FORESTRY MANAGEMENT GUIDELINES

KIWIS FOR KIWI

North Island Brown Kiwi in Exotic Plantation Forests

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IN PARTNERSHIP WITH
Department of Conservation
Te Papa Atawhai

Contents

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Special thanks is given to Pete Graham, kiwi practitioner, Sally Strang, Environmental Manager, and Tony Dwane, Environmental Planner from Hancock Forest Management (NZ) Ltd for guidance with the second edition.

1.0 Purpose of the management guidelines

The Management Guidelines for Brown Kiwi in Exotic Plantation Forests has been developed by Kiwis for kiwi to help forest owners, managers and operators plan and put in place kiwi-friendly operations in exotic forests where kiwi live.

Introduction

The brown kiwi (Apteryx mantelli) is classified by the Department of Conservation, DOC, as 'nationally vulnerable', Robertson et al (2012)'. Studies in sites with no active management show brown kiwi are declining at an alarming rate each year – and their population is halving approximately every decade.

In the last five years, as commercial forests have become ready for harvest, more and more forest owners and managers have put in place measures to protect any kiwi that live there. Their interest stems in part from a growing commitment to the natural environment, needing to comply with resource consent conditions imposed by regional councils, and in part to meet forestry certification standards.

The latter, third party certification of sustainable management practices, is playing an increasingly important role in how New Zealand's plantation forests are managed. Half of the country's plantations and one-third of the annual harvest are already third party certified, through the international Forest Stewardship Council (FSC) system. A national standard under FSC will guide forest management.

All around New Zealand, there are now collaborative efforts to ensure kiwi can continue to live in exotic plantation habitats.

These guidelines will help you to minimise any damage to kiwi during all stages of forest management and harvest operations. They begin by providing background information about brown kiwi, where they live and the threats they face, then providing a range of management options and useful resources which you can adapt and use, depending on:

- The kiwi numbers in your area
- The location of your blocks
- Which areas are identified as priority kiwi areas
- Other kiwi management in your area
- Available resources and time frames

2.0 Brown Kiwi Habitats and Behaviours

Productive woodlot with native vegetation pockets

Throughout their range, brown kiwi can be found in exotic forests, particularly in areas with native forest remnants or riparian areas alongside a plantation woodlot.

2.1 Habitat types

Kiwi are known to survive and thrive in managed plantation forests. They move in from nearby native bush and shrub land once a growing stand has developed sufficient ground cover and insect life. Some adult kiwi will successfully breed within an exotic forest, building a significant population over the plantation's lifespan. In some cases, kiwi will use both the exotic and native forest habitats as part of their territories.

Kiwi often live in gullies containing native plants within the pine stands, but move around extensively looking for food and a mate. That means they cross logging roads and tracks and enter cut-over areas despite the lack of cover there.

2.2 Habitat size

The size of habitat a kiwi requires depends on the habitat fertility, invertebrate numbers and proximity to other suitable habitat. Northland and Coromandel Brown kiwi are known to live in as small an area as 6 ha per bird, whereas Eastern and Western Brown kiwi occupy larger areas (20-90 ha). Translocation guidelines state that 500ha is a minimum area to be managed for predator control in Northland or Coromandel in order for the population of a minimum of 40 kiwi to be viable. There also needs to be other nearby suitable habitat they can disperse. For Eastern and Western Brown kiwi the minimum recommended area for protection is closer to1000ha.

2.0 Brown Kiwi Habitats and Behaviours cont.

2.3 Kiwi behaviour

FEEDING:

Kiwi are nocturnal and can move more than one kilometre each night while feeding. They may move between native bush and plantation forest on a nightly basis or, depending on food availability, they may visit the pines on regular cycles. Some may feed only in the pines, while others stay only in the native bush enclaves. Kiwi predominately feed on soil invertebrates and the location of these varies with time of year and vegetation cover. In dry periods, kiwi may move outside their normal territories to visit wet or swampy areas. That means these areas should be protected.

DAY TIME SHELTERS:

Kiwi sleep during the day, either under the ground in burrows or on the surface under cover such as log piles, birds' nests, slash piles, windrows or thick shrub (such as bracken, gorse, pampas grass and toi toi). An individual bird may have as many as 40 different campsites within its home range and usually roosts in a different location each day. The exception is when the male is incubating eggs.

TERRITORIES:

Paired adult kiwi can have an established home range of 5 - 50 hectares and they seldom move beyond its borders. Younger kiwi will move through an area in search of mates, or a new home range, and may only be in a particular patch of bush/stand of pines for a few nights.

