A history of threatened fauna in Nelson Lakes area

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Photo: Black-billed gulls nesting on the upper Wairau riverbed. Photo: Kate Steffens

CONTENTS

1. Introduction

This report covers all of the Department of Conservation's (DOC) Nelson Lakes area, in Nelson/Marlborough Conservancy and documents the history of threatened bird species, and one threatened bat species, recorded within the Nelson Lakes area over the past 150 years (including locally extinct species).

Although this report discusses the history of threatened fauna in the Nelson Lakes area, a few species have such a limited amount of information on record that they will only be mentioned briefly. For example, little information exists for the kakapo *(Strigops habroptilus)*. This species was clearly abundant around Murchison in the 1800s when Mary Thornton, in the 1890s, set traps for kakapo in the Matakitaki - she described "the kokapaw (kakapo)" as "good eating ... all feathers really ... you need at least a couple each for a good feed" (Wills 2007). Mary Thornton went on to comment that "the kakapo seemed to vanish about the beginning of World War I [1915]" (Wills 2007). Very little information exists on the South Island thrush *(Turnagra crassirostris)* which was possibly last seen by Noall Berryman in 1946 in the vicinity of Mt Newton who commented that "one day while hunting small clearings I was fairly certain I saw the then rare native thrush, a bird I had never seen before or since" (pg 6, Berryman 2004). A single record for marsh crake *(Porzana pusilla)* exists in the area, from a wetland up the Owen Valley in 2002 (Seelye pers com).

Although yellow-crowned parakeets and New Zealand pigeon are not classed as threatened species (Miskelly et al. 2008), they have been included in this study because (i) they remain in low numbers in the area and (ii) they may ultimately benefit from management for other threatened species in the area. Short-tailed bats *(Mystacina sp.)* were not included in this report because few records exist for this species in the area whereas long-tailed bats are covered in detail.

Many of the historical references in this report are from Butler's 1991 report which described the distribution of birds in Nelson Lakes National Park (as opposed to the entire Nelson Lakes area), based on surveys under-taken between 1978 and 1985. This report treats any species records post the survey in Butler's 1991 report as 'recent' records i.e. species records from 1985 to 2009 are regarded as 'recent'. Records earlier than 1985 are treated as 'historical'.

- The main objective of this report is to summarise historical and recent knowledge regarding distribution of threatened birds and bats in the Department of Conservation's Nelson Lakes area, including population trends where possible - with particular reference to Butler's 1991 report.
- The second objective is strategic - to lead into the Rotoiti Nature Recovery Project (RNRP), species and/or ecosystem protection projects, the Area Biodiversity Action Plan and to provide recommendations to facilitate future management and/or research initiatives.

The national status of threatened birds and bats within this report was stated using the New Zealand Threat Classification System Ranking (Hitchmough et al 2007; Miskelly et al 2008). The four main parameters used to assign threat ranking were: total population size; population trend; geographical range; and whether the taxon has been directly or indirectly affected by humans (Miskelly et al 2008).

The population status of threatened species within Nelson Lakes area was categorised as: Extinct; Critically Rare; Rare; and Localised. This report only covers species that are of conservation concern, so there is no need for categories such as "abundant" or "common". These categories are intended to indicate the size, distribution pattern, and "robustness" of each population in Nelson Lakes area. The categories should definitely not be regarded as action priority or local threat categories, as they are based on distribution and abundance only, and do not take into account other ecological parameters. Readers should note that the third category ("Rare") is a very broad band. We do not have enough information about some of the populations to effectively subdivide this category.

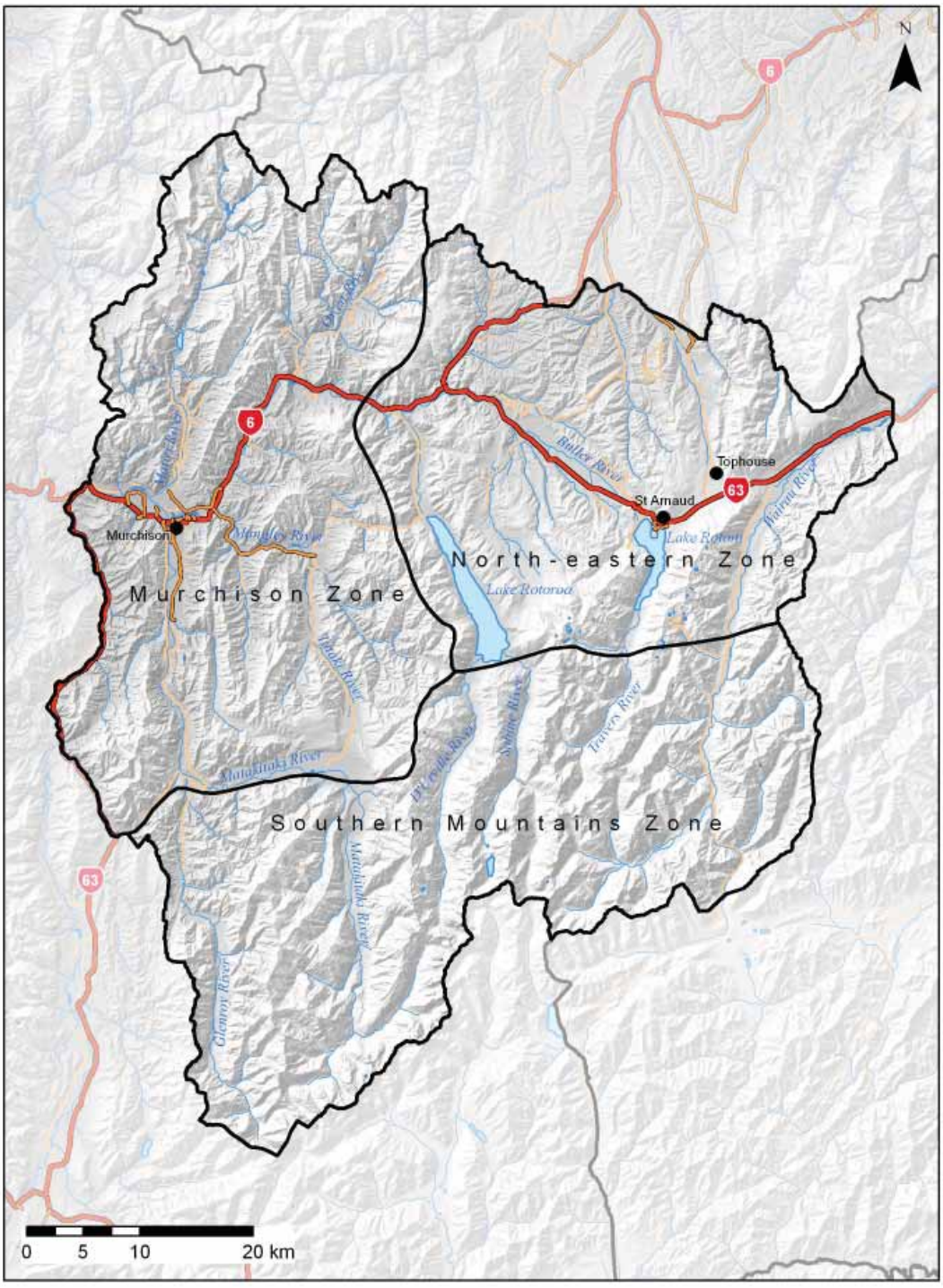
1. **Extinct** in Nelson Lakes area – Species that have not been reported (either confirmed or unconfirmed) since 1985, and which in Butler's report are listed as "very rare/extinct in area".
2. **Critically Rare** in Nelson Lakes area – Only a few isolated individuals or breeding pairs of the species remains in the area.
3. **Rare** in Nelson Lakes area – Cryptic species that are known to be present but which are only recorded in low numbers; and conspicuous species that are regularly encountered but only in low numbers.
4. **Localised** in Nelson Lakes area - species that are present in reasonable densities at a few locations, but are generally absent or rare across most of the area.

For the purposes of this report, Nelson Lakes area has been sub-divided into three geographical zones: North-eastern zone, Murchison zone and Southern Mountains zone (Fig 1). The zones have been chosen to help describe species distribution in Nelson Lakes area, and are not intended to signify ecological units.

The boundary between the North-eastern and Murchison zones is the Hope-Lookout Range and the Braeburn Range. These zones adjoin the Southern Mountains zone at a boundary that tends east-north-east over the Maruia Saddle to the mid-Matakitaki Valley and Mole Tops, to the head of Lake Rotoroa and Mt Angelus, then to the crest of the Raglan Range overlooking Dip Flat.

The Murchison zone has been split further into North Murchison and South Murchison, with the Buller River being the divide between the two areas.

Figure 1 Zones of Nelson Lakes



2. Great spotted kiwi *Apteryx haastii*

2.1 STATUS

NZ Threat Classification System ranking: Nationally Vulnerable (Miskelly et al. 2008).

Population status in Nelson Lakes area: Critically rare.

2.2 REVIEW OF KNOWLEDGE

Although there are enough historic records of kiwi seen and heard to suggest that kiwi were once widespread in the northern and central parts of Nelson Lakes area, there is a paucity of records that identify the species of kiwi involved. Bull (1965) in Walker (1987) described two species of kiwi being present in good numbers in the Nelson Lakes area in the early days but by 1900 they had become rather scarce. One or more species of kiwi persisted in the North-eastern and Murchison Zones into the first quarter of the 20th century, but there was evidently a rapid decline of kiwi populations after the 1920s.

During the Nelson Lakes National Park bird survey of 1978-1985 only one possible great-spotted kiwi call was heard south or south-west of D'Urville Hut in October 1983 (Butler 1991).

2.2.1 North-eastern zone

Sub-fossil bone deposits from the Red Hills have confirmed that little-spotted kiwi and a larger unidentified species of kiwi (either brown or great spotted kiwi) were present in the Tophouse area in pre-historic times (Trevor Worthy in Butler 2001). No confirmed reports of great spotted kiwi in the Tophouse area have been found. A call that was heard near Tophouse in 1991 and reported as a kiwi call to the Department of Conservation in 1993 (on file [archives] Nelson Lakes Area Office [NLAO]) was likely to have been made by a weka.

An observer in the Buller/Glenhope area refers to "large grey kiwis – often seen in daylight" during the 1920s (Butler 2001). This report most likely relates to great spotted kiwi, which are the largest extant kiwi species, grey in coloration, and are known to be easily flushed during daytime. During spring 2001 a farmer living on the south side of Big Bush, 20 km west of St Arnaud, reported an unusual bird call that he believed was definitely not a weka but might have been a kiwi (unpublished record). In December 2001 a kiwi call was reported from St Arnaud adjacent to Big Bush (NHS-03-04 file, NLAO). In January 2003 a kiwi call was reported

from Kawatiri Junction, only about 5 km from the farm where possible kiwi calls were reported in 2001 (NHS-03-04 file, NLAO). None of the 2001-2003 records from the Big Bush area were confirmed as kiwi.

Although Haast (1861) stated that Lake Rotoiti "swarmed with birds" in 1860, his list of species did not include kiwi. However, not far from Rotoiti, a report exists of two small kiwi "half as big again as a quail" found burnt under a log in the Howard Valley in the 1920s or 1930s (Butler 2001). This observation may relate to adult little spotted kiwi, or less likely to brown kiwi chicks, but probably not great spotted kiwi, as great spotted kiwi productivity is believed to be no more than one chick per territory per year. A kiwi (possibly little spotted kiwi) was heard in the Maud valley in the 1960s by Rowley Taylor and Colin Clarke.

Kiwi were first recorded from Lake Rotoroa in 1860 by Haast (1861) who described them as "abundant in many spots, and judging from their different calls, of various species". However, Mr D Win noted that kiwi were scarce near Lake Rotoroa around 1900 (Bull 1965). After visiting the lake in 1925, Moncrieff stated "of woodhens and kiwis we saw not a sign though they were plentiful two years ago". The most recent kiwi record from Lake Rotoroa was around 1970 (Butler 2001).

Some calls reported from Louis Creek in 1992 were associated with a sighting of two small birds that were distinguishable from weka by having longer "pale red" bills and absence of the "flicking tail" (archive file, NLAO). Some "kiwi-like" calls were heard in response to a tape playback at Louis creek in January 1994, however a follow-up survey of the area in the same month led to Rhys Buckingham noting that "I suspect kiwi are absent from the area" (Buckingham 1994). Little over a year later in April 1995, an observer reported hearing four female great spotted kiwi calls near New Creek, on the Muntz Range (archive file, NLAO). In 1998 there was a report of possible probe holes seen near Maori Stream west of Lake Rotoroa (archive file, NLAO), but it is known that invertebrates (dragonfly larvae) can make similar holes.

Great-spotted kiwi were (re)introduced to Lake Rotoiti (within the RNRP predator controlled zone) in 2004 and 2006. This small population of kiwi (<20 birds) have produced at least four chicks since their release.

2.2.2 Murchison zone

(i) North Murchison

Kiwi were abundant in North Murchison until the late 1800s. Dudley Win is reported to have stated that two species of kiwi were numerous in 1870 when his father R. Win settled in the Owen River area (Bull 1965). By about 1900 kiwi had become scarce; and Dudley Win believed that stoats caused a marked reduction in kiwi numbers during the 1890s (Bull 1965). Noall Berryman mentioned that at 'halfway hut' between Fern Flat and 1000 acre plateau (Matiri) in 1946 "it was not unusual to hear the call of the kiwi" (Berryman 2004).

