Forestry management guidelines for forests with brown kiwi

Wendy Sporle

Kiwi are a nocturnal endemic bird with 11 species/subspecies throughout New Zealand living in habitats from alpine South Island, coastal Stewart Island and forest and scrublands of the North Island. Once widespread and existing in large numbers, in 1996 it was calculated that North Island kiwi had probably declined in abundance by at least 90% in the previous 100 years (McLennan, et al., 1996). Now, 20 years later they are classified as nationally vulnerable.

Kiwi populations

Brown kiwi (*Apteryx mantelli*) may still seem relatively numerous with c. 25,000 birds in 2015 (Innes, Eppink, & Robertson, 2015), but despite this the majority remain in sites with little or no management. Where initially the main agents of decline were habitat loss, today this has been reduced and the impacts of predators are the main drivers of local extinctions.

These unmanaged populations are in decline due to predation of adults by dogs and ferrets and recruitment failure due to predation of chicks by stoats (*Mustela erminea*) and cats (*Felis catus*). This predation contributes to very low individual survival (10%). Predation of adult kiwi by dogs (*Canis familiaris*) and ferrets (*Mustela puorius*) can cause catastrophic declines and sometimes loss of populations (Taborsky M., 1988), (Pierce & Sporle, 1997), (Robertson, Colbourne, Graham, Miller & Pierce, 2011). In Northland, a life table analysis showed that unmanaged populations were declining by 2.5% per year, but because dog and ferret control was not being carried out nearby, the actual decline was estimated to be closer to 3% per year (Robertson, Colbourne, Graham, Miller & Pierce, 2011).

Landscape-scale (10,000+ ha) mustelid trapping programmes and aerial applications of 1080 have proven effective at reversing population declines, with annual growth rates of up to 11.3% per year being recorded (Robertson & de Monchy, 2012). Numerous community group trapping and/or poisoning projects have led to increased call rates of kiwi, especially in areas where benefits are obtained from similar projects nearby.

Other threats include loss of genetic diversity and other localised events such as vehicle strikes, fire, disease and ongoing habitat loss (Holzapfel, 2008). Overcoming predation is undoubtedly the most effective way to ameliorate these less important issues (Innes, Eppink, & Robertson, 2015).

Figure 1: Spatial distribution of kiwi in New Zealand. North Island brown kiwi are managed as Northland, Coromandel, eastern and western populations, while South Island tokoeka have four regional populations in Haast, Southern and Northern Fiordland and Rakiura (Stewart Island). Source: *Kiwis for kiwi*

Working collaboratively to help protect kiwi

Kiwis for kiwi works to support collaborative efforts between agencies and community projects to protect kiwi by developing resources and providing support aimed at ensuring ongoing survival of kiwi.

Kiwis for kiwi is a fully independent charity, which aims to protect kiwi and their natural habitat, ensuring the species flourish for generations to come. It allocates funds to hands-on kiwi projects, raises sponsorship dollars, increases public awareness of the plight of kiwi and works alongside kiwi experts to provide resources,

advice and best practice guidance to all those working to save kiwi. In partnership with the Department of Conservation, *Kiwis for kiwi* supports the national Kiwi Recovery Programme. For more information visit: www.kiwisforkiwi.org.

With the Department of Conservation and key kiwi stakeholders a new draft Kiwi Recovery Plan has been developed with this objective:

> *To make kiwi management a key consideration within all production management practices, and that in order to do so information and support is to be provided (Germano, et al., 2016)*

In 2008, a resource was developed between *Kiwis for kiwi*, DOC Whakatane and Environment Bay of Plenty, which provided kiwi biology and threat information and options for the recovery of brown kiwi in the production woodlots. Through management and science we now know more about kiwi use of woodlots and how we can make a difference.

The new guidelines, written by a team including *Kiwis for kiwi*, managers from Hancock's forests, DOC staff and with the guidance of scientists and kiwi practitioners, have been expanded to provide recommended management methods relevant for forest managers, planners, council planners, certifying bodies and kiwi practitioners. They recognise that within production landscapes any protection methods and costs must be practical as well as effective in order to achieve kiwi recovery goals.

There are huge tracts of production habitat with kiwi populations that could potentially be secured through management. A number of companies managing exotic forests and owners of smaller woodlots have been requesting consistent guidance for some years in order to protect and recover kiwi within these forests. They are motivated by a desire to play a part in protecting kiwi, by third party certification expectations and by forest owners' or shareholders' requests.

If the woodlot is nearby to other kiwi protection, there is the opportunity to carry out the predator control in conjunction with the adjacent work to provide a larger landscape benefit. Contract trappers can be shared and kiwi knowledge and awareness complement all efforts.