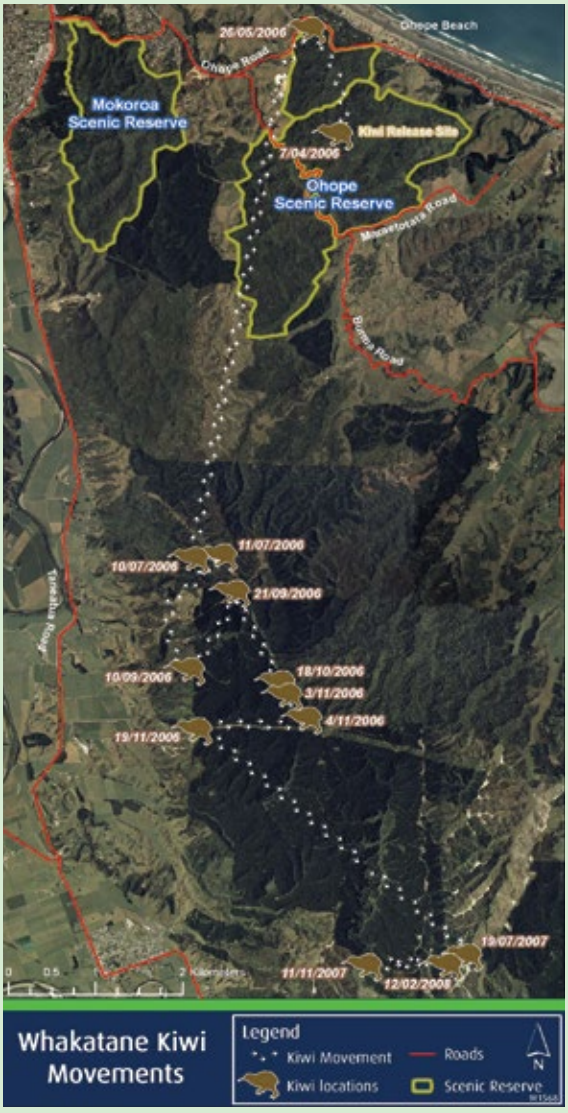
BREEDING:

Kiwi can begin breeding from 2-3 years of age, and will continue to do so each year as long as they have a partner. If not killed by a predator or other unnatural cause, they can live for about 60 years.

That means kiwi can outlive the rotation of a plantation forest.

Kiwi feeding in a bank

Roost sites may just be under pampas or toetoe



2.0 Brown Kiwi Habitats and Behaviours cont.

2.4 Brown kiwi breeding cycle

APRIL – MAY:
Adult kiwi court and this is the time of year most calling takes place.

JUNE:
First clutch of two eggs are laid in a nesting burrow excavated by the male.

JULY – AUGUST:
Main incubation period. The male will incubate the eggs for up to 80 days, until the chicks hatch, without any help from the female.

Incubation time is a high risk period as the male is always in the same burrow and reluctant to move, even when there is disturbance around him. If he is disturbed, he will often desert the nest and not return to the eggs.

SEPTEMBER:
Chicks hatch. After a few days they are independent and will be moving around and foraging on their own. Sometimes they may be found wandering around in the daytime.

This is a high risk time for chicks, when they can fall prey to animal pests or suffer life threatening injury.

NOVEMBER:
Sometimes the adult pair will produce a second clutch of two eggs, using a different nest.

JANUARY – FEBRUARY:
The second clutch of chicks usually hatch now, but some kiwi may still be breeding in March and April.

Where possible logging should be avoided in July and August, in areas where breeding kiwi are present. This gives the kiwi a chance to successfully fledge their first clutch of chicks.

Harvesting compartments of the woodlot will reduce impacts on kiwi by allowing non-nesting birds to retreat into adjacent areas.

Kiwi egg in a nest under some grasses

3.0 Threats to Kiwi in Plantation Forests

Kiwi killed by a dog

The main threats kiwi face in plantation forests are the same as in native forest where introduced mammalian predators, such as stoats, cats and dogs, are at large. However, plantation forests also bring additional hazards and risks, particularly during mechanical land preparation and harvesting stages.

3.1 Common threats

- Predation by dogs, usually causes death. This can rapidly be a cause of local extinctions.
- Predation:
  - of adult kiwi, by ferrets, and possibly by possums and pigs.
  - of chicks, by stoats, cats, ferrets, possums and possibly pigs.
  - of eggs, by possums and pigs.
- Being run over when crossing roads at night.

3.2 Additional threats associated with forestry operations

- Habitat loss and degradation.
- Isolation of remnant kiwi populations.
- Death from falling into steep-banked ponds and fire control dams.
- Being hit by vehicles, especially logging trucks at night.
- Being disturbed, injured or killed during land preparation or clearing, slash-burning and harvesting.

Kiwi with a trap injury

Kiwi and eggs will not survive burn-offs

Leg hold traps set on the ground are a threat for passing kiwi

Kiwi also use roads

4.0 Handling Kiwi

Cradle hold of kiwi against the person's body and with legs firmly held near the feet

In general kiwi are not to be moved from woodlots as they will usually move themselves. Small chicks, sitting males and eggs in nests are more vulnerable and may need expert attention if found. The goal should generally be to manage the kiwi in situ and not to translocate them to another site.