Kiwi calls were reportedly heard (by an anonymous observer) from the forested slopes west of Lake Matiri in 1980 (Spurr 1985). In addition to this, kiwi were heard in the upper Fyfe, upper and mid Owen Valley and upstream of Lake Matiri during the bird surveys of 1982-1983 (Spurr 1985). During January 1999 a bat box positioned on a saddle between Frying Pan Creek and Sandstone Creek (Owen River catchment) recorded an animal that "sounded very much like a great spotted kiwi" (Ure 1999b). Nelson Lakes Area staff received a report of a hunter near Matiri Hill observing a large grey kiwi feeding for about two minutes during a night in early 2004. However by 2009, when kiwi listening was carried out by Nelson Lakes DOC staff on Stern Creek plateau, west of Mt Newton, even with ideal listening conditions and playing both male and female great-spotted kiwi calls, no kiwi were heard. This was believed to be the most likely area where great-spotted kiwi would naturally remain in the Area and so the lack of kiwi recorded during this survey led staff to conclude that great-spotted kiwi were likely to be extinct from the plateau, and by implication, the wider Nelson Lakes Area (except for the (re)introduced population at Lake Rotoiti).

It is interesting to note that in late August 2002 two different observers reported seeing a kiwi beside State Highway 6 near Prytherics Creek in the upper Buller Gorge and the carcass of a great spotted kiwi found dead on the road in the same area was handed into Buller Area Office in September 2002. This site is less than 20 km west of Murchison, but is not in the Nelson Lakes Area.

(ii) South Murchison

In South Murchison kiwi appear to have declined quite early in the 1800s. Brunner considered kiwi extinct in the hills dividing the Tiraumea from the Tutaki by 1847 (Brunner 1848), although this observation proved to be incorrect. A kiwi was sighted in the Tiraumea Valley in September 1986 - "the bird which was standing with its nose in the ground was approached to within 20-25 feet before it took any notice of me" (archive file, NLAO).

Cecil Wills (2007) commented that kiwi were virtually extinct within 20 years of the early settlers arriving in the Matakitaki Valley - "when the first of the gold seekers and settlers came to the Matakitaki River Valley" there were "little grey and brown kiwi". "The early settlers, especially the children with their dogs, hunted the kiwi to virtual extinction in only 20 years" (Wills 2007).

2.2.3 Southern Mountains zone

A kiwi call was reported from the Begley Valley in January 1978 (J.D. Hayward, archive file, NLAO) and a kiwi was reportedly heard in the Rainbow Valley in 1996.

There are few records of kiwi from the Southern Mountains. Given the apparent historical abundance of kiwi around Lake Rotoroa, it seems likely that kiwi would also have been up the Sabine and D'Urville valleys; however the only known kiwi record from these valleys comes from the D'Urville Valley in 1971. Although a possible kiwi call was heard near

D'Urville Hut during Butler's (1991) survey. A kiwi was reportedly seen in the upper Travers in 1990 (Butler 2001), and a tramper reported seeing "kiwi bones and feathers on a drumstick" near Upper Travers hut during November 1993 (archive file note, NLAO). There are no other reports of kiwi from the Travers valley in the 1990s, and in this context it is likely that the sightings were of weka. However, it is quite possible that the (re)introduced population of great spotted kiwi at Lake Rotoiti will expand into the Travers Valley, and records such as that made by a tramper at John Tait Hut in May 2008 of "hearing a kiwi at night" might be accurate.

A kiwi-like call was reported from the Glenroy Valley in 2002.

2.3 TRENDS IN ABUNDANCE AND DISTRIBUTION

Other than the (re)introduced population of great-spotted kiwi at Lake Rotoiti, it is likely that this species is extinct within the Nelson Lakes Area. Since 1991 a small number of possible kiwi calls, sightings, probe holes or body parts have been reported from several locations in Nelson Lakes Area, but none of these have been confirmed.

It is likely that many reported kiwi calls were made by other bird species. Inexperienced observers may misinterpret weka calls (and sightings) for kiwi.

The great-spotted kiwi population immediately west of Nelson Lakes Area is sparse and unlikely to be self-sustaining. Writing of the southern Northwest Nelson population, John McLennan anticipated that "...it is here that kiwi may decline significantly over the next few decades" (McLennan and McCann 2002). Hence it is extremely unlikely that a significant number of birds would ever disperse into Nelson Lakes Area.

2.4 THREATS

A major threat to kiwi survival is predation of young kiwi by stoats and cats. Predation of adult kiwi by dogs and ferrets can also cause catastrophic local declines in populations (Robertson, 2003).

Land clearance, vehicles and possum trapping operations have been factors in the decline of great-spotted kiwi populations (van Hal 2007).

2.5 INFORMATION NEEDS

- To compare survival of Operation Nest Egg (ONE) chicks with wild-raised young within the Rotoiti Nature Recovery Project.

2.6 RECOMMENDED MANAGEMENT

Maintain RNRP predator control; continue to increase the genetic diversity of the RNRP population.

There is no need to caution against ground-set possum traps for kiwi outside the RNRP area. However, there is still a need to caution against ground-set possum traps in those area where weka remain.

3. Blue duck *Hymenolaimus malachorhynchos*

3.1 STATUS

NZ Threat Classification System ranking: Nationally Vulnerable (Miskelly et al. 2008).

Population status in Nelson Lakes area: Critically rare.

3.2 REVIEW OF KNOWLEDGE

Unless otherwise stated, all of the blue duck location information discussed below has been sourced from the Department of Conservation's Bioweb records. Several doubtful or unconfirmed records discussed below have not been entered onto Bioweb.

Haast (1862), while noting observations on blue duck in the Western Districts of Nelson commented that "the most abundant member of the family Anatidae is the whio, the blue duck of the settlers. It is found in all rivers, and is easily killed".

Some hundred years later, Butler (1991) noted that although blue duck were apparently numerous in Nelson Lakes NP in the 1800s, by 1978-1985 (during the NLNP survey) blue duck were only recorded in the Travers, Sabine, Glenroy and Matakitaki valleys, the most individuals being seen in the last.

3.2.1 North-eastern zone

There are no records of blue duck in the Tophouse or Glenhope areas. In 1986 one blue duck was reported from The Forks in Rainey River, Big Bush.

The Lakes area supported high numbers of blue duck in historical times. Following his 1860 exploration of western Nelson, Julius von Haast stated that Lake Rotoiti "swarmed with birds" and that a number of species including blue duck were very abundant in the area (Haast 1861). And during his exploration of South-west Nelson, Heaphy (1846) noted that "in the course of a day and a half we obtained at the Rotoroa (Lake Rotoroa), without any trouble ... four blue ducks". During the spring of 1989, 1990 and 1991 a single blue duck was observed at Coldwater Stream. There have been occasional recent records of blue duck seen on both lakes (e.g. one seen on Lake Rotoroa near Sabine Hut in September 2000, one seen at Kerr Bay in Lake Rotoiti in 1998 and one seen at Rotoiti Lakehead in June 2002). It is likely that these birds were occasional visitors from the Southern Mountains zone and were likely to be lone males.

The last pair of blue duck recorded in the Howard was made by Mr N. McConochie in the late 1930s who commented that "this pair of whio never successfully hatched any young and one died three years before the other" (Moncrieff, 1957).

There have been four reports of blue duck seen on the Gowan River during 2005. Shar Hyde reported seeing a blue duck in February 2005; the second report was of two seen by Chris Win near the motor-camp about 3 km from Lake Rotoroa; and the third sighting was made by Michael Higgins during August 2005. In addition, Chris Win reported a sighting of a single blue duck on the Gowan in August 2006.

3.2.2 Murchison zone

(i) North Murchison

In North Murchison, the Owen catchment is the scene of regular and recent blue duck sightings, although there is little historical information from the area.

During a general bird survey carried out from November 1982 to March 1983, blue duck were observed in the Fyfe, Owen and Sandstone rivers (Spurr, 1985). Blue duck were seen near Bulmer creek confluence in 1994 and 1998; and faeces found at a number of sites in the upper reaches of the main stem of the Owen River during a 1998 Department of Conservation survey were attributed to blue duck (Ure 1998a). Blue duck faeces – but no blue duck – were also seen in Johnston Creek, a downstream tributary to the Owen (Ure 1998b). A male bird was observed in Johnston Creek by a goat hunter in 2007. The Fyfe River and Sandstone Creeks are two tributaries to the Owen River that held an unprotected breeding population of blue duck at least until the mid-1990s. On 26th October 1992 one observer photographed a pair with six ducklings above the middle gorge of the Fyfe River, and on the same day saw a single adult below the middle gorge and another pair below the top gorge (PES 0143/1 file, NLAO). Ducklings or juveniles were also seen in this river during 1993 and 1994. Five juvenile blue duck were seen with two adults in the middle reaches of Sandstone Creek during 1994. In August 2006, a trap-line was established in the Fyfe as part of Wangapeka/Fyfe Operation Ark, in order to protect the remaining two pairs of blue duck from stoat predation (and to enhance the population through nest protection and Whio Nest Egg operations) (Steffens 2006). In late 2008, four pair of blue duck could be found in the protected stretch of the Fyfe River and with them, 15 juveniles. A second trap-line was established in the Sandstone in December 2008 in order to protect the remaining pair of whio in this waterway.

Small numbers of blue duck have been observed in the lower Matiri catchment and tributaries below Lake Matiri in recent years, but there is little historical information. In 1991 four adult blue duck were observed on Lake Matiri. During December 1994 Dave Barker used an indicator dog to survey 18km of riverbed in the east and west branches of the Matiri River (downstream from Lake Matiri): two blue duck were found in the East Branch and two were found a short distance up the West

Branch (Barker 1995). During a 1998 survey, DOC staff found two sites in Trent Stream - an eastern tributary to the middle reaches of the Matiri River - where faeces were possibly attributable to blue duck (Ure 1998a). A single male blue duck was observed downstream of Lake Matiri as recently as April 2007. This bird had been previously banded as a young adult in the Rolling River (Wangapeka catchment).

Three blue duck were seen by a hunter in the West Branch Matiri River during 2004, and in 2007 a family of whio was recorded by goat hunters in the same area. In 2002 and 2004, a single blue duck was seen in the headwaters of the Newton River near Thorn Creek.

(ii) South Murchison

Blue duck are rare in South Murchison but this was not always the case. Further to his observation of blue duck at Lake Rotoroa in 1846, Heaphy noted that "great quantities of blue ducks are to be met" on a stream west of the Tiraumea (probably the Mangles).

Mr W Blackadder recalls hearing blue duck on the Maruia, while camping at the falls in 1876 "I could hear the blue duck out on the river, flying backwards and forwards at intervals" (Maruia Jubilee Committee 1980). Two adult birds were recorded in 1989 at Lake Caslani, a small tributary to the Maruia River south of the Shenandoah. There is also a 2004 record of one adult seen in the Maruia River about 1 km from the Buller confluence.

Allan Bradley, a Murchison resident, recalls regularly seeing blue duck in Six Mile Creek (lower Matakitaki) during the 1950s-1960s. During September 1999 two pairs were seen in the middle reaches of Six Mile Creek (Craig Simpson pers. com.); and in 2004 one bird was seen at the confluence of the Six Mile Creek and the Matakitaki River, about 8 km south of Murchison. Although a blue duck was recorded from Six Mile Creek as recently as 2006, this observation was not confirmed (Seelye pers com).

In 2002 a landowner reported seeing a blue duck in the lower reaches of the Tutaki River's west branch, but this report has not been confirmed. The most recent sighting of blue duck in South Murchison is from Peasoup Creek where residents regularly heard a male calling in 2007 (Seelye pers com).

3.2.3 Southern Mountains zone

Very few historic references to blue duck have been found from the eastern area of the Southern Mountains; however they were historically known from inland Marlborough. In 1850 W.M. Mitchell saw blue duck in the lower Acheron Valley, a tributary to the Clarence River in what is now Molesworth station (McCaskill 1969). During 1982 a pair were considered to have a nest beside the Wairau River at Dip Flat (PES 0143/1 file, NLAO). In 1985 a blue duck was observed in the middle reaches of Lees Creek, a tributary to the Wairau River about 7 km upstream from Dip Flat. In 2007 a single male blue duck was seen near the hut up Lees Creek. This young adult male, identified from bands, was originally from

the Wangapeka and is likely to have been passing through Lees Creek as no further sightings have been recorded (even with a thorough survey carried out by DOC).

The central section of the Southern Mountains has historically supported a substantial population of blue duck. However, Bull (1965) noted that "the blue duck is now rare and largely confined to gorges in the upper parts of the rivers that run into lakes Rotoiti and Rotoroa". Blue duck were found in the valleys of the central Southern Mountains during Butler's (1991) survey. There were regular reports of birds from the Travers Valley in the 1990s: during 1993 two were occasionally seen in the lower reaches of Hopeless Creek and about the confluence with the Travers River; in 1994 two were seen approximately 2½ km downstream from Upper Travers Hut (PES 0143/1 file, NLAO). The last juvenile to be reported from the Travers Valley was in December 1995 when a pair of adult blue duck was observed with a duckling near John Tait Hut; and occasional reports of a single blue duck near John Tait Hut continued until 1998. In 1998 a single blue duck was seen on Lake Angelus, an alpine tarn that drains into the Travers Valley. The blue duck records from the Travers continued into the early 2000s: a single male was regularly seen in the Travers Valley near the Hopeless Creek confluence during 2000; two were seen together at the Arnst confluence in October 2001; and an observer reported seeing three near the Travers and Arnst confluence in October 2002.

There have been records of blue duck from various parts of the Sabine Valley since the 1970s. Rotoroa fishing guide and water taxi operator Craig Simpson recalls seeing up to ten birds on Blue Lake in the late 1970s and early 1980s. Eight blue duck were reported from Blue Lake in 1988, and the last year that a juvenile was reported from Blue Lake was 1990, although another juvenile was observed about 1.5 km downstream in the Sabine River West Branch during 1995. Blue duck were abundant in the East Branch of the Sabine River in the 1970s, but not as numerous by the 1980s. They were commonly seen on the stretch of river above the bottom gorge in the Sabine in the 1970s (Craig Simpson pers. com.). In 1995 a pair was seen 1 km upstream from the Sabine gorge; and in 1996 three juvenile birds were observed approximately 2 km further upstream (PES 1043/1 file, NLAO). A tramper reported seeing five blue duck flying downstream near the Sabine forks during April 2001, but DOC staff were unable to contact the tramper to confirm the observation (species record card, NHS-03-12-02 file, NLAO). There is a 2006 record of a male bird heard calling in the Sabine Gorge, and this follows a few earlier sightings in the middle reaches of the Sabine. At the downstream end of the Sabine River, during February 2005 a solitary male was seen and heard calling about 2 km from Lake Rotoroa (Craig Simpson pers. com.).

