Worksheet 4: Takahē Recovery Plan 2007-2012

Takahē (Porphyrio hochstetteri)

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Photo Credit: Department of Conservation

Abstract

The takahē (*Porphyrio hochstetteri*) is an endangered species and classed as Nationally Critical under the New Zealand Threat Classification System. Active management is needed to ensure its long-term survival. This is the third national recovery plan for takahē and replaces the previous (2002–2007) recovery plan. This 5-year plan is a guide for the Department of Conservation and other agencies involved in conserving takahē. Its main objective is a 25% population increase for takahē by 2012.

To achieve this, the Takahē Recovery Programme will expand the Fiordland population with liberations of takahē produced on islands or in mainland sanctuaries and at the Burwood Captive Rearing Unit to sites beyond the Murchison Mountains, where the main wild population of takahē currently exists. The programme will maintain the populations on islands or in other sanctuaries at a level of maximum productivity. In the Murchison Mountains, the management focus will be to increase the population to the area's natural

carrying capacity. The recovery programme will continue research and monitoring to determine the factors that impact on takahē populations, and will continue to work with Ngai Tahu, other key associates, and the public.

Above is the abstract for the 2007-12 Takahē Recovery Plan. You can access the full document at:

Wickes, C. Crouchley. D. and Maxwell, J. Takahē (*Porphyrio hochstetteri*) Recovery plan 2007–2012. http://www.doc.govt.nz/upload/documents/science-and-technical/tsrp61entire.pdf

The following pages are an excerpt from the above report. Use them to answer the questions below:

Questions

1) Take note of what time period this Takahe Recovery Plan was written for.
2) The takahē is an endangered species and is one of the focus species of our study. Collect a 'dot and jot sheet' and make summary points on the background history of the takahē available in this article. Include years and population numbers.
3) Give the recognised 2012 scientific name for the takahē.
4) Describe the typical habitat of the takahē in the wild for most of the year and include how this changes in winter.
5) Takahē are part of a community of organisms. Name AND explain the interrelationship between the following BIOTIC factors:
    a) Takahē and red tussock?
    b) Takahē and red deer?
    c) Takahē and stoats?
6) Exactly where in NZ (include a map if you need it) are takahē found *in the wild*?
7) Where else are takahē found? Be specific – use location names.
8) What options (more than one) do the offshore islands and 'mainland island' sanctuaries offer the takahē that they do not have in the wild?
9) Describe the *abiotic* factors of the takahē habitat. In particular, what abiotic factors may have contributed to the bird's decline in numbers?
10) What biotic factors have impacted the Murchison Mountains communities that takahē are part of?

Excerpts from Takahē (Porphyrio hochstetteri) Recovery plan 2007 – 2012:

1. Introduction

The takahē or notornis (*Porphyrio hochstetteri)* Trewick, 1996, previously known as *Notornis mantelli* Owen, 1848) is a large, flightless, endemic rail, once thought to be extinct, as there had been only four confirmed sightings between 1898 and 1948. However, locations of unconfirmed reports between 1898 and 1948 suggested that takahē survived during this period throughout Fiordland National Park, and in pockets spread along the Southern Alps/Ka Tiritiri o te Moana as far as the northwest of the South Island (Reid 1974). An expedition in 1948, led by Doctor Geoffrey Orbell, located a population in the Murchison Mountains, Fiordland National Park. Surveys subsequently found about 250 birds in the valleys of the Murchison Mountains and neighbouring ranges. Soon after takahē were rediscovered in 1948, the 503-km^2 Takahē Special Area was set aside for their conservation within the Murchison Mountains (Fig. 1).

In the two decades following 1948, a large amount of information on the natural history of takahē was collected, and intensive research commenced in 1972 to determine the species' ecological requirements, breeding biology and population size (e.g. Mills 1975).

By the 1970s, the takahē population in Fiordland had declined dramatically and it appeared that the species was in danger of extinction. The takahē population reached an estimated low of 112 birds in 1981.

The primary cause of takahē decline in Fiordland since 1948 has been habitat deterioration caused by high numbers of introduced red deer (*Cervus elaphus*), which had become established in Fiordland during the 1940s and 1950s. Ground control of deer had started in the Murchison Mountains in 1948; this was extended to intensive helicopter hunting in 1976.

Photo credits : Gordon Roberts Department of Conservation

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TE MĀRA A TĀNE

Predation by introduced mammalian predators, particularly stoats (*Mustela erminea*), has also contributed to takahē decline.