Releasing a chick into a burrow

Any kiwi handling should only happen either in an emergency situation or as part of a planned programme. All planned kiwi handling must be done by an Accredited Kiwi Handler and follow Best Practice standards.

Though foresters are not required to know the Best Practice standard details they need to be aware that any Accredited Kiwi Handlers they utilise must;

- Have valid handling permits
- Operate within Best Practice standards

If there is a planned programme which includes handling kiwi some of the key Best Practice information which a forest manager should be aware of when contracting Accredited Kiwi Handlers is:

- Planned catching of kiwi should be done outside the breeding season. Female kiwi are not to be caught during the breeding season. Catching of male kiwi should be avoided during the breeding season as they may be sitting.
- Kiwi dogs must be worked only in daylight hours when the kiwi are sheltering unless given a special exemption by a DOC dog certifier.
- A translocation permit is required if you plan to move kiwi. This is an involved process which may take up to six months.
- Transmitters must only be attached to kiwi in the manner described in the Best Practice Manual.
- All injured and dead kiwi must be given to DOC.

4.0 Handling Kiwi cont.

4.1 Emergency situations

Some emergency situations may arise when a kiwi or egg may need to be handled by a person who is not an Accredited Kiwi Handler. In order to prepare for such a situation forestry field staff and contractors should attend workshops or briefings about kiwi and have phone numbers of who to contact and what to do. Emergency procedure and contact templates are available at the end of this document and should be printed A3 size, laminated and put on the smoko shed wall. Some of these situations may include;

- If a kiwi is injured and needs to receive treatment.
- If there is an urgent and immediate threat of a kiwi being injured or killed.
- If a nest is deserted, then the eggs should be salvaged and taken to a captive facility and incubated.

If a kiwi is seen running or flushing from the site it should not be caught unless it is believed to be in imminent danger. Once caught place in a box in a quiet cool place and contact an Accredited Kiwi Handler immediately.

Kiwi safe in a ventilated box awaiting transportation

4.2 Planned programmes

If foresters wish to enhance their kiwi population, then an Operation Nest Egg (ONE) programme could be implemented. A plan would be required to carry out this work and permits obtained from DOC for an Accredited Kiwi Handler to deliver the plan.

In very exceptional and occasional situations a plan may be developed to either temporarily or permanently relocate the kiwi to a nearby safe habitat. A translocation permit from DOC will be required for this work.

ONE chick in an incubator

5.0 Management Recommendations for Kiwi in Plantation Forests

Kiwi in a radiata woodlot

Around New Zealand there are collaborative efforts to ensure kiwi continue to thrive in these ecosystems. It is recognised that the forest industry is endeavoring to work towards ensuring kiwi can live sustainably within the forest they own and manage. The following recommendations will help foresters achieve their kiwi recovery goals.

While each management site has unique considerations, it is important that management guidance is consistent and considered. In general, the recommendations are to leave kiwi in situ as long as there is some form of habitat for them to live in and as long as they are not under immediate threat of being killed. It is believed by kiwi practitioners that adult kiwi will usually flush from an area of disturbance as long as there is somewhere for them to go. Other than in emergency situations, holding or catching of kiwi is only to be done by an Accredited Kiwi Handler or by someone directly supervised by an Accredited Kiwi Handler. Any non DOC Accredited Kiwi Handler wanting to undertake kiwi handling must first secure a permit under the Wildlife Act.

There does need to be some flexibility according to site, kiwi density and resources available for management and the following is intended as a basic outline.

It is not expected that foresters become kiwi specialists. There will be DOC staff, Accredited Kiwi Handlers and local community kiwi project members who may be able to support the kiwi work and provide advice.

It is recommended that an early relationship is established with a local Accredited Kiwi Handler so they can be contacted if required to handle kiwi.

GENERAL MANAGEMENT TASKS:

- The kiwi population within the forest or woodlot is ascertained through a kiwi survey.
- That kiwi are predominantly managed at a population level rather than an individual level.
- That kiwi are managed in situ unless total habitat removal is planned, and there is no replanting planned or no adjacent habitat the kiwi could retreat to.
- Basic kiwi friendly forestry guidelines including dog control are adopted.
- Contractors, staff and management are trained to understand kiwi, kiwi sign and what to do if kiwi are found. Kiwis for kiwi has a training pack to help with this.
- There is an emergency plan developed and information is onsite to help.