In 1991 and 1993 blue duck were reported from the headwaters and middle reaches of the D'Urville River. One of the observations was of two adults, but the others related to solitary birds, and no juveniles or ducklings were seen. The last report of a pair of blue ducks from the D'Urville Valley was in April 1995 (PES 0143/1 file, NLAO). The most

recent sighting in the D'Urville was of a solitary bird standing on a boulder approximately 5 km upstream from Lake Rotoroa in May 2003 (A Taylor pers. com.).

According to Butler (1991), the last location where blue duck bred in Nelson Lakes National Park was the east branch of the Matakitaki River in the western section of the Southern Mountains. From 1992 to 1994 pairs of blue duck were regularly reported from within about an 8 km stretch of the East Branch Matakitaki River, between the Matakitaki forks and one or two kilometres upstream from East Matakitaki Hut. There was a 1995 sighting of four blue duck about 3 km above East Matakitaki Hut, and two sightings in 1996 of single birds near the hut and 3 km upstream. Records diminished after 1996, and only one possible sighting was obtained during a survey of the East Matakitaki in November 2001 (Ian Hutchison pers. com.). The most recent record from the Matakitaki is of two birds seen a short distance downstream of the Matakitaki forks in 2004.

Elsewhere in the Southern Mountains, Butler saw one blue duck near the Upper Glenroy Hut during 1985, and there are two records of solitary birds in Nardoo creek: in 1990 a blue duck was seen near the head of Nardoo creek; and in 1991 a blue duck was observed about half way up the creek from the Matakitaki confluence. During 2005 an unconfirmed sighting of a blue duck was made in Station Creek, a tributary to the Matakitaki River, about 2 km from the Nardoo (Russel Frost pers com.).

3.3 TRENDS IN ABUNDANCE AND DISTRIBUTION

A decline in the blue duck/whio population in Nelson Lakes National Park is evident from records in the early 1990s (when successful breeding pairs remained) to today (only a few solitary birds remain). Blue duck surviving in the Southern Mountains are effectively isolated from the remnant breeding population in North Murchison, with too few birds (particularly females) remaining in Nelson Lakes National Park to make a 'come back' without human intervention.

Most blue duck are now in the Murchison Zone (particularly North Murchison) but very few ducklings have been seen outside the Operation Ark area over the past ten years. Within 12 months of the trapping operation starting in the Fyfe (in 2006), ducklings were raised to fledging.

3.4 THREATS

Stoats are a major threat to blue duck, particularly to nesting females. Where stoats have been trapped, blue duck seem to be more productive.

There is the possible threat of an invasive exotic waterweed, didymo, which is likely to reduce the amount of available feeding habitat and freshwater invertebrate population (food source) for foraging blue duck. No studies have yet been carried out to determine the effect of didymo on blue duck productivity. Didymo is slowly creeping up into the headwaters of many of the major blue duck waterways (Owen, Fyfe, Sandstone, Matiri, Gowan, Matakitaki rivers) in the Nelson Lakes Area.

3.5 INFORMATION NEEDS

- Department of Conservation staff need to record all blue duck sightings onto Bioweb.
- What effect will didymo have on blue duck?

3.6 RECOMMENDED MANAGEMENT

Blue duck are likely to become extinct in Nelson Lakes National Park within the next few years, although a population could be restored through intensive management. The Travers and Sabine Rivers would be the obvious contenders for a whio management site because of the existing infrastructure and historical records indicating that this area held a strong population of blue duck.

The stoat trapping in the Fyfe/Sandstone Rivers, as part of the Wangapeka/Fyfe Operation Ark site, has resulted in an increase in whio productivity and abundance since 2006. Hopefully this operation will prevent blue duck extinction in the Nelson Lakes Area.

4. New Zealand falcon *Falco novaeseelandiae*

4.1 STATUS

NZ Threat Classification System ranking: Bush form: Nationally Vulnerable; Eastern form: Nationally Vulnerable (Miskelly et al. 2008).

Population status in Nelson Lakes area: Rare.

4.2 REVIEW OF KNOWLEDGE

New Zealand falcon were frequently encountered in the 1800s and by the 1980s they could still be found in all the valleys of Nelson Lakes National Park but not in abundance (Butler 1991).

Although falcon are still widespread throughout the Nelson Lakes Area, they have diminished in numbers since the days of the early settlers (Moncrieff 1957; Bull 1977).

Falcon in the eastern part of Nelson Lakes Area (particularly the Wairau Valley) are generally regarded as belonging to the eastern form, while the birds in the west of the Area are regarded as belonging to the bush form (Gasson 2002).

4.2.1 North-eastern zone

Moncrieff (1957) noted that "nowadays the New Zealand falcon, although far from extinct, has diminished in numbers" throughout Nelson Lakes NP. Bull (1977) also stated that "falcon are widespread in the Park but in small numbers".

In the Lakes area, the Department of Lands and Survey wrote in 1984 that falcon can occasionally be seen soaring in the mountain updrafts, above Mt Robert. Falcon were observed as recently as 1997 and 2007 on Mt Robert (Bioweb).

As part of the RANZ/DOC NZ falcon survey in 1994-1998, falcon were observed nesting around St Arnaud by a local farmer each year and fledglings were seen in all years except 1995/96 (Lawrence 2002). Three falcon nests were also recorded in 1998/99 at Lake Rotoiti and one nest at Lake Rotoroa (Lawrence 2002). Pengally (2000) recorded falcon nesting at: Big Bush; the southern end of Lake Rotoiti; the northern end of St Arnaud Range; and Glenhope - in 1999/2000. Lone falcon were also recorded at Maud Creek, Speargrass station and along the Porika Track by Pengally in 1999/2000. Falcon were recorded near Angelus Hut in 1998 and 2005, and in the Speargrass Valley in 1989, 1990 and 2004

(Bioweb). Falcon have been seen as recently as 2009 in the St Arnaud village area (Steffens pers obs).

Falcon were recorded throughout 1989 in the Wairau area - sightings were from No Catchem Stream, Dip Flat and Dover Creek (Bioweb). They were also recorded from Six Mile Creek, below Rainbow ski field in 1989 (Bioweb). Lone falcon were recorded at Schroeder Creek (Wairau) by Pengally in 1999/2000 (2000). Falcon were also observed nesting at Beeby's carpark in 2001/2002 (Gasson 2002).

4.2.2 Murchison zone

In North Murchison, falcon were recorded in the bird surveys of 1982/83 in the Fyfe, Owen and Matiri valleys, as well as on Mt Owen (Spurr 1985). At least one pair has been regularly seen in the lower Matiri Valley and one, or two, falcon are regularly heard in the lower Fyfe (Steffens pers obs). Falcon were heard as recently as May 2009 in the Owen.

In South Murchison, Haast records being "attacked by the little sparrow-hawks in the Matakitaki plains" (1862). Falcon were observed at the Buller/Maruia confluence in 1990 (Bioweb). They were also observed along the Tiraumea River in 1990 (Bioweb) and in the West Branch of the Tutaki in 2001/2002 (Gasson 2002). A pair was observed near Murchison Township in 2001 (Bioweb) and juvenile birds (often with a chook fetish) are still regularly seen in the area (Seelye pers com). Falcon were also observed up Six Mile Stream, Matakitaki in 2001/2002 and in 2007 (Gasson 2002; Bioweb).

4.2.3 Southern Mountains zone

Several falcon were seen, and four heard calling on the flats of the D'Urville Valley in 1965 (Adams 1965). A pair of falcon was observed nesting by West Sabine swing-bridge (and harassing trampers) in December 1976 (Thomas and Clare 1976). Falcon were also observed on the Sabine flats in 1989 and 1998 (Bioweb). Pengally (2000) recorded falcon nesting at Mt Misery in 1999/2000. There have been regular falcon sightings in the Travers Valley/Range in recent years, for example falcon were observed in the Cupola Valley in 2000 (McArthur and Ure 2000).

Further east, falcon were observed up Lees Creek in 1989 (Bioweb). A falcon nest was recorded in the Rainbow River gorge in 1999/2000 (Pengally 2000).

4.3 TRENDS IN ABUNDANCE AND DISTRIBUTION

Because falcon are naturally sparsely distributed it is expected that they will be seen only occasionally. It is therefore difficult to show changes in abundance. However, although falcon can still be found throughout Nelson Lakes Area, the sightings recorded tend to be from particular areas (Murchison, St Arnaud, Owen). It is probable that this is a decline in status from the mid 1800s and perhaps also from the 1980s when Butler (1991) recorded falcon in all valleys of Nelson Lakes National Park.

Falcon nests were monitored around Lake Rotoiti and in Big Bush in the late 1990s/early 2000s. Most nests were on the forest floor in beech forest, typically under fallen red beech logs. One pair in the predator control area at Lake Rotoiti (RNRP) hatched 10 chicks and fledged 5-7 chicks in three years of monitoring, but at least one of the fledged birds died. Monitored nests outside the predator control area were less productive than those inside the predator control area, and there may be a high rate of nest disturbance and egg or chick predation across most of Nelson Lakes Area (Gasson pers obs).

4.4 THREATS

There have been occasional reports of falcon being illegally shot in the Murchison block (two rumoured shootings between 2000-2003).

Eggs and chicks may be predated on the ground by introduced mammalian predators (particularly stoats and cats), and there may be a high loss of newly fledged birds (as indicated by Gasson 2001a & 2002).

4.5 INFORMATION NEEDS

- Department of Conservation staff need to continue collecting and entering all falcon records onto Bioweb.

4.6 RECOMMENDED MANAGEMENT

No management required at this time.

5. Western weka *Gallirallus australis australis*

5.1 STATUS

NZ Threat Classification System ranking: At risk - declining (Miskelly et al. 2008).

Population status in Nelson Lakes area: Rare.

5.2 REVIEW OF KNOWLEDGE

Weka were very abundant at the time of the early explorations in the Nelson Lakes Area. Heaphy (1846) recorded weka at Lake Rotoroa where they were easy to catch for food and Haast (1861) wrote of "no other bird being as numerous as the weka which was everywhere in the grassy plains, forests, as well as near the summits of mountains amongst sub alpine vegetation". By the 1980s, weka populations in the Park seemed to fluctuate about a fairly low level (Butler 1991).

Bioweb observations comprise many of the recent weka observations.

5.2.1 North-eastern zone

The Tophouse area (particularly north and east of Beebys Knob) appears to support low numbers of weka that may be resident and may form part of a greater Richmond Ranges population. A family of weka were observed as recently as 2008 on Beeby's Knob (G Omlo pers com). Locals from the Tophouse area have reported increasing numbers of weka over the past twelve months, including sightings of pairs near Tophouse Pub and Alpine Meadows, where pairs of weka had not been observed for some years.

Since the beginning of the 20th century there have been fluctuations in the number of weka at Lake Rotoiti. Rose Win recalled weka being plentiful (in the vicinity of Lake Rotoiti) during the mid-1800s (Newport 1990). Alex McConochie observed that weka which had been "everywhere" suddenly disappeared in a catastrophic die-off during March and April 1909; and it was 1951 when he again heard weka in the Rotoiti zone (Bull 1965). Since this catastrophic event, they have never again reached their former numbers. There was evidently a moderate increase in weka numbers near Lake Rotoiti during the late 1950s – early 1960s. Malcolm McConochie recalls seeing reasonable numbers of weka in St Arnaud during this period (I McConochie pers. com.). There have been several weka resident near St Arnaud between 1991 and 2001. Two weka were banded at St Arnaud in November 1999 and an unbanded weka was

observed in the village in November 2001 (Gasson pers obs). Another weka banded at St Arnaud in May 2000 was recovered in a Fenn trap set for mustelids in October 2001 (NHS 03-14-03 file, NLAO). Weka have thus far failed to re-establish a population at St Arnaud, although a family of weka were observed in St Arnaud village over the summer of 2008 and a single adult male is regularly heard in the village today (Steffens pers obs).

A similar fluctuating pattern has been noted at Lake Rotoroa with Heaphy (1846) noting how easy weka were to catch at Rotoroa in 1846 but by 1925 "of woodhens and kiwis we saw not a sign" (Moncrieff 1925). R.C. Vail heard several weka at Rotoroa in 1970 (Butler 1991). Today weka only occasionally appear at Lake Rotoroa (James McConchie pers. com).

5.2.2 Murchison zone

Dudley Win indicated that weka were numerous when his father Mr. R Win settled near the Owen River about 1870 (Bull 1965). The 1909 die-off of weka that Alex McConochie observed in the Lakes area was widespread, and also affected weka in North Murchison. According to Mr McConochie, weka near Mt Owen soon recovered in numbers only to decline again (Bull 1965). Weka were recorded in the Fyfe, Owen and Matiri valleys during the 1982/83 bird surveys (Spurr 1985). Although weka are currently sparse in North Murchison, they are still observed today by trampers in the Matiri, on 1000 acre plateau and have recently (2009) been recorded by DOC staff at Stern Creek (along the western edge of Nelson Lakes Area) and in the Fyfe Valley.

In South Murchison, Mr W. Blackadder camped at Maruia Springs in 1876 and commented that "I had several Maori hens (wekas) round my camp nearly all night by the number of calls there seemed to be quite a few in this locality" (Maruia Jubilee Committee 1980). Mr Warwick Thomson also recalled the abundance of weka in the Maruia around 1910 "there were thousands of woodhens" (Maruia Jubilee Committee 1980).

