

THE STATE OF NEW ZEALAND'S BIRDS 2007

Special report
New Zealand bird atlas

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A NEW BIRD ATLAS REVEALS WINNERS AND LOSERS

COMPILED AND EDITED BY KERRY-JAYNE WILSON

This report on the state of New Zealand's birds 2007 highlights the more important changes in bird distribution that have been identified by the recently-published *Atlas of Bird Distribution in New Zealand 1999-2004*. Our emphasis here is on those endemic species that have declined in range over the 20 years since the first atlas was produced and those introduced species that are expanding into new areas.

GUEST EDITORIAL

Modern ornithological research in New Zealand commenced with the formation of the Ornithological Society of New Zealand (OSNZ) in 1939, thus enabling a growing number of enthusiasts to combine their talents to gather information on New Zealand's birds.

Advances in our knowledge of birds have generally focused on descriptions of breeding and living habits, and the tallying of numbers. Such studies have rarely encompassed the entire national or international populations of particular species, and until recently the distribution of most New Zealand birds was poorly known.

The creation of larger and more comprehensive datasets was stimulated with the rise of the computer as a storage and manipulative tool from the 1960s. Based on the first plant and bird atlases in Britain, and the foresight of Peter Bull in New Zealand, the first New Zealand *Atlas of Bird Distribution* was compiled between 1969 and 1979. Even allowing for the mapping and computer difficulties of the time, the presentation of those detailed distributions for the most

commonly seen New Zealand birds was an eye-opener for both ornithologists and wildlife managers alike. For the first time there was a benchmark against which to judge changes in distribution.

Retrospectively, that first atlas provided a cautionary flag for those living in an electronic age, and dealing with records from long-term studies. The agency entrusted with those electronic files, decided as a cost cutting measure to not continue their storage, and they were destroyed. Fortunately, OSNZ still maintained the original field record cards, and is again creating an electronic file for that first atlas survey. This recompilation will enable comparisons to be made in the future which were impossible to include in the new Atlas.

Regrettably, the maintenance of long-term studies of birds in New Zealand is generally the result of single-minded individual endeavours, rather than institutional foresight and planning. The two bird distribution projects have demonstrated the importance and value of such long-term commitment by the Ornithological Society through the clear



documentation of rapid changes within the New Zealand avifauna.

Having discovered that there is change, it is important to not only quantify the extent of that change, but also to understand the processes causing change. Some of these may be behavioural, or the influence of predation and competition, but there is plenty of evidence to show that change in habitat availability is playing a significant role in modifying the distribution of our birds. This was why one of the important goals of the 1999-2004 surveys was to relate species presence to the habitats used. This may be a coarse way to start a national investigation, but an examination of differences in habitat

relationships between tui and bellbird, for example, may start to explain differences in their national distributions.

Habitat use is at the core of bird community structure and maintenance. Changing habitats have exposed parts of the country to the loss of their endemic birds, and replaced them with both human-introduced, and natural invaders, which are now the most common birds in the open farmland of modern New Zealand. The data gathered in the new atlas indicate these newcomers have barely penetrated the original New Zealand habitat mix, but are overwhelmingly dominant in the new, man-made landscape that characterises so much of the modern countryside.

Where suitable habitats remain, and as demonstrated in predator-fenced areas and sites subject to predator control, embattled New Zealand endemics not only survive, but also expand their distribution and increase in numbers. Even some of the most common endemics however, are exhibiting signs of decline within remaining suitable areas. While much effort nationally is focused on endangered endemic species such as kokako, kakapo and black stilt, the most alarming distributional decline recorded in the atlas is that displayed by the North Island weka. A close examination of the atlas shows other species will soon fare poorly unless significant management changes occur.

The principal lesson of the atlas surveys is probably the speed at which distributions have changed across a wide range of species. Even those that are expanding, tell an important story, because in many cases we have no data to explain why they are expanding. Perhaps if we did, the results could help guide efforts to save those in decline.

At a time when the environment continues to change, it is important that the questions presented by the atlas data are explored further. Can we afford not to undertake such explorations? The membership of the Ornithological Society

Top Left: Remnant of dense, multi-species podocarp forest, with fringing red beech (*Nothofagus fusca*), isolated in farmland at Ball's Clearing, inland Hawkes Bay, North Island. Loss and fragmentation of habitats are major drivers of changes in bird distribution.

Left: Song thrush (*Turdus philomelos*), a successful introduced passerine found in modified and natural habitats throughout the country. Photo by **Jim Briskie**

has voluntarily contributed millions of dollars of time and resources to demonstrate these important benchmarks. Will the environmental managers of the country now provide the vision, and actions for change, that will add value to this benchmark contribution, and make their slogan of the "Return of the Dawn Chorus" an increasing reality? Perhaps the Ornithological Society will be able to judge in another 20 years!

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COMPARATIVE BELLBIRD ssp & TUI

Bellbird ssp

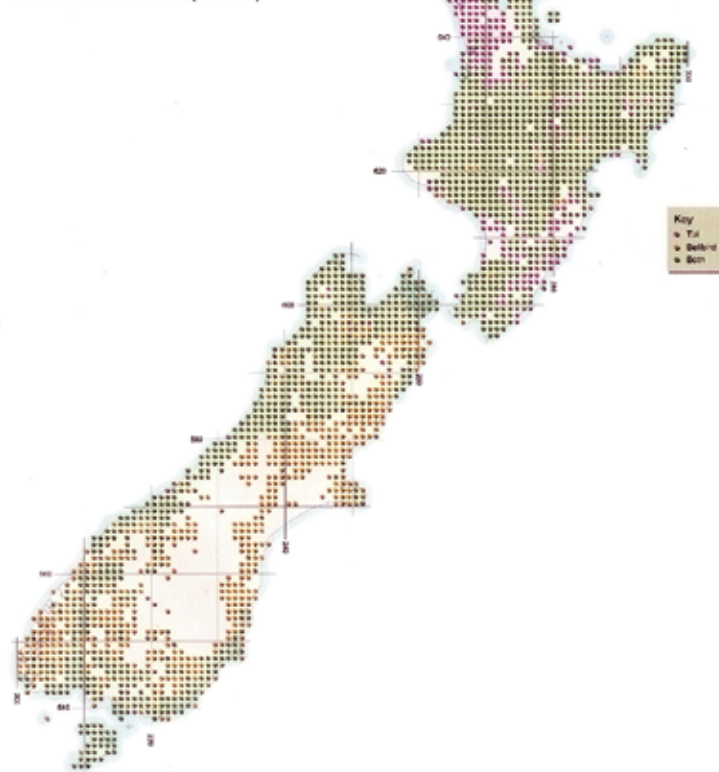
2013 squares where observed (65.40%)