Onsite briefing of contractors and forest managers

5.0 Management Recommendations for Kiwi in Plantation Forests cont.

TABLE 1: MANAGEMENT OPTIONS FOR KIWI IN PLANTATION FORESTS

Management regime	Level of intervention to individual kiwi	When suitable	External input	Resources	Time frame
Kiwi friendly forestry practices	Low	In areas where kiwi are present	Low	Low	Life of forest
Dog control	Low	In areas where kiwi are present	Low	Low	Life of forest
Pest control	Low	In a priority site, and where possible where the kiwi population is known to be stable and/or other kiwi habitat or protection surrounds the plantation.	Low	Medium	Long term. Life of forest
Operation Nest Egg	High	Effective if forest managers want to boost population numbers fast. More than five known pairs are present. The kiwi are easily accessible.	High	High	3 year minimum
Temporary relocation of kiwi	High	As a last resort if all habitat will be removed and/or kiwi that are under unmanaged threat.	High	Medium	1 year for relocation
Translocation to another protected habitat	Extreme	This is a last resort and not highly recommended. When all habitat will be permanently removed OR there are no other kiwi in the area. Or a new population is to be established elsewhere with these kiwi.	High	Medium	1 year for removal

DECISION TREE TO GUIDE MANAGEMENT PLANNING


Harvested area with adjacent bush

5.0 Management Recommendations for Kiwi in Plantation Forests cont.

5.1 Surveys: First find out about your kiwi

Understanding the local population is an important first step in planning a kiwi programme. Kiwi call count monitoring guidelines are in the Kiwi Best Practice manual and on the Kiwis for kiwi website.

IDENTIFY WHETHER THERE ARE ANY KIWI PRESENT BY CARRYING OUT ONE OR SEVERAL OF THE FOLLOWING:

- Check any evidence of reports of calls and sightings.
- Carry out a call count survey.
- Deploy remote listening devices.
- Get an Accredited Kiwi Handler and certified kiwi dog to carry out a population survey.

IDENTIFY THE SIGNIFICANCE OF THE POPULATION BY:

- Estimating the number of kiwi present in your area.
- Calculating kiwi numbers in the general area – are there several healthy populations, or is yours one of only a few?
- Determining if there is kiwi protection being carried out at the site or on surrounding properties.

Certified conservation dogs safe with muzzles on

5.2 Kiwi friendly forestry

BASIC PRINCIPLES:

Kiwi survive and thrive in exotic forests as long as a few simple precautions are taken. The kiwi-friendly forestry practices outlined below have been peer-reviewed by forest managers who agreed they could be put in place with little disruption to the silvicultural regimes and will not reduce profitability – all it takes is awareness, planning and care.

Nesting male kiwi

ACTIVITIES:

Brief all your staff and contractors and make information about kiwi and your kiwi-friendly management practices easily available. There may be local kiwi workshops/hui they can attend. Kiwis for kiwi has developed a training pack to assist with this which includes information on:

- How to recognise kiwi and kiwi sign.
- Emergency procedures on what to do and who to contact if kiwi are disturbed or found.
- Photocopy these kiwi emergency procedures and contacts list, and have a copy on site for reference by forestry workers (perhaps near the First Aid equipment).

ADDITIONAL AWARENESS AND INFORMATION:

- View the initial chapter and forestry section on the *How to Save Kiwi* videos developed by Kiwis for kiwi (viewable from https://www.youtube.com/user/Kiwisforkiwi).
- Make contact with a person from DOC, an Accredited Kiwi Handler, Kiwis for kiwi or a local kiwi group who can provide advice.
- Maintain contact with your local kiwi group to share up-to-date information on where logging is taking place.
- Maintain records of any kiwi sightings and sign, and pass onto the local kiwi group or DOC.
- Kiwi will use forest roads. Have truck and vehicle drivers aware of this. Erect a 'Kiwi Live Here' sign to remind people to consider kiwi.
- When working in the forest, contractors should look out for kiwi burrows, sign or injured kiwi.

5.0 Management Recommendations for Kiwi in Plantation Forests cont.

FOREST PLANNING STAGE:

- Where possible plan small forest compartment harvesting.
- Retain riparian and wetland areas in native vegetation.
- Leave an additional vegetated buffer around these areas where possible as in very wet winters kiwi may be 'flushed out' of swamps and need adjacent habitat.
- Stagger woodlot ages and consider long rotation saw log regimes rather than short rotation pulp.
- Small foresters can consider planting hardwood species in scrub light-wells, rather than clear felling all the scrub.

LAND PREPARATION STAGE:

- Leave refuges of indigenous vegetation and wetlands when carrying out the initial land clearing.
- Removing vegetation manually is less dangerous for kiwi than roller crushing.
- Avoid fires, where possible, as kiwi will hide in piled or wind-rowed slash.
- In high density kiwi areas which are having roads established the contractors need to be aware of kiwi and look out for nests or flushed kiwi. If possible establishing roading should be done in late summer when kiwi are not nesting. An Accredited Kiwi Handler and kiwi dog can be contracted to check the planned route for nesting kiwi.

FOREST ROTATION STAGE:

- Have a dog control plan. Prevent contractors bringing dogs to work. Hunting dogs should have a current Kiwi Aversion certificate and be permitted to hunt in the forest. Avoid night hunting, encourage the use of radio tracking collars so dogs are less likely to be lost. Dogs pose a significant threat to kiwi, and are considered the main threat to adult kiwi. Banning dogs completely from the site is the most effective measure for ensuring the safety of resident kiwi.
- Consider establishing a predator control programme.