Kidson, a surveyor in the Matakitaki in 1865 wrote from his campsite that "we are living like Lords. there are plenty of woodhens and pigeons" (Brown 1976). Cecil Wills (2007) also wrote how when the first settlers arrived in the Matakitaki in the mid-late 1800s "the brown speckled weka" was common but by 1930 "the weka [was] rarely" observed.

The weka population around Murchison Township, in South Murchison, also fluctuates but it is probably the most productive population remaining in the Nelson Lakes Area.

5.2.3 Southern Mountains zone

Bull (1965) recalls an observation from I L Powell that weka were present near John Tait Hut in 1963, whereas he had not seen any weka during two trips to the area in 1933. Bull (1965) also stated that "on longer walks, say to the John Tait Hut, observers have ... very occasionally [seen] a weka". In the same account, weka are described as "rare" in Nelson Lakes National Park.

Weka were recorded in the lower D'Urville valley during the surveys of the early 1980s (Butler 1991).

Reports of weka in the Southern Mountains today are infrequent and possibly relate to solitary mobile birds. For example, a weka seen at West Sabine Hut in February 2000 (J Hopcraft pers. com) and a weka heard about a kilometre north of the hut in January 2001 (G Taylor pers. com) may have been the same individual.

5.3 TRENDS IN ABUNDANCE AND DISTRIBUTION

It is evident that a catastrophic event almost wiped out the Nelson Lakes Area weka population in/around 1909.

At about this time, N McConochie from Glenhope Station observed scores of weka "feeding to repletion" on countless rodents during a great mouse plague. A month after this observation, he returned to the same area and noticed that the healthy weka were gone, replaced by dead and dying birds. Curious to know the cause of this, he killed and examined one weka and found that "the fur from the mice had so bound up its organs that food could no longer be digested" (McConochie 1966).

And although weka numbers have recovered slightly since this time it is not known whether these populations are self sustaining (with the exception of Murchison which holds a productive weka population). This report is in agreement with Butler (1991) who stated that "weka populations in the [Nelson Lakes National] Park seem now to fluctuate about a fairly low level".

At least one attempt has been made to re-introduce birds to St Arnaud, but the translocated birds died out within a year or so (M.R. Clarke in Butler 1991).

5.4 THREATS

Ferrets, cats and stoats all prey on weka. After periodic heavy seeding in beech forests which is the type of forest that dominates the landscape in Nelson Lakes Area, stoats become more abundant and are likely to prey more on weka.

Weka face competition for food with introduced species such as possums and rodents, and possibly also from wasps which feed on invertebrates living on the forest floor.

Disease and parasites were associated with some documented declines of weka elsewhere in the country (Beauchamp et al 1999).

Motor vehicles occasionally kill weka on roads.

Pest Animal Control Operations can impact negatively on weka: notably poison such as broadifacoum and ground-set traps such as leg-hold traps.

5.5 INFORMATION NEEDS

- Determine why weka are doing well in some areas (ie Murchison) and not others (ie Rotoroa).
- Determine the impact of Pest Animal Control Operations on weka populations.
- Carry-out research into the cause of 'boom and bust' cycles of weka in the Nelson Lakes Area.

5.6 RECOMMENDED MANAGEMENT

It is difficult to prescribe management for weka without fully understanding the factors which have caused numbers to fluctuate in the past. Predator management alone may be sufficient to allow weka to establish in the Rotoiti Nature Recovery Project (RNRP) and/or its surrounds. The Tophouse area would be an ideal location to carry-out weka management, making use of the current RNRP trap-lines and implementing a Friends of Rotoiti (FOR) trap-line along Tophouse Road. This area holds a remnant weka population and would provide good habitat. However, ferret control (without harming weka) would need to be implemented and thus far, a kill trap/tunnel design to catch ferrets but exclude weka, has not been designed.

Nelson/Marlborough Conservancy has defined "ground bird areas" where potentially harmful pest control methods cannot be used on public conservation land. Ground bird areas need to be periodically reviewed with respect to the known distribution of weka; and new pest control methods need to be reviewed with respect to their potential impact on weka.

6. Black-fronted tern *Chlidonias albostriatus*

6.1 STATUS

NZ Threat Classification System ranking: Nationally Endangered (Miskelly et al. 2008).

Population status in Nelson Lakes area: Localised.

6.2 REVIEW OF KNOWLEDGE

There are very few historical records of black-fronted tern in the Nelson Lakes Area (Butler 1991).

The Wairau River, a section of which runs through the eastern side of the Nelson Lakes Area, holds the largest proportion of breeding black-fronted terns in the country although the majority of this tern population breed downstream of the Nelson Lakes Area boundary (in South Marlborough).

This species is migratory and only spends the breeding season (Sept - Feb) inland, on braided river-beds. Black-fronted tern sightings in the Nelson Lakes Area are therefore generally restricted to spring and summer, and to braided rivers (and their surrounds).

6.2.1 North-eastern zone

During the October 1985 river-bird survey on the Wairau, black-fronted terns were the most common bird on the river, with 1359 terns being recorded (Wildlife Service 1985). The majority of these terns would have been recorded downstream of Wash Bridge, in South Marlborough Area. However, black-fronted terns are regularly seen during the breeding season on the Wairau River, between Wash Bridge and Rainbow homestead. Nest monitoring and various forms of localised predator control have been carried out on this stretch of the Wairau since late 2005. This work showed that black-fronted tern nesting success is very low (with predation being the main cause of egg mortality). Colonies at Bull Paddock Stream (85 nests; 18% hatch success) and immediately upstream of the Wash Bridge (66 nests; 12% hatch success) were monitored in 2006 (Steffens 2007b).

In the Lakes area, black-fronted terns were observed in good sized flocks on Lake Rotoiti foreshore during the season's of 1963/4 and in 1965. By 1985 at the end of the general bird survey carried out by Nelson Lakes National Park staff - only 1 to 10 terns were recorded at either end of Lake Rotoiti (Butler 1991). Today, black-fronted terns are rarely seen at

the lake, and those that are observed are just flying through (Steffens pers obs).

Black-fronted terns nest most years on the upper Buller River, in the vicinity of the Howard River mouth (Butler et al 1990; Steffens 2007a). Surveys between 1995 and 2008 indicate that the number of terns using this stretch of the Buller River has stayed reasonably stable (Ure 1995; Steffens 2007a; DOC survey 2008 on file NLAO). A breeding colony of approximately 15 terns was observed in December 2007 in the mid-upper Howard Valley (Bioweb).

6.2.2 Murchison zone

Black-fronted terns occasionally feed up tributaries of the Buller River (the Owen and Matiri rivers) but are not known to have nested there.

Department of Conservation river bird surveys carried out in the Matakitaki (from Base Hut to the gorge above Mammoth Flat) since 1995 noted low but reasonably stable tern numbers: 18 terns were counted in 1995, 13 terns in 1999 and 35 terns (a colony) in 2007 (Steffens 2007a). A colony of approximately 70 black-fronted terns (30+ nests) was observed on the Matakitaki during the 2008 river-bird survey just upstream of the confluence of the Six Mile and Matakitaki river (D Seelye pers com). Chicks and fledglings were observed at this colony during the breeding season.

6.2.3 Southern Mountains zone

There are no known records of black-fronted terns on the Matakitaki River, above Matakitaki Base Hut.

A small breeding colony of black-fronted terns was present immediately downstream of the Rainbow/Wairau confluence in 1988 (Cash 1988). During a braided river bed survey in 1995, Ure counted 94 terns on the Rainbow River. He also observed 25 terns between Rainbow Bridge and Connors Creek (Ure 1995). A black-fronted tern colony (50+ terns with chicks) was recorded in 2007 at the confluence of the Rainbow and Wairau rivers (Bioweb) and on the Wairau River, upstream of the Rainbow River confluence, in 2008 (G Omlo pers com). These colonies tend to be small-medium sized (< 30 nests) and isolated compared to the colonies further down the Wairau (Steffens pers obs).

6.3 TRENDS IN ABUNDANCE AND DISTRIBUTION

Black-fronted terns are declining nationally, a population estimate in 2002 of less than 10,000 birds (Keedwell 2004). The number of birds nesting on the Wairau is also likely to be declining given their poor breeding success.

Butler (1991) noted that black-fronted terns were 'more abundant' in Nelson Lakes National Park in the 1960s. A similar observation was made by Bull (1965) that "black-fronted terns and black-billed gulls [pre 1965] have found the changed conditions, especially open farmlands near Nelson Lakes National Park, to their liking and are now probably more numerous than ever before". It is likely that the black-fronted tern population has decreased in size since the 1960s, although the surveys carried out on the upper Buller River and Matakitaki River since 1995 indicate that tern numbers are reasonably stable. Because this is a migratory species, it is unclear whether the Nelson Lakes populations of terns are the same individuals returning to their natal area each year, or are new birds attracted to the area.

6.4 THREATS

The key threat to black-fronted terns is introduced mammalian predators - feral cats, mustelids, rats and hedgehogs (Taylor 2000). However, a major predator of black-fronted tern eggs on the Wairau River was identified during a video/DNA study in 2008 as Australasian Harrier (Steffens 2009a).

Flooding of nests is a natural hazard. Nesting habitat is being restricted by weeds, especially willows and lupins. An aquatic water-weed, didymo, is present in all of the Nelson Lakes Area waterways where black-fronted terns breed i.e. the Wairau, Buller and Matakitaki rivers and this could pose a major threat to the food supply of terns (small fish and aquatic invertebrates).

Sheep and cattle grazing on the riverbed during spring and summer may occasionally cause disruption in nesting colonies.

Future hydro-scheme developments also pose a threat to this species (Taylor 2000).

6.5 INFORMATION NEEDS

- To develop a management programme that benefits black-fronted terns on the Wairau and determine whether this programme can be sustained.
- Includes continued work identifying the major predators of black-fronted terns on the Wairau, probably through DNA analysis.
- To understand the impact of didymo on the food supply for black-fronted terns.
- To determine whether black-fronted terns are fairing better in the Buller catchment compared to the Wairau by comparing tern hatching success on the Buller and Matakitaki rivers with that on the Wairau.

- To determine whether black-fronted terns return to their natal areas in the Nelson Lakes Area.
- To carry out surveys of braided river birds on the Buller and Matakitaki rivers at least every second year.

6.6 RECOMMENDED MANAGEMENT

Carry-out management with the aim of increasing black-fronted tern productivity on the Wairau (including predator control and habitat enhancement).

7. Black-billed gull *Larus bulleri*

7.1 STATUS

NZ Threat Classification System ranking: Nationally Endangered (Miskelly et al. 2008).

Population status in Nelson Lakes area: Localised.

7.2 REVIEW OF KNOWLEDGE

Like black-fronted terns, black-billed gulls usually spend their winters on the coast but nest inland, on braided river-beds during the spring/ summer.

7.2.1 North-eastern zone

Contrary to most other threatened species in the Area, historical records imply that the black-billed gull population increased in Nelson Lakes National Park (and its surrounds) between the late 1950s and the mid 1980s. Moncrieff (1957) commented that black-billed gulls cannot be found on the lakes in the [Nelson Lakes] National Park (Moncrieff 1957). However, only a few years later Bull (1965) noted that "in summer . . . small flocks of black-billed gulls may be seen at St Arnaud jetty". And in 1983 black-billed gull flocks were observed on Lake Rotoiti (mostly at the township end) from July to January, the largest of which numbered about 200 birds (Butler 1991).

D.D. Cummings commented that black-billed gulls have increased in the farmland surrounding the Park in recent years (in Butler 1991). A similar observation was made by Bull (1965) that "black-fronted terns and black-billed gulls [pre 1965] have found the changed conditions, especially open farmlands near Nelson Lakes National Park, to their liking and are now probably more numerous than ever before".

The occasional flock of black-billed gulls can still be observed on Lake Rotoiti during the summer (ie a flock of 100 adults and juveniles was observed for a few weeks in Kerr Bay in January 2009) but in most years gulls are only seen near their nesting locations on the upper Buller, Wairau and Matakitaki rivers.

A black-billed gull colony can typically be found on the Buller River (near the Howard/Buller confluence) each year (Butler et al 1990; Steffens 2007a). In 1995, 90 gulls were counted on the Buller River (Ure 1995); in 1995/1996 a colony of approximately 75 nests was counted (Ornithological Society of NZ); in 2006, 118 gulls were counted (Steffens 2007a); in 2007, 90 were counted (Steffens, 2007a); and in 2008, 131

black-billed gulls were counted on the Buller River (Seelye pers obs). These figures indicate a reasonably stable population trend over the past 14 years on the upper Buller River.

The Wairau River, above the Wash Bridge, occasionally holds one, or more, colonies of black-billed gulls. The black-billed gull population on this river is nowhere near the size of that of black-fronted terns (Steffens pers obs).

7.2.2 Murchison zone

Black-billed gulls also nest on braided sections of the Matakitaki River each year. On the section of river from Matakitaki Base Hut to Mammoth Flat Gorge - 8 gulls were counted in 1995 (Ure 1995); 19 in 1999 (Ure 1999a) and 63 in 2007 (Steffens 2007a). Although no black-billed gulls were recorded from this section of the Matakitaki in 2008, a large colony (80+ nests) was located near a black-fronted tern colony at the Matakitaki/ Six Mile stream confluence (D Seelye pers com). Chicks were recorded at this colony in November 2008 (D Seelye pers com).

7.2.3 Southern Mountains zone

No records of black-billed gulls can be found for the Southern Mountains - probably due to the lack of suitable nesting habitat.