Photo Credit: Steve Attwood

From 1957 to the 1970s, an attempt was made to establish a captive breeding programme in conjunction with a private bird breeder in what is now the National Wildlife Centre at Pukaha Mount Bruce, Wairarapa (Fig. 2). This was partially successful, and some birds were produced. However, setbacks were encountered due to behavioural and disease problems resulting from the limitations of the facilities. First attempts at captive rearing of wild-laid eggs were also carried out at the Te Anau Wildlife Centre.

By the 1980s, results of earlier research were being used to support the implementation of a wide-ranging management plan for takahē. This included deer and stoat control, the intensive management of the wild takahē population to maximise breeding success, habitat manipulation (territory-based fertiliser trials) to improve habitat quality for the birds, the establishment of a new wild population in Fiordland, and the building of a dedicated captive rearing facility (Burwood Captive Rearing Unit) to provide birds to establish new populations in Fiordland and on browser- and predator-free islands.

The Burwood Captive Rearing Unit was opened near Te Anau, Fiordland, in 1985. This specialist facility was built on a 9.7-ha parcel of land adjacent to the 3104-ha Burwood Bush Scientific Reserve (Fig. 2). (This unit is referred to simply as Burwood in the rest of this plan.) Approximately half of the Burwood Bush Scientific Reserve is red (*Nothofagus fusca*) and silver (*N. menziesii*) beech forest, with the rest being red tussock grassland and areas of native shrubs. An 80-ha area within the scientific reserve has been fenced to exclude predators and is used to hold takahē. Eggs are collected from nests in the wild and artificially incubated and reared at Burwood, and a small breeding group is also maintained there.

