

# Pateke (*Anas chlorotis*) recovery plan, 2005–10

S.M. O'Connor, R.F. Maloney and R.J. Pierce

THREATENED SPECIES RECOVERY PLAN 59

Published by  
Science & Technical Publishing  
Department of Conservation  
PO Box 10420, The Terrace  
Wellington 6143, New Zealand

Cover: Brown teal duck and ducklings bred by Neil Hayes, Carterton. *Photo: Lynda Feringa (reproduced with permission from Wairarapa Times Age).*

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ISSN 1170-3806

ISBN 0-478-14146-7

This report was prepared for publication by Science & Technical Publishing; editing and layout by Amanda Todd. Publication was approved by the Chief Scientist (Research, Development & Improvement Division), Department of Conservation, Wellington, New Zealand.

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## ABSTRACT

The pateke/brown teal (*Anas chlorotis*) was formerly widespread and common in lowland habitats throughout New Zealand. However, it is now nationally endangered. Remnant populations occur primarily in eastern Northland and on Great Barrier Island (Aotea Island). Other populations occur on Coromandel Peninsula and on several islands and managed mainland sites. Introduced mammalian predators have been identified as the current main agents of decline. At the time of writing, predator control on Great Barrier Island (Aotea Island) and in Northland, which has been in place since 2000, appears to have arrested the overall decline in parts of their remnant range. Meanwhile, captive-bred birds have been released on Coromandel Peninsula, with the objective of establishing and securing a third large population. The current recovery plan covers the period 2005–2010 and sets in place the actions required to move into the next phase of recovery management for pateke. In this respect, the plan spans a transitional phase, which aims to consolidate the security of the species and set the platform for the broader recovery of the species. It identifies many tasks spanning management, community partnerships and focused research, which are required to effectively recover the species.

Keywords: *Anas chlorotis*, brown teal, pateke, threatened species recovery, Great Barrier Island (Aotea Island), Northland, reintroductions, captive breeding

© Copyright January 2007, Department of Conservation. This paper may be cited as:  
O'Connor, S.M.; Maloney, R.F.; Pierce, R.J. 2007: Pateke (*Anas chlorotis*) recovery plan, 2005–10.  
*Threatened Species Recovery Plan 59*. Department of Conservation, Wellington. 33 p.

# 1. Introduction

The pateke or brown teal (*Anas chlorotis*) is an endemic New Zealand duck that is closely related to the Campbell Island teal (*Anas nesiotis*) and Auckland Island teal (*Anas aucklandica*). Pateke were formerly widespread in forested and wetland areas throughout mainland New Zealand, offshore islands and Chatham Island (Worthy 2002). Today, the c. 1000 birds are largely confined to Great Barrier Island (Aotea Island) (hereafter referred to as Aotea) and parts of eastern Northland, with smaller populations occurring on Coromandel Peninsula, on several islands and in a few managed mainland sites (O'Connor 2004).

Until recently, all wild populations have been declining (Parrish & Williams 2001; Ferreira & Taylor 2003) and some have become extinct, e.g. Stewart Island/Rakiura (extinct 1970s) and Fiordland (few birds currently known and hybridisation with mallards (*Anas platyrhynchos*) evident). Research in Northland (Williams 2001) and on Aotea (Barker & Williams 2002) indicated that low rates of recruitment and/or adult survival were causing this decline, but that the agents of decline were poorly known. Historic declines may have been related to combinations of habitat loss, over-hunting, disease and the impacts of introduced predators.

An audit of the pateke recovery programme in 2000 provided the basis for refocusing and improving the management direction for pateke (Innes et al. 2000). Since 2000, targeted management and monitoring programmes have been implemented at key sites on Aotea and in eastern Northland (O'Connor 2001; Pierce et al. 2003). Meanwhile, releases of captive-reared birds began on Coromandel Peninsula in 2003 (O'Connor 2004).

The short-term goal of the pateke recovery programme is for pateke to be secure in the wild, with a combined protected population of more than 2000 birds at managed sites, by 2010. The long-term goal is for pateke to no longer be threatened and for the species to be a national icon of wetland and forest ecosystem health and sustainable farming practices.

## 2. Plan term and review date

This recovery plan has a 5-year term. It will be reviewed in July 2010.

## 3. Context

### 3.1 OVERVIEW OF SPECIES

#### 3.1.1 Species ecology and biology

Pateke are small dabbling ducks that are endemic to New Zealand (Marchant & Higgins 1990). In former times, they mainly occupied lowland wetlands and associated forests (Worthy 2002). However, most pateke currently inhabit lowland valleys and coastal areas comprising habitat mosaics of short-grass pasture, streams, wetlands, estuaries and associated riparian vegetation. They feed in the evening and at night on invertebrate and plant material in damp or flooded pastures, lawns, drains, shallow wetlands and estuaries (Marchant & Higgins 1990). Details of feeding are poorly known, but Moore & Battley (2003) found that pateke are capable of ‘jack-hammering’ open estuarine cockles. Pateke breed mainly during winter and spring, nests being located mainly in rushes, sedges and under banks. Communal daytime roosts are located beside larger water bodies (streams, ponds and estuaries) and are most used during the non-breeding period (Marchant & Higgins 1990).

#### 3.1.2 Status and species recovery principles

Pateke are nationally endangered (Hitchmough 2002), numbering c. 1000 birds (O’Connor 2004). They are currently in the ‘secure’ phase of the recovery action model (O’Connor & Falconer 2002). The current plan focuses on strengthening the security of pateke and moving into the recovery phase.

#### 3.1.3 Past and present distribution

In the past, pateke were widespread throughout mainland New Zealand and its offshore islands (Worthy 2002). However, they are now mainly confined to Aotea, eastern Northland and eastern Coromandel Peninsula, with low numbers occurring on several small islands, in Fiordland and at a few mainland management sites (Marchant & Higgins 1990; O’Connor 2004). Although there are small amounts of regional variation in plumage and morphology, particularly between Fiordland and northern remnant populations, pateke are grouped as one species, with no separation into formal sub-species. All Fiordland birds that have been sampled show evidence of hybridisation with grey (*Anas superciliosa*) or mallard ducks.