9940 sheets recorded (31.24%)

Tui

1853 squares where observed (60.20%)

10156 sheets recorded (31.92%)



INTRODUCTION

The Atlas of Bird Distribution 1999-2004 was published by the Ornithological Society of New Zealand (OSNZ) in August 2007. This massive tome is the result of five years of fieldwork by over 850 voluntary observers (mostly members of OSNZ), who between them contributed 31,817 record sheets with a total of 1.5 million distribution records.

For the survey, the country was divided into a grid of 10 km × 10 km squares. Record sheets were submitted from 96.4% of the 3192 grid squares in New Zealand. Not a bad effort for a Society with about 1000 members! Fieldwork for the second atlas began in December 1999, exactly 20 years after observations for the first atlas finished. Although there was anecdotal evidence that some species were undergoing significant changes in distribution, the new atlas presents the first robust evidence we have for the extent of such changes.

The atlas contains such a wealth of information it is impossible to do justice to all the issues it raises. Two matters of particular concern are: the decline in range and abundance of many endemic species, and the expansion of range of some introduced and recently colonising species. Eighty-five percent of non-marine birds and 44% of marine birds native to New Zealand are endemic, that is they breed nowhere else in the world. Yet, the most commonly seen birds in most of New Zealand today are species deliberately

introduced by European settlers, or have colonised New Zealand by their own powers of dispersal in the wake of wide-scale habitat change.

The emphasis in this report is on those endemic species that have declined in range and those introduced or recently colonised species that have increased their distributions in New Zealand. This report discusses only those changes that have taken place on the New Zealand mainland and the immediately adjacent offshore islands. The distributions of Chatham Island birds were only mapped in the new atlas and neither atlas maps bird distributions on the Kermadec or sub-Antarctic Islands. The state of Chatham and sub-Antarctic birds was discussed in *The State of New Zealand Birds (SONZB) 2005* and the Kermadec species in *SONZB 2006* reports.

We hope this report will highlight those endemic species for which further conservation action is required and those post-settlement arrivals that are expanding in range and have the potential to further invade indigenous ecosystems or compete with native species. We trust it will raise people's awareness of the ongoing changes in our bird fauna, the plight of many endemic species, and provide research and conservation organisations with direction so that they can focus on solutions to the problems we identify.

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THE KEY FINDINGS

New Zealand's avifauna continues to change with a continuing reduction in range of many endemic species and increases in the distributions of many introduced birds.

Threatened and endangered species that are being actively managed by the Department of Conservation are holding their own, and most have increased in distribution between the two atlases. However, other endemic species urgently require management to arrest declines in range.

The second atlas provides the first robust evidence for marked declines in endemic species such as blue duck, kaka, weka, and yellowhead.

Other native species remain widespread, but their range has declined between the two atlas surveys. Species in this category include banded dotterel, wrybill, long-tailed cuckoo, rifleman, and New Zealand pipit.

Almost all species belonging to orders or families endemic to New Zealand remain at risk of extinction; this includes all kiwi species, kakapo, kea, kaka, rock wren, kokako, stitchbird, and yellowhead.

Changes in the distribution of waterfowl are especially noticeable. While some endemic species such as blue duck and brown teal have declined, others,

notably paradise shelduck and New Zealand scaup have increased. There have been huge increases in the ranges of most introduced ducks and geese. Eutrophication of lowland lakes and other habitat changes explain some changes in waterfowl distribution.

New species continue to colonise New Zealand, and the rate at which these species are arriving shows no sign of decline.

The second atlas provides the first robust evidence for the increase in range of a number of introduced and recently colonising species. Some of these species have increased their range hugely between atlas surveys.

Climate change is likely to result in further changes in the distribution of some bird species. The southwards extension of the grey ternlet is perhaps related to global warming. Two alpine birds, kea and rock wren, have also declined but this is more likely to have been caused by introduced predators than climate change. Natural spread from their northern release sites is also a more likely explanation for the southern extension of distribution of the introduced feral turkey, guineafowl and Barbary dove.

The *Atlas of Bird Distribution* provides information on changes in distribution for only a few species of seabirds. Many seabirds are under threat; their status was discussed in *The State of New Zealand Birds* (SONZB) 2006.

CHANGES IN THE DISTRIBUTION OF ENDEMIC TAXA

Of the 66 endemic species or subspecies for which it was possible to compare the distribution maps in both the first and new atlas, 15 taxa showed an increase in range, 26 showed no measurable change, and 25 had become more restricted in distribution. For the 30 non-endemic native taxa where distributions could be compared, 12 had increased in range (nine are species that had colonised New Zealand since human settlement), while only two, Australasian bittern and grey duck, had declined.

In addition to those 15 endemic species that had increased in range between atlases, seven other endemic species were so rare in the 1970s they were not mapped in the first atlas, but with intensive management have increased in range and consequently appear in the new atlas. These are: little spotted kiwi, takahe, shore plover, orange-fronted parakeet, both North and South Island saddlebacks, and the stitchbird.