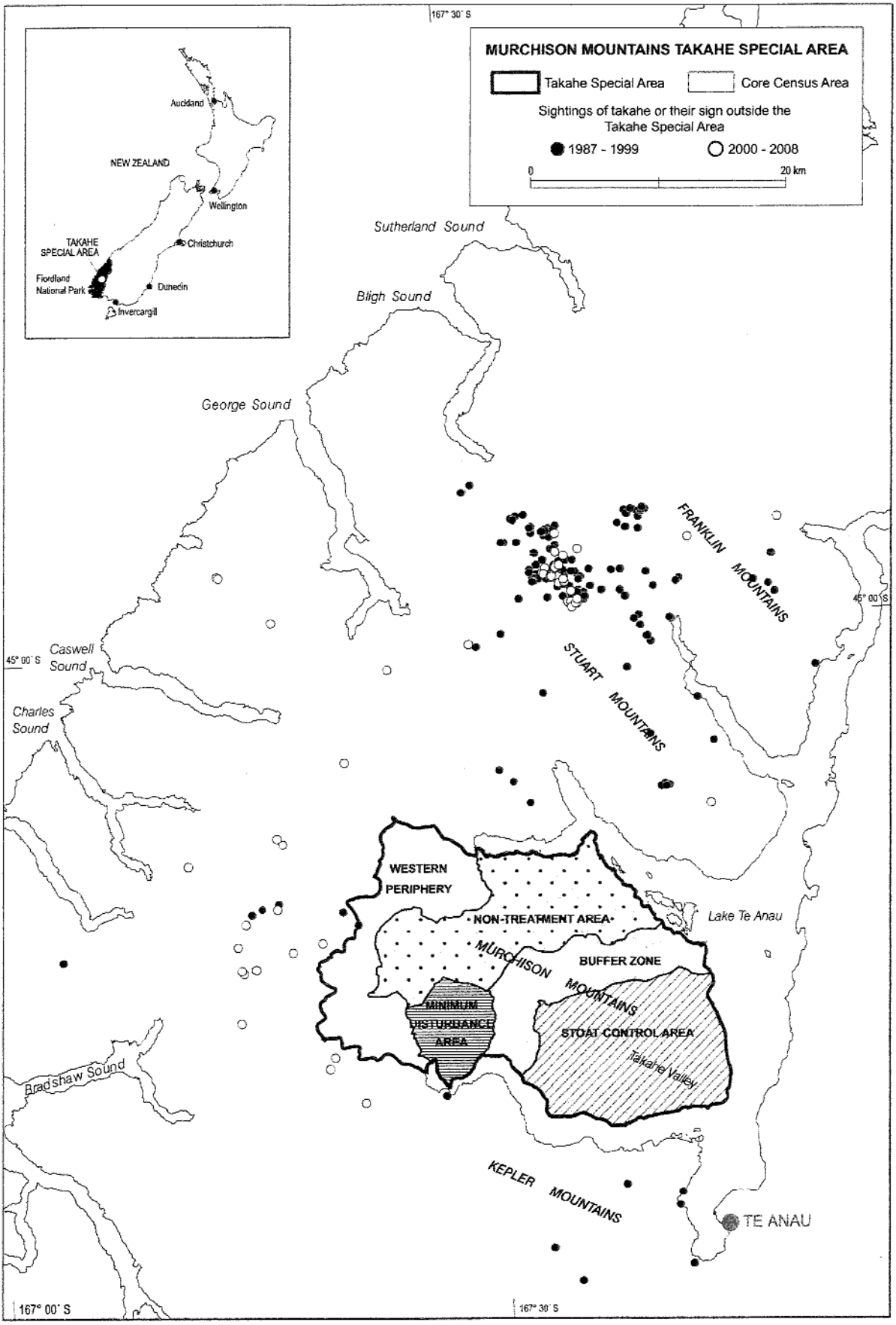
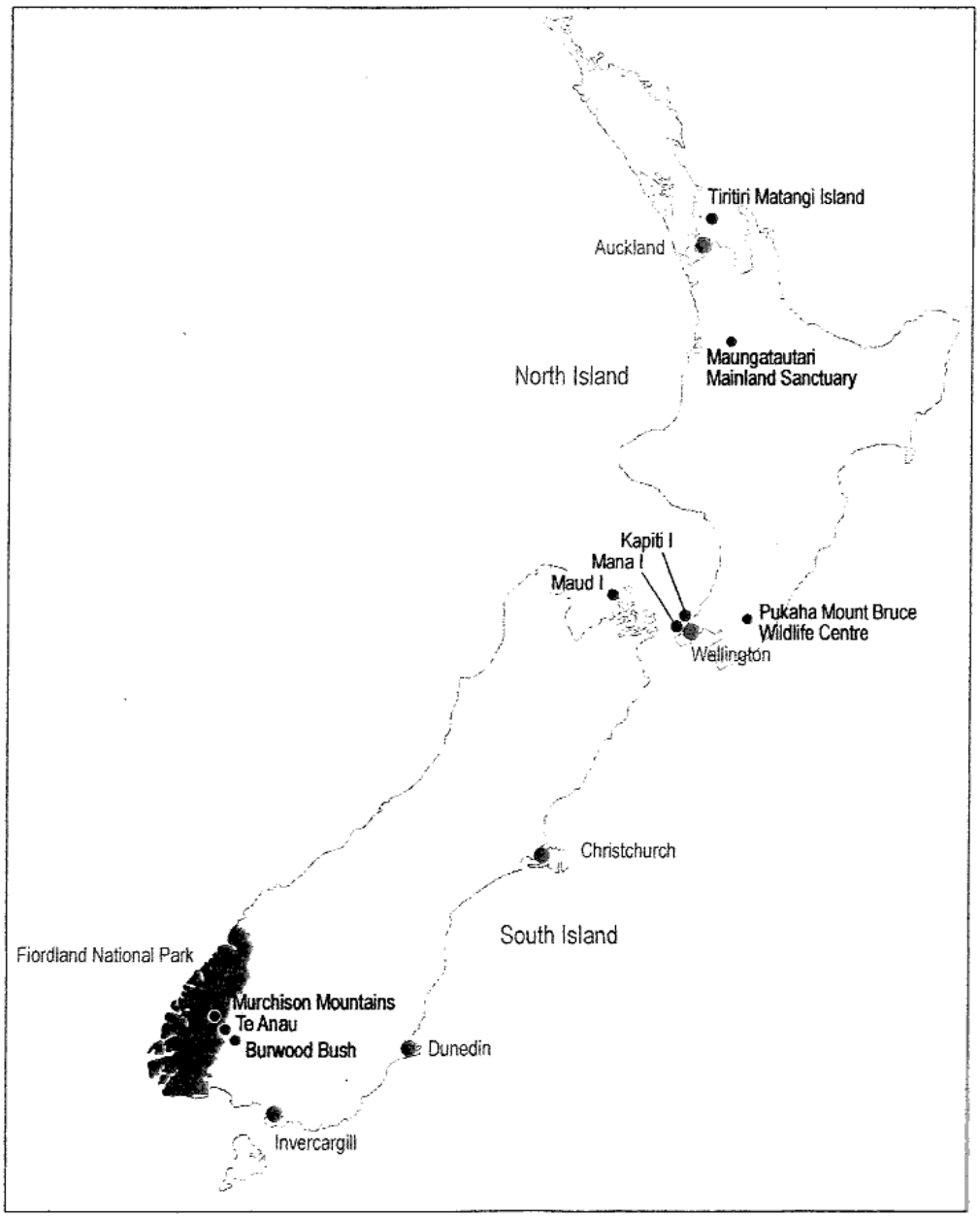


Figure 1. Takahe (*Porphyrio hochstetteri*) distribution in Fiordland, including the Murchison Mountains Takahe Special Area (showing extent of the area under stoat control during stoat trapping trial, c. 15 000 ha) and sightings of takahe outside the Murchison Mountains (between 1987 and 2008).