Signage to protect kiwi

HARVESTING OPERATION STAGE:

- Where possible, leave escape routes for any kiwi that might be within the block to be logged. In particular, leave gullies and other enclaves of native bush undisturbed.
- Don't leave 'forest islands' intending to return and harvest later, as kiwi may have retreated into these areas. Move contiguously through the forest.
- If it is a small woodlot and all habitat is to be removed in a short time with no nearby habitat for the kiwi to retreat to, kiwi will need to be located and relocated. This needs to be planned for outside the breeding season. Discuss with the Accredited Kiwi Handler. As mentioned before, a translocation proposal will need to be developed well in advance.
- If a kiwi is found sitting on a nest try to work around the nest and return at a later date. If this is not possible make immediate contact with an Accredited Kiwi Handler. The egg/s may need to be taken for incubation. If chicks are present, they may need to be rescued and translocated into a kiwi crèche. If adult kiwi flush leave them to find safe cover.
- If possible avoid harvesting in July and August when kiwi have just begun nesting. The 1st clutch nests have a better chance of survival as stoats may not have emerged from dens.
- Be aware that harvest initially attracts kiwi but as the harvested area dries out, the kiwi seek damper areas.
- Where possible avoid dragging logs through stands of native forest, or fell or dump harvest waste into native gullies or enclaves of bush or scrub, as kiwi are most likely to have sought refuge there.
- Where there are options, avoid having log processing sites where kiwi may be roosting. Ridges will be less likely to be chosen by kiwi.

POST-HARVEST OPERATION STAGE:

- Retain riparian and wetland areas with native vegetation, whether mature or regenerating.
- Avoid disturbing known kiwi habitat or retreat areas (such as slash piles) during land preparation.
- Where possible avoid burning slash 'birds-nests' in which displaced kiwi often roost.

5.0 Management Recommendations for Kiwi in Plantation Forests cont.

5.3 Priority forests

Priority forests intended for active management and protection can be identified and strategic plans for each silvicultural stage developed which take kiwi into consideration. Aspects which may contribute to a forest being considered a priority are;

- The requirement or desire to carry out more intensive protection at a representative forest site to satisfy forestry certification or shareholder expectations.
- High densities of kiwi (more than five calls per hour for Northland and Coromandel, or three calls per hour for Eastern and Western brown kiwi areas)
- Where habitat size is suitable to sustain a viable population of kiwi (a genetically viable population needs a minimum of forty breeding kiwi).
- The habitat contains native enclaves which will be retained when the area is harvested
- The forest is on the boundary of, or contiguous with, other kiwi protection effort. Here projects can complement each other.
- If the population in the forest is the last remnant of a surviving population in that area.
- It is a population the forest owner has chosen to enhance through ONE or other intensive management.

A vulnerable chick having newly left the natal burrow

MANAGEMENT IN PRIORITY FORESTS IN ADDITION TO THE BASIC KIWI FRIENDLY FORESTRY PRACTICES

Once the priority forests have been identified the forest managers can create a programme to more intensively protect the kiwi.

Priority Forests management recommendations include;

1. Baseline surveys of the managed population are carried out then repeated at least five yearly to check the efficacy of the predator control programme. This can be done by either having experienced people listening to calls, by deployment of remote listening devices or the use of a certified kiwi dog.
2. Pest and predator control should be carried out following acknowledged Best Practice guidelines (see the Kiwis for kiwi website www.kiwisforkiwi.org).
   - Plan and implement a predator control programme in priority forests throughout the rotation. If the forest is near a community group project, the predator control work could be contracted to professional trappers. Best Practice trapping information is available through the DOC and also Kiwis for kiwi.
   - Dog control is essential as dogs are the main limiting factor in population recovery. If possible dogs should be excluded from the priority forests.

Kiwi killed by a dog

3. Other intensive management. An ONE programme can be planned and implemented if the forest managers have decided to more rapidly boost or enhance the kiwi population. This should be considered in conjunction with predator control which protects the broader biota of the forests rather than just kiwi. As most adult kiwi will flush from a logging operation their translocation or capture to be moved is generally not recommended. It may be necessary to move small chicks or eggs.

5.0 Management Recommendations for Kiwi in Plantation Forests cont.


Stoat in a Fenn trap

5.3.1 Predator control

BASIC PRINCIPLES:

Whether your forest is being planted, maintained or harvested, an effective animal pest and predator control programme reduces threats to kiwi (and all other species in the forest) with the least level of intervention and the greatest benefit. A well informed and delivered predator control programme is key to the survival of the kiwi population.