#### 3.1.4 Agent(s) of decline and threats to pateke

Until recently, populations of pateke in Northland and Aotea were steadily declining (Parrish & Williams 2001). Predators are considered to be the principal agent of decline, particularly introduced mammals (mainly dogs *Canis familiaris*, mustelids, and cats *Felis catus*) (O’Connor 2004). Dogs, cats, ferrets (*Mustela furo*) and stoats (*Mustela erminea*) are all capable of preying on all life stages of pateke, including adults. Some bird species, e.g. pukeko (*Porphyrio porphyrio*), prey on ducklings (Barker & Williams 2002), while Australasian harriers (*Circus approximans*) prey on ducklings and juveniles. Prolonged dry spells

and associated food shortages not only contribute to starvation and increased juvenile mortality (Barker & Williams 2002; O'Connor 2004), but also may result in pateke being more accessible to predators, as wet areas will be greatly constricted and birds are likely to forage during the day as well as at night. Other risks include vehicles (many birds are killed on roads each year in all management areas (O'Connor 2004)), shooting and increased coastal subdivision; the latter has several associated risks, including predation from pet animals and vehicle deaths.

### **3.1.5 Past and current management**

Until the late 1990s, pateke management comprised the release of captive-bred birds and some pasture management and planting. More recently (2000 onwards), intensive and targeted predator control has been implemented in the Mimiwhangata area of eastern Northland and in the Okiwi Basin on Aotea, along with associated intensive monitoring (Pierce et al. 2003). In 2003, this was extended to eastern Coromandel, where captive-bred birds were released in 2003 and 2004 (O'Connor 2004). Several community initiatives are also underway in neighbouring sites in Northland and on Aotea (e.g. Tutukaka Landcare Coalition, Awana Trust).

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

The preferred option for the recovery of pateke is to manage large populations in Northland and Aotea, and to reintroduce pateke to former sites (initially Coromandel); these should all be supported by maximum practicable predator control. When these populations are secure, pateke should be introduced to additional threat-managed sites and habitat management should be implemented at secure sites. There are clear opportunities for collaboration with community groups, which will enable the recovery of pateke over a wide geographical area.

## **3.2 STRATEGIC DIRECTIVES**

This recovery plan supports the outcomes and outputs for protection in the Department of Conservation's (DOC's) Statement of Intent for 2004-07 (DOC 2004), in particular:

'New Zealand's natural and historic heritage entrusted to the Department of Conservation is protected and restored'

- Halt the loss of natural heritage
  - Control or eradicate animal pests that pose the greatest threat to native flora and fauna (Consumption)
- Restore and protect threatened species
  - Protect and enhance populations and ranges of native species most threatened with extinction

### 3.3 CULTURAL IMPORTANCE

Pateke are an important taonga species to many iwi.

### 3.4 PUBLIC AWARENESS

There is a high level of public awareness and community concern for pateke, particularly in and around their current range. Many private initiatives are underway in support of pateke, e.g. landcare group activities and a captive breeding programme (O'Connor 2004). There are also at least two national non-government organisations with a specific targeted interest in pateke—'Ducks Unlimited' and the 'Brown Teal Conservation Trust'.

## 4. Goals

### 4.1 LONG-TERM GOAL

The long-term recovery goal is to recover pateke populations so they are no longer threatened and are a national icon of wetland and forest ecosystem health and sustainable farming practices.

### 4.2 PLAN-PERIOD GOALS

The four main goals for the term of the recovery plan are for:

1. Pateke to be secure in the wild, with a combined protected population of more than 2000 birds at 5-10 managed sites by 2010
2. Community-based protection of wild pateke to be supported and to contribute to Goal 1 throughout the life of this plan and beyond
3. Proven successful predator management prescriptions for pateke to be readily available to conservation managers (DOC and community) on mainland New Zealand by June 2006 and on Aotea by June 2008
4. Proven successful pateke reintroduction prescriptions to be readily available to conservation managers by 2010

# 5. Implementation

## 5.1 MANAGEMENT

### 5.1.1 Topic 1—Threat management

In the past, it is likely that a number of threats interacted to bring about the decline of pateke throughout New Zealand. Key factors are likely to have included habitat deterioration and loss, predation pressure from introduced mammals, excessive hunting, and possibly disease. Hybridisation with the aggressive mallard duck has been recorded in both North Island and South Island populations (Great Barrier Area Office, DOC, unpubl. data), but appears to only be prevalent at sites where the population is very small and declining (e.g. in Fiordland (Te Anau Area Office, DOC, unpubl. data)); there is no evidence of increasing numbers of hybrids occurring in larger populations. Of these threats, predation is the most pervasive, urgent and manageable threat currently impacting on pateke. Whilst the impacts of core predators (dogs, cats and mustelids) are well known, the impacts of many other predators that are known to kill pateke (e.g. pukeko, Australasian harriers, rats *Rattus* spp., and eels *Anguilla* spp.) are uncertain. In addition, some key sites in eastern Northland and Aotea are increasingly being exposed to new development, which brings with it many associated threats to pateke.

Currently, 'maximum practicable predator control' is in place in the Mimiwhangata-Whananaki area in Northland, at Okiwi Station/Whangapoua catchment area on Aotea and in the Moehau Kiwi Sanctuary on Coromandel Peninsula. This management includes the control of core mammalian predators and pukeko to low levels and the control of some competitors (Table 1). The hypothesis being tested is that the control of dogs, cats, mustelids and pukeko (but not Australasian harriers, ship rats *Rattus rattus*, and large eels) will result in significantly greater productivity, survival and flock numbers of pateke than occurred during previous years and/or at other sites (Pierce et al. 2003). The selection of the target species in Table 1 was based on the outcomes of previous studies on pateke and other threatened species in northern New Zealand, and on much anecdotal evidence of specific predators of pateke. Pest monitoring at these pateke management sites has also been extended to rodents and rabbits (*Oryctolagus cuniculus*), because there is a need to understand the population responses and potential impacts of these 'prey' species when their predators are continuously controlled. If the current management prescription does not achieve the targets for pateke, additional pest species may be added to the target list. However, current trends in demographic responses of pateke suggest that current management may be adequate for securing the species (pers. obs). Increasingly, these three management areas are being expanded by DOC and community initiatives, the latter of which includes some variations in target species, e.g. the inclusion of rat and possum (*Trichosurus vulpecula*) control. The experimental approach at Mimiwhangata and Okiwi will allow prescriptions for management to be more accurately defined for all pateke initiatives.

TABLE 1. CORE PREDATORS AND COMPETITORS THAT ARE BEING CONTROLLED IN PATEKE (*Anas chlorotis*) MANAGEMENT AREAS.

MANAGEMENT SITE	PREDATORS CONTROLLED	COMPETITORS CONTROLLED	PEST MONITORING
Mimiwhangata area, Northland	Dogs Cats Mustelids Pukeko (Also some eel control)	Paradise shelduck Mallard	Cat and mustelid captures and live sightings; pukeko, harrier and rat abundance.
Okiwi Basin, Great Barrier Island (Aotea Island)	Dogs Cats Pukeko (Mustelids absent)	Paradise shelduck Mallard (few present)	Cat captures and sightings; pukeko, harrier, rat and rabbit abundance.
Moehau, Coromandel	Dogs Cats Mustelids Pukeko	Paradise shelduck Mallard	Cat and mustelid captures. Other pests monitored as part of Moehau Kiwi Sanctuary management.