7.3 TRENDS IN ABUNDANCE AND DISTRIBUTION

For a species that is classed as nationally endangered and declining elsewhere, it still appears to be 'holding its own' in the Nelson Lakes Area. However, like the black-fronted tern, this is a migratory species and it is unclear whether the Nelson Lakes populations of gulls are the same individuals returning to their natal area each year, or are new birds attracted to the area.

7.4 THREATS

The threats for black-billed gulls are similar to those faced by black-fronted terns. The primary threat is introduced predators - feral cats, mustelids, rats and hedgehogs.

Flooding of nests is a natural hazard but availability of suitable nesting habitat is being restricted by weeds, especially willows and lupins. An aquatic water-weed, didymo, is present in all of the Nelson Lakes Area waterways where black-billed gulls breed i.e. the Wairau, Buller and Matakitaki rivers and this could pose a major threat to the food supply of gulls (small fish and aquatic invertebrates).

Sheep and cattle grazing on the riverbed during spring and summer may occasionally cause disruption in nesting colonies.

Future hydro-scheme developments also pose a threat to this species (Taylor 2000).

7.5 INFORMATION NEEDS

- To determine the nesting success of the black-billed gull population on the Upper Buller River.
- To determine whether black-billed gulls are fairing better within the Buller catchment compared to the rest of the country (including a comparison of nesting success with the gull population/s in Southland re: Rachel McClelland's PhD research).
- To carry out surveys of braided river birds on the Buller and Matakitaki Rivers at least every second year.

7.6 RECOMMENDED MANAGEMENT

Any management plan implemented to enhance productivity of black-fronted terns on the Wairau will benefit black-billed gulls also.

Control the suite of predators around the Buller/Howard black-billed gull colony (if required as a result of the nesting success study).

8. South Island kaka *Nestor meridionalis meridionalis*

8.1 STATUS

NZ Threat Classification System ranking: Nationally Endangered (Miskelly et al. 2008).

Population Status in Nelson Lakes area: Rare.

8.2 REVIEW OF KNOWLEDGE

Butler (1991) noted that kaka were abundant during the early explorations in the 1800s but the population had declined through the 1900s so that groups of more than five or six birds were rarely seen by 1991.

During the 1980s survey, kaka were recorded throughout Nelson Lakes National Park - many sightings were from Mt Misery, the lower D'Urville Valley and the Travers and Matakitaki Valleys (Butler 1991).

Butler et al (1990) noted that in the Nelson region, South Island kaka were most commonly seen in Nelson Lakes National Park, particularly around Lakes Rotoiti and Rotoroa and adjoining lowland forests such as Big Bush.

8.2.1 North-eastern zone

Ted Fitzsimmons, writing about the Lake Rotoiti area during the years 1925 - 1930 wrote that "kaka and kea, although always about, were never very plentiful." (Fitzsimmons 1978). According to Mr McConochie of Lake Station, kakas virtually disappeared about 1908 (Bull 1965). However, the kaka population around St Arnaud was large enough to be studied in 1984 (7 adults were monitored) (Wilson 1985) and studied long-term from 1997 to 2006 to determine the effect of stoat control on their nesting success and recruitment in the Rotoiti Nature Recovery Project (RNRP). From 1996-2002, 127 kaka were caught and banded in the RNRP, Big Bush Conservation Area and at Rotoroa (Taylor et al 2009). This study found that a level of predator control sufficient for the local recovery of a kaka population was achieved through trapping alone. It is of interest to note that the kaka population within the RNRP was supplemented by four females from Codfish Island in 1999 because the RNRP population was dominated by males and extra females were required to provide an adequate sample of nesting attempts (Butler 1999).

Mr Dudley Win, an early settler, recalls that kaka were in their "hundreds" at Lake Rotoroa about 1900 (Bull 1965). Moncrieff (1925) observed kaka at Lake Rotoroa in 1924 - "but only one or two". Moncrieff also noted

that kaka obviously moved around the district for food as on one occasion no kaka were observed on a visit to Lake Rotoroa but "within a month some hundred of birds near the accommodation house played amongst the tall trees" (Moncrieff 1957). Kaka are still commonly heard around Rotoroa today.

Kaka were observed as recently as 2004 in the Red Hills, Mt Richmond Forest Park (Bioweb).

8.2.2 Murchison zone

In North Murchison, Kaka were regularly encountered during the 1982/83 survey in the Fyfe, Owen and Matiri Valleys (Spurr 1985). Kaka were observed at Lake Matiri in 1992 (Bioweb). They are regularly heard during DOC bird counts in the Fyfe Valley and a group of six birds was encountered on the saddle between the Fyfe and Frying Pan valleys in 2007 (Bioweb). Kaka were also heard in 2009 at Stern Creek, above the West Branch of the Matiri and in the Sandstone Valley (Bioweb).

In South Murchison, Mr W. Blackadder recalls kaka around his campsite at Maruia Falls in 1876 "there were a few paradise ducks and kakas, whistling and screeching early in the morning" (Maruia Jubilee Committee 1980). Mr Warwick Thomson also remembers kaka in the Maruia around 1910 "there were thousands of woodhens, kaka and pigeons" (Maruia Jubilee Committee 1980). The Tutaki State Forest area was known to contain a reasonable number of kaka in 1985 (Wilson 1985). Bioweb records indicate that kaka were heard in the Glenroy in 1998; along the Tiraumea track in 2005 and along Jamieson track in 2005.

8.2.3 Southern Mountains zone

Kaka were recorded along Jacobs Ladder, Matakitaki in 2000 (Bioweb).

In the central Southern Mountains, Adams (1965) recorded kaka calling at Morgan's Hut in the D'Urville Valley in 1965 and the population of kaka on Mt Misery was studied in 1984/85 (Wilson 1985). Nelson Lakes National Park was chosen for this kaka study because the majority of the Park and environs (especially Mt Misery, the Sabine and the D'Urville Valleys) were known to contain a reasonable number of kaka (Wilson 1985). Other than the lakes, the D'Urville and Sabine valleys hold the greatest number of recent kaka sightings in Nelson Lakes National Park. Kaka were observed in the D'Urville in 1988, 1990, 1992 and 2005; and in the Sabine in 1989 and 1992 (Bioweb). Kaka were also heard by a DOC team in the Cupola Valley in 2000 (McArthur and Ure 2000).

No records could be found for kaka along the eastern edge of the Southern Mountains block.

8.3 TRENDS IN ABUNDANCE AND DISTRIBUTION

Although kaka are irregularly observed throughout most of the Nelson Lakes Area, they appear to be most abundant around Lakes Rotoiti and Rotoroa. It has been proven that the stoat trapping operation carried out by the Rotoiti Nature Recovery Project increases productivity of the kaka population at St Arnaud (Taylor et al 2009) so although this population is likely to survive, others in the Area (if left unprotected) are likely to decline into extinction. As Wilson et al (1998) comments - most nesting attempts in unmanaged areas fail because of predation, and kaka are predicted to become extinct on mainland New Zealand in all unmanaged areas.

8.4 THREATS

Predation by stoats and possums are the most likely cause of the continuing decline of kaka populations (Greene et al. 2004).

8.5 INFORMATION NEEDS

- Department of Conservation staff need to continue collecting/entering records onto Bioweb.

8.6 RECOMMENDED MANAGEMENT

Maintain the RNRP stoat trapping operation as protection for resident kaka.

If the opportunity presents itself, protect nesting kaka at Rotoroa as part of an ecological restoration project.

9. Kea *Nestor notabilis*

9.1 STATUS

NZ Threat Classification System ranking: At Risk - naturally uncommon (Miskelly et al. 2008).

Population status in Nelson Lakes area: Rare.

9.2 REVIEW OF KNOWLEDGE

Butler (1991) noted that the first recorded sighting of kea in the Park was on Mt Robert in 1903 - and by the 1960s, a study carried out at Cupola Basin indicated that kea had a resident density of one bird per 2.5km² plus juveniles (Clarke 1970). During Butler's 1980s bird survey, kea were seen throughout Nelson Lakes National Park (1991).

Butler et al (1990) described kea as being reasonably common in the mountains of Nelson Lakes National Park.

9.2.1 North-eastern zone

Ted Fitzsimmons (1978), writing about the Lake Rotoiti area during the years from about 1925 to about 1930 wrote that "kaka and kea, although always about, were never very plentiful." Such a trend for kea appears to continue today.

In the Lakes area, the association between kea and humans has been a strong one. Bull (1965) noted that "in winter, keas sometimes come down to lower altitudes and occasionally visit St Arnaud" and Clarke (1970) observed that the kea on Mt Robert in the 1960s appeared to be attracted to the area because of ski club activities. Sightings of kea by trampers are still regularly recorded from Mt Robert (2005, 2007-2009), and occasionally at the huts at the head of Lake Rotoiti (2006) (Bioweb). Kea were heard by DOC staff near Speargrass Hut in 2007 and have been recorded from Angelus Hut in 1998 and 2005 (Bioweb).

Kea nest monitoring was carried out in the vicinity of St Arnaud range from 1993 to 1998 to determine nesting success and survivorship in kea (Kemp 1999). Thirty-six kea nests were monitored in this period and breeding was generally widespread (except in 1996 when no nests were found). It was found that kea nests appeared to be relatively immune to predation from introduced mammals at this site (Kemp 1999). A couple of kea are sighted each winter at Rainbow Skifield in the St Arnaud Range – with an injured juvenile from Rainbow Skifield Road being brought into the Nelson Lakes DOC office as recently as July 2009 (Steffens pers obs). Numbers of kea counted at Rainbow Skifield have declined since the 1990s (Kemp pers com).

In 2001 DOC attempted to re-locate radio-tagged kea from Kemp's earlier study and during this search kea were located throughout the upper Wairau area - up Hellfire Stream and Woolshed Stream (Wairau) and along Nesbits Creek (Raglan Range) (Gasson 2001b). The body of one kea was found beneath a rock jumble in the basin feeding Sandfly Creek (Raglan Range) (Gasson 2001b).

Five unbanded kea were observed by a ranger in 2008 - playing around Beeby's Hut on the Richmond Range (Bioweb).

9.2.2 Murchison zone

Kea were observed in good number in the Fyfe, Owen and Matiri valleys during the survey of 1982/83 (Spurr 1985). Two kea were observed at Poor Pete's Hut, 1000 acre plateau in 1988 and at Lake Jeanette, upper Matiri in 1992 (Bioweb). Two kea were also observed at Poverty Basin in 2001 (Bioweb). Annual bird counts carried out by DOC staff in the Fyfe since 2007 regularly record kea calls - especially near the lower Fyfe gorge. Seven kea were observed flying together by a resident up the Owen in June 2009 (Seelye pers com).

In South Murchison, Berryman (2004) commented that "we found that kea lived in the Mt Mantell area" in 1949 "in fairly large numbers". "They appeared to roost in the northern crags of Old Man Mountain and like an early alarm clock they would create a terrific noise as many headed south to their daily feeding grounds" (Berryman 2004). Further north, 6-7 juvenile kea were observed by a resident up the Doughboy in July 2009 (Bioweb).

Kea were observed up the Six Mile, Matakitaki in 2007 and as recently as 2008 on Mt Murchison. All five kea on Mt Murchison were at the summit, and appeared to be juveniles (Bioweb).

9.2.3 Southern Mountains zone

Four kea were observed up the West Matakitaki valley and two up the East Matakitaki valley in 1990 (Bioweb).

Quite a number of kea were recorded in the D'Urville in 1965 - six were seen at one time (Adams 1965). Kea were also observed in the D'Urville, at Ella Hut (now George Lyon hut) in 1989 (Bioweb). A study carried out on kea in Cupola Basin in the 1960s noted that of 24 kea captured, only 6 birds were resident (Clarke 1970). Kea were recorded in the Travers in 1989 and 1990 (Bioweb), and six kea were recorded at Upper Travers Hut in 2000 (McArthur and Ure 2000).

Kea were recorded up Lee's Creek, in 1988 and 1989 (Bioweb).

9.3 TRENDS IN ABUNDANCE AND DISTRIBUTION

Approximately 150 000 kea were intentionally killed across the South Island between 1870 and 1948 (Cunningham 1948). To enable such a cull to take place, kea must have been considerably more abundant than they are today - a total population of 5000 birds (Kemp 1999).

Kea remain throughout the Nelson Lakes Area but the population is sparse.

The kea population on the St Arnaud Range appeared to be quite stable during the study carried out be Elliott and Kemp (2004). However, they were only 50% confident that the population was not declining and only 68% confident that it will not go extinct within 100 years. The numbers of kea at Rainbow Skifield has declined since the 1990s (Kemp pers com) which might indicate a decline in the population. This population of kea, around Lake Rotoiti, although low in number is probably the stronghold for kea in the Nelson Lakes Area.

9.4 THREATS

Kea are occasionally illegally shot, and there is the odd incident of accidental entanglement, poisoning and mishaps with vehicles.

The major potential predators of kea nests in montane beech forest in the Nelson Lakes Area are stoats and possums.

9.5 INFORMATION NEEDS

- Department of Conservation staff need to continue collecting/entering records onto Bioweb.
- What are the long-term survival rates of kea in an area with stoat management (trapping) i.e. the RNRP/St Arnaud Range area?

9.6 RECOMMENDED MANAGEMENT

Continue kea advocacy work - including requesting St Arnaud locals who regularly ski on Rainbow ski field, to carry-out 15 minute kea counts at the field, on occasion, for Josh Kemp's continuing kea count work.

10. Rock wren *Xenicus gilviventris*

10.1 STATUS

NZ Threat Classification System ranking: Nationally Vulnerable (Miskelly et al. 2008).

Population status in Nelson Lakes area: Rare.

10.2 REVIEW OF KNOWLEDGE

Oliver (1955) reported that the first rock wren nest to be discovered was "about 1880 among loose rocks on a mountain in the Nelson district", but stated that rock wren are "now rare in Nelson".

