

# Pukaha Mount Bruce captive management strategic direction

2010–2015



Department of Conservation  
*Te Papa Atawhai*

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2010-2015

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Cover photo: Pukaha Mount Bruce staff release captive-reared kākā into the wild, April 2010.

Photo: Rosemary Vander Lee.

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# Foreword

The Department of Conservation and its predecessor agencies has a long and productive association with the National Wildlife Centre at Pukaha Mount Bruce and with the National Wildlife Centre Trust. More recently (since 2002) the Pukaha Mount Bruce Board, with the strong involvement of Rangitane O Wairarapa, has fulfilled the governance role at Pukaha and worked with the Department to advance the conservation values on site. During this period the Stage 1 Visitor Centre upgrade has been accomplished by the Board and currently Stage 2 Nocturnal House upgrade fund raising is well under way.

Among the many aspirations of the Pukaha Mount Bruce Board and the department is the intention to continue to provide facilities and expertise to undertake captive management in support of native species Recovery Group work. From the time of Elwyn Welch's takahē translocations in the 1950s many of the modern techniques used in the breeding and handling of native species have been pioneered by the captive management team at Pukaha. The Board and the Department's intention is to continue this traditional role while continuing to provide an exciting high quality and continually improving visitor experience thus ensuring the ongoing advocacy of conservation values in Wairarapa.

*The Board and Department recognise the opportunities provided by the 750,000 people domiciled within a two hour drive of Pukaha Mount Bruce.*

This strategic document developed by Rosemary Vander Lee, Phil Brady and the captive management team at Pukaha, identifies the strategic pathway that the captive management programme will follow at Pukaha over the next five years. It emphasises the intention to provide expert support to Recovery Group (species support) programmes while maximising the opportunity to contribute to the visitor experience by providing an educational and exciting experience based on the captive management work. It also captures the possibility of the captive breeding of appropriate species for local release in support of the Pukaha Restoration project and/or other restoration projects.

I hope the document serves to provide an insight into the captive management programme at Pukaha and to remind those associated with the projects, of our agreed strategic intent.

Chris Lester  
Wairarapa Area Manager

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# Key audience

The key audience for this document includes:

- Species recovery groups
- Pukaha Mount Bruce Board partners
- Pukaha Mount Bruce Supporters and sponsors
- Departmental staff

# Purpose of document

The purpose of this document is to identify and develop strategic opportunities for the Pukaha Mount Bruce (Pukaha Mount Bruce) captive management Programme and to clarify the role of the captive management programme over the next 5 years. It is timely to consider the roles and functions of the captive management Programme because:

- Several long term species programmes have successfully concluded.
- There is a growing preference for insitue breeding of native species and captive breeding techniques are inclined more toward breeding for local release
- The coexistence of both private and government run breeding facilities may well result in the duplication of roles that were historically conducted predominately at Pukaha Mount Bruce (Appendix 1).
- Of the desire to provide a modern, informative and enjoyable visitor experience at Pukaha Mount Bruce.
- Changes in the aspirations of the wider conservation community to increasingly include non-bird species in both recovery programmes and advocacy situations.
- Availability of a recent review of the Pukaha Mount Bruce captive management Programmes (Miskelly 2008).
- Of the proliferation of community groups with ambitions to restore ecosystems and return locally extinct species to protected areas

The document identifies preferred strategic directions for captive management and how these will be prioritised and implemented over the next five years. The captive management direction as it relates to the Pukaha restoration programme is also examined. The Pukaha Mount Bruce Board vision and plans for facility and visitor experience upgrades are also relevant considerations.

# Background and context

The captive management Programme is currently wholly staffed and funded by the Department of Conservation (DOC) Wairarapa Area Office. It has a longstanding working relationship with the National Wildlife Centre Trust (NWCT) and more recently with the Pukaha Mount Bruce Board (Pukaha Mount Bruce Board).

Since 1984, the National Wildlife Centre at Pukaha Mount Bruce has been jointly managed with the National Wildlife Centre Trust, initially in partnership with the NZ Wildlife Service, and later (since 1987) the Department of Conservation. Integrated management between the NWC and the adjacent Mount Bruce Scenic Reserve began with the release of captive-reared and translocated kākā in 1996. The successful establishment of kākā led to commencement of intensive predator control in the forest, and this was followed by releases of North Island kokako and North Island brown kiwi from 2003.



A traditional challenge is laid down to guests at the 2002 signing of the Memorandum of Understanding between Rangitāne o Wairarapa, the Pukaha Mount Bruce board and the Department of Conservation,

In 2002 Rangitāne o Wairarapa, the Pukaha Mount Bruce Board and the Department of Conservation formed a partnership to protect the forest and native fauna species of the Mount Bruce Scenic Reserve from pests. Greater Wellington Regional Council and Horizons Regional Council provided the management of pests on the 2700-hectare farmland buffer zone around the forest, and assisted neighbouring private landowners to control pests on their land.