Figure 2. Map of New Zealand showing the various locations of free-ranging populations of takahe (*Porphyrio hochstetteri*) (Fiordland, four offshore islands and one mainland sanctuary) and captive populations of takahe (Te Anau, Burwood, Pukaha Mount Bruce).



Birds from Burwood have been used to establish takahē populations on five offshore islands (Maud, Mana, Kapiti, Tiritiri Matangi and one other) and (latterly) one mainland sanctuary (Maungatautari Ecological Island, near Hamilton) (Fig. 2), and for release back into the wild in Fiordland. Also, in addition to Burwood, a few captive birds are also held at Te Anau Wildlife Centre and at Pukaha Mount Bruce National Wildlife Centre.

Since about 1981, the population of takahē in the Murchison Mountains has fluctuated between 93 and 167 birds. To standardise technique each year, monitoring effort is restricted to the 'Core Census Area' which consists of all suitable habitat east of the Esk Burn and Woodrow Burn streams (the remainder of the Takahē Special Area is termed 'the western periphery', where a census is carried out once every 5 years) (Fig. 1).

Weather records have been kept in the Murchison Mountains (Takahē Valley) since 1972. Five of the coldest winters occurred during the mid-1990s, with the winter of 1995 being the coldest since records started. Without the captive rearing and re-introduction programme and effective deer control over this period, it is likely that the takahē population in the area would have declined to near extinction.

In June 2008, the estimated population of takahē was approximately 93 in the Core Census Area; 91 on islands and at Maungatautari, 36 at Burwood, and 5 display/advocacy birds at Pukaha Mount Bruce National Wildlife Centre and the Te Anau Wildlife Centre. In addition, occasional sightings are made of takahē in Fiordland beyond the Core Census Area. Two such takahē were recorded during the 2007/08 year, bringing the current total population estimate to 227 adult takahē. Birds under 1 year of age are not counted in these totals.

With deer now controlled to low numbers in the Murchison Mountains, climatic conditions and predation (especially by stoats) appear to be the key factors limiting recovery of the wild takahē population.

Photo credit: Department of Conservation

The relative importance of naturally (climate) induced habitat changes versus human-induced changes in the decline of the species prior to European settlement have been debated. Some authors have suggested that the species was more heavily influenced by human hunting than climate-induced reduction of grasslands, and has a wider habitat tolerance than the preference for alpine grasslands exhibited in their remnant natural range; and that management activity thus ought to be spread over a wider selection of habitat types including lowland forest (Jamieson & Ryan 2001). In practice, additional

management sites for the birds are limited to those that are predator-free or at least predator-controlled, and the available sites are all lowland. Takahē established on predator-free islands have the choice of lowland forest and grassland habitat types, but have remained predominantly grassland feeders (Dawson 1994; Baber 1996).

3. Context

3.1 Overview of species

3.1.1 Species ecology and biology

The primary features of takahē ecology which affect their conservation are their specialised feeding habits, some components of their behaviour, and aspects of the environments in which they live. In Fiordland, takahē live in alpine grasslands and feed on tussocks during much of the year. Snow tussocks (*Chionochloa pallens*, *C. flavescens* and *C. crassiuscula*) are their preferred food. In winter, the birds move into forested valleys, where a major food source is the rhizome of the fern *Hypolepis millefollium*. Takahē on islands feed year-round on a mixture of native and introduced grasses. On Kapiti Island, which is mostly covered in forest, areas of grassland and swamps are highly preferred by takahē. Adult birds live in pairs and maintain large territories, which they defend aggressively against other takahē during the breeding season. This means that, even in very good habitat, population density is low. Takahē are long-lived birds and have a low reproductive rate, with clutches consisting of 1–3 eggs. Usually only one chick is raised per clutch, however, and only a few pairs manage to rear chicks consistently from year to year. While this low reproduction rate is generally sufficient to maintain the population under normal conditions, recovery from catastrophic events is slow.

Note: **Deer**

Mainland islands are areas of land able to be managed to restore and protect their habitat, particularly through intensive management of pests. They are referred to as mainland 'islands' because they are manageable areas isolated by means of fencing, geographical boundaries or more commonly, intensive management

(Threatened species recovery plan 61 19)

Deer have long been implicated as a major factor in the decline of the takahē. They compete with takahē for palatable alpine plants (Mills and Mark 1977), and studies have shown that tussocks especially, take a long period of time to recover their nutritional content after heavy deer browsing (Lee et al. 2000)