10.2.1 North-eastern zone

The distribution map for rock wren in Butler's 1991 report showed that they were recorded on the Robert Ridge between 1978 and 1985. There have been at least two sightings of rock wren on Robert Ridge since 1985 - three, possibly four rock wren were seen at Julius Summit in September 2004 (Bioweb) and one rock wren was seen further north in February 2001, between Relax Shelter and Prospect Shelter (Wayne Bastian pers. com).

In 2002 one rock wren was seen near the top of the ski lift at Rainbow Ski Area on several days in mid July (Jack Coote pers. com).

Rock Wren was recorded from Hinapouri tarns in 2006 (Bioweb).

10.2.2 Murchison zone

No rock wren references pre-1988 have been found in the Murchison zone.

Recently in North Murchison at least two observers saw rock wren near Bulmer Lake on Mt Owen about 2003/2004 and another record of rock wren from Mt Owen in the 1990s was from the Bohemia area, about 1km west of Bulmer Lake (PES 0153/1 file, NLAO). There are two records of rock wren on the Matiri Range in recent times - a 1991 record relates to the ridge between the Needle and the Haystack, and a rock wren was reported from the Haystack in 1988 (Bioweb).

No recent records of rock wren in South Murchison have been found.

10.2.3 Southern Mountains zone

Recently in the eastern Southern Mountains area one male rock wren was photographed in the head of St Ronan's Stream (a tributary to the Wairau River) during 1995 (Graeme Omlo pers. com) and another rock wren was sited in this area in 2007 (Bioweb).

The central Southern Mountains has been the source of the majority of rock wren records in Nelson Lakes Area. Rock wren were reported in this block as early as 1966, when a pair was seen on the east ridge leading to Mt Ella (Butler 1991). No further records were forthcoming from the Ella Range until the 1990s. Further east, Butler's 1991 report referred to a few pairs of rock wren that were known from the Travers Saddle area "twenty years ago" (i.e. circa 1971). Bioweb records show that in 1977 rock wren were present near Kehu Peak (1.5km south-east of Travers Saddle) and in Mt Cupola/Cupola Basin area about 5km north of Travers Saddle. During the 1978-1985 survey eight records of rock wren were obtained, all from the eastern side of the national park, the Travers and Mahanga Ranges (Butler 1991). Mahanga Range sightings during this period appear to be centred on the Moss Pass/Blue Lake area e.g. Moss Pass in 1983 (Bioweb) and Lake Constance morane circa 1984 (Roger Gaskell pers. com).

Rock wren are present at a number of sites in the central Southern Mountains, particularly on the Travers Range and in the upper catchments of the Sabine and D'Urville rivers. In January 2004 a pair of rock wren were seen about 1km north of Lake Ella (D'Urville catchment) within 1km of the 1966 sighting (Paul Gasson pers obs.) and another bird was observed at the head of the D'Urville in 2008 (Bioweb). Rock wren have been reported from the eastern catchments of the Travers Range at regular intervals over the past 20 years. There are recent records from the head of Hukere Stream near Mt Angelus (2000 & 2005) and Summit Creek near Mt Travers (Bioweb records). A Department of Conservation survey of the Travers Range in January 2000 confirmed that rock wren were present in the Hopeless and Cupola catchments (McArthur & Ure 2000). These sightings follow a scattering of earlier reports from the same catchments, including observations made during a Department of Conservation survey in 1995 (PES 0153/1 file, NLAO). During the January 2000 survey a pair of rock wren was also seen on the eastern flanks of Mt Travers about 2km north-east of Travers Saddle (McArthur & Ure 2000). Elsewhere in the central Southern Mountains, two rock wren were seen at Waiau Pass in December 1999, and in 1993 rock wren were reported from the east side of the Franklin ridge in the east branch of the Sabine catchment (Bioweb records).

One pre-1985 record of rock wren in the western Southern Mountains has been found – a bird was reported from Gloriana Peak in 1981 (Bioweb). The most recent records of rock wren in the western Southern Mountains are two 2004 records from the basin between Faerie Queene and Gloriana peaks in the West Branch Matakitaki catchment (Bioweb). Rock wren have also been reported from other tributaries to the Matakitaki River in recent times. There is a 1999 record of rock wren in the head of Downie Creek (Bioweb) and in early March 1995 Mike Hawes observed rock wren at two locations near the head of the Matakitaki River East

Branch south-east and south of David Saddle, and in a tributary 2km east of East Matakitaki Hut (PES 0153/1 file, NLAO). These records follow two 1990 records of rock wren about the head of the Matakitaki river East Branch, about 1km south-east of David Saddle and 1.5km west of David Saddle.

10.3 TRENDS IN ABUNDANCE AND DISTRIBUTION

Although rock wren are only occasionally recorded in the Nelson Lakes Area, they appear to be distributed across Nelson Lakes National Park with particular strongholds in the upper catchments of the Travers, Sabine and D'Urville valleys. There are too few historic records to enable a comparison of current distribution with historical distribution. Rock wren can be difficult to locate, and the failure to find rock wren during a particular survey (e.g Katrina Hansen's 1995 survey of Hopeless, Cupola and Upper Travers catchments) does not mean that they are absent. Known rock wren sites in the upper catchments of the Matakitaki River East Branch and D'Urville Rivers were visited by Department of Conservation staff in November 2001 and January 2004, but rock wren were confirmed present only near Mt Ella in 2004. A possible sighting of rock wren south-east of David Saddle in 2001 could not be confirmed.

10.4 THREATS

The major threat to rock wren survival is predation by stoats and mice, particularly when nesting (Michelsen-Heath & Gaze 2007). The extent and effect of predation is not known for rock wren (Gaze 2004).

10.5 INFORMATION NEEDS

- Continue to collect baseline information about the distribution of rock wren in Nelson Lakes Area and enter that information onto Bioweb. It is unlikely that the full distribution of rock wren in Nelson Lakes Area is currently known, and biodiversity staff should maximise opportunities to identify new sites. Depending on resources, this could range from collecting observations from the public to undertaking a systematic rock wren survey programme.

10.6 RECOMMENDED MANAGEMENT

Rock wren have proved to be a difficult species to monitor due to their sparse distribution and their variable conspicuousness (Gaze 2004). In addition, the logistical challenge of monitoring them in such isolated locations as those in the Nelson Lakes Area would prove difficult and expensive. For this reason, no management is recommended at this time.

11. South Island fernbird *Bowdleria punctata punctata*

11.1 STATUS

NZ Threat Classification System ranking: At Risk - declining (Miskelly et al. 2008).

Population status in Nelson Lakes area: Rare.

11.2 REVIEW OF KNOWLEDGE

Bull (1965) noted that fernbird have been recorded in or near Nelson Lakes National Park on rare occasions during the decade prior to 1965.

The Bioweb database contains a few recent records only. Most of the fernbird records discussed below were made by DOC staff.

11.2.1 North-eastern zone

Fernbirds have been reported from two sites in the Wairau Valley since Butler's (1991) study. A fernbird was heard at the bottom of the Red Hills Road in January 2003 (Peter Russell pers. com) and fernbirds are occasionally seen near Wash Bridge, Wairau River on the boundary between the Department of Conservation's Nelson Lakes and South Marlborough Areas. In the north of Nelson Lakes Area fernbirds have been reported from the Blue Glen Creek, about 1.5km from Kikiwa (Omlo pers. com). In about 2000 N. Etheridge reported fernbirds from a wetland 1km south of Tophouse (Maitland pers. com).

During the spring of 2001 three fernbirds were seen in a small wetland on the Teetotal flats 3km north-west of Lake Rotoiti (Gasson pers. obs.) and the occasional fernbird is still recorded from this area (Omlo pers. com). In February 2003 a fernbird was heard in Black Valley swamp 2km north-east of Lake Rotoiti (Maitland pers. com) and a pair was observed feeding a fledgling in this swamp in 2009 (Steffens pers. obs).

Butler (1991) noted that fernbird had been reported in the past from the Howard Valley and McConochie's swamp near St Arnaud. A fernbird was seen in the Louis tributary of the Howard during March 2003 (Gaze pers. com).

During Butler's survey, fernbirds were found by the Braeburn walk at Lake Rotoroa in 1983 and 1984. At the time, Butler notes that "there were only three or so pairs present and whether this population will be a permanent feature is doubtful". No fernbirds have been recorded as this site since 1984.

11.2.2 Murchison zone

North of Murchison fernbirds were heard at several sites on the Matiri downlands between Larrikins Hut and Poor Pete's Hut in May 2003 (Jack and Gasson pers. obs.) and in 2007 (Steffens pers. obs.). Department of Conservation staff saw and heard a fernbird on the river flat about 1 km upstream from Lake Matiri during August 2005 (Omlo pers. com.); and staff also saw and heard a fernbird in the Matiri Valley near Lake Jeanette in 2003 (Richards pers. com.). A "very healthy population" of fernbirds was recorded on the plateau, at the head of Stern Creek (on the western boundary of Nelson Lakes Area) in 2009 (Steffens pers. obs).

During February 2003 a fernbird was seen in exotic poplar forest bordering the Buller River and the Murchison golf course (Omlo pers. com.).

11.2.3 Southern Mountains zone

There are no known reports of fernbirds seen or heard in the Southern Mountains.

11.3 TRENDS IN ABUNDANCE AND DISTRIBUTION

There is no discernable trend in abundance/distribution of fernbirds in Nelson Lakes Area but habitat loss must have been an issue historically (fragmentation of wetlands / damage to wetlands). A local DOC ranger who has worked in the Nelson Lakes Area since the 1990s believes that the fernbird population along the Red Hills fringe (Richmond Ranges) has declined rapidly over the past few years (Omlo pers. com.).

11.4 THREATS

Nationally, the loss of wetland and fern-land habitat through agricultural development has had a negative impact on fernbird populations (Heather & Robertson 1996).

Fernbirds are rare in the Teetotal area, although there seems to be a reasonable amount of suitable habitat, which indicates that mammalian predation might be effecting fernbird productivity/survival at this site (and other fernbird populations in the Area). A study carried out by Parker (2002) implicated mustelids in fernbird nest loss and also noted that mice might be significant predators of fernbird eggs. Rats are likely to be major predators also.

11.5 INFORMATION NEEDS

- To determine why fernbirds are located in some areas with suitable habitat and not others. Is predation the main cause?
- To identify potential source sites for fernbird translocations to the Nelson Lakes Area.
- To continue to collect sightings for Bioweb.

11.6 RECOMMENDED MANAGEMENT

Consider carrying out translocations to suitable protected (stoat and rat control) habitat, for example St Arnaud village. Such a re-introduction project could expand to include Black Valley Wetland when the habitat is restored.

Restore suitable fernbird habitat (including Black Valley Wetland).

12. Long-tailed bat (South Island) *Chalinolobus tuberculatus*

12.1 STATUS

NZ Threat Classification System ranking: Nationally Endangered (Hitchmough et al. 2007).

Population status in Nelson Lakes area: Rare.

12.2 REVIEW OF KNOWLEDGE

Long-tailed bats appeared to be common throughout the country in the 1800s (O'Donnell 2000) with one large colony in the Wangapeka Valley (Nelson region) being numbered in its 'hundreds' (Cheeseman, 1893). Historic records in the Nelson Lakes Area refer to bats being 'a common sight' in areas such as the Tophouse-Korere Road in the early 1900s and at one site 1km east of St Arnaud (called 'bat cutting' by the locals) a colony of 'more than a hundred' bats was observed about 1930 (Fitzsimmons 1978). This was at a time when locals were noticing the decline in bat numbers around the area.

As a result of long-tailed bat surveys being carried out in the St Arnaud area in the early 1990s, the status of the species in this area was classed as 'Rare' (O'Donnell 2000).

12.2.1 North-eastern zone

(i) Tophouse area

Bats were once a reasonably common sight along the Tophouse-Korere Road and elsewhere in the headwaters of the Motupiko River. A section of road to the north of Tophouse was evidently known as "Bat Corner" in earlier times (PES 0161 file, NLAO). Up to about 1940 bats were plentiful around Birchlea homestead on the Korere-Tophouse Road between Tophouse and Kikiwa (G Nicholls pers. com.). Between early 1963 and May 1966 Department of Scientific and industrial Research (Animal Ecology Division) staff sighted bats at two different locations near Tophouse and the Korere-Tophouse Road; and Taylor (1967) identified two further sites in the Tophouse/Roundell area where bats had been seen by local residents "in recent years". One observer believed that bats disappeared about Tophouse c. 1967 when the roost trees (old man pine) were felled (PES 0161 file, NLAO). However, Bruce McKenzie remembers bats from the Tophouse Saddle about 5km east of Tophouse as recently as 1985 (Gaze 1998).

During the years 1997-1999 Graeme Ure used bat detectors to survey a range of sites beside State Highway 63 and the Tophouse-Korere Road. Adjacent to SH 63, Ure recorded one bat pass east of Tophouse Saddle, about 5km east of Tophouse (Ure 1999b). This followed a January 1992 observation by Ian Miller who used a bat detector in the same area (Gaze 1998). During 1999 Ure recorded one bat pass on the south side of SH 63, beside Roundell Creek about 2km south of Tophouse (Ure 1999b). Kevin Davies-Bourne recalled seeing bats in 1997 in the Alpine Meadows subdivision area, about half way between the Roundell Creek and Tophouse Saddle areas (PES 0161 file, NLAO). On the Tophouse-Korere Road Ure recorded two possible bat passes about 3km north of Tophouse (Ure 1998c). During late January 1997 Mark Manson recorded one bat pass at Tophouse Cottage 0.5km north of Tophouse Hotel. Earlier in the same month, while undertaking a walking transect, Ure observed one bat pass near Five Mile Creek, 1.7km north of Tophouse. This may be the vicinity of the area formerly known as "Bat Corner" (PES 0161 file, NLAO).