*“The Pukaha Mount Bruce Captive Breeding Programme supports and functions in parallel with the vision and strategic intent of the Pukaha Mount Bruce Board”*

In contributing to achieving the visions of the Department of Conservation and the Pukaha Mount Bruce Board, the Pukaha Mount Bruce captive management Programme will fulfil the following four principal strategic directions:

1. Continue and strengthen the contributions to species recovery programmes, recovery groups and restoration initiatives by building and maintaining flexibility in programmes and infrastructure to meet evolving conservation needs particularly in relation to the species optimisation framework.
2. Enhance and support the Pukaha Restoration programme through the appropriate use of captive breeding projects, technical analysis and planning assistance, and operational logistics
3. Develop and promote Pukaha Mount Bruce captive management facility as a centre of expertise and learning and to provide a range of opportunities for the transfer of skills and knowledge to a wide range of partners and clients involved in species recovery.
4. Identify and develop advocacy and educational tools and opportunities for public participation and interaction with captive management activities to provide a valued and unique visitor experience and raise public support for and awareness of species recovery needs.

# The Pukaha Mount Bruce Board

## VISION STATEMENT

*“Inspiring hope by restoring connections between native wildlife, the forest and people”.*



Visitors observe birds in the forest. Photo: Simon Woolf.

## MISSION/PURPOSE

Pukaha Mount Bruce builds on its unique history to:

- Engage visitors and the community with a conservation/restoration experience which will inspire action with hope.
- Encourage excellence and the sharing of expertise in the captive breeding of endangered species and the restoration of native ecosystems.
- Lead research opportunities in conservation.
- Provide and enhance education/Te Ao Turoa opportunities at Pukaha Mount Bruce.

## STRATEGIC INTENTS

Pukaha Mount Bruce Board will: (is this Board or CM?)

1. Support native wildlife breeding and species recovery programmes:
  - Support captive management programmes.
  - Evaluate and strengthen the captive breeding programme.
  - Expose current and historic breeding programmes to key audiences such as visitors and sponsors including through the internet while not compromising the programmes.

2. Conduct an ecological restoration programme within Pukaha Mount Bruce Scenic Reserve:
  - Increase biodiversity through the introduction of new flora and fauna species.
  - Maintain and improve quality of predator control (continuous improvement).
  - Attract university research projects to support restoration.
3. Deliver education on conservation/Te Ao Turoa.
4. Develop a unique and engaging visitor experience in partnership with captive breeding managers incorporating captive management programmes where appropriate.
  - Respond to the needs of visitors.
  - Deliver high-quality customer service and facilities.
  - Implement Phase 2 of the Visitor Experience improvements (aviaries, outside interpretation).
5. Work with iwi in order to integrate tikanga māori.

# Captive management

## CURRENT ROLE OF PUKAHA MOUNT BRUCE CAPTIVE BREEDING PROGRAMME



Orange-fronted kākāriki.  
Photo: Rosemary Vander Lee.

The captive management programme at Pukaha Mount Bruce currently conducts breed for release and captive management programmes for a number of threatened native New Zealand species. It currently has the following roles and functions:

- Assist with native species recovery via captive breeding for species recovery release programmes e.g., shore plover, hihi, kākā, brown teal, whio, orange-fronted kākāriki.
- Provide visitor experiences that lead to a better understanding and promotion of conservation and species recovery.
- Encourages and provides opportunities for scientific research to assist future recovery and restoration programmes e.g. hihi, tuatara.
- Increase the profile of New Zealand's flora, fauna and conservation using captive management programmes and advocacy species e.g., takahē.
- Develop captive breeding and restoration techniques to benefit species recovery through in-situ conservation programmes e.g. kākā, kākāriki, hihi, shore plover.
- Engage with the wider conservation community via professional organizations (e.g., ARAZPA).
- Provide advice and assistance with matters pertaining to hand rearing, translocations, and general husbandry for native species.

Identified strengths of the current Pukaha Mount Bruce Captive breeding programme that should be retained are:

### **Solid core people competencies**

Staff have a diverse range of captive management skills and experience, and diverse networks and relationships relative to captive management.

### **Sound facilities**

Pukaha has adequate aviaries and facilities to support a variety of captive management programmes. The Pukaha Mount Bruce Board desires to contribute to facility improvement and maintenance.

### **Sound organisation**

Unique management synergies exist with DOC and the Pukaha Mount Bruce Board. The relationship combines the resources of a government agency's international reputation in conservation with a strong iwi and local government connection.



Kākā chicks and eggs in nestbox basket.  
Photo: Pukaha Mount Bruce.

### **Established culture**

The Pukaha Mount Bruce Centre is internationally linked with renowned takahē breeder Elwyn Welch and the rediscovery of the takahē story. The pioneering techniques developed over the past 30 years are a critical point of difference, and provides the platform for future captive management programmes.

### **High people exposure**

Its reputation as a National Wildlife Centre together with its location on SH2, (two hours from Wellington) and popularity as a destination for visitors, all contribute to maintaining and raising the profile of captive management and conservation.

## **KEY ACTION**

A key action requirement identified from this analysis is the need to develop a business model that provides the means of reducing inflexibility and capacity limits, marketing captive management capability, and developing a service model that refines the capacity to deliver excellence in captive management.

### **Implementation**

The captive management team will implement the four strategies as follows:

1. Continue and strengthen contributions to national species programmes and recovery groups by creating and maintaining flexibility in programmes and infrastructure to meet evolving conservation needs.

