zealand dotterels	Yes	Undertaken 1995–98 and results reported (Dowding 1998).
8.2.2 Continue research on survival, dispersal and recruitment of juveniles	Yes	Results of dispersal study reported by Dowding (2001). Survival of juveniles also measured and was high (JED, unpubl. data). The study is ongoing.
8.2.3 Undertake research on the breeding biology of the New Zealand dotterel	Partially	No dedicated study, but data acquired as part of Task 8.2.1 and during monitoring at protected sites. Double-brooding reported by Dowding et al. (1999). Timing and duration of breeding season described by Pye & Dowding (2002).
8.2.4 Devise a programme to test translocation techniques [in case there is a need to relocate birds from Stewart Island/Rakiura]	No	Task superseded as recovery has begun through predator control.
8.2.5 Continue research on the Omaha-Mangawhai population	Yes	Undertaken by JED & S.P. Chamberlin (OSNZ). Continuation of a long-term study of demographics and movement.
<b>Tasks (southern population)</b>		
8.3.1 Attempt to reverse the decline of the Stewart Island population by controlling cats ( <i>Felis catus</i> ) around important breeding areas each season	Yes	Cat control trials carried out 1992–94. Control carried out at Table Hill in 1995. Cat and rat ( <i>Rattus</i> spp.) control carried out at five sites each season since 1996.
8.3.2 Study the effect of cat control on southern New Zealand dotterel survival and productivity	Partially	Survival measured and was significantly higher in cat-control areas (Dowding 1998). Accurate measurement of productivity proved difficult both technically and logistically.
8.3.3 Monitor the southern population annually by counting numbers in autumn flocks and recording colour-banded birds	Yes	Results recorded in various unpublished reports and recovery group papers.
8.3.4 Prepare a contingency captive-breeding plan [in case numbers of the southern population fall below 30]	Yes	Captive-rearing trials undertaken at Otorohanga and Auckland Zoos. Thirty-one juveniles released 1995–2001. Rearing protocol prepared by Nelson (2001). Following successful management of the southern subspecies <i>in situ</i> , the recovery group recommended that the captive programme be discontinued.
8.3.5 Determine the extent of genetic differences between the northern and southern populations by analysis of DNA	Partially	DNA analysis not carried out but subspecies separated on morphological, ecological and behavioural grounds (Dowding 1994).

## References—Appendix 1

- Dowding, J.E. 1993: New Zealand dotterel recovery plan. *Threatened Species Recovery Plan Series 10*. Department of Conservation, Wellington. 38 p.
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# Appendix 2

## MANAGEMENT OF NORTHERN NEW ZEALAND DOTTERELS (*Charadrius obscurus* *aquilonius*): DEFINITIONS AND SITE SELECTION

### **Full management**

Full management means that the site or sites are monitored on a regular basis throughout the breeding season and the following work is undertaken:

- Effective control of mammalian predators
- Control of avian predators if necessary
- Fencing of nesting areas, reduction of disturbance (including Compliance and Law Enforcement activities), and reduction of nest loss to flooding and crushing
- Advocacy
- Monitoring of breeding success and production of a written report for the season

### **Effective management**

At unmanaged sites, productivity may vary widely (particularly where there are very few pairs) but averages c.0.25 chicks fledged per pair per season (Dowding 1998). Management at a site is considered 'effective' if productivity averages 0.5 chicks fledged per breeding pair per season (or higher), over a 3-year period or longer.

### **Selection of sites for management**

When resources become available for management at new sites, a number of factors will determine where the resources should be used.

On a national scale, the two highest priority areas are Waikato west coast and Northland west coast (Dowding 2001). Therefore, when resources are available to be used anywhere, they should be used in these areas. Since remaining sites in both areas all have few pairs, a cost-effective management unit will probably consist of several separated sites (see Actions 1.3 and 1.4).

Resources may sometimes be restricted to use within a conservancy or some other localised area. Therefore, a list of priority sites in each conservancy is shown below. It should be noted that site rank can change (nationally or locally) with time, as sites gain or lose breeding pairs, threat levels change, ownership changes or as the habitat changes physically. Site priority will be determined by a wide range of factors, including:

- Number of pairs. Management is likely to be more cost-effective at sites with many pairs. Can several small sites in close proximity be managed as a unit?
- Location on a national scale. Is the site in or near one of the two top-priority areas identified above?