### **Issues**

- Pateke are nationally endangered and are not secure against extinction.
- Predators are the primary agents of current pateke decline.
- Management effort to secure pateke has not been consistently high quality.
- Increased coastal development poses additional risks to pateke via road-kills and from predation by domestic animals, particularly cats and dogs.
- Awana is ranked as the second most important site for pateke on Aotea and part of this site (the O'Shea block) has been offered for sale to the Crown.
- Many landowners and community groups are keen to assist in pateke recovery but they need advice and support. Conversely, there is resistance amongst some landowners to recognise the implications of their land management.
- There are potential ripple effects in predator-control areas, e.g. increases in rabbits and rats, and increased attraction of predators to the area.
- Competition from mallards and paradise shelducks (*Tadorna variegata*) is an issue at many sites.
- Diagnosing the cause of death of monitored birds is often problematic.

### **Objectives and actions**

**Objective 1.1:** Increase the pateke population in the Okiwi Basin (Aotea) to exceed 750 birds in annual trend counts by 2010.

**Objective 1.2:** Increase the pateke population in the Teal Bay-Mimiwhangata-Whananaki (Northland) managed area to exceed 750 birds in annual trend counts by 2010.

**Objective 1.3:** Apply maximum practicable predator control in at least one additional catchment on Aotea by July 2007; the first priority site is the Awana catchment.

ACTION	ACCOUNTABILITY	PRIORITY
1.1 Apply sustained maximum practicable predator control (Innes et al 2000) for a specific suite of predators at Okiwi (initially cats, dogs and pukeko) until a successful prescription is identified (Pierce et al. 2003). Apply this prescription throughout the term of the plan.	AM (Area Manager) Aotea (Great Barrier Island (Aotea Island))	Essential
1.2 Apply sustained maximum practicable predator control for a specific suite of predators (guided by Okiwi outcome in Action 1.1) in the Awana catchment (or next priority site) on Aotea from 2007.	AM Aotea	Essential
1.3 Apply sustained maximum practicable predator control for a specific suite of predators, initially involving mustelids, cats, dogs and pukeko, in conjunction with localised experimental habitat manipulation in Mimiwhangata area (Teal Bay-Whananaki) throughout the term of the plan.	AM Whangarei	Essential
1.4 Minimise road deaths of pateke throughout the term of the plan by erecting signage along sections of road where pateke are vulnerable, by managing culverts to allow safe pateke access beneath roads, and by advocating for more careful driving and constructing judder bars in pateke areas.	AM Aotea and AM Whangarei	Essential
1.5 Minimise deaths from dogs throughout the term of the plan by advocating for and applying better control of domestic dogs, and ensuring good dog compliance in and around areas important to pateke.	AM Aotea and AM Whangarei	Essential
1.6 Minimise deaths from shooting throughout the term of the plan by advocating for duck hunters to be aware of pateke and identify their targets, and by enforcing legislation where warranted.	AM Aotea and AM Whangarei	Essential
1.7 Minimise impacts of competitors in areas important to pateke throughout the term of the plan by controlling mallards and paradise shelducks.	AM Aotea and AM Whangarei	High
1.8 Continually improve pateke management skills (including predator control) via training and skill sharing.	AM Aotea, AM Whangarei and recovery group	Essential
1.9 Maintain biosecurity measures at Aotea, mainland departure points and transport carriers throughout the term of the plan to ensure mustelids are excluded from Aotea.	Conservator Auckland and AM Aotea	Essential
1.10 Provide ongoing support to Auckland Regional Council and community aspirations for predator eradications from parts (or all) of Aotea.	Conservator Auckland and AM Aotea	Essential
1.11 Provide ongoing support for community initiatives for predator control in Northland.	AM Whangarei	Essential
1.12 Implement a regular audit of predator control and monitoring effort, as identified in monitoring guidelines (Pierce et al. 2003).	AM Aotea, AM Whangarei and recovery group	Essential

*Continued on next page*

ACTION	ACCOUNTABILITY	PRIORITY
1.13 Implement ongoing necropsy of dead birds as part of routine pateke management activities.	AM Aotea and AM Whangarei	Essential
1.14 Lobby and bid to Nature Heritage Fund and any other potential funding sources for purchase of the O'Shea block in Awana catchment on Aotea.	Conservator Auckland	Essential Essential
1.15 Monitor pateke responses to test the effectiveness of management as per monitoring guidelines.	AM Aotea and AM Whangarei	
1.16 Monitor potential ripple effects of predator control on populations of rabbits and rats, and prepare contingency plans to deal with any significant ecological consequences.	AM Aotea and AM Whangarei	High
1.17 Provide field operators and necropsy specialists with photographic examples of classic 'known predations' and a protocol for evaluating predation events by June 2006.	Recovery group and AM Whangarei	Essential

### 5.1.2 Topic 2—Habitat management

The habitat currently occupied by pateke is markedly different from their historic habitat, which comprised predominantly lowland forest and wetlands (Worthy 2002). These habitat types have been greatly reduced in extent and quality, and now often occur as remnants within a largely cultural environment. Currently, remnant populations of pateke occur mainly in habitat mosaics comprising pasture, wetlands, estuaries and forest edges (Williams 2001; Barker & Williams 2002). Ecological processes are heavily modified in these habitats, with many prolific exotic plants, including grasses, being present, and the megafauna comprising mainly domestic mammalian herbivores. If managed well, however, livestock grazing can be beneficial to pateke (Miller 2004).