This will be achieved by:

- Working co-operatively with recovery groups to identify highest priority bird and non-bird fauna and potential captive breeding needs.
- Working with Pukaha Mount Bruce Board to develop and maintain facilities capable of fulfilling these needs.

Appendix 2 outlines the current use of aviary space and planned use based on potential captive breeding programmes and advocacy needs .



Aviary two on the public walkway. Photo: Darren Page.

Appendix 3 notes recent species acquisitions, recent reviews, current and upcoming proposals and potential species suitable to contribute to the Pukaha Mount Bruce Board advocacy programme.

2. Support the Pukaha Restoration programme through the appropriate use of captive breeding projects, technical analysis and planning assistance and provision of operational logistics. The Captive Breeding Team will:

- Utilise the species prioritisation criteria created with the Pukaha Mount Bruce Board to plan for future advocacy species and facility improvements etc
- Continue pursuing opportunities to breed for release orange-fronted kākāriki to be held at Mount Bruce to support release into Pukaha and other areas as negotiated with the Recovery Group.
- Develop translocation protocol for NI robins by 2010/11 with intended implementation by 2011/2012. This project is envisaged to be a collaborative effort involving Captive management, Restoration project staff and the Pukaha Mount Bruce Board

- Continue developing improved facilities to support Operation Nest Egg and to increase the number of kiwi available for release to Pukaha Mount Bruce.
  - Pukaha Mount Bruce is being considered as a location for translocation of Waiohine short-tailed bats. The captive management team will continue to work closely with the Wairarapa Biodiversity team and Pukaha Mount Bruce Board to facilitate this project. The production of a short educational/promotional film is proposed for the nocturnal house in 2010.
3. To develop and promote Pukaha Mount Bruce captive management programme as a centre of expertise, and to provide mechanisms for transferring skills and knowledge to a wide range of customers. The captive management team will:
- Provide technical advice and recommendations for improvements to the nocturnal house and associated facilities, which will allow for additional nocturnal species to be housed/displayed to the public.
  - Retain the name “National Wildlife Centre” in an inclusive capacity with the visitor centre and captive breeding and training programmes as a promotional mechanism.
  - Develop and provide on a commercial basis a ‘hands on’ training module to provide basic training in bird handling, food preparation and feeding, health care, disease management, and facility management and make available to relevant audience e.g., rangers, university students, veterinary students, private aviculturalists etc.



A recently hatched kākā chick.  
Photo: Raelene Berry

- Investigate the opportunity to become a training facility for Unitec’s National certificate in Captive Wild Animals programme.
- Foster existing relationship with Massey University Ecology Department students to gain on site training experiences.
- Utilise our existing relationship with Massey University to develop a programme to train National “catching teams” for translocations.

- Encourage captive management staff members to deliver paper/presentation at (NZ Branch) ARAZPA Conference annually.
  - Provide regular articles for the ARAZPA newsletter.
  - Continue to offer opportunities to develop species conservation techniques.
  - Publish scientific papers on significant research findings.
  - Continue to lead the production of best practice, including writing manuals, demonstrating techniques and providing leadership to other institutions.
4. To identify and develop, advocacy tools and opportunities for audience participation and interaction with captive management activities to align with Pukaha Mount Bruce Board goals, where possible, to provide a valued and unique visitor experience. The captive management team will:
- Develop an advocacy plan with Pukaha Mount Bruce Board to ensure that staff, facility and aviary resources are available for the safe holding of advocacy species that provide an entertaining and informative visitor experience.
  - Extend the role of the captive management Rangers to facilitate new product development with the Visitor Centre staff. For example, kākā nest visits. After the 3 p.m. kākā feed, six people pay a fee to go to a kākā nest and watch the ranger do a nest check, chicks are removed and nest material changed, providing a photo opportunity and one-on-one contact with the ranger.
  - Provide on a commercial basis, ‘premium’ volunteer programmes targeted towards international volunteers that involve a standard suite of activities across captive breeding and restoration programmes.
  - Regularly provide materials to the Pukaha and DOC websites.
  - Publish the *Pukaha Post* three times a year in conjunction with Visitor Centre staff and the Pukaha Mount Bruce Board.
  - Provide talks at key events e.g., conservation week to publicise work.



The largest clutch of kaka chicks to hatch at Pukaha Mount Bruce. All six chicks successfully fledged.  
Photo: Raelene Berry.

## **Reporting**

The captive management staff report to the Area Manager Wairarapa who makes decisions in relation to Pukaha Mount Bruce captive management programmes. Captive management staff routinely provides advice to the Area Manager who regularly updates the Pukaha Mount Bruce Board.

Specifically, the Captive Management Programme Manager (PM) will directly update the Area Manager on Strategies 1 and 2:

- Following attendance of recovery group meetings held in autumn/winter the captive management PM will submit a written report to the Area Manager in time for the September Pukaha Mount Bruce Board meeting. The report will detail outcomes and opportunities identified at RG meetings.
- A seasonal wrap up report will be provided to the Area Manager in April summarising the results of the breed for release programmes for the year. A summary of this report will be available for the May board meeting.