There have been particularly marked changes in the distribution of many of the species that belong to orders, families or subfamilies that are endemic to New Zealand and for these species the declines out-number the increases. The North Island brown kiwi showed a reduction in range while the distribution of the other kiwi taxa is little changed. The critically endangered kakapo occupied such a minute distribution in both atlases its distribution appears unchanged. The kea, both subspecies of kaka, North Island kokako and both New Zealand wren taxa have suffered a reduction in distribution. Of the three species in the endemic subfamily Mohouinae, only the whitehead had not become more restricted, while the yellowhead showed an alarming decline over the past 20 years.

The only taxa belonging to endemic families that have increased in range are the two saddlebacks and the stitchbird. In the 1960s these three taxa were each confined to a single island. Since then these three species have been translocated to a number of predator-free sites, mostly small islands. In the first atlas the South Island saddleback was present in only two squares and the North Island species in five. In the new atlas the South Island saddleback was recorded in 11 squares and the North Island form in 18. The stitchbird, the sole member of the recently described endemic family Notiomystidae was confined to Little Barrier Island at the time of the previous atlas, but was recorded at six sites in the new atlas.

All but three of the endemic species that have declined in range are discussed elsewhere in this report. The three species not discussed here are the black-billed gull, black-fronted tern and fairy tern, which were all featured in the SONZB 2006 report. There remains serious concern for the future of these three species.

What of those endemic species and subspecies that have increased in range between the two Atlas surveys? The paradise shelduck is one of few endemic birds that is now more numerous than it was before human settlement. It favours

Birds to Watch

The atlas draws attention to three groups of birds whose distributions need to be monitored.

1. *Native species that are in decline and require urgent conservation action.* This includes: Fiordland crested penguin, blue duck, brown teal, North Island weka (and less urgently other weka subspecies), wrybill, black-billed gull, black-fronted tern, kea, kaka (both subspecies), long-tailed cuckoo and rock wren.

2. *Endemic species that are under management.* Most species in this group are increasing but management needs to continue. This includes: North Island brown kiwi, rowi (Okarito kiwi), black stilt, New Zealand dotterel (both subspecies), shore plover, fairy tern, orange-fronted parakeet, stitchbird, kokako and yellowhead.

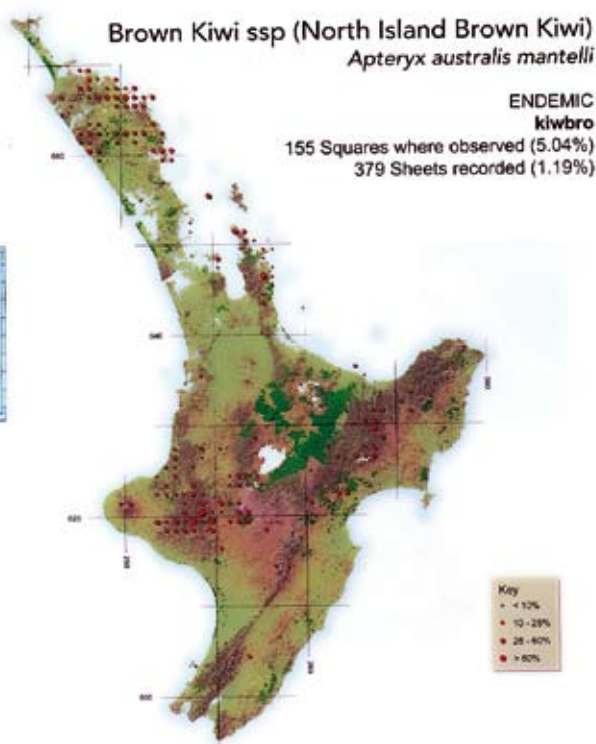
3. *Introduced and recently colonised species that have significantly increased their range, or established wild populations between the two atlases.* This includes: Canada goose, feral goose, chestnut-breasted shelduck, Muscovy duck, feral turkey, guineafowl, Barbary dove, sulphur-crested cockatoo, and eastern rosella.



Above: Australasian crested grebe (*Podiceps cristatus*).

Since the last atlas all three species of grebes have increased in distribution, with the crested grebe expanding its range to Central Otago and lowland Canterbury.

Photo by Kerry-Jayne Wilson



open country which prior to settlement was limited in area. It has continued its spread so that it now occurs in virtually all but the most heavily forested areas.

While the atlas indicates the red-billed gull has increased in range, recent counts suggest that numbers in its largest colonies have declined. Little shags and spotted shags are two other widespread endemic taxa that have also apparently increased in range.

Somewhat surprisingly all three species of grebes have done well. In the 1980s the total population of the endemic New Zealand dabchick numbered 1200-1500 birds. The species remains effectively restricted to the North Island, but has now spread over much of that Island, missing only from densely forested and mountainous areas, especially the Whanganui River area and the mountain chain running between the Tararua and the Urewera region. Three records of dabchicks in the Southern Lakes region require further investigation but perhaps may herald recolonisation of the South Island. In the first atlas the native crested grebe was restricted to Fiordland, a few moraine lakes on the West Coast and the Canterbury high country. In the new atlas the Fiordland population appears to have declined but they have also spread into Central Otago and coastal Canterbury. The Australasian little grebe has only recently colonised New Zealand and is discussed in a later section of this report.

Perhaps the most gratifying increases are the remaining nine species, all of which had declined in range in the past. This includes the variable oystercatcher, the Northern and Southern New Zealand dotterels and the New Zealand falcon (see later sections). Arguably the most dramatic increase has been with the New Zealand scaup which was threatened 20 years ago but since has spread into modified lowland habitats, even becoming established in Christchurch city during the last decade. Four forest-dwelling species, kereru, North Island robin, bellbird, and tui have all increased in distribution since the previous

atlas. As all make some use of non-native habitats, it is perhaps the ability of these species to use exotic vegetation that may be driving their spread.