#### *Issues*

- Specific habitat management prescriptions to benefit pateke are not well understood
- Grazing management has been largely ad hoc, particularly at Mimiwhangata
- Potentially negative impacts of fertilising and grazing regimes on terrestrial and aquatic invertebrate communities and Whangapoua Estuary in Okiwi Basin are not well understood

#### *Objectives and actions*

**Objective 2.1:** Apply sustained grazing management at Okiwi Station that is consistent with the Okiwi Recreation Reserve and Whangapoua stewardship area conservation working plan (Davis 2002) until 2010, unless research outcomes dictate a review or change of prescription

**Objective 2.2:** Prepare and implement a conservation working plan to direct integrated park management of Mimiwhangata Coastal Park by December 2005 that gives primacy to pateke values consistent with the long-term goal of this recovery plan

ACTION	ACCOUNTABILITY	PRIORITY
2.1 Manage grazing leases to provide consistently suitable habitat for pateke at Okiwi and Mimiwhangata throughout the term of the plan	AM Aotea and AM Whangarei	Essential
2.2 Prepare integrated conservation working plan for Mimiwhangata Coastal Park by December 2005, covering biodiversity values, grazing-pressure standards and monitoring, drainage and water manipulation, weed control, fencing, wetlands/ponds, habitat manipulation, tracks and roads, riparian strips, fertiliser regimes, retirement and revegetation, buildings and structures, mammalian pest control and monitoring, and other biota monitoring (e.g. kiwi <i>Apteryx mantelli</i> , shorebirds, rails <i>Gallirallus philippensis</i> , and snails)	AM Whangarei	Essential
2.3 Review fertiliser regimes at Okiwi and make recommendations that best suit pateke and wider ecological values by June 2005	AM Aotea and recovery group	Essential

### 5.1.3 Topic 3—Reintroduction

Past attempts to reintroduce pateke largely failed due to inadequate planning and site management, and a general lack of monitoring (Innes et al. 2000). The current knowledge of predator impacts and advances in predator control methodology provide many opportunities for re-establishing populations of pateke in their former range. During the term of this plan, one large population will be established at Moehau-Port Charles (Coromandel Peninsula) and initial releases will be made at one or more additional sites, with the aim of establishing large populations (Pierce et al. 2002). Smaller scale releases are also anticipated to establish or enhance populations at suitable sites where community-based predator control regimes are in place or to test and develop release techniques (experimental releases) for broader application. Potential release sites have been assessed and ranked nationally against key criteria by Maloney et al. (2001). This is a 'living document', which will be updated regularly and will guide selection of the most suitable sites for reintroduction. One consideration will be the geographic spread of pateke populations nationally and opportunities for 'insurance' by having many secure populations separated by geographic distance.

#### *Issues*

- Little knowledge was obtained about why past reintroductions failed
- The captive-breeding and rearing programme has not been effectively utilised in the past
- Reintroductions of captive-bred birds allow the establishment of new populations and the enhancement of existing isolated remnant ones, without impacting core wild populations
- Current opportunities for re-establishing new populations are mostly in northern New Zealand, but it is desirable to gain a wide geographic spread of populations in order to minimise the chance of catastrophic stochastic events (e.g. disease) negatively impacting the persistence of the species

- In some areas, populations may be recovering following the protection of one or two pairs, which could result in some genetic bottlenecks
- There is a growing interest amongst community groups to host pateke reintroductions, which raises a potential 'quantity v. quality' conflict due to the limited availability of captive birds for release

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

**Objective 3.1:** Establish secure breeding population of at least 200 birds at Moehau Kiwi Sanctuary by 2010

**Objective 3.2:** Test and refine release techniques by applying experimental approaches aimed at establishing pateke at release sites and creating new populations in the long term

ACTION	ACCOUNTABILITY	PRIORITY
3.1 Release c. 40–50 birds annually at Moehau until projected target (of 200 birds by 2010) is on track	AM Hauraki and recovery group	Essential
3.2 Adapt predator management prescription annually as necessary in and around release site to improve survival, residency, productivity and recruitment during reintroduction effort	AM Hauraki and recovery group	Essential
3.3 Integrate predator management prescription for pateke in the wider Moehau-Waikawau area with that of kiwi by 2005, and review and adapt annually for long-term protection of the new population	AM Hauraki and recovery group	Essential
3.4 Implement pre-release conditioning and quarantine protocols annually (Gummer & Evans 2003)	AM Hauraki and recovery group	Essential
3.5 Test effectiveness of supplementary feeding regime annually	Recovery group	Essential
3.6 Implement annual monitoring as per monitoring guidelines (Pierce et al. 2003)	AM Hauraki and recovery group	Essential
3.7 Continually support community-led predator-control initiatives	AM Hauraki	Essential
3.8 Minimise road deaths throughout the term of the plan by erecting signage along road sections where pateke are vulnerable, by managing culverts to allow safe pateke access beneath roads, and by advocating for more careful driving and placing judder bars in pateke areas	AM Hauraki	Essential
3.9 Minimise deaths from dogs throughout the term of the plan by advocating for and applying better control of domestic dogs, and ensuring good dog compliance in and around areas that are important to pateke	AM Hauraki	Essential
3.10 Continually advocate for duck hunters to identify their targets and avoid shooting pateke, and enforce legislation where warranted	AM Hauraki	Essential
3.11 Control competing waterfowl (mallard and paradise shelduck) in areas that are important to pateke throughout the term of the plan	AM Hauraki	Essential
3.12 Continually build capability and skills for pateke management via training and skill sharing	AM Hauraki	Essential

**Objective 3.3:** Begin pateke releases at a fourth additional suitable site from 2008, with the aim of establishing a large breeding population of at least 200 birds

ACTION	ACCOUNTABILITY	PRIORITY
3.13 Re-assess and rank mainland and island site options at least every 2 years as per Maloney et al. (2001)	Recovery group	Essential
3.14 Prepare and approve a translocation proposal for pateke release at fourth site	Appropriate managers and recovery group	Essential
3.15 Consult with Ngai Tahu about translocations within their rohe, and with other iwi depending on release site, as part of relevant translocation proposals	Appropriate managers	Essential
3.16 Implement release programme at fourth site	Appropriate manager	Essential

**Objective 3.4:** Begin pateke releases aimed at establishing or enhancing moderate to large populations (100–200+ birds) at sites where management is led by the community from 2007

ACTION	ACCOUNTABILITY	PRIORITY
3.17 Evaluate and recommend site(s) suitable for management of pateke recovery led by the community and provide technical advice and support	Recovery group	Essential

**Objective 3.5:** Sustain pateke presence on Mana, Kapiti, Tiritiri Matangi and Hauturu/Little Barrier Islands, and Warrenheip and Karori mainland sanctuaries, where practicable, to contribute to the security of the species nationally, and respond to any significant sightings in Fiordland

ACTION	ACCOUNTABILITY	PRIORITY
3.18 Implement management of threats throughout the term of the plan	AM Kapiti, AM Warkworth and Managers Warrenheip and Karori sanctuaries	High
3.19 Implement quarantine and predator-control contingency measures throughout the term of the plan	AM Kapiti, AM Warkworth and Managers Warrenheip and Karori sanctuaries	High
3.20 Implement monitoring as per monitoring guidelines (Pierce et al. 2003) throughout the term of the plan	AM Kapiti, AM Warkworth and Managers Warrenheip and Karori sanctuaries	High
3.21 Evaluate need for additional pateke introductions to sustain local populations	Recovery group	High
3.22 Respond to significant sightings of birds in Fiordland with additional survey and evaluation of the potential for translocation, e.g. to Anchor Island	Southland Conservancy and recovery group	High