More recently bat observations in the Tophouse area have been few and far between - two bats were seen flying together near Tophouse on a relatively warm night with abundant insect activity in July 2005 (Gasson pers. obs.), and a farmer reported that he may have struck a bat while driving between Tophouse and Kikiwa in mid-June 2003 (G Ryan pers obs.). No bats were recorded from the Tophouse area during 2007 and 2008 transect surveys (Steffens 2008a).

(ii) Glenhope-Big Bush areas

The earliest record of bats in the Glenhope area was from 1919, although this record is considered to relate to short-tailed bat (N. McConochie in Gaze 1998). There is a 1959 record from Horopito Road near Korere (NZDA in Dwyer, Gaze 1998); and in the years up to 1975 one observer saw bats in the Rainey River valley at a spot between Nestor Gully and Swampy Gully - groups of up to four bats were seen on different occasions (Lloyd Higgins pers. com.). Since 1985 bats have been observed again in the Rainey river catchment, and at two new sites on the south and east sides of Big Bush. Lloyd Higgins recalls seeing bats flying around the Slips on the southern edge of Big Bush in the period 1995-2000. Higgins gained the impression that the bats were coming across the Buller River (pers. com.). This observation complements Thorneycroft's observations of bats seen about the lower reaches of Speargrass Creek prior to 1994. During March 1997 Gaze recorded a bat pass on each of two consecutive nights in Big Bush 3km north-west of Tophouse (PES 0161 file, NLAO).

(iii) Lakes area

In the Lake Rotoiti catchment, bats were formerly common about the Black Valley swamp 1km east of St Arnaud according to Ted Fitzsimmons, who wrote: "For many years there was a large colony of native bats living about the swampy area near the gravel pit and rubbish tip (this part of the road was called 'bat cutting'), but by the mid 1930s they were noticeably declining in numbers, probably partly due to the clearing of

the adjacent bush and the gradual draining of the swamp... I am sure that when I first observed them myself about 1929 or 1930 they numbered more than 100" (Fitzsimmons 1978). Dwyer reported on bat records about St Arnaud spanning the period from 1927-1942, but also referred to a 1953 record at Lake Rotoiti (in Gaze 1998). Further west, Taylor identified ten sites about Speargrass Station and Lake Station in the upper Buller catchment where bats had been sighted in the period from 1963-1966 (Taylor 1967). A farmer recalled seeing bats about the short section of Speargrass Creek between the main road bridge and the confluence with the Buller River during the years prior to 1994; and in about 1988 a bat flew into a house on Speargrass Station (PES 0161 file, NLAO). In 1998 and 1999 long-tailed bat passes were recorded on an automatic bat detector on a beech forest-farmland boundary at the "Borlase corner" 1km south-east of St Arnaud (N Etheridge 1998 and J Thorneycroft 1999, PES 0161 file, NLAO). Also in 1998 long-tailed bat passes were recorded on automatic bat detectors set by Thorneycroft in Kerr Bay and at another site 800m further south on the edge of Lake Rotoiti; and Graeme Ure recorded two long-tailed bat passes at Duckpond Stream 1.2km north-west of St Arnaud (Ure 1998c). Nicola Etheredge saw a bat flying along the Mt Robert Road corridor 200m south of the Buller River outlet in January 2001; and Russel Frost observed a bat flying above a quiet reach of the upper Buller River over a fifteen minute period in March 2000. A St Arnaud resident saw a bat outside his house in autumn 2004 (Allan Poll pers. obs.). No bats have been recorded since 2004 immediately around St Arnaud, even with DOC transect surveys being carried out in 2007 and 2008; and automatic bat boxes being set in 2009 (Steffens 2008a & 2009b).

Bats were known from Lake Rotoroa as early as 1926 when Moncrieff observed them flying at dusk (Moncrieff 1957). There is a pre-1957 record from the Gowan Valley and one record from the mouth of the D'Urville River (Lake Rotoroa) in December 1962 (Dwyer in Gaze 1998). There is a reference to Cliff Christian reporting bat activity at the Gowan Bridge in 1992 (PES 0161 file, NLAO). In October 1998 Jack van Hal recorded one long-tailed bat pass on an automatic bat detector beside the Braeburn Walk. This followed a bat pass recorded on an automatic bat detector set in the same area by James McConchie in 1996. Long-tailed bats were recorded on automatic bat boxes along the Braeburn and Flower Brothers Walks at Lake Rotoroa in 2009 and a bat pass was recorded in the village in 2007 (Steffens 2008a & 2009b).

Dwyer (1960) reported on one pre-1960 bat record from the Howard Valley but Taylor (1967) was able to add a further seven sites relating to observations in the upper-mid Howard Valley during the period from 1963-1966. These sightings included one freshly dead long-tailed bat that was obtained from near Gibbs Creek in the Howard Valley in February 1965 (Taylor 1967). Higher up in the Howard catchment during the 1970s Bruce Thomas found bats common in the vicinity of Cedric and Tier streams (PES 0161 file, NLAO). During February 1997 Graeme Ure surveyed eight sites in the vicinity of Cedric Stream on the Sabine-Speargrass track (upper Howard Valley) using automatic and hand-held

bat detectors. Ure recorded one call sequence at one site, and multiple calls at another site. This survey effort followed a bat recorded by Rhys Buckingham near the Cedric Stream swing-bridge earlier in 1997 (Ure 1998c). Long-tailed bats have been recorded from the Howard catchment in more recent times. Bats were recorded in the upper Howard in 2007 (R Grose pers com) and one bat pass was recorded on an automatic bat box, by DOC staff, at the Howard/Porika road junction in March 2009 (Steffens 2009b).

12.2.2 Murchison zone

(i) North Murchison

The first record of bats in North Murchison is from the middle reaches of Sandstone Creek, a tributary of the Owen River in 1980 (Alison Giles in Gaze 1998).

Ure surveyed two sites in Frying Pan Creek (Owen River catchment) using automatic bat detectors during January 1999 and recorded a very faint "potential" bat pass (Ure 1999b). In December 1999 L. Carter reported seeing a bat fly in front of a vehicle being driven along SH6 near Coal Creek, 1.2km west of the Owen River (Ure 2000). Ure recorded ten bat passes on automatic bat detectors at two sites about 3km upstream of the Fyfe gorge during January 2000 (Ure 2000). West of the Owen catchment, James McConchie saw one bat about 1.5 km south-west of Lake Jeanette in the Matiri Valley during October 1999. This followed a 1995 observation reported by a hunter 3km further south at Lake Bradley (PES 0161 file, NLAO).

The most recent bat record in North Murchison was from the Owen Valley East Road, where DOC staff recorded one bat pass during a transect survey in 2007 (Steffens 2008a).

(ii) South Murchison

There are historical records of bats in several of the valleys east and south of Murchison, giving the impression that bats must have been widespread in South Murchison. The earliest record from this area is from 1927, and relates to a report from the town of Murchison (Dwyer in Gaze 1998). In addition, a local remembered seeing bats at Horse Terrace, Matakitaki in the period 1934 to 1956 "often in the dusk, we would throw stones out from the terraces and watch the bats chase after them" (Cecil Wills PES 0161 file, NLAO); and in 1957 and 1958 bats were observed in the North Branch of the Tutaki and in the Mangles Valleys to the east of Murchison (Dwyer in Gaze 1998).

The most recent bat record from the Matakitaki Valley was from 1km north-west of the Horse Terrace Bridge, where D Seelye heard one bat pass through a handheld bat detector during a walking transect in 2001. This follows a series of records from the area around the Glenroy-Matakitaki confluence and Upper Matakitaki area: in January 1998, M. Graham reported seeing five bats flying around the Glenroy/Matakitaki confluence at dusk (PES 0161 file, NLAO); during January 1997 Caroline Moreton recorded two bat passes on an automatic bat detector set beside

Brooks Road, Upper Matakitaki; and in February 1997 Moreton recorded twelve bat passes at the Glenroy River bridge, near the confluence with the Matakitaki. Bats have also been recorded further north and east in the Matakitaki catchment in recent times: during September 2000 Graeme Ure recorded nine bat passes over three nights of surveying with an automatic bat detector in the upper reaches of Six Mile Creek, a tributary to the lower Matakitaki (Ure 2000); and in January 1998 Ure recorded two bat passes beside Mole Stream, 2km from the Matakitaki confluence (Ure 1998c). There is also a 1996 file reference to an observation near Matakitaki Lodge on Peter Oxnam's property (PES 0161 file, NLAO). However, no bats were recorded in the Matakitaki during transect surveys in 2007 and 2008 (Steffens 2008a).

There are several historical records of bats from the lower Maruia Valley. In 1988 Rob Gordon, a farmer in the Maruia Valley, reported three sites where bats were present about Paenga, north of the Shenandoah Saddle. One site was in the Flat creek catchment (west of Nelson Lakes area) about 2km south-west of Paenga; another was a site in an old matai tree near the river at Paenga; and another site was amongst trees on a cliff on the west bank of the Maruia about ten miles south of Maruia Falls, opposite Moonlight Lodge (PES 0161 file, NLAO). There have been a substantial number of bat records from the Maruia Valley and tributaries in more recent times. In November 1999 Graeme Ure recorded three bat passes at the Rappahannock bridge south of the Shenandoah Saddle in the Warwick valley (PES 0161 file, NLAO). This follows a report of two to four bats being seen flying over riverbed and pasture near the Rappahannock and Warwick river confluence during October 1998 (Greg Robinson pers. obs.). North of the Shenandoah Saddle during November 1998 Ure counted forty-two bat passes over a half hour period (using a handheld Bat-box) on the west bank of the Maruia River, 300 metres south of the Maruia Falls, - technically just over the river from Nelson Lakes Area (Ure 1999b). In April of 1998 Ure recorded one bat pass on Mt Mantell, in the headwaters of Pea Soup Creek about 6km north-north-east of Shenandoah Saddle (Ure 1998c). A number of long-tailed bat passes were recorded as recently as 2007-2009 along Pointons Road, West Bank of the Maruia - again technically just outside of the Nelson Lakes Area (Steffens 2008a, 2009b).

Long-tailed bats were recorded from the Four Rivers Plain, Murchison on 6 October 1992 when a bat roost was found in a felled willow tree beside the Buller River (estimated number of bats that exited the roost in the felled tree was 20-30) and DOC staff counted >30 bat passes from this site in 1993, with a further five passes being recorded in 1995 (PES 0161 file, NLAO). D Seelye recorded 28 long-tailed bat passes over three nights on Four Rivers Plain in 2009 which indicates that this area remains a strong-hold for bats.

Other recent bat records from South Murchison include: a 1996 file note referring to Hinehaka road 3km west of Murchison as a "hot spot" for bats; three bats were observed 2km south of Blue Rock in the Blackwater Valley (a tributary to the Mangles River) during February 1991 (P Wilson, National Bat database); and there is a 1996 file reference to an observation

by Ken Simpson that bat activity near Harte Creek in the lower Mangles may indicate a bat roost (PES 0161 file, NLAO). No long-tailed bats were recorded in the Mangles during the 2007 and 2008 transect surveys (Steffens 2008a).

12.2.3 Southern Mountains zone

A historical bat record from the Southern Mountains relates to a sighting in November 1958 from Morgans Flat in the D'Urville Valley (Dwyer in Gaze 1998). Since 1980 historical records are restricted to bat remains being observed in the "stomach contents of trout taken in the Rainbow Valley and D'Urville" (Crouch 1981).

More recently, in February 2000 Graeme Ure recorded three bat passes beside the Wairau River about 1km north of Dip Flat in the eastern Southern Mountains (Ure 2000). No bats were recorded during surveys along Rainbow Road in 2007 and 2008 (Steffens 2008a).

12.3 TRENDS IN ABUNDANCE AND DISTRIBUTION

O'Donnell (2000) noted that in the St Arnaud area in the early 1990s that bat "counts appear to reflect significant declines" in the bat populations "over the past 150 years". At this time, very few bats were thought to remain in the St Arnaud, Big Bush and Howard areas. The status of bats in these areas appears to remain much the same today, although it is likely that the Tophouse and St Arnaud populations of bats are locally extinct - whereas the bat population in the Howard remains low in number.

During the bat surveys carried out around Murchison by DOC staff in 1993 and 1994, a local ranger, Dave Seelye, noted that "local knowledge tends to show that bats were more prevalent 20 years ago, very few are sighted today" (PES 0161 file, NLAO). Cecil Wills (2007) and another former resident of the Matakitaki agreed that as far as they knew in 2007 "bats had vanished from the Matakitaki". Since the early 2000s, bats have ceased being observed in the Matakitaki, Mangles and Matiri valleys which indicates that the decline in bat abundance/distribution has continued over the past twenty years and the bat populations in these areas are likely to be close to extinction.

Although greatly diminished in size, the Nelson Lakes Area long-tailed bat populations remain strongest around Four Rivers Plain, Murchison and in the lower Maruia, with Rotoroa and the Howard holding small populations also. The occasional bat is recorded elsewhere.

12.4 THREATS

It is unclear why long-tailed bat populations in the Nelson Lakes Area have been constricted to the Murchison, Rotoroa and Howard areas but the most likely causes of decline nationally are loss of roosting trees

following forest clearance and predation by introduced animals (O'Donnell 2000). Such introduced animals include: rats, stoats and feral cats. Bats are especially vulnerable to predation while in torpor in their roosts during the day (Molloy 1995). Competition for food with wasps might be a problem also (Molloy 1995).

12.5 INFORMATION NEEDS

- Are there any substantial 'manageable' long-tailed bat populations remaining in the Nelson Lakes Area i.e. around Howard Valley, Rotoroa or Murchison?

12.6 RECOMMENDED MANAGEMENT

If the opportunity presents itself, protect roosting bats at Rotoroa (or elsewhere) as part of an ecological restoration project.