Forestry guidelines 2016

Kiwi live in exotic forest. As early as 1983, research on kiwi has been carried out in production forest (Colbourne & Kleinpaste, 1983). In Waitangi, research carried out by Rogan Colbourne found kiwi pairs had territories averaging 5 to 6 ha. He also concluded that kiwi were thriving because of indigenous enclaves and swamps which kiwi used as refugia.

It is a matter of understanding kiwi biology, threats and needs and considering them when planning or carrying out the plantation silviculture. To help this understanding the guidelines provide information on habitat types and minimum sizes, kiwi behaviour, territories and breeding cycles. It identifies the high-risk months from the end of June to end of September, where a male may be sitting fast on an egg and more vulnerable to injury or desertion or there may be a naive chick wandering in the forest afterwards.

Chick hatched from a salvaged egg – it will be returned to the woodlot once it weighs 1000 gm

Threats to kiwi in production woodlots are similar to those elsewhere such as mustelids, cats, dogs and vehicle strike at night. However, there are the potentially additional threats of populations or individuals becoming isolated or being disturbed, injured or killed during land-clearing, burning or harvest.

Experience has shown that adult non-nesting kiwi will usually flush from disturbance, and if there are refugia available and no fire is being used they will survive. Management recommendations are outlined in guidelines and the key focus is to:

- First, ascertain information about the population through a call survey, deployment of remote monitoring devices or with a conservation dog and accredited kiwi handler
- Aim to manage the kiwi at a population level
- Manage the kiwi in situ unless all habitat is to be removed and there are no refugia nearby for kiwi to retreat to. It is not recommended to catch kiwi and fit transmitters in order to move adults. Sometimes putting a transmitter on a male will help identify if he is nesting and where the nest is
- Apply kiwi-friendly forestry methods in all woodlots with kiwi including:
  - retain riparian refuges intact

  - avoid fires
  - take extra care when planning roads to avoid digging up burrows
  - have a plan to restrict and control dog access
  - avoid harvesting during July and August where possible
  - have crews aware of kiwi and record any activity they see
  - work around any known nests
  - take any salvage or deserted eggs away for incubation and rescue chicks if necessary
  - encourage adults to flush to safety without catching them
- Train contractors and site personnel to recognise kiwi signs, to understand basic kiwi behaviour and ecology and to know what to do if a kiwi is seen
- Develop an emergency plan and have a pre-planned contact list
- Establish a relationship with a kiwi accredited handler in case it is required. Other than in emergency situations, any handling of kiwi can only be carried out by a person who is a kiwi accredited handler with a Wildlife Act permit who is following prescribed kiwi best practice.

Once a survey is carried out the forest manager should identify whether the site will be a priority site for more intensive protection or have the basic kiwi-friendly forestry methods applied. Priority sites will satisfy certification criteria or shareholder expectations. Criteria may include one or more of the following:

- If they are nearby or adjacent to other kiwi management
- If they have high densities of kiwi
- If the site size is large enough to sustain at least 40 kiwi (minimal size for genetic diversity) and where offspring can safely disperse.

In the priority sites additional predator control is to be carried out as per best practice so the kiwi are protected throughout the rotation. If the company chooses, they can apply other intensive management like Operation Nest Egg (ONE) alongside the predator control to boost their population. This is a choice which is also described. Ongoing survey of the population will identify if the protection predator control is achieving the desired benefit.

The guidelines also include a contact sheet template, which can be posted onto smoko shed walls along with an emergency procedure chart.

Figure 2: Decision tree to guide management planning

Left: Kiwi probe holes in a swamp. Right: Kiwi footprints in a muddy area

Complementary training module

To assist the effective training of site crews a small training module has been developed. It can be delivered by a kiwi practitioner or forester who is aware of kiwi and who has been briefed on the package content. Recognising that crews do not have a lot of time on-site for training, it is planned that the delivery is less than 20 minutes long and can be done at the morning briefing or smoko time. There are photos included to help identify kiwi scats, feathers, burrows, footprints and eggs. Crews are informed about kiwi and their threats and the emergency procedure poster is discussed in order to prepare them if necessary.

Delivery of the training module and briefing of people who wish to deliver it in their regions has begun. A database of local accredited handlers and others who have been briefed to deliver the training is being developed as a reference.

As this is being rolled out there have been helpful suggestions about ways of enhancing its uptake. The development of a kiwi unit standard to accompany other core forestry unit standards is being scoped. Discussions are still underway with third party certifying auditors to ensure broad buy-in and consistency of messages about recommended kiwi protection in plantation forests.

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Kiwi – site training