Strategies 3 and 4 will be reported on monthly through the MOR process as/when contributions are made, such as kiwi releases, progress on translocations and feedback on advocacy programmes.

## **Risks**

Experience demonstrates that the Department's inflexibility and inability to implement programmes quickly, has resulted in Pukaha Mount Bruce losing opportunities to participate in a number of national recovery programmes such as Hotchsetter's frog in 2005 and the *Powelliphanta* 'Augustus' giant snails in 2006.

Captive management staff will actively pursue Strategies 1 and 2, which are recognised as vital to attract business from Recovery Groups. The need to develop and promote captive management expertise to fulfil project requirements is also recognised as is the fact that captive management has developed into a competitive business model. The Pukaha captive management team accepts the challenges associated with the current environment including the revenue generation opportunities associated with the Pukaha Mount Bruce Board.

# Future funding and staff commitment

Pukaha Mount Bruce Board has the ability to apply for a variety of grants that are not open to government agencies, e.g.:

- NZ lotteries Environment and Heritage
- Birdlife International
- Thomas George McCarthy Trust
- Lottery Significant Projects Fund

The captive management team will support Board funding applications by providing technical information and feasibility advice. The captive management team will endeavour to provide “Value Adding” experiences to generate revenue through the visitor profit centre and provide exciting and unique visitor opportunities, e.g., kākā nest visits, kiwi releases, up-close encounters with ranger activities etc.

## References

Department of Conservation 2009. Kaki/black stilt visitor hide brochure

Miskelly, C. 2008. An assessment of future captive management options at Pukaha Mount Bruce National Wildlife Centre. DocDM 361418

# Appendix 1

## BRIEF HISTORY

### **Captive breeding programmes in the Department of Conservation**

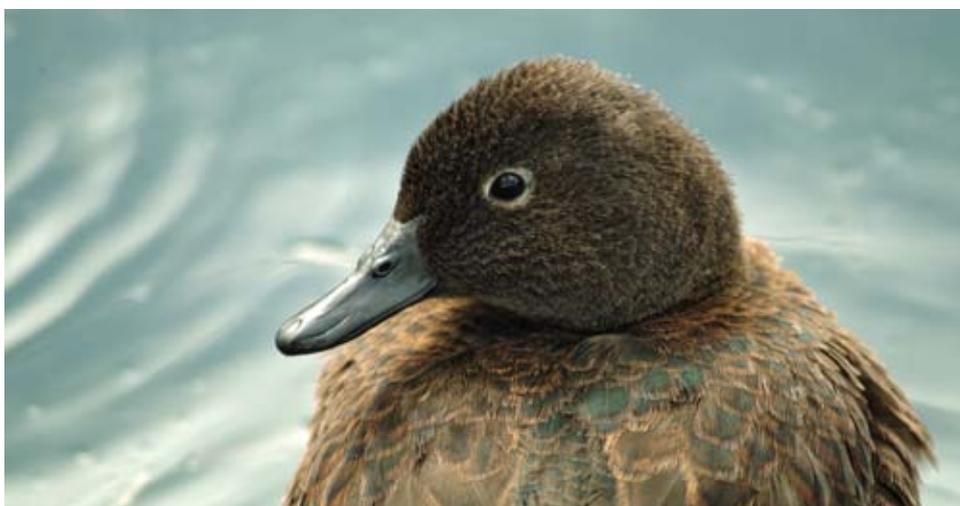
There are three DOC-managed facilities that breed threatened NZ native species for re-introduction to off-shore islands or protected mainland sights. Pukaha Mount Bruce is the only multi-species facility contributing to National Recovery Programmes. This section will describe the three DOC facilities as well as comparable privately managed facilities.

#### ***Pukaha Mount Bruce National Wildlife Centre***

A captive-breeding facility for native wildlife was established at Mount Bruce by the New Zealand Wildlife Service in 1961, building on local farmer Elwyn Welch's attempts to rear and breed the recently rediscovered takahē (which started in 1957). The Wildlife Service successfully bred brown teal in 1962, and whio (blue duck) in 1964, but did not succeed in breeding takahē until 1977. The facility was renamed as the National Wildlife Centre in 1980.

The range of species held at Mount Bruce increased during the 1970s and 1980s, with successful breeding being recorded for North Island saddleback, little spotted kiwi, great spotted kiwi, Antipodes Island parakeet, black stilt, hihi (stitchbird), kererū, North Island kokako, North Island robin, Auckland Island teal and grand skink.

During the 1990s and subsequently, the focus of captive breeding at NWC was on breeding threatened species for release as part of national recovery programmes, and on development of captive husbandry techniques for species that will or may require captive-breeding programmes. Major programmes focussed on Campbell Island teal, shore plover, North Island kokako, hihi, North Island kākā, short-tailed bat, and grey-faced petrel (the latter as an analogue for the Nationally Critical Chatham Island taiko).



Campbell Island teal.  
Photo: Simon Woolf.



North Island kokako chicks.  
Photo: Pukaha Mount Bruce.



A shore plover chick reared  
at Pukaha Mount Bruce for  
release onto Mana Island,  
February 2008.  
Photo: Amanda Cosgrove.