**Objective 3.6:** Implement pateke captive management plan throughout the term of this plan

ACTION	ACCOUNTABILITY	PRIORITY
3.23 Ensure genetic integrity and numbers of captive population by the transfer of new bloodlines from wild pateke populations (Dumbell 2000) annually between 2004 and 2006 (O'Connor 2004)	Recovery group	Essential
3.24 Implement best-practice captive management procedures (including disease surveillance, pre-release conditioning and quarantine procedures) as identified in captive management plan, husbandry manual (Gummer & Evans 2003), release strategy (Pierce et al. 2002) and other best-practice documents	Recovery group	Essential
3.25 Produce birds of sufficient quality for annual releases within required timeframe	Recovery group	Essential
3.26 Use captive birds to advocate pateke conservation	Recovery group	High
3.27 Implement disease surveillance/pathology when capturing new birds (Gummer & Evans 2003)	Recovery group	Essential

**5.1.4 Topic 4—Legal protection/planning**

Pateke are threatened by activities that can be addressed by statutory authorities through appropriate legislation, regulations, consent processes and other policies.

**Issues**

- Predation by domestic dogs and cats in coastal areas is likely to increase
- Disturbance at key flock and feeding sites is likely to escalate with coastal development and its associated pressures
- Mortality rates on roads are likely to be increasing in most pateke areas

**Objectives and actions**

**Objective 4.1:** Mitigate threats to pateke through legal and planning mechanisms throughout the term of this plan

ACTION	ACCOUNTABILITY	PRIORITY
4.1 Minimise the impacts of dogs on pateke via robust dog exclusion, advocacy, control, and enforcement in and around key sites, including sites that have sufficient habitat to allow pateke to recover	Conservators and area managers	Essential
4.2 Minimise the impacts of pet dogs and cats via subdivision opposition or mitigation, e.g. pet-free covenants on subdivisions	Conservators, area managers and community relations managers	Essential
4.3 Minimise road deaths of pateke by imposing speed limits, judder bars, better culvert designs, etc.	Conservators and area managers	Essential

*Continued on next page*

ACTION	ACCOUNTABILITY	PRIORITY
4.4 Provide better statutory protection through the purchase and gazetting of new reserves within and around key sites, including sites that have sufficient habitat to allow pateke to recover	Conservators and area managers	Essential
4.5 Advocate for developers to provide compensation or mitigation for pateke habitat values that are lost or degraded, through tangible contributions to the pateke recovery programme	Conservators and area managers	Essential
4.6 Promote appropriate statutory and policy provisions (as in Actions 4.1–4.5 above) for important pateke areas to be added to district plans when they are being reviewed	Conservators and area managers	Essential

### 5.1.5 Topic 5—Recovery group

The Pateke Recovery Group has a pivotal role in providing recommendations and ongoing technical advice for the recovery of pateke.

#### *Issues*

- Technical advice to secure pateke has not been consistently high quality
- There is a lack of continuity of skills amongst pateke recovery programme workers
- Management and monitoring techniques need to be viable and cost-effective in the long term

#### *Objectives and actions*

**Objective 5.1:** Conservation managers receive high-quality technical advice that enables the recovery of pateke throughout the term of this plan

ACTION	ACCOUNTABILITY	PRIORITY
5.1 Ensure the recovery group has an appropriate composition (mix of DOC employees and stakeholders), an appropriate balance of skills (technical, operational, public relations and leadership), and an appropriate capacity of key members, as per role descriptors	Regional General Manager Northern	Essential
5.2 Recovery group leader and science coordinator to undertake biannual (or more frequent, if required) site visits to help resolve issues and ensure high quality of management and monitoring effort	Recovery group	Essential
5.3 Lead and provide strategic direction to the pateke recovery programme	Recovery group	Essential
5.4 Actively facilitate the implementation of recovery group recommendations by feeding recommended actions into the management line as and when appropriate	Recovery group	Essential

*Continued on next page*

ACTION	ACCOUNTABILITY	PRIORITY
5.5 Strengthen relationships with key programme stakeholders, including landowners, leaseholders, institutions with captive populations, iwi, community groups, Fish and Game New Zealand, and research organisations	Recovery group	Essential
5.6 Regularly update monitoring guidelines to reflect current best practice	Recovery group	Essential

**Objective 5.2:** Ensure that pateke recovery programme workers are highly skilled throughout the term of this plan

ACTION	ACCOUNTABILITY	PRIORITY
5.7 Actively facilitate skill-sharing and training opportunities for pateke recovery programme workers	Appropriate managers and recovery group	Essential
5.8 Ensure workers follow best-practice guidelines	Recovery group and programme managers	Essential

## 5.2 COMMUNITY RELATIONS

### 5.2.1 Topic 6—Community-led conservation initiatives

In addition to the captive breeding network, there is a growing interest in community-led conservation initiatives. DOC only has the capacity to secure pateke in limited areas. However, in other areas, community groups are beginning to see pateke return to well-managed private lands. Therefore, there are clear opportunities for DOC to support community groups in the protection of pateke. This collaborative approach will lead to the recovery of pateke over a very wide geographical area.

#### *Issues*

- Community-based conservation groups are supportive, but are not always adequately resourced or supported to protect pateke
- Communities, landowners and tangata whenua are sometimes not aware of the plight of pateke and the opportunities that exist for them to be involved in pateke recovery
- Landowners may not be engaged in management practices that are sympathetic to pateke in areas where pateke remain
- Feeding areas, flock and roost sites, and breeding areas are often not protected from disturbance by people and their vehicles, boats, pets, etc.
- Pateke are sometimes shot by duck hunters

## **Objectives and actions**

**Objective 6.1:** Establish a platform for broader iwi- and community-led pateke recovery by 2006

ACTION	ACCOUNTABILITY	PRIORITY
6.1 Share pateke knowledge and provide ongoing technical advice to iwi and community groups aiming to protect pateke mainly on private land	Conservators, area managers and recovery group	Essential
6.2 Prepare a survival guide for pateke protection and distribute to appropriate iwi, community groups and forums by 2006	Recovery group	Essential
6.3 Encourage iwi and community ownership of pateke issues (e.g. road-kills, pets and predators) and voluntary codes of conduct and practice throughout the term of this plan	Conservators, area managers and recovery group	Essential
6.4 Advocate for reduced disturbance to pateke feeding, nesting and roosting areas throughout the term of this plan (also refer to Action 10.6)	Conservators and area managers	Essential
6.5 Provide technical advice and support to groups that will extend the number of managed sites in Northland beyond Mimiwhangata area and Russell Peninsula by 2006	Northland Conservator, AM Whangarei Area, AM Bay of Islands Area and recovery group	Essential
6.6 Provide technical advice and support to groups that will extend the number of managed sites on Aotea by 2006	Auckland Conservator, AM Aotea and recovery group	Essential