TABLE 2: ACTIVITIES

Threat	Mitigation	Responsibility
Predation by dogs	Ensure forestry crews and other contractors do NOT bring dogs to the site at any time.	Forest manager
	Install signs to advocate 'no dog' areas and let people know kiwi are present.	Forest manager
	If dogs are seen in forests arrange with District Council to trap and remove them.	Forest manager
	Ban all dogs from areas where kiwi are known to be present except permitted and kiwi aversion certified hunting dogs, permitted pest control dogs and kiwi dogs.	Forest manager
	Offer kiwi aversion training for the dogs of all hunters using the forest.	Forest manager/ Local kiwi project/DOC
	Undertake pig control by methods other than using pig dogs (e.g. poisoning, trapping).	Forest manager
Predation by mustelids	Establish a mustelid trapping programme following Best Practice guidelines.	Forest manager/ Local kiwi project
Disturbance and competition for food by rats and possums	Carry out control of possums and rats following Best Practice guidelines.	Forest manager
Predation by cats	Shoot or set live capture or kill cat traps following Best Practice guidelines.	Forest manager/ Local kiwi project
Trapping	Ensure all pest control operations use raised set traps for possum/cat control so they do not catch kiwi. Traps need to be at least 700mm above the ground.	Forest manager
Liberation of pigs for hunting	Pigs can predate kiwi eggs and their presence is a threat to kiwi as it attracts hunters who may not have kiwi aversion trained dogs. Prohibit the liberation of pigs.	Forest manager

5.0 Management Recommendations for Kiwi in Plantation Forests cont.

Newly hatched Operation Nest Egg chick

5.3.2 Optional planned intensive management

The following management tools need to be planned and consulted on in advance of the start of any work.

Operation Nest Egg

This tool can be applied if the forest manager wishes to increase kiwi numbers rapidly. It could also be used if a new population is to be established. Trapping could be seen to be costly in a low density kiwi area when weighed against numbers of kiwi benefiting from the effort. A manager may wish to increase kiwi numbers through ONE in conjunction with carrying out predator control.

BASIC PRINCIPLES

A sample of the kiwi population in an area is radio tracked to establish when breeding begins. Eggs and/or chicks are removed and sent to a captive institution and/or kiwi crèche, where they remain until they attain a weight of 1200gms. At that size, they are better able to defend themselves from stoat or cat predation. These juvenile kiwi are then returned to the forest they came from or, if suitable habitat is not available, they are released into another area where predator control is occurring.

ACTIVITIES:

- Create a plan and secure support, permits and resources.
- Ensure that planned activities are supported by the local DOC office and the Kiwi Recovery Group for inclusion in the ONE translocation register (i.e. a full translocation proposal may not be required)
- Adult male kiwi are caught by Accredited Kiwi Handlers working with certified kiwi dogs.
- Radio transmitters are attached to them and they are monitored to see when breeding begins. Radio tracking is carried out by trained operators usually during the day. Tracking should initially take place weekly, and later once a month as the kiwi's home range and habits are established.
- Eggs and/or chicks are removed, normally during September and December.
- Chicks are reared in a crèche or safe area until they are at least 1200gms in weight.
- Chicks are returned or taken to a new site where predator control is occurring.
- Chicks are monitored for a couple of months to ensure they do not disperse and that they survive.
- Annual summary of number of eggs lifted and chicks released to be forwarded to the local DOC office.

Placing a transmitter on a kiwi

Removing an egg from a burrow

Releasing an Operation Nest Egg kiwi

5.0 Management Recommendations for Kiwi in Plantation Forests cont.

Temporarily relocating kiwi

This is not usually a recommended tool as most kiwi will move by themselves unless they are on a nest, very deep in a burrow or are a naive chick. In some exceptional cases it could be considered where habitat will be removed where the kiwi is situated and/or kiwi are under immediate threat from machinery, and there is adjacent suitable habitat.

BASIC PRINCIPLES:

Moving kiwi to a nearby temporary safe area could be an exceptional option if some retained habitat is available within or nearby the birds' current home range. A permit is required from DOC and the translocation must be carried out by Accredited Kiwi Handlers. As kiwi are territorial they may make their way back into the harvest area (their home range). Locating kiwi with telemetry equipment may be required each day.

ACTIVITIES:

- Create a plan
- Notify an Accredited Kiwi Handler when logging is planned, preferably a few months in advance to allow for permits to be arranged.
- Arrange the necessary translocation permits.
- Before operations begin, kiwi are caught by the handler, transmitters are attached and their territories are mapped.
- At the beginning of each day, before the contractors start work, the kiwi are located. If kiwi are in the area to be harvested that day and are deemed at risk because they will not naturally flush, they are moved to an adjacent safe area.
- If the kiwi is incubating an egg and the harvesting cannot be temporarily stopped until incubation is complete, or work carried on away from the nest site, the egg will need to be removed for artificial incubation.
- Contractors are briefed each day.

Locating a kiwi with telemetry equipment

Monitoring kiwi within the woodlot

5.0 Management Recommendations for Kiwi in Plantation Forests cont.

Translocating kiwi to another protected habitat

This is a last resort and a less recommended option as it is costly and often not fully successful. It could only be considered if all habitat will be permanently removed OR no other kiwi are left in the area. It could also be an option if the kiwi will be translocated to another predator controlled site where they will establish a new population or be used to enhance a low density population.