Since 1984, the NWC has been jointly managed with the National Wildlife Centre Trust, initially with the Wildlife Service, then (since 1987) the Department of Conservation. Integrated management between the NWC and the adjacent Mount Bruce Scenic Reserve began with the release of captive-reared and translocated kākā in 1996. The successful establishment of kākā led to commencement of intensive predator control in the forest, and was followed by releases of North Island kokako and North Island brown kiwi starting in 2003, including captive-bred birds. In 2002 Rangitāne o Wairarapa, the Pukaha Mount Bruce Trust Board and the Department of Conservation formed a partnership to protect the forest and its inhabitants from pests. Greater Wellington Regional Council and Horizons Regional Council funded the management of pests on a 2700 hectare buffer zone around the forest, and neighbouring landowners controlled pests on their land.

The Campbell Island teal captive-breeding programme was notable as being one of the two major components in the successful Campbell Island teal recovery programme, along with the 2001 eradication of Norway rats from 11,300 ha Campbell Island. Captive-bred teal were introduced to Whenua Hou (Codfish Island) in 1999 & 2000, and a mix of captive-bred birds and 'wild' birds from Whenua Hou were successfully re-introduced to Campbell Island in 2004-06. This resulted in termination of the captive-breeding programme in 2008, which had achieved its main goal.

Captive-reared shore plover, mainly from NWC, were also successfully used to establish a self-sustaining population on an island off the east coast of the North Island following releases during 1998-2004. The shore plover captive-breeding for release programme has now shifted focus to Mana Island, with the first birds released in 2007.

Several major captive breeding programmes have recently been completed at NWC, including termination of the Campbell Island teal and North Island kokako breeding programmes following advice from their respective recovery groups, and a hiatus in the short-tailed bat and grey-faced petrel captive rearing programmes, with no firm plans for either to be re-instigated." (Miskelly 2008)

### ***Burwood Bush rearing unit, Te Anau***

Since 1983, the Department has been involved in managing takahē nests to boost the birds' recovery. Artificial incubation of eggs and rearing of chicks is carried out at the Burwood Bush rearing unit, Te Anau, where five pairs are held to form a small breeding group. This facility is not open to the public.

Chicks are reared with minimal human contact, being fed and brooded through the use of puppets and models. 'Excess' eggs from wild nests are also managed at the unit to produce birds suitable for freeing back into the wild population in the Murchison Mountains. Some of these captive-reared birds have been used as stock to establish the offshore island population.

### ***Twizel***

Kakī (black stilt) have been intensively managed since 1981, when their population declined to a low of just 23 birds. The Department of Conservation's captive breeding centre, near the town of Twizel in the Mackenzie Basin, plays an important role in the Kakī Recovery Programme.

A number of Kakī pairs are held at the centre for captive breeding. All Kakī eggs are artificially incubated and the young chicks are raised in captivity. At 2-9 months they are released into the wild. Rearing them in captivity significantly increases their chances of survival by preventing predation when they are most vulnerable, (as chicks and eggs).

Conservation efforts to date have succeeded in averting extinction and increasing Kakī numbers. By 2005, kakī numbers in the wild had increased to 55 adults, including 11 pairs. The next phase of the recovery programme will address the complex issues associated with managing kakī in the wild.

The Kakī Visitor Hide operates guided tours from late October to April. The guided tours offer unique opportunity to see kaki and learn about their ecology and conservation. A display aviary next to the hide enables a close up encounter. Inside the hide two television display units show up-close footage of hatching chicks, young kaki and adult birds in the Captive Breeding Centre. (Dept of Conservation 2009)

### **Captive breeding programmes in privately managed facilities**

#### ***Isaac Wildlife Trust (Peacock Springs)***

In 1977 the Isaac Wildlife Trust was established by Sir Neil and Lady Isaac. The purpose of the Trust was to create an idyllic and safe environment for New Zealand wildlife. The Trust works to save threatened species, fund scholarships, and ensure that the Peacock Springs Wildlife Park is retained and further developed for the people of Christchurch. The facilities are not open to the public.

Peacock Springs, has grown from 20 hectares with just a handful of animals, to 1000 hectares that is home to a number of species including; tuatara, black stilt, Campbell Island teal, orange-fronted kākārīki, NZ shore plover, brown teal, blue duck and kiwi. The Wildlife Trust breeds seven threatened species in partnership with DOC. The aviaries that house some of New Zealand's most threatened bird species are built to the highest possible standards of predator proofing.

#### ***Rainbow Springs, Kiwi Encounter***

Based in Rotorua at Rainbow Springs, Kiwi Encounter is the only purpose-built kiwi conservation centre open to the public in the world. The facility capitalises on the opportunity to take a behind-the-scenes glimpse at kiwi conservation in action. Four different areas within the building are linked together to form a superb tourism attraction based completely on kiwi conservation.

The proceeds from entrance tickets go directly towards continuing this

conservation work and enable Rainbow Springs to continue growing the numbers of kiwi eggs we are able to hatch and raise each year on-site at Kiwi Encounter.

Guided tours operate every hour and culminate with a chance to get close to kiwi in the open nocturnal house—there is no glass, and you are able to watch kiwi as they forage for food in an enclosure that is as similar to their natural environment as possible.