**Objective 6.2:** Broaden public support and involvement in the pateke recovery programme throughout the term of this plan

ACTION	ACCOUNTABILITY	PRIORITY
6.7 Improve consultation with landowners, iwi and other stakeholders throughout the term of this plan	Area managers and conservators	Essential
6.8 Provide school kits in areas with pateke populations by 2006	Recovery group and conservators	Essential
6.9 Provide media releases at significant times, including pateke releases, flock counts and predation events, throughout the term of this plan	Area managers and conservators	Essential
6.10 Provide practical advocacy tools (signs, brochures, etc.) by 2006	Area managers and conservators	Essential
6.11 Improve awareness of pateke in duck shooting fraternity by 2006	Area managers and conservators	Essential
6.12 Improve awareness of domestic dog and cat threats throughout the term of this plan	Area managers and conservators	Essential
6.13 Improve awareness of road-kill threat throughout the term of this plan	Area managers and conservators	Essential

### 5.2.2 Topic 7—National interest groups, landowners and conservation groups

Several national interest groups and pateke breeders have been supporting pateke recovery for many years. In recent years, increasing numbers of landowners and conservation groups have also supported pateke initiatives. All of these groups and individuals have important roles in the recovery of pateke, and their effectiveness could be greatly enhanced with increased funding.

#### *Objectives and actions*

**Objective 7.1:** Proactively engage in collaborative pateke recovery effort with ‘Ducks Unlimited’, ‘Brown Teal Conservation Trust’, pateke captive breeders and other key interest groups throughout the term of this plan

**Objective 7.2:** Foster connections and support iwi, private landowners and community groups both in areas that currently have pateke and in areas where the birds could recover in the future throughout the term of the plan

ACTION	ACCOUNTABILITY	PRIORITY
7.1 Implement ongoing public relations initiatives to raise the profile of pateke and the recovery programme	Conservators and area managers	Essential
7.2 Continually strengthen networks and implement information sharing (e.g. <i>Pateke Roundup</i> ) among national interest groups, landowners and conservation groups	Conservators, area managers and recovery group	Essential
7.3 Develop and publish best-practice documents, including predator control, grazing, monitoring and pateke survival guide, throughout the term of this plan	Recovery group	Essential
7.4 Support funding applications by groups and landowners involved in the protection and recovery of pateke throughout the term of this plan	Conservators, area managers and recovery group	Essential
7.5 Provide ongoing technical support for groups and landowners involved in the protection and recovery of pateke	Conservators, area managers and recovery group	Essential

### 5.2.3 Topic 8—Tangata whenua

Pateke are an important taonga for many iwi. Objective 8.1 sets out actions for engaging collaboratively with tangata whenua; however, note that other objectives (e.g. Objectives 6.1, 6.2 and 7.2) and associated actions are also relevant to tangata whenua.

#### *Objectives and actions*

**Objective 8.1:** Proactively engage in collaborative pateke recovery effort with tangata whenua throughout the term of this plan

ACTION	ACCOUNTABILITY	PRIORITY
8.1 Continually seek involvement and support from local tangata whenua in pateke recovery initiatives	Area managers	Essential
8.2 Share information (e.g. pateke roundup and annual reports) with tangata whenua throughout the term of this plan	Area managers	Essential
8.3 Maintain appropriate representation on recovery group throughout the term of this plan	Recovery group	Essential

#### 5.2.4 Topic 9—External funding

Although DOC is currently adequately funded to secure pateke in a few localities, this funding is not guaranteed to continue. Moreover, the recovery of the species across a wider geographic area will require additional funding from external sources.

##### *Objectives and actions*

**Objective 9.1:** Secure external funding to engage broader pateke recovery effort by July 2007

ACTION	ACCOUNTABILITY	PRIORITY
9.1 Develop and implement external funding strategy (sponsorship/fund-raising) to support public and private pateke recovery initiatives by 2006	Recovery group	Essential
9.2 Seek external funding to achieve Objective 3.3 of this plan by 2007	Recovery group	Essential
9.3 Secure external funding to support Objectives 6.1 and 9.1 of this plan	Recovery group	Essential

### 5.3 RESEARCH

#### 5.3.1 Topic 10—Agents of decline and experimental management

Although predators are considered to be the main current agents of decline of pateke (O'Connor 2004), little is known about many of the ecological aspects that may be of importance to the recovery of the species. One approach to gaining a better understanding of ecological requirements is to implement experimental management regimes and closely monitor pateke responses.

##### *Issues*

- Agents of decline have yet to be adequately identified, documented and published.
- Proven management prescriptions that deliver a positive response from existing pateke populations have yet to be identified, documented and disseminated.

- Proven management prescriptions for successful reintroduction of pateke have yet to be identified, documented and disseminated.
- Habitat management needs for pateke are poorly understood and appropriate tools/regimes for maximising habitat use need to be tested.
- Starvation has been a cause of death amongst juveniles during the 2002 and 2003 seasons at Okiwi; however, the primary agents behind this are unknown.

### **Objectives and actions**

**Objectives 10.1:** Determine current agents of pateke decline with confidence, and publish results of this work for Northland by December 2005, and for Aotea and Moehau by 2007

ACTION	ACCOUNTABILITY	PRIORITY
10.1 Identify current key agents of pateke decline through research, analysis, documentation and draft paper of pateke demographic monitoring at Mimiwhangata (by 2005), Okiwi (by 2007) and Moehau (by 2007)	Recovery group	Essential

**Objective 10.2:** Identify management prescriptions that result in a positive response from pateke annually or biennially