- Location on a regional scale in relation to existing managed sites. Within sub-populations or regions, managed sites should be spread to provide the greatest possible sphere of influence (see Dowding 2001). This will assist with maintaining the range of the species as well as numbers.
- The practicality of management. Is the site too remote or too large to manage effectively? Can mammalian predators be effectively controlled? Are avian predators likely to be a problem? What is the level of recreational use? Can disturbance and nest loss to flooding be reduced? Are there issues of ownership or access? Does the area have any form of statutory protection?
- Potential benefits to other species or programmes. Will other taxa benefit from management actions? Can the work be integrated with other projects in the same area?
- Potential for community or other-agency involvement.

At the start of the period covered by this plan (2004), the following were identified as priority sites for new management programmes in each conservancy:

CONSERVANCY	SITES (IN ORDER OF PRIORITY)
Northland	<ol style="list-style-type: none"> <li>1. West-coast management unit (Action 1.3)</li> <li>2. Walker Island</li> <li>3. Bay of Islands management unit</li> <li>4. Karikari/Puwheke</li> <li>5. Kokota Spit</li> </ol>
Auckland	<ol style="list-style-type: none"> <li>1. Whangapoua (Great Barrier Island (Aotea Island))</li> <li>2. Pakiri River</li> <li>3. Motuihe</li> </ol>
Waikato	<ol style="list-style-type: none"> <li>1. West-coast management unit (Action 1.3)</li> <li>2. Colville/Whangaapehi/Waiaro</li> </ol>
Bay of Plenty	<ol style="list-style-type: none"> <li>1. Ohiwa Harbour</li> <li>2. Maketu</li> </ol>
East Coast/Hawke's Bay	<ol style="list-style-type: none"> <li>1. Waioua/Waiouka/Waiotahi</li> <li>2. Wherowhero</li> </ol>

Because site rank may change, final decisions on where to establish new management programmes should be made by local conservancy or area offices (or other agencies) in consultation with the recovery group, at the time resources become available.

## References—Appendix 2

- Dowding, J.E. 1998: The impact of predation on New Zealand dotterels. Unpublished report on Investigation Number 2051 to Science & Research Unit, Department of Conservation, Wellington. 23 p.
- Dowding, J.E. 2001: Natal and breeding dispersal of northern New Zealand dotterels. *Conservation Advisory Science Notes* 338. Department of Conservation, Wellington. 24 p.

# Appendix 3

## TIMELINE FOR PROPOSED RECOVERY ACTIONS FOR NEW ZEALAND DOTTEREL (*Charadrius obscurus*)

Priorities: E = Essential (black), H = High (mid-grey), M = Medium (pale grey). NI = North Island, StI = Stewart Island/Rakiura. Shaded years are those in which the particular action should be undertaken.

OBJECTIVE	ACTION	PRIORITY	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
1.1	1.1 Maintain predator control, StI	E	■	■	■	■	■	■	■	■	■	■
	1.2 Keep StI mustelid-free	E	■	■	■	■	■	■	■	■	■	■
1.2	1.3 Identify NI west coast management units	E	■	■	□	□	□	□	□	□	□	□
	1.4 Establish management at NI west coast sites	E	□	■	■	■	■	■	■	■	■	■
1.3	1.5 Maintain management at current NI sites	E	■	■	■	■	■	■	■	■	■	■
	1.6 Establish management at new sites	H	■	■	■	■	■	■	■	■	■	■
2.1	2.1 Census southern subspecies annually	E	■	■	■	■	■	■	■	■	■	■
	2.2 Census northern subspecies every 7 years	E	■	□	□	□	□	□	■	■	□	□
2.2	2.3 Monitor numbers in Wanganui annually	M	■	■	■	■	■	■	■	■	■	■
3.1	3.1 Oppose activities that impact on ≥ 1% of population	H	■	■	■	■	■	■	■	■	■	■
	3.2 Coordinate legal resources and actions	M	■	■	■	□	□	□	□	□	□	□
3.2	3.3 Identify key NI breeding/flocking sites	H	■	■	□	□	□	□	□	□	□	□
	3.4 Provide statutory protection at key sites	H	□	■	■	■	■	■	■	■	■	■
4.1	4.1 Report on non-DOC management	E	■	■	□	□	□	□	□	□	□	□
	4.2 Promote/support non-DOC management	E	■	■	■	■	■	■	■	■	■	■
5.1	5.1 Maintain and increase advocacy	H	■	■	■	■	■	■	■	■	■	■
6.1	6.1 Examine long-term management options, StI	E	■	■	■	□	□	□	□	□	□	□
	6.2 Implement actions recommended by Action 6.1	H	□	□	■	■	■	■	■	■	■	■
7.1	7.1 Research on NI sub-populations	M	■	■	■	■	■	□	□	□	□	□

# Recovery plans

This is one of a series of recovery plans produced by the Department of Conservation. Recovery plans are statements of the Department's intentions for the conservation of particular plants and animals for a defined period. In focusing on goals and objectives for management, recovery plans serve to guide the Department in its allocation of resources and to promote discussion amongst a wider section of the interested public.