### ***Otorohanga Kiwi House & Native Bird Park***

The Kiwi House & Native Bird Park is owned and operated by the Otorohanga Zoological Society Inc., a non-profit organisation dedicated to the conservation of New Zealand's native wildlife through education, display and breeding programs. Otorohanga is currently involved in four breed for release programmes (kiwi, whio, pateke, and banded rail). They have a 12 additional native bird species on display, in both free flight walk-through aviary and viewing enclosures. (50,000 people visit the Kiwi House each year).

## **Captive breeding programmes at New Zealand zoos**

### ***Wellington Zoo***

Currently involved in captive breed for release programmes with Brothers Island tuatara, grand skink and Otago skink (in a purpose-built Scaly Nursery). They also support conservation research projects with Otago sea lions, the Kererū Discovery Project, and research into effective contraception methods for possums.

(Wellington Zoo attracted 182,000 visitors in 2007-08, over 82,000 of them were children and young people; fifty-six percent of them come from Wellington city. Eight percent of zoo visitors in the last year were international tourists.)

### ***Auckland Zoo***

Auckland Zoo is currently fund raising and building what will be a major new visitor attraction in Auckland—Te Wao Nui. The Living Realm. This \$16.2 million development is the largest and most important initiative in the zoo's 85-year history. It aims to offer an experience of New Zealand's natural heritage, interwoven with knowledge of Māori culture and early European settlement history. The re-development will cover nearly a third of the Zoo's existing area. It will feature the ecology of five environments; our coast and sea, island sanctuaries, wetlands, forests and the South Island.

Forty key threatened native species breeding programmes will be embedded in the precinct, and overall 75 native animal and 100 native plant species will have a home in Te Wao Nui. The zoo aims to lift visitor numbers to 700,000 a year with this new development, and to boost the proportion of overseas visitors from 12 to 25 per cent.

# Appendix 2

## EXISTING AVIARY SPACE AT THE NATIONAL WILDLIFE CENTRE, MOUNT BRUCE

| 1. PUBLIC AREAS                       |                |                     |  |
|---------------------------------------|----------------|---------------------|--|
|                                       | Aviary 1       | 14 × 7 m            |  |
| 1.1 Bush aviaries<br>(3.5–3.7 m high) | Aviary 2       | 24 × 17 m           | Divided into 4 flights                                   |
|                                       | Aviary 3       | 7.5 × 15 m          |  |
|                                       | Aviary 4       | 8.5 × 16 m          |  |
|                                       | Aviary 6       | 10 × 21 m           |  |
|                                       | Aviary 7       | 27 × 8 m            | Divided into 2 flights                                   |
|                                       | Aviary 8       | 18 × 18 m           | Divided into 2 flights                                   |
| 1.2 Takahē enclosure                  | Predator fence | 1930 m <sup>2</sup> | 245 m <sup>2</sup> pond                                  |
| 1.3 NPF                               | Predator fence | 1630 m <sup>2</sup> |  |
| 2. OFF-DISPLAY BREEDING AVIARIES      |                |                     |  |
| 2.1 Shore plover                      | Flock aviary   | 536 m <sup>2</sup>  | 100 m <sup>2</sup> pond                                  |
| 7 breeding aviaries                   | SA 1           | 190 m <sup>2</sup>  | 50 m <sup>2</sup> waterway                               |
|                                       | SA 2           | 260 m <sup>2</sup>  | 85 m <sup>2</sup> waterway                               |
|                                       | SA 3           | 220 m <sup>2</sup>  | 50 m <sup>2</sup> waterway                               |
|                                       | SA 4           | 150 m <sup>2</sup>  | 30 m <sup>2</sup> waterway                               |
|                                       | SA 5           | 140 m <sup>2</sup>  | 50 m <sup>2</sup> waterway                               |
|                                       | SA 6           | 180 m <sup>2</sup>  | 51 m <sup>2</sup> waterway                               |
|                                       | SA 7           | 140 m <sup>2</sup>  | 40 m <sup>2</sup> waterway                               |
| Plateau Creek aviaries                |                | 28 × 7 m            | Divided into 3 flights                                   |
| Insect proof aviary                   |                | 74 m <sup>2</sup>   | 40 m <sup>2</sup> pond                                   |
| 2.2 Teal pens                         |                |                     |  |
| Original (1–8)                        |                | 51x 12.5 m          | Divided into 8 pens                                      |
| Newer teal pens (9–16)                |                | 52 × 15 m           | Divided into 8 pens                                      |
| Flock aviary                          |                | 23 × 19 m           | Divided into 4 pens                                      |
| 2.3 Bush aviary                       |                |                     |  |
| Aviary 16                             |                | 12 × 12 × 10 m      | Purpose-built for kokako, divided into 2 flights         |
| 3. OFF-DISPLAY HOLDING AVIARIES       |                |                     |  |
| Cellblock                             |                | 18.5 × 10           | Divided into 6 flights                                   |
| Antipodes                             |                | 30 × 5.5 m          | Kākā section (half)<br>Other half divided into 3 flights |
| Tuatara block                         |                | 19 × 10 m           | Divided into 3 sections                                  |

## Current and proposed use of the 16 teal pens

|                 |   |
|-----------------|---|
| Teal pens 1-4   | Converted to whio (blue duck) pens                      |
| Teal pens 5/6   | Pair of wild-origin brown teal of high genetic quality  |
| Teal pens 7/8   | Pair of wild-origin brown teal of high genetic quality  |
| Teal pens 9-14  | Currently converting three of these to kiwi crèche pens |
| Teal pens 15/16 | Converted to insect-proof aviaries for shore plover     |

As part to the Pukaha Mount Bruce facility upgrade (phase 2) the captive management team is working closely with the Board providing technical advice and information to upgrade facilities and aviaries.