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Kiwi

All five species of endemic kiwi are threatened with extinction. The critical factor affecting kiwi populations is predation by introduced mammals, especially stoats killing chicks, and dogs and ferrets killing adults.

The original Atlas did not distinguish between the three species then recognized, because so little was then known about kiwi. Five kiwi species are now recognised and with greatly increased knowledge, it is now clear that North Island brown kiwi have disappeared from many parts of the North Island, especially southern Northland and the King Country. New records of this kiwi in the Coromandel and Mt Taranaki reflect increased community interest in kiwi conservation, but the Wairarapa record is of a newly translocated population. The former South Island brown kiwi has now been divided into two species, the rowi and the tokoeka. The distribution of the rowi has remained stable, though highly restricted near Okarito, but a new management site has been added in the Marlborough Sounds. In contrast, the increased distribution of tokoeka in Fiordland in the latest Atlas likely reflects greater survey efforts and more work is needed to determine the status of this population. The range of great spotted kiwi is similar between atlases, if 1970s records from the Southern Alps north of about Arthur's Pass were assumed to be of this species. Finally, the little spotted kiwi range has increased through translocations from Kapiti Island to five offshore islands, and to Karori Sanctuary in Wellington.

Considerable research, monitoring and management has been carried out since 1991 by the Department of Conservation, community groups and iwi, aided by exceptional sponsorship from the Bank of New Zealand Save the Kiwi Trust. This work has seen rapid increases in most managed populations, but the majority of kiwi populations remain unmanaged and so continue to decline.

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Fiordland crested penguin

This penguin was seen in 48 squares in the new atlas and 50 in the previous atlas. It is hard to assess if the species has undergone any change in distribution as its core range in remote Fiordland and Stewart Island was seldom visited during either atlas. The Fiordland crested penguin may have now pipped the yellow-eyed penguin for the dubious honour of being the world's rarest penguin. This is a species in dire need of a more detailed assessment of its status and conservation needs.

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WATERFOWL

If they eat grass they are doing fine, if they were rare they are now more so. These are two take away messages from the changes in waterfowl distribution revealed by the two atlases.

Two endemic waterfowl, blue duck and brown teal, are now in fewer places than 30 years ago. It is sad indeed that despite a 20-year "recovery programme", the distributions of blue ducks in both islands have contracted significantly, most worryingly on the South Island's West Coast and in southern Te Urewera. With official conservation efforts now restricted to a handful of small enclaves, perhaps encompassing no more than 100 pairs, this unique waterfowl is undoubtedly in serious trouble.

So too is the brown teal. Teal have now gone not just from the 13 South Island squares depicted in the first atlas, but now also from the only five (southern Fiordland) locations depicted in the recent atlas. Meanwhile the contraction of the Northland population has continued unabated. Even on Great Barrier Island, their former stronghold, brown teal distribution has contracted. Between atlases almost 3000 brown teal were bred in captivity and released into the wild, but the only gains have been on Coromandel Peninsula and on mammal-free islands close to Wellington. It is clear this effort has failed and a new strategy is needed to save this species from extinction.

In contrast, Canada goose and paradise shelduck distributions have expanded dramatically. The deliberate transfers of Canada geese to the North Island were just commencing when the first atlas was compiled and this conspicuous bird was present in only 9.4% of the areas then surveyed; now Canada geese occupy a quarter (26.9%) of the country and continue to expand. Similarly, paradise shelducks have expanded from 54% to 85% of the areas observed, doubling their North Island range and even establishing populations on golf courses, public parks and school grounds in urban areas.

Introduced mallards have also consolidated their presence on lowland wetlands, streams, pastoral land, and urban areas. Their most conspicuous distributional change has been on the South Island with expansion on the West Coast, north-west Nelson and their recent invasion