ACTION	ACCOUNTABILITY	PRIORITY
10.2 Maintain, analyse and interpret annual outcome monitoring of pest management at Okiwi and Mimiwhangata as per monitoring guidelines (Pierce et al. 2003)	AM Aotea and AM Whangarei	Essential
10.3 Monitor, analyse and interpret population trends in Northland and Aotea via established flock counts annually as per monitoring guidelines	AM Aotea and AM Whangarei	Essential
10.4 Determine population trends at Kapiti, Mana and Tiritiri Matangi Islands, and Karori and Warrenheip sanctuaries at least every 2 years via dog survey and other techniques as per monitoring guidelines	AM Kapiti, AM Warkworth and Managers Warrenheip and Karori sanctuaries	High
10.5 Maintain regular liaison between science coordinator and field technicians	Recovery group	Essential
10.6 Investigate the relationship between pateke habitat use and farming practices, to develop guidelines for best-practice farming that optimally accommodates pateke by 2010	AM Aotea, AM Whangarei and recovery group	Essential
10.7 Investigate diet of pateke in the wild to guide habitat management and release-site selection	Recovery group	Essential

**Objective 10.3:** Investigate and identify optimum release techniques annually via experimental releases

ACTION	ACCOUNTABILITY	PRIORITY
10.8 Test and refine experimental release techniques with the aim of identifying optimum prescriptions in terms of post-release survival, residency, productivity and recruitment at release sites	Area managers and recovery group	Essential

**Objective 10.4:** Support research on new predator initiatives

ACTION	ACCOUNTABILITY	PRIORITY
10.9 Trial new techniques at pateke management sites that could improve the effectiveness and efficiency of predator control, and publish results	Appropriate managers and recovery group	High
10.10 Evaluate new developments in predator control and apply new techniques that will improve pateke recovery outcomes	Appropriate managers and recovery group	Essential
10.11 Support the testing and development of predator control techniques by others that will benefit pateke in the longer term, i.e. approaches that are larger scale, utilise new tools, use sustainable methods and are more integrated	Appropriate managers and recovery group	Essential

### 5.3.2 Topic 11—Population dynamics and demographic research

Previous research programmes at Okiwi and Mimiwhangata have not confidently identified the population demographics at these sites. Because pateke are relatively cryptic and not all birds utilise flock sites, interpreting responses to management through the use of trend counts is difficult. Consequently, radio-telemetry is the main monitoring tool currently being used in pateke management areas; however, this is invasive and expensive.

#### *Issues*

- A poor understanding of pateke flock ecology has led to difficulties in interpreting trends at flock sites and responses (across key demographics) to management, and is, therefore, impeding recovery effort
- A poor understanding of the rates of survival, productivity and recruitment, knowledge of which is needed to grow each managed sub-population, is impeding recovery effort
- Current intensive telemetry-focused monitoring is unsustainable

#### *Objectives and aims*

**Objective 11.1:** Determine the minimum rates of survival, productivity and recruitment that will be necessary to increase pateke populations at Okiwi, Mimiwhangata and Moehau

ACTION	ACCOUNTABILITY	PRIORITY
11.1 Model demographic parameters at Okiwi, Mimiwhangata and Moehau annually to provide context for demographic rates returned from telemetry at each management site	Recovery group	Essential
11.2 Complete write-up of previous Okiwi and Mimiwhangata research programmes by 2006	AM Aotea and AM Whangarei	Essential
11.3 Investigate and identify the dynamics of flock ecology/demography via current telemetry monitoring, and publish by 2008	Recovery group	Essential
11.4 Investigate juvenile dispersal and its relationship to recruitment via telemetry monitoring by 2006, and publish by 2008	Recovery group	Essential
11.5 Investigate alternative (cost-effective but statistically robust) methods of monitoring, e.g. morphological characteristics, through robust field trials by 2007	Recovery group	Essential

## 6. Acknowledgements

Comments on current pateke directions or on a draft of this plan were provided by D. Barker, A. Beauchamp, K. Evans, K. Hawkins, N. Hayes, O. Latham, N. Miller, E. Neill, J. O'Reilly, J. Roxburgh, R. Stamp and M. Williams.

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# Appendix 1

## TIMELINE FOR RECOVERY ACTIONS FOR PATEKE (*Anas chlorotis*)

Shaded areas are periods when actions should be implemented. Priorities:  
E = Essential, H = High, M = Medium.

ACTION NUMBER	ACTION	PRIORITY	2005	2006	2007	2008	2009	2010
<b>1</b>	<b>Mimiwhangata and Aotea management</b>							
1.1	Okiwi predator control	E						
1.2	Awana predator control	E						
1.3	Northland predator control	E						
1.4	Minimise road deaths	E						
1.5	Minimise deaths from dogs	E						
1.6	Minimise deaths from shooting	E						
1.7	Minimise competition	H						
1.8	Improve management skills	E						
1.9	Maintain Aotea biosecurity	E						
1.10	Support community pest control/eradication Aotea	E						
1.11	Support Northland community initiatives	E						
1.12	Audit predator control regimes	E						
1.13	Disease surveillance	H						
1.14	Lobby for O'Shea property purchase Aotea	E						
1.15	Monitor pateke responses Aotea and Northland	E						
1.16	Monitor rabbits/rats Aotea and Northland	E						
1.17	Predator sign protocol	E						
<b>2</b>	<b>Habitat management</b>							
2.1	Manage grazing leases Okiwi, Mimiwhangata	E						
2.2	Prepare integrated Mimiwhangata work plan	E						
2.3	Review fertiliser regime Okiwi	E						
<b>3</b>	<b>Reintroductions</b>							
3.1	Moehau releases	E						
3.2	Adaptive predator control Moehau release site	E						
3.3	Adaptive predator control in wider Moehau area	E						
3.4	Pre-release conditioning and quarantine	E						
3.5	Determine effectiveness of supplementary feeding	E						
3.6	Implement monitoring Moehau	E						
3.7	Support community predator control Moehau area	E						
3.8	Minimise road deaths Moehau	E						
3.9	Minimise deaths from dogs Moehau	E						
3.10	Minimise deaths from shooting Moehau	E						
3.11	Control competing waterfowl Moehau	E						
3.12	Improve capability and skills Moehau	E						
3.13	Reassess potential sites for reintroduction at 4th site	E						