13. Other species

13.1 MOHUA/YELLOWHEAD *(Mohoua ochrocephala)*

NZ Threat Classification System ranking: Nationally Vulnerable (Miskelly et al. 2008).

Mohua were a conspicuous species around Rotoiti and Rotoroa until the late 1920s. The observations of Dudley Win (Bull 1965) and Moncrieff (1925) record that mohua were abundant in the bush about Lake Rotoroa between 1900 and 1925. Moncrieff records that on a visit to Lake Rotoroa in 1924, apart from the tui, yellowheads were the most common species seen (1957). At Lake Rotoiti in 1927/1928 mohua were seen "in flocks of up to 30 or 40 behind the boatsheds at the northeast corner of the lake, but at that time they started to diminish" (Ted Fitzsimmons 1978). In 1944 six mohua were recorded in an area of forest near Gowan Bridge (Stidolph 1946). Mr D.D. Cummings recalled that yellowheads were plentiful in the Speargrass and Howard Valleys in the mid 1950s (Bull 1965).

The last record of mohua at Lake Rotoiti was in 1959, when mohua were reported by rangers (Butler 1991) and at Lake Rotoroa in 1954 when Mr McConochie stated that "there was a very fine colony of bush canaries at Lake Rotoroa" (Moncrieff 1957).

In the Southern Mountains, yellowheads were last reported from the D'Urville Valley in 1962 (Host 1965).

This species is now 'extinct' in the Nelson Lakes Area.

13.2 PARAKEETS/KAKARIKI *(Cyanoramphus* sp*)*

13.2.1 Yellow-crowned parakeet *(C. auriceps)*

NZ Threat Classification System ranking: Not threatened (Miskelly et al. 2008).

In pioneer days yellow-crowned parakeets were most abundant, moving around with mobs of yellowheads (Moncrieff 1957). Mr Dudley Win recalls that hundreds of parakeets were found near Lake Rotoroa about 1900 (Bull 1965). Parakeet abundance appeared to decline suddenly about 1920 according to A. McConochie of Lake Station (Bull 1965). Even with such a decline, one could see as many as 30 parakeets feeding together on Rotoroa lakeside in the mid 1920s (Moncrieff 1925). In 1965 several flocks of yellow-crowned parakeets of up to seven birds were observed in the D'Urville Valley (Adams 1965) and flocks of two or threes could be observed in the Tiraumea (Moncrieff 1957). In the mid 1960s Bull (1965)

noted that despite the virtual disappearance of parakeets between 1908 and 1920, these birds “are not uncommon in the Park today”. Parakeets were observed in good number in the Matiri during the 1980s bird survey, but were not so abundant in the Fyfe and Owen valleys (Spurr 1985).

During Butler’s Nelson Lakes National Park bird survey in 1978-1985, he noted that yellow-crowned parakeets have a very limited distribution in the Park - with most birds recorded in the D’Urville and Sabine valleys, particularly at the head of Lake Rotoroa, and in the Matakitaki (Butler 1991).

Yellow-crowned parakeets are still observed in the Nelson Lakes Area today, with recent records from the Fyfe/Sandstone rivers (2009), Travers Valley, East Sabine and D’Urville valleys (Ure 2000), Lakes Rotoroa and Rotoiti (2009), Speargrass (2006) and the Red Hills, Mt Richmond Forest Park (2004). However, as described by Bull in 1977, “yellow-crowned parakeet appear to be widely distributed but in small numbers”, and by Butler et al in 1990 “there are no sites (in the Nelson region) where its presence can be assured”.

This species is classed as ‘rare’ in the Nelson Lakes Area.

13.2.2 Red-crowned parakeet *(C. novaezelandiae)*

NZ Threat Classification System ranking: At Risk - Relict (Miskelly et al. 2008).

Red-crowned parakeets were noted by Handly (1895) as being the most plentiful species of parakeet in the late 1800s. However, by 1924 the switch in species dominance was noted in such localities as Lake Rotoroa where the yellow-crowned parakeet was observed in greater abundance than its larger cousin (Moncrieff 1957). Parakeets were noted as being on the increase in 1938 (in the Nelson Province), although the red-fronted species appeared to be less numerous than its smaller relation (Moncrieff 1938).

Red-crowned parakeet sightings are few and far between in the Nelson Lakes Area since the 1930s - and even when using taped parakeet calls to attract birds during Butler’s 1978-1985 bird survey, no red-crowned parakeets were observed (Butler 1991). However, a very authentic sighting of a red-crowned parakeet was recorded in 2000 at John Tait Hut, Travers Valley where the observer had a “good 30 second view of the bird which had red extending over the entire top of its head” (Bioweb). This sighting gives us hope that the species may still exist in the Nelson Lakes Area but in such low abundance that’s its demise is surely eminent (if not already locally extinct).

This species is classed as ‘critically rare’ (possibly ‘extinct’) in the Nelson Lakes Area.

13.2.3 Orange-fronted parakeet *(C. malherbi)*

NZ Threat Classification System ranking: Nationally Critical (Miskelly et al. 2008).

As noted by D.D. Cummings and A.H. McConochie (*in* Butler 1991) orange-fronted parakeets were frequently seen in Nelson Lakes National Park in the early 1900s, always in small numbers together with flocks of yellow-crowned parakeets. However, orange-fronted parakeets must have been very rare by the 1950s as Moncrieff, an avid bird watcher in the Nelson Lakes area, noted that "no record of this species is to hand", although "this species was probably in the park area" (Moncrieff 1957). The last record of orange-fronted parakeets in the Nelson Lakes Area was from the D'Urville valley in 1965 when Adams (1965) identified two orange-fronted parakeets near Morgan's Hut.

This species is now considered to be 'extinct' in the Area.

13.3 SOUTHERN-CRESTED GREBE *(Podiceps cristatus australis)*

NZ Threat Classification System ranking: Nationally Vulnerable (Miskelly et al. 2008).

What is probably the first published observation of the Crested Grebe in New Zealand originates from Lake Rotoroa - in the account given by Heaphy on 11 February 1846 at Lake Rotoroa where "grebes and divers with other water-birds, were floating about on the surface" (Westerkov 1972). A juvenile specimen of Southern-crested grebe was sent to the Auckland museum by Mr Cheeseman, collected from Lake Rotoiti, in 1881 (Moncrieff 1957). Mr Dudley Win noted 20 or so crested grebes on Lake Rotoroa around 1900 (in Bull 1965) and Moncrieff observed a pair nesting on the lake in 1928 (Moncrieff 1957).

The last record of crested grebe on Lake Rotoiti was from 1952 when M.M. Small saw the species when surveying the lake (in Westerkov 1972) and the last record on Lake Rotoroa was by Butler (1991) who noted that two sightings of a single bird were recorded at the head of the lake during the 1978 - 1985 bird survey in Nelson Lakes National Park. Westerkov (1972) indicated that Southern-crested grebe had ceased to breed at Lake Rotoroa some time in the 1950s/60s but still occurred on the lake as occasional visitors, which is supported by Butlers (1991) observations. No known records of Southern-crested grebe exist in the Nelson Lakes Area since 1985.

This species is classed as 'extinct' in the Nelson Lakes Area.

13.4 NEW ZEALAND PIGEON *(Hemiphaga novaeseelandiae)*

NZ Threat Classification System ranking: Not Threatened (Miskelly et al. 2008).

In the Nelson Lakes Area records of New Zealand pigeon (Kereru) are most numerous from Lake Rotoroa, with the first record being by Heaphy in March 1846 who "in the course of a day and a half obtained, at the

Rotoroa, without any trouble, six pigeons" (Heaphy 1846). Adams (1965) observed a few pigeons at the lower end of the D'Urville valley in 1965 and noted that numbers would alter seasonally (changing food abundance/ type). Bull (1965) noted that native pigeons were sometimes seen at St Arnaud but more commonly around Lake Rotoroa. A study carried out by Clout et al (1986) at Lake Rotoroa, looked at habitat use and spring movements of pigeons, and concluded that the lakeside habitat at Rotoroa might be an important over wintering area not only for local pigeons, but also for some which breed in forests outside the National Park. A further study carried out by Etheridge (2005) found that the New Zealand pigeon population at Lake Rotoroa is relatively stable (compared to the earlier study of 1983-85). Both studies noted that pigeon abundance at Lake Rotoroa was greatest during the winter months.

Further afield, New Zealand pigeon were noted in abundance in the Matakitaki in 1865 (Brown 1976) and in the Maruia in 1910 (Maruia Jubilee Committee 1980). They were observed during bird surveys in 1982/83 up the Fyfe, Owen and Matiri valleys (Spurr 1985). During the Nelson Lakes National Park bird surveys of 1978-1985, pigeons were recorded in the Matakitaki valley and one observation was made in the Glenroy (Butler 1991). Recent records outside of Lake Rotoroa/D'Urville include regular sightings in the Owen and around Murchison, a sighting from the upper Fyfe in 2007 and occasional sightings in St Arnaud (one bird was seen as recently as 2007).

New Zealand pigeon are classed as 'localised' within the Nelson Lakes Area with a stable population at Lake Rotoroa.

13.5 GREY DUCK *(Anas supercilious)*

NZ Threat Classification System ranking: Nationally Critical (Miskelly et al. 2008).

Moncrieff (1957) summarised grey duck abundance in Nelson Lakes National Park during the 1950s - as being a fair population at various periods. Bull (1965) described how an observer was likely to encounter up to forty grey duck at the head of Lake Rotoiti in 1965, a species that also occurred at Lake Rotoroa. Grey duck were observed up the Travers Valley in 1986 by J. Jolly (Wildlife Service). In 1991 Butler stated that grey duck occur "throughout Nelson Lakes National Park on the two major lakes and in all river valleys almost to the upper limit of the forest" (Butler 1991). Butler (1991) also noted that the species undergoes widespread movements and may be migratory; and although interbreeding with mallard may occur at the lakes, the grey duck of the rivers are invariably pure-bred."

Grey duck were recorded in abundance up the Matiri (15 birds on Lake Matiri; 13 birds on Lake Jeanette) during the 1982/83 Forest Service survey and were noted as being the second most abundant freshwater bird in the survey area (Spurr 1985).

No survey work has been carried out for grey duck in the Nelson Lakes Area since 1985 and such work is recommended to ascertain their current status in the Area. Only a few birds have been recently noted in remote, backcountry locations such as the Fyfe River, including ducklings (2008), but they have certainly not been observed in abundance. Grey ducks are no longer observed on the Lakes. It appears that the grey duck population in the Nelson Lakes Area has followed the national trend noted by Miskelly et al (2008) "that the decline of the grey duck has apparently accelerated recently" - and hence the change in their threat classification since 2005 from 'Nationally Endangered' to 'Nationally Critical" in 2008. Competition and genetic introgression from the introduced mallard are the main causes behind the grey ducks' rapid population decline. Without immediate and innovative management, pure-bred grey ducks are likely to be extinct in the New Zealand region within a decade (Miskelly et al 2008).

This species is classed as 'critically rare' in the Nelson Lakes Area.

13.6 SOUTH ISLAND BROWN TEAL, SOUTH ISLAND SADDLEBACK AND SOUTH ISLAND KOKAKO

13.6.1 South Island brown teal *(Anas chlorotis)*

Mr D Win recalls that teal (probably brown duck) were common on ponds and slow-moving creeks at Rotoroa about 1900 (Bull 1965). Moncrieff (1957) noted that brown duck *(Anas chlorotis)* "formerly inhabited Nelson Lakes National Park but has been absent for years". Mr McConochie, Lake Station, stated in 1957 that the last brown teal that he saw was in the Hope River "some twenty years ago" (Moncrieff 1957). Brown teal are now 'extinct' in the Nelson Lakes Area and their NZ threat classification is 'nationally critical' (Miskelly et al 2008).

13.6.2 South Island saddleback *(Philesturnus carunculatus carunculatus)*

In 1895 Handly described the range of the saddleback as becoming "circumscribed, and it is now confined to a few out-of-the-way localities, such as Tophouse" (Handly 1895). Mr Win, formerly a settler at Owen River, commented that saddlebacks were numerous about 1870 but had become rather scarce at Lake Rotoroa about 1900 (Bull 1965). The last record of saddleback in the Nelson Lakes Area was made by Mr Fitzsimmons who saw a single saddleback at Lake Rotoiti "some twenty years ago" (late 1930s) (Moncrieff 1957). This species is 'extinct' in the Nelson Lakes Area and their NZ threat classification is 'At Risk – Recovering' (Miskelly et al 2008).

13.6.3 South Island kokako (*Callaeas cinerea cinerea*)

Butler (1991) noted that kokako were still numerous in the district at the time of the early explorations. However, the population must have crashed by 1900 as Mr D. Win recalls seeing only a single kokako at Lake

Rotoroa at about this time (Bull 1965). Moncrieff (1957) explains how she went in search of the native crow in 1926 as it had been rumoured that it still existed in the Park area. Although Moncrieff (1957) did not locate any kokako at this time, she mentioned that a Mrs Maxwell of Port Nelson observed the bird while staying at Lake Rotoroa Boarding house - and how it had apparently been driven out of its normal haunts by the Murchison Earthquake in 1932.

While on a hunting trip, shortly after World War I, N. McConochie observed an orange-wattled native crow up the Matakitaki (McConochie 1966). About 1954 Cecil Wills' father sighted a pair of strange birds likely to be kokako, in the bush on Horse Terrace, in the Matakitaki (Wills 2007). Cecil Wills herself believed that in 1957 she "may have seen one of the shy grey birds near the water intake to the Old Glenroy Gold Company's race" (Wills 2007).

Further possible sightings were recorded up to 1987 in the Rotoroa and Howard areas but these sightings were unconfirmed. No sightings, possible or otherwise, have been recorded since this time. South Island Kokako is 'extinct' in the Nelson Lakes Area and their NZ threat classification is 'Extinct' (Miskelly et al 2008).

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