The Captive Management Programme Manager is also working with recovery groups and captive collection coordinators to acquire additional species.

### Public aviaries

| FACILITY       | CURRENT USE                        | TERM         | PLANNED USE          | ISSUES  |
|----------------|------------------------------------|--------------|----------------------|---|
| Aviary 1       | Yellow-crowned kākāriki (Advocacy) | 5 year       | Kokako               |   |
| Aviary 2       | Hihi and RCK, kokako               | 5 year       | Multi species aviary | Add banded rail                                   |
| Aviary 3       | Empty                              | 5 year       | Wildlife garden      | Security of geckos in aviary                      |
| Aviary 4       | Kākā                               | 2 years      | Kākā                 |   |
| NPF (Aviary 5) | Empty                              |              | NI weka              |   |
| Aviary 6       | Hihi                               |              | Hihi                 |   |
| Aviary 7       | OFP                                | 5 year       | OFP                  |   |
| Aviary 8       | OFP                                | 5 year       | OFP                  |   |
| Aviary 16      | Empty                              |              | Multi species aviary | Difficulty in viewing small birds in large aviary |
| Takahē         | Takahē                             | Indefinitely | Takahē               |   |

### Off-display aviaries

| FACILITY              | CURRENT USE                              | TERM              | PLANNED USE   | ISSUES   |
|-----------------------|--|-------------------|---|--|
| Aviary 16             | Empty                                    | 1 year<br>5 years | Kokoko chick finishing<br>Multi species aviary                          | Isolated, along public track might be security issues          |
| Teal Flock            | Empty                                    | 5                 | Teal ducking holding pen prior to release (1/2)<br>Shore plover display | Awaiting RG proposal<br>Requires “calm” individuals to display |
| Teal pens 1-4         | Whio                                     | 5 years           |   |  |
| Teal pens 5-8         | Brown teal                               | 5 years           |   |  |
| Teal Pens 9-10        | Teal                                     | 5 years           | Holding space   |  |
| Teal Pens 11-14       | Kiwi Crèche pens                         | 5 years           | Kiwi Crèche pens  |  |
| Teal Pens 15-16       | Shore plover insect proof aviary         | 5 years           | Shore plover insect proof aviary  |  |
| Cell Block            | Quarantine space                         | 5 years           | Quarantine space  |  |
| Antips Aviary         | Quarantine space                         | 5 years           | Quarantine space  |  |
| Tuatara Block         | Empty                                    | 5 years           | Develop for advocacy species or banded rail                             |  |
| Plateau Creek         | Shore plover—quarantine and sick holding |                   | Shore plover— quarantine and sick holding                               |  |
| Shore plover aviaries | Shore plover                             | Indefinitely      | Wrybills in 5 years for 5+ years  |  |

# Appendix 3

## RECENT SPECIES ACQUISITIONS

### Orange-fronted kākāriki

Pukaha Mount Bruce will actively seek increased involvement in the National breed for release programme for the next 5 years.

### Antipodes Island parakeet

Pair scheduled to arrive in 2009/2010 breeding season. Pukaha Mount Bruce will seek to increase involvement in the Recovery Group programme.



Antipodes Island parakeet.  
Photo: © Tui De Roy.

## CURRENT AND UPCOMING PROPOSALS

### Banded rail

The Recovery Group is looking to begin a breed-for-release programme for Cape Kidnappers in 2010. Pukaha Mount Bruce is keen to participate with improvements to aviaries outlined for Phase 2 development.



Banded rail. Photo: R. Veitch.

### Wellington speargrass weevil (*Lyperobius buttoni*)

Captive breeding will probably be necessary in the longer term for both the Mana and Matiu/Somes Island projects. Pukaha Mount Bruce shall begin growing *Aciphylla squarrosa* ("speargrass") in April 2010 in preparation for commencing a captive-breeding programme in support of the populations on Mana and Matiu/Somes Islands. *Lyperobius* are notoriously difficult to breed in captivity, so further investigation is required before any formal proposal is made. Adults would be on display in the nocturnal house and their story would be told via a short film in the nocturnal house theatre.



Wellington speargrass weevil.  
Photo: Andrew Morrison.