Blue Duck

Hymenolaimus malacorhynchos

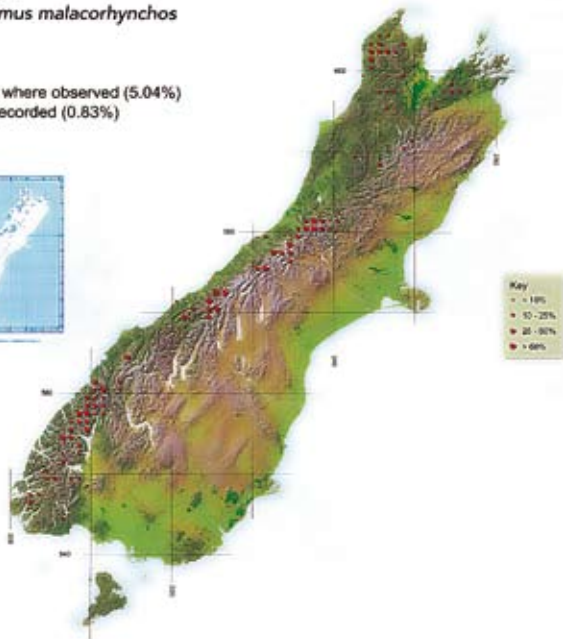
Whio

ENDEMIC

ducblu

155 Squares where observed (5.04%)

265 Sheets recorded (0.83%)



Feral Goose

Anser anser

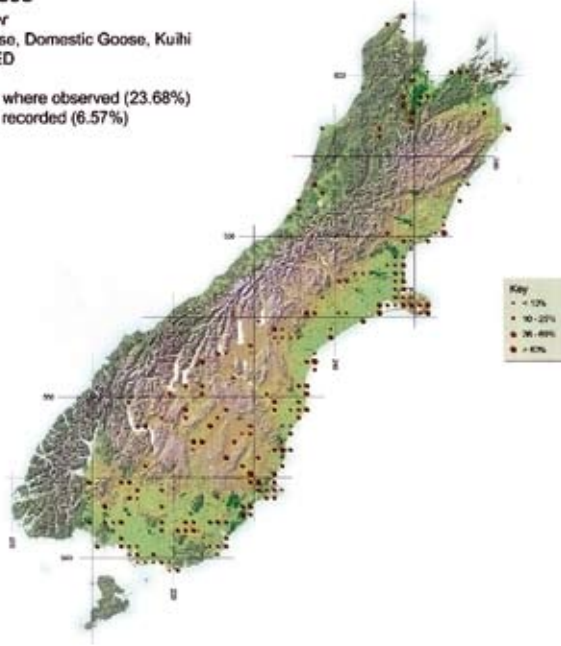
Graylag Goose, Domestic Goose, Kūihi

INTRODUCED

gosfer

729 Squares where observed (23.68%)

2090 Sheets recorded (6.57%)



into remote areas of Fiordland. This has been accompanied by a regional decline in native grey ducks and an increase in the presence of grey duck x mallard hybrids. The atlas hasn't fully captured the extent of the grey duck decline because of the difficulty in distinguishing between hybrids and "pure" grey ducks.

The two atlases show how four other waterfowl have expanded their ranges on lowland wetlands; grey teal has quadrupled its range while shoveler and scaup have doubled theirs. The increasingly eutrophic condition of many shallow lowland lakes has likely benefited the plankton-feeding shoveler and the mud-sieving grey teal and both birds are especially common on sewage impoundments. The New Zealand scaup has spread more slowly, seemingly obtaining initial refuge on urban lakes and expanding outward from there. The pattern of scaup expansion in the North Island is almost identical with that of dabchick, perhaps not surprising given their similar diets. Black swans have also bounced back from their historic low following the 1968 *Wahine* storm and their greater expansion in North Island may be a consequence of a habitat shift onto eel grass beds in estuaries.

If there is a surprise in the atlas it is the widespread occurrence of feral geese. This is probably the fifth-most widely distributed waterfowl now and given most records are of flocks it may now be our fourth-most abundant waterfowl after mallard, paradise shelduck and Canada goose. The atlas has also chronicled what had not been reported before, the breeding in the wild of two ornamental escapees, Cape Barren goose and Muscovy duck. They now join the previously-established but restricted mute swan as acclimatising species and the atlas's listing of some records of wild mandarin ducks and Carolina wood ducks suggest they may be next.

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Table 1 Relative distributions of waterfowl during the 1969-1979 and 1999-2004 atlas surveys, recorded as the percentage of total of surveyed grid squares in which they were observed.

Species	North Island		South Island	
	1969-1979	1999-2004	1969-1979	1999-2004
Grid squares surveyed	1582	1412	1958	1647
Black swan	17.82	40.93	14.86	23.66
Canada goose	2.59	22.14	15.58	31.59
Paradise shelduck	47.10	92.36	62.21	81.59
Blue duck	5.06	4.21	9.24	5.85
Mallard	58.03	85.50	44.13	60.85
Grey teal	5.63	24.43	6.13	20.37
Brown teal	3.03	2.86	0.66	0.24
Shoveler	14.29	24.43	12.00	19.29
New Zealand scaup	6.45	14.93	9.30	20.06

New Zealand falcon

Only one falcon species occurs in New Zealand and it is endemic. The second atlas shows an increase in the distribution of the New Zealand falcon in the eastern South Island areas but a noticeable thinning in the North Island, particularly west of Lake Taupo. There are no recent confirmed sightings from Northland.

The increase in the South Island is probably a result of the falcon's use of exotic pine plantations and possibly other modified habitats. There has been a noticeable increase in sightings on Banks Peninsula. The reasons for the thinning of falcon distribution in the North Island are unknown. Falcon numbers have also increased in the Wellington area.

The Raptor Association of New Zealand (www.ranz.org.nz) is currently undertaking a national survey of New Zealand falcons and this should provide additional data on their distribution and population size.

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Weka

There are four subspecies of the endemic weka. The new atlas confirms the North Island weka is in serious trouble, having declined by 95% in the East Cape and the Bay of Islands during droughts in 1983 - 1986 and 1990 - 1994, respectively. In the East Cape region they survived in only two valleys; although have subsequently expanded their range they remain less widespread than in the 1970s. Island populations of weka remained strong and recent releases have been successful where predator controls were in place. However, there is still limited interest in including weka in restoration programmes.

The new atlas shows a worrying picture for the western weka as well. In Golden Bay, western weka numbers have fluctuated during the past century but natural recovery failed after 1988 and the second atlas shows a decrease in the range of this subspecies throughout Nelson province. Weka have been transferred to Abel Tasman National Park, but they are killed by predators when they leave the predator-controlled area. In Westland there have been recent reductions



Left: Grey duck (*Anas superciliosa*). Even on remote West Coast lakes, at the time of the previous atlas the grey duck's strong-hold, most birds now show signs of hybridisation with mallards. Upper left: New Zealand scaup (*Aythya novaeseelandiae*). One of few endemic species that increased in distribution between atlas surveys. Above: Paradise shelduck (*Tadorna variegata*), one of the few endemic bird species that have benefited from forest clearance. Photos by Kerry-Jayne Wilson