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ACTION NUMBER	ACTION	PRIORITY	2005	2006	2007	2008	2009	2010
3.14	Prepare/approve translocation proposal for 4th site	E						
3.15	Consult with Ngai Tahu for translocations within their rohe, and with other iwi depending on release site, as part of relevant translocation proposals							
3.16	Implement reintroduction at 4th site	E						
3.17	Evaluate/support releases at sites managed by the community	E						
3.18	Manage island threats on existing pateke islands	H						
3.19	Island quarantine and predator contingencies	H						
3.20	Island pateke monitoring as per guidelines	H						
3.21	Evaluate the need for further island releases	H						
3.22	Add new bloodlines to captive breeding population	E						
3.23	Implement captive best practice as per husbandry manual	E						
3.24	Produce quality birds for release	E						
3.25	Advocate pateke conservation through captive birds	H						
3.26	Implement disease surveillance	E						
3.27	Fiordland response: survey, evaluation and translocation if appropriate	H						
<b>4</b>	<b>Legal protection</b>							
4.1	Dog exclusion, controls and enforcement	E						
4.2	Subdivision rules for pets	E						
4.3	Minimise road deaths via restrictions	E						
4.4	Gazette reserves	E						
4.5	Advocate developer mitigation	E						
4.6	Changes to statutes and council policies	E						
<b>5</b>	<b>Recovery group</b>							
5.1	Appropriate recovery group composition	E						
5.2	Site visits	E						
5.3	Lead strategic direction	E						
5.4	Facilitate implementation of recommendations	E						
5.5	Strengthen relationships with stakeholders	E						
5.6	Update monitoring guidelines	E						
5.7	Skill-sharing and training	E						
5.8	Ensure best practice applied	E						
<b>6</b>	<b>Community conservation initiatives</b>							
6.1	Support community initiatives	E						
6.2	Prepare pateke survival guide	E						
6.3	Encourage community ownership of issues	E						
6.4	Advocate for minimising disturbance	E						
6.5	Extend number of managed sites in Northland	E						
6.6	Extend number of managed sites on Aotea	E						
6.7	Improve consultation	E						
6.8	Provide school kits	E						
6.9	Media releases	E						
6.10	Advocacy tools	E						
6.11	Hunter awareness	E						
6.12	Awareness of domestic dog and cat threats	E						
6.13	Awareness of road-kill threat	E						

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ACTION NUMBER	ACTION	PRIORITY	2005	2006	2007	2008	2009	2010
<b>7</b>	<b>Landowners and interest groups</b>							
7.1	Improve pateke profile	E						
7.2	Share information	E						
7.3	Develop/publish best practice	E						
7.4	Support funding applications	E						
7.5	Provide technical support	E						
<b>8</b>	<b>Tangata whenua</b>							
8.1	Involvement and support	E						
8.2	Information sharing	E						
8.3	Appropriate representation	E						
<b>9</b>	<b>External funding</b>							
9.1	Prepare external funding strategy	E						
9.2	Achieve external funding for Objective 3.3	E						
9.3	Achieve external funding for Objectives 6.1 and 9.1	E						
<b>10</b>	<b>Research experimental prescriptions</b>							
10.1	Identify current agents of pateke decline	E						
10.2	Analyse annual demographic monitoring results/response to management	E						
10.3	Analyse annual trend count data	E						
10.4	Trends at small sites, especially islands	E						
10.5	Science coordinator liaison with field technicians	E						
10.6	Investigate habitat management	E						
10.7	Investigate wild diet	E						
10.8	Identify successful release prescriptions	E						
10.9	Trial predator control methods	H						
10.10	Apply more efficient methods of predator control	E						
10.11	Support generic new work on predator control	E						
<b>11</b>	<b>Research demography</b>							
11.1	Model demographic parameters	E						
11.2	Complete write-ups of previous studies	E						
11.3	Investigate flock ecology	E						
11.4	Investigate juvenile dispersal and recruitment	E						
11.5	Investigate alternative methods of monitoring	E						

# Recovery plans

This is one of a series of recovery plans produced by the Department of Conservation (DOC). Recovery plans are statements about DOC's intentions for the conservation of a particular species of plant or animal, group of species, or plant or animal community over a defined period. Recovery plans focus on the goals and objectives of recovery management, guide DOC in its allocation of resources and are used to raise public awareness of the recovery process.

Each plan has a term of 5 or 10 years.

The purpose of recovery plans is to aid the recovery of that species or group of species by empowering people to understand issues, make sound decisions and minimise uncertainties in the future.

The recovery of a species can be defined as 'establishing/enhancing multiple populations within the historic range, or at suitable sites, which may or may not require ongoing management' (O'Connor & Falconer 2002).

Recovery plans:

- Are proactive and operational in nature, focusing on specific key issues, providing direction and identifying roles for managers and technical workers
- Set objectives for the recovery of species and outline measurable actions that are required to achieve those objectives
- Are primarily used by DOC staff to guide their annual work programmes, but also provide a forum for planned initiatives with tangata whenua, community interest groups, landowners, researchers and members of the public
- Stimulate the development of best-practice techniques and documents, which can be transferable across similar species recovery programmes

A recovery group has been established for pateke/brown teal (*Anas chlorotis*). This group consists of people who have knowledge of the ecology and management needs of the species. There is also a position for a Te Rūnanga o Ngai Tahu representative on the group (as enabled through the Ngai Tahu Claims Settlement Act 1998); however, at the time of writing Ngai Tahu are not active members due to the recent demise of the pateke population in Fiordland. The role of the recovery group is to aid the recovery of the species they represent through the generation and provision of high-quality technical advice.

This plan replaces the existing 10-year recovery plan for patake (Williams & Dumbell 1996). The recovery group prepared this plan in conjunction with people who are interested in or will be affected by the plan, or who have an expert knowledge of the species. Drafts have been sent to relevant Conservation Boards for comment and to people or organisations with an interest in conservation management of pateke. Changes to the plan were made as a result of that consultation.

The recovery group will review progress in the implementation of this plan and will recommend any management changes that may be required to DOC managers. Comments and suggestions regarding the conservation of pateke are

welcome and should be directed to the Pateke Recovery Group via any DOC office or to the Manager, Threatened Species Section, Research, Development & Improvement Division, Department of Conservation, PO Box 10420, The Terrace, Wellington 6143.

The recovery planning process provides opportunities for further consultation between DOC, tangata whenua and others regarding the management of this species. Those interested in being more involved in the management of pateke or in receiving information should also contact DOC.

The General Manager Operations (Northern) of DOC formally approved this plan in May 2006. A review of the plan is due after 5 years (in 2010), or sooner if new information or technology leads to a significant change in management direction. This plan will remain operative until a new plan has been prepared and approved, or until it has become redundant, should recovery be achieved, at which time management effort will enter a 'maintenance phase'.

# Threatened species recovery plans

NO.	SPECIES	YEAR APPROVED
58	New Zealand dotterel ( <i>Charadrius obscurus</i> ) recovery plan, 2004-14	2006
57	New Zealand fairy tern recovery plan, 2005-15	2006
56	<i>Dactylantbus taylorii</i> recovery plan, 2004-14	2005
55	New Zealand large galaxiid recovery plan, 2003-13	2004
54	Hibi/stichbird ( <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>Dactylantbus 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 Publishing, Research Development & Improvement Division, Department of Conservation, PO Box 10420, The Terrace, Wellington 6143, New Zealand.