### Wrybill

Colin Miskelly's review identified that the recovery group has plans to collect eggs from wild populations and establish a captive breeding population at Isaacs Wildlife Trust. They anticipate five years to establish captive breeding to provide release birds. Pukaha Mount Bruce and Isaac Wildlife Trust are closely associated with the National Shore Plover breed for release programme and have successfully established new populations on three offshore islands in the last ten years. The Recovery Group's goal is to have five self-sustaining populations of shore plover on offshore islands. Pukaha Mount Bruce and Isaac Wildlife Trust would utilise



Wrybill.  
Photo: © Andrew Walmsley.

the existing shore plover model with and some of the same aviary space to cooperatively meet the goals of both recovery groups. Pukaha Mount Bruce will develop a proposal outlining appropriate transition to holding a captive wrybill breeding population as the shore plover captive programme commitment reduces over the next 5 years.

### **Whitaker’s skink (Pukerua Bay population)**

Colin Miskelly’s review identified the need to build up a captive population through capture of wild individuals from Pukerua Bay (years 1-5 ) Offspring from the captive breeding programme would be released annually for ten years.(years 5-15?) Pukaha Mount Bruce has



Whitaker’s skink.  
Photo: Dave Towns.

been working with staff on Mana Island with takahē and shore plover programmes for the last three years. The upgrade to the nocturnal house would provide an opportunity to establish a viewing area for skinks and enable Pukaha Mount Bruce an opportunity to become involved in this long term breed for release programme

within our Conservancy. The Pukaha Mount Bruce captive management team will seek support from the Pukaha Mount Bruce for this project.

### **NI kokako**

A proposal by Auckland Conservancy to foster eggs of kokako from Mapara under inbred kokako pairs on Tiritiri Matangi, has lead to the idea of trialling the fostering of eggs under “Kahunrangi” at Pukaha Mount Bruce. Using “expendable eggs” from the inbred pairs on Tiritiri Matangi allows us to trial new techniques without significant risk. This could potentially lead to an alternative technique to the current reliance on translocations of adult birds.



North Island kokako.  
Photo: Pukaha Mount Bruce.

## **PHASE 2 VISITOR EXPERIENCE PROJECT SPECIES PLANNING**

Work with Pukaha Mount Bruce Board and ARAZPA to obtain additional species to enhance the visitor experience. Utilise the species prioritisation criteria created with the Pukaha Mount Bruce Board to plan for future species and necessary facility improvements etc.

## **NI weka**

Pukaha Mount Bruce is proposing that the NPF enclosure be cleared and replanted to hold weka with the potential to bred for release within the East Coast Bay of Plenty Conservancy. Informal discussions have begun with Weka Recovery Group members to acquire birds.



North Island weka. Photo: Nadine Gibbs.

## **Weta**

Pukaha Mount Bruce intends to submit a proposal to provide the service of captive breeding for the Foveaux Strait giant weta in 2010/2011 for implementation in 2011/2012. Adults would be on display in the nocturnal house and their story would be told via a short film in the Nocturnal house theatre.



Hochstetter's frog.  
Photo: Greg Sherley.

## **Hochstetter's frog**

Pukaha Mount Bruce will submit a proposal to house the frogs in a new purpose-built enclosure in the Nocturnal house. There is the potential to take frogs following the completion of a research project at Otago University.

## **Aviary 3, proposed walk through wildlife garden**

The 7.5 × 15 m aviary will be modified to enable visitors to walk through a specially planted aviary and get up close with up to nine species of lizard. The aviary signage will link to DOC publications that promote what people can do in their own back yard to attract and protect wildlife. This project proposal will be fleshed out as part of Phase 2 upgrade.

## **Teal flock aviary**

Formerly used to flock young Campbell Island teal prior to translocation, this 23 × 19 m aviary is split into four holding pens. With minor modifications this aviary could be refitted to house young brown teal (pateke) prior to release in one half, shore plover and other wader species (non-breeding) in one quarter, and Antipodes Island parakeets in one quarter.

## **Aviary 16**

This is a purpose built (12 × 12 × 10 m) kokako breeding aviary divided into 2 flights. It was used in the kokako breed for release programme up until 2008 when the programme was phased out by the Kokako Recovery Group. The public loop track will walk visitors past the aviary (January 2010) and provides an opportunity for visitors to view multiple species for advocacy. The captive management team will develop for Pukaha Mount Bruce Board consideration a proposal to stock this aviary with species most suited to this advocacy opportunity.

## **Tuatara block**

Formerly used to hold breeding ducks, these aviaries are in close proximity to the kākā feed stations. If available, funds could be used to renovate these aviaries to hold breeding banded rail. Currently planning to put banded rail in shared aviaries with non-breeding kākāriki

## **RECENT REVIEWS OF THE PUKAHA MOUNT BRUCE CAPTIVE MANAGEMENT PROGRAMME**

Dr. Colin Miskelly (DOC, Wellington Conservancy) recently reviewed the Pukaha Mount Bruce Captive Breeding Programme (Miskelly 2008). This review identified a range of options for the Captive Breeding Programme. These options were strongly considered in the development of the strategic directions outlined in this document. However, the Miskelly Review was limited in its scope and additional options were explored. These additional considerations included:

- Opportunities beyond breed for release programmes
- Potential to capitalise on the unique expertise within the Pukaha Mount Bruce staff
- Opportunities to generate revenue within the Captive Breeding Programme
- Need to balance the visitor experience and advocacy role of Pukaha Mount Bruce Board while maintaining the capability and flexibility to meet the conservation needs of DOC.