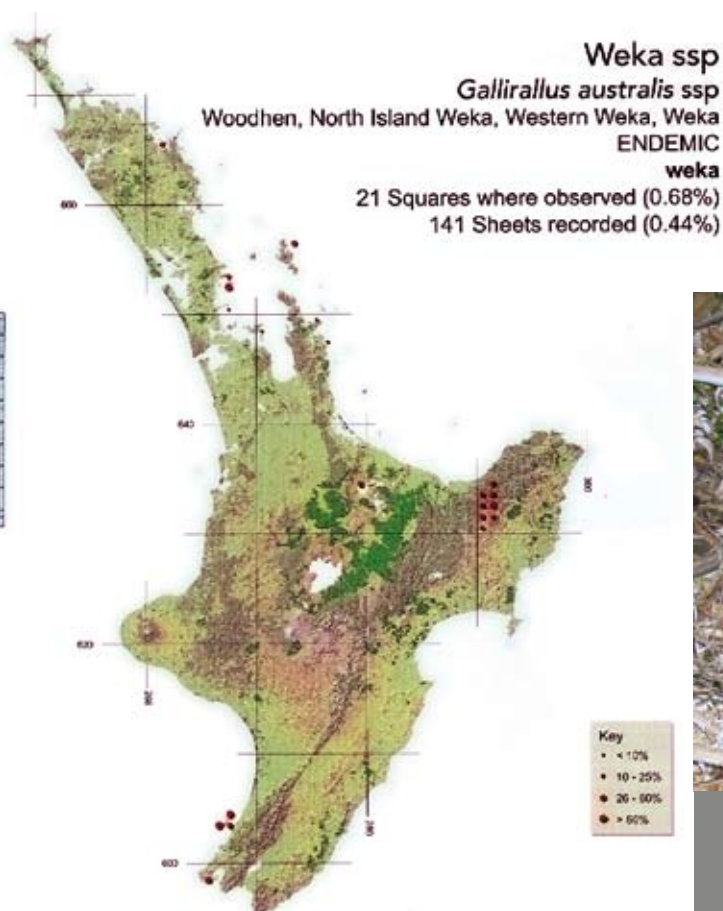
in those areas developed for intensive farming and the past rapid expansion of weka south of Hokitika has stalled. In Fiordland, weka declined in the 1990s, and the best numbers are on Secretary Island and the mainland north of Doubtful Sound.

The buff weka once occurred on the east coast of the South Island. It is extinct in its native range but thrives as an introduced population on the Chatham Islands. Ngai Tahu have liberated buff weka to islands in Lake Wanaka and Lake Wakatipu and a

further liberation onto a predator-protected peninsula is planned.

The Stewart Island weka is now only present near smaller offshore source islands, and where protected in a restoration programme. Numbers have declined due to their removal from some offshore islands, and unsuccessful liberations back onto Stewart Island, potentially as a result of cat predation.

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Above: North Island weka (*Gallirallus australis greyi*). North Island weka are seriously threatened with extinction on the North Island mainland. Photo by Tony Beauchamp

ENDEMIC SHOREBIRDS

Ten endemic shorebird species (including 15 taxa) are found in the New Zealand region. Internationally, six of the 10 species are considered threatened, and nationally, 13 of the 15 taxa are threatened (7 Acutely Threatened, 1 Chronically Threatened, and 5 At Risk). The main threats to endemic shorebirds are predation by introduced mammals and degradation of riverbed and coastal habitats by development, exotic vegetation, and recreational activities. Only the eight species that breed on the New Zealand mainland are discussed here.

In spite of an intensive captive-rearing programme for black stilts (Nationally Critical), there has been little change in their distribution between the two atlases. The wild breeding population is still very small and largely confined to the Mackenzie Basin. Predation by introduced mammals remains a major threat, and survival of adults in the wild is low. Management is made more difficult by high rates of dispersal from release sites.

The southern subspecies of the New Zealand dotterel (Nationally Critical) has increased to about 270 birds as a result of intensive cat and rat control over the past 12 years. However, breeding remains confined to Stewart Island. Atlas data for the northern subspecies of the New Zealand dotterel (Nationally Vulnerable) are supplemented by the results of censuses undertaken every 7-8 years. The subspecies has increased on the east coast, where management is most intensive, but continues to decline on the Waikato coast, Northland west coast and Far North where there is little or no management.

The banded dotterel (Gradual Decline) has decreased in distribution between the two atlas periods. There have been declines in local breeding populations, notably in Otago, on the West Coast, and on the Bay of Plenty coast. While it is still relatively numerous, the population size and rate of

decline are unknown.

At the time of the first atlas, the shore plover (Nationally Critical) was confined to a single population of 130 birds on Rangatira Island in the Chatham Islands. Recently, captive-reared birds have been released on small islands off the North and South Island mainlands; one newly established population of about 100 birds is now self-sustaining, and further releases are under way. The total wild population has increased, but remains small (c 75 pairs), and there are self-sustaining populations on only two small islands. The species remains dependent on predator-free habitat.

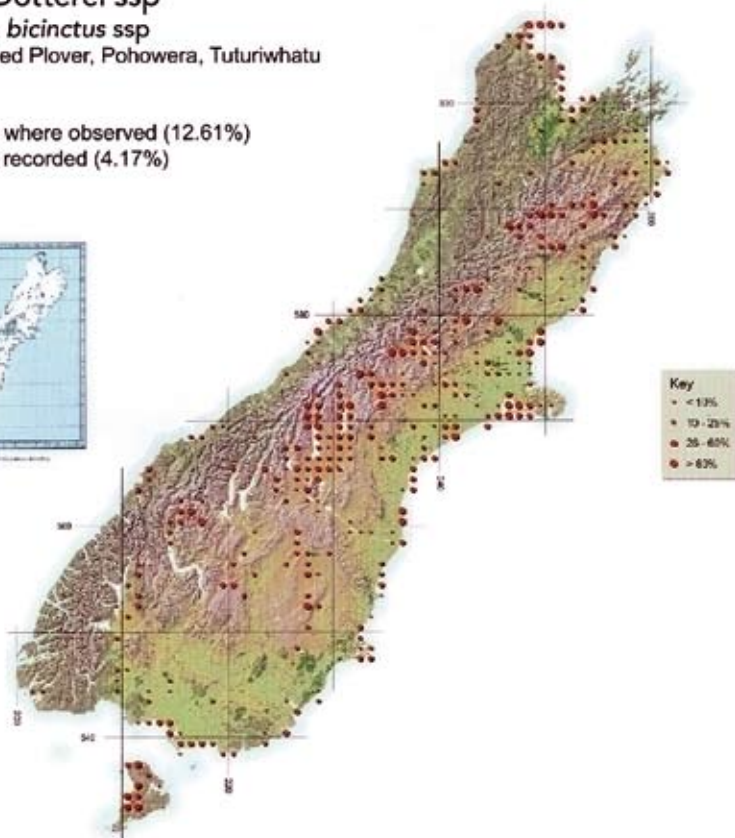
The snipe taxa that were native to mainland New Zealand are now extinct,

but congeneric species survive on the Chatham Islands and most sub-Antarctic island groups. Snakes Island snipe have recently been released on islands off Stewart Island.