After preparing a technical report which was refined by scientists and managers both within and outside the Department, a draft of this plan was sent to the New Zealand Conservation Authority and relevant Conservation Boards for comment. After further refinement, this plan was formally approved by the General Manager Operations (Northern) on 24 March 2006. A review of this plan is due after 10 years (2014), or sooner if new information leads to proposals for a significant change in direction. This plan will remain operative until a reviewed plan is in place.

The Department acknowledges the need to take account of the views of the tangata whenua and the application of their values in the conservation of natural resources. While the expression of these values may vary, the recovery planning process provides opportunities for consultation between the Department and the tangata whenua. Departmental Conservancy Kaupapa Atawhai Managers are available to facilitate this dialogue.

A recovery group consisting of people with knowledge of the New Zealand dotterel (*Charadrius obscurus*) and with an interest in its conservation has been established. The purpose of the New Zealand Dotterel Recovery Group is to review progress in the implementation of this plan and to recommend to the Department any changes that may be required as management proceeds. Comments and suggestions relating to the conservation of New Zealand dotterels are welcome and should be directed to the recovery group via any office of the Department or to the Threatened Species Section, Terrestrial Conservation Unit, Research, Development & Improvement Division.

# Threatened species recovery plans

NO.	SPECIES	YEAR APPROVED
57	New Zealand fairy tern recovery plan, 2005-15	2006
56	<i>Dactylanthus taylorii</i> recovery plan, 2004-14	2005
55	New Zealand large galaxiid recovery plan, 2003-13	2004
54	Hihi/stitchbird ( <i>Notiomystis cincta</i> ) recovery plan	2004
53	New Zealand non-migratory galaxiid fishes	2004
52	Grassy plants of fertile sites	2004
51	Mudfish ( <i>Neochanna</i> spp.)	2003
50	Kiwi ( <i>Apteryx</i> sp.)	2003
49	<i>Powelliphanta</i> land snails	2003
48	North Island <i>Oligosoma</i> spp. skink	2002
47	Tuatara	2001
46	Chatham Island fantail, Chatham Island tomtit and Chatham Island warbler	2001
45	Forbes' parakeet and Chatham Island red-crowned parakeet	2001
44	New Zealand shore plover	2001
43	Chatham Island shag and Pitt Island shag	2001
42	Chatham Island mollymawk, northern royal albatross, Pacific mollymawk	2001
41	Chatham Island tui	2001
40	Black robin	2001
39	Parea	2001
38	Chatham Island oystercatcher	2001
37	Chatham petrel	2001
36	Chatham Island taiko	2001
35	Hoiho	2001
34	Pygmy button daisy	2001
33	<i>Hebe cupressoides</i>	2000
32*	Inland <i>Lepidium</i>	2000
31*	<i>Muehlenbeckia astonii</i>	2000
30*	North Island kokako	1999
29*	Weka	1999
28*	<i>Pittosporum patulum</i>	1999
27	<i>Cyclodina</i> skinks	1999
26	Coastal cresses	1999
25*	Threatened weta	1998
24*	Striped skink	1998
23*	Fairy tern	1997
22*	Blue duck	1997
21	Kakapo	1996
20	Stitchbird	1996
19*	Brown teal	1996
18*	Native frogs	1996
17*	New Zealand (Hooker's) sea lion	1995
16*	<i>Dactylanthus taylorii</i>	1995
15*	Bat (peka peka)	1995
14	Otago and grand skinks	1995

All Threatened Species  
Recovery Plans are available  
on the DOC website:  
[www.doc.govt.nz](http://www.doc.govt.nz) >  
Publications >  
Science & technical

\* Out of print.

In-print issues are available free of charge from: Science & Technical  
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Conservation, PO Box 10420, The Terrace, Wellington 6143, New Zealand.