BASIC PRINCIPLES:

Translocating kiwi from their established home range to other protected habitat is the most disruptive option. A preferred option will usually be to create a sufficiently protected environment for kiwi to survive within the home woodlot or adjacent areas.

First, it is difficult to find every kiwi, which means lifelong pair bonds can be broken. Second, the newly translocated kiwi are often unsettled in their new home range and may wander outside their new home into unprotected areas. They may also try and return to their original home range. If they are translocated into a medium or high density area territory squabbles can cause disruption.

Translocation permits are required from DOC, and permission must be granted by appropriate iwi authorities and landowners. The kiwi must be relocated, under conditions listed in the permit, to an area which has been approved by DOC.

Monitoring translocated kiwi

ACTIVITIES:

If translocation is recommended the following actions take place:

- Create a plan
- Notify an Accredited Kiwi Handler when logging is planned, preferably a few months in advance to allow for permits to be arranged .
- Arrange the necessary translocation permits.
- Adults are caught by an Accredited Kiwi Handler and radio tagged for translocating.
- If radio tagged, the adults are all re-caught and transported to the new location on the same day. Transmitters will normally remain on the kiwi for post release monitoring.
- Any additional kiwi seen during operations are caught by the Accredited Kiwi Handler for translocation.
- Kiwi are released at the new site, usually with receiving and departing iwi representatives present.
- The translocated kiwi are monitored for survival.

An adult kiwi ready for release

6.0 Field Information for Staff and Contractors


Kiwi Chick

The information in this section can be used to help field staff and contractors understand how they can make sure kiwi living within the exotic woodlot are safe. You may find it useful to keep a copy on site.

'Kiwi briefings' can be incorporated into any routine training you hold for staff and contractors. A training or briefing pack is available from Kiwis for kiwi. The *How to Save Kiwi* video produced by Kiwis for kiwi contains several chapters including – 'About Kiwi', Predator trapping" and 'Kiwi and Forestry'. This footage can be viewed from www.kiwisforkiwi.org

Forms to record any kiwi sightings are also a good way to collate information on when and where kiwi are seen, what the kiwi were doing and what was done by the person finding them.

6.1 Recognising kiwi

As kiwi are nocturnal and inhabit deep bush, plantation forests and scrub. They may not be seen except when disturbed accidentally during the day, or when crossing roads or tracks at night. However, even if you don't see kiwi, it is possible to identify sign that kiwi are about:

KIWI CALLS:

Kiwi call at night. On still nights, their distinctive piercing call can travel about a kilometer.

The male's call is an upward shrill single note, repeated 15–20 times.

The female call is a lower, coarse rasping cry, also repeated 15–20 times.

Morepork calls are often confused with male kiwi, but it is usually lower in tone and only repeated 7–10 times.

The *How to Save Kiwi* video has calls on it. Alternatively, kiwi calls can be found and downloaded from the internet.

KIWI FOOTPRINTS:

In soft terrain, such as mud and sand, the three toed kiwi footprints show up really well. Footprints can sometimes be seen in the wet mud along roadside verges. They are slightly larger than a hens footprint, and heavier and more spread out than a pheasant foot print.

KIWI PROBE HOLES:

Kiwi feed by probing the ground with their long bills. They leave a cylindrical hole about 10-centimetres deep, with a small depression where the base of their bill has been pushed against the earth. Numerous probe holes may be found close together.


Kiwi probeholes in a swamp


Kiwi footprints in a muddy area

6.0 Field Information for Staff and Contractors cont.

KIWI FEATHERS:

Kiwi feathers are very distinctive as they are fine and not 'zipped' together like most other bird feathers. They are usually brown with a hint of russet. The feathers are sometimes caught on vegetation, such as hook grass, but a large pile of feathers usually indicates the bird has been in some kind of trauma. Kiwi can shed handfuls of feathers when fleeing from a predator, but still be unharmed. However, if a pile of feathers is found spread over a couple of metres, it is more likely the bird is dead following contact with a predator or machinery. Look for a carcass.

Kiwi feathers

KIWI BURROWS AND ROOSTS:

As already described, kiwi can roost both above and below the ground. Nests and breeding burrows are usually dug below ground or into a bank and will contain a substantial amount of leaf litter and feathers. If disturbed, kiwi may hide their eggs in the leaf litter. (See 6.2 Emergency procedures for advice on removing eggs)

A kiwi burrow in a pine plantation

KIWI FAECES

Compared to most bird droppings, kiwi leave quite large, slightly runny deposits. They have a strong distinctive smell unlike any other bird and look like a flattened messy blue grey splodge with a trace of white normally around the outer edge.