The new atlas shows the breeding distribution of the wrybill (Nationally Vulnerable) continues to contract. About 90% of the breeding population now appears confined to three large South Island catchments (Upper Waitaki, Rangitata, and Rakaia). Within those catchments, high concentrations are found only in the upper reaches, where habitat is less degraded and there is less human activity.

In contrast to most other endemic waders, the South Island pied oystercatcher

Banded Dotterel ssp
Charadrius bicinctus ssp
Double-banded Plover, Pohowera, Tuturiwhatu
ENDEMIC
dotban
388 Squares where observed (12.61%)
1327 Sheets recorded (4.17%)



Below left: Shore plover (*Thinornis novaeseelandiae*). Confined to Rangatira Island in the Chatham Islands at the time of the previous atlas, now reintroduced to islands around the New Zealand mainland.

Photo by Kerry-Jayne Wilson

and the variable oystercatcher (both Not Threatened) are thought to be increasing in numbers. The pied oystercatcher has changed little in its breeding or wintering distribution. The variable oystercatcher appears to be increasing in some areas such as Canterbury, Taranaki, and Hawke's Bay where it was previously sparse.

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Kea

Nestor notabilis

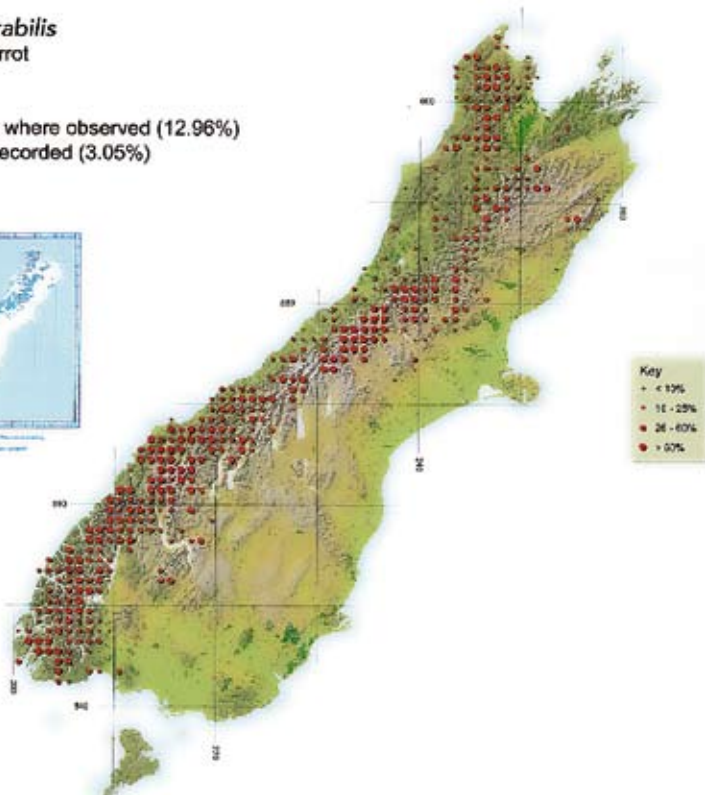
Mountain Parrot

ENDEMIC

kea

399 Squares where observed (12.96%)

971 Sheets recorded (3.05%)



Above: Kea (*Nestor notabilis*). Their habit of "hanging out" at car parks and alpine villages gives a misleading impression of their threatened status.
Photo by Kerry-Jayne Wilson

PARROTS

The New Zealand mainland has an interesting parrot fauna with three large species (one, the kaka, with North Island and South Island subspecies), and three smaller parakeets. There are additional parakeet taxa on the Kermadec, Chatham and sub-Antarctic islands. All the native species are endemic, the larger parrots belonging to two endemic subfamilies, both of which perhaps diverged from other parrots during the Cretaceous. In addition there are four species that have been introduced from Australia.

Of the endemic species only the kakapo and yellow-crowned parakeet have not declined in range between the two atlases. For the kakapo the atlas gives a misleading impression of its distribution. This critically endangered species is intensively managed by the Department of Conservation and over the five years that atlas observations were made the birds had been shifted between several predator-free islands. Although the atlas shows kakapo present in 9 squares, these represent only four predator-free islands and one captive facility. Currently kakapo are present on only three islands with all breeding age females confined to a single island.

The kea is a curious beast that likes to hang out in car parks, alpine villages and other places frequented by people. Thus, the kea's conspicuousness gives a misleading impression of its abundance. In reality kea underwent a retrenchment in range between the two atlases and, as they will travel over moderately large distances, they may well be even less numerous than the atlas suggests.

The third large endemic parrot is the kaka. Both subspecies of kaka have declined in both range and numbers, due

to predation at the nest. Many mainland populations have a severely male-biased sex ratio and the conservation status of kaka is more serious than the 328 squares in which they were reported suggests. Both subspecies are found on some islands so the island populations should be secure.