Kiwi faeces

6.0 Field Information for Staff and Contractors cont.

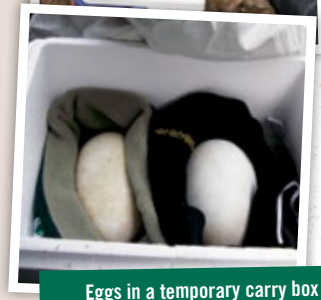
6.2 Procedures for Emergency Kiwi Recovery

Scenario	Action
Kiwi seen moving during any forestry operations	If possible, leave the bird to move to safety on its own, and note its direction of travel. If the bird is heading into a danger zone, stop operations and flush the bird to safety. If the bird cannot be removed from danger, and the operation must continue, be prepared for recovery of an injured or dead bird. If the bird cannot be removed from danger, and the operation can stop, call your accredited handler to help to remove bird.
A person other than an accredited handler has had to catch a live or injured kiwi during any forestry operations	Handle the bird with care. Hold firmly by both feet, or the unfeathered portion of its legs to avoid harm to handler or bird. Do NOT squeeze around chest, as the bones are very fragile. Cradle the bird in your arms like a baby, belly uppermost. If its legs are damaged, swaddle the whole body in a jumper or your arms, exerting an even pressure round all of the bird. Examine the bird for any obvious injury and note its severity. If possible, tape the bird's legs together where there are no feathers (electrical or masking tape can be used but don't leave the legs taped for an extended period) and wrap the whole bird loosely in a towel/jumper/coat, head included. The kiwi should stop struggling once restrained gently and in the dark. Place the bird in a confined space, with padding of coat/jumper/sacks, with legs still together. Take care that the kiwi will not overheat when wrapped in clothes or is in an over insulated box. If a box or empty chilly bin is not available, a sack, pack or bag will do. Make sure the bird cannot escape. Keep in safe, quiet dark place. Contact an accredited handler. Keep notes of what happened and when, to help with diagnosis. Follow any instructions or advice as offered by kiwi personnel.
A person other than an accredited handler has caught or injured kiwi chicks	Handle the young bird with extreme care. Hold gently by legs, and cradle and support its body against your chest with your other hand. Keep the kiwi warm but not overheated, in a jumper or beanie, and put in a small container so it's unable to escape. Keep in a quiet safe place and call for assistance as above.
Kiwi eggs unearthed and/or disturbed during any forestry operations	Assume the egg is alive even if it is cold and cracked, unless it has been obviously broken and the chick inside is dead, or it's extremely smelly and slightly sticky to touch. Look for second egg, as usually two eggs are laid per clutch. Note the position of the eggs before removing them from the nest, and gently mark the top with a pencil if possible. Transport the eggs in an upright position. If eggs are found outside the nest, in vegetation, it may not be possible to know which is the top of the egg. If you have a flat surface, (chilly bin, lunch box lid), carefully place the egg in the centre and it will roll and balance with the air cell at the top. This is the correct position for transport. Mark the top and keep it this way up. Place the egg(s) in a padded box, chilly bin or bag, with sufficient padding to stop the eggs getting damaged. Keep in a warm dry place, but do not apply any heat directly to the eggs. Contact an accredited kiwi handler, as the eggs need to be taken to a facility for artificial incubation as soon as possible. If transporting the eggs yourself, have someone hold the box to avoid severe jolting over rough terrain. If on your own, strap the container into the vehicle with the seat belt. If possible warn the kiwi house of your arrival and have details of where the eggs have come from.

The cradling hold for kiwi

Kiwi legs being taped

Lightly marking the top of a kiwi egg



Eggs in a temporary carry box

5.0 Key Contacts

This table could be useful for recording contact details of people who can help if you come across kiwi during your forestry operations.


Adult brown kiwi

Organisation/position	Name	Office/home phone	Cell phone
Kiwi accredited handler			
Local kiwi project			
Local Department of Conservation office			
After hours Department of Conservation		0800 DOCHOT	
Vet or bird rescue			
Vet			

FURTHER INFORMATION AND SUPPORT

- Pest control – contact DOC, regional councils or kiwi groups.
- Kiwi Survival Guide - advocacy material, general information and *How to Save Kiwi* videos – www.kiwisforkiwi.org
- Kiwi Information – DOC. This includes scientific reports about kiwi in plantation forests.
- New Zealand Forest Owners' Association website – general information on http://rarespecies.nzfoa.org.nz/

Kiwis for kiwi was launched Oct 2012 to carry on the work of BNZ Save the Kiwi Trust, building on a sponsorship relationship that started in 1991. The Trust is responsible for public awareness and education, fundraising, sponsorship, grant allocation and being the national organization disseminating kiwi information.

Initially this booklet was jointly produced by the Trust, The Whakatane Kiwi project, the Department of Conservation and Environment Bay of Plenty, This second edition has been produced by Kiwis for kiwi and key forest managers in order to provide workable methods of protecting kiwi in exotic forest.

KIWIS FOR KIWI

p: (09) 307 4878 **e:** enquiries@kiwisforkiwi.org **w:** www.kiwisforkiwi.org