Of the parakeets, the red-crowned is now effectively restricted to predator-free offshore islands although the atlas shows a few mainland records. The distribution of the yellow-crowned parakeet is apparently little changed, although they are not numerous anywhere on the mainland, except for temporary peaks in numbers following mast events in some South Island beech forests. The orange-fronted parakeet is the only endemic parrot whose situation is better than the atlas suggests. Since 2004 when the atlas fieldwork finished, captive bred birds have been released on two islands where initial observations suggest they have bred. At the time the atlas observations were made this critically endangered species was recorded in only three squares in north Canterbury.

The endemic species may be doing poorly, but not so the introduced parrots, all of which

have increased in range since the first atlas (see later section).

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Right: Orange-fronted parakeet (*Cyanoramphus malherbi*). Not recognised as a separate species at the time of the previous atlas survey; since the completion of the new atlas, captive-bred birds have been released on several islands.
Photo by Kerry-Jayne Wilson

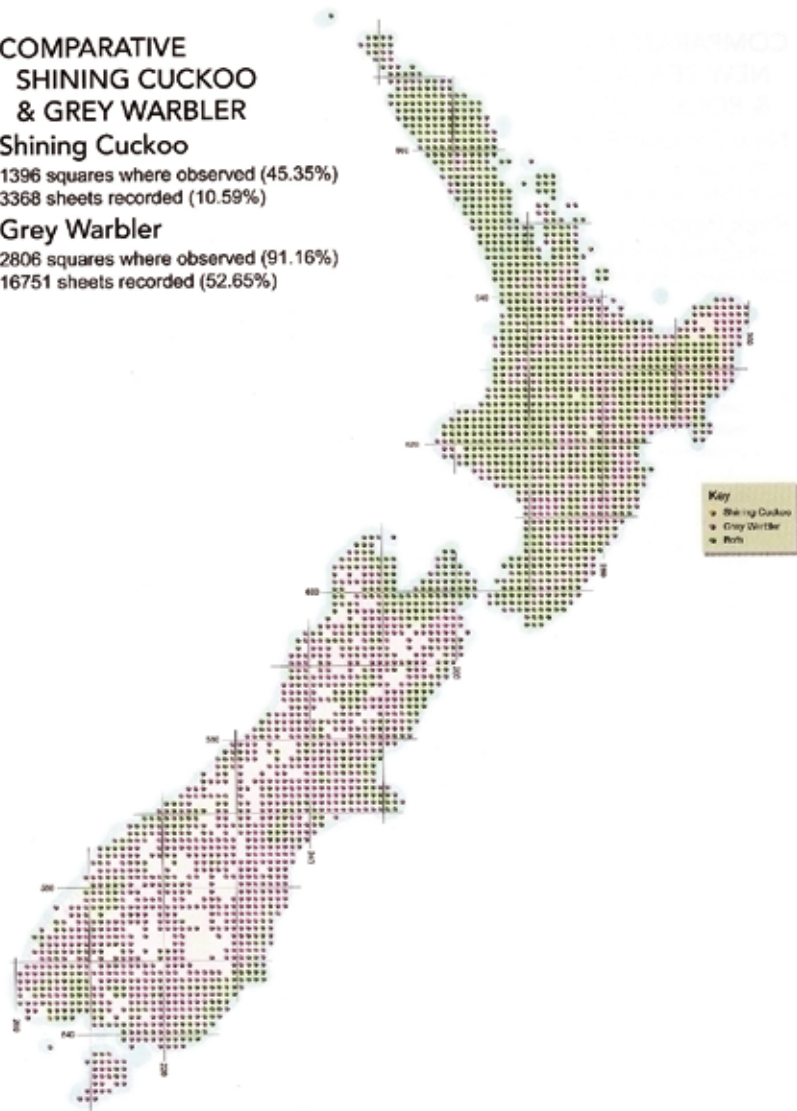
COMPARATIVE SHINING CUCKOO & GREY WARBLER

Shining Cuckoo

1396 squares where observed (45.35%)
3368 sheets recorded (10.59%)

Grey Warbler

2806 squares where observed (91.16%)
16751 sheets recorded (52.65%)



human population growth and habitat loss. International action will be needed if cuckoos are to survive across both their breeding and wintering ranges.

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NEW ZEALAND WRENS

Distributions of both surviving New Zealand wrens, the rifleman and the rock wren, appear to have declined substantially in the time between the two atlas surveys. Riflemen declined on both islands, from 14.6% to 5.3% of grid squares on the North Island and from 37.6% to 17.74% on the South Island. Rock wrens are endemic to the South Island where they were observed in 4.7% of squares between 1969 and 1979, but only 1.95% of squares visited for the second atlas.

The atlas notes that some northern and western South Island reductions in the rifleman's range could be attributed to survey effort, but losses in Southland and Waikato certainly indicate the species is in decline. Although they have persisted for longer than many other endemic species in unmanaged forests, like other endemic hole-nesting species (such as yellowhead, kaka and orange-fronted parakeets), rifleman are known to be vulnerable to rats and other introduced predators.

Understanding the status of rock wrens is even trickier; their alpine habitats are difficult to access and the birds are inconspicuous. Located in only 10% of

Cuckoos

New Zealand has two species of cuckoos. Both are brood parasites that lay their eggs in the nests of host species, which then raise the offspring as their own. This breeding strategy makes cuckoos dependent on healthy populations of their hosts and declines in host populations will inevitably result in declines in cuckoos.

The shining cuckoo remains widespread in New Zealand and it exclusively parasitises the grey warbler. The new atlas suggests a slight decline in shining cuckoos that warrants monitoring, but otherwise the range of this species matches its common and widespread host. In contrast, the endemic long-tailed cuckoo has undergone a worrying decline, especially in its previous stronghold on the West Coast of the South Island. Long-tailed cuckoos depend on whiteheads, yellowheads, and brown creepers as hosts and although populations of creepers and whiteheads appear relatively stable, the yellowhead has experienced a catastrophic decline and has disappeared from large areas since the first atlas. Widespread restoration of this host species should be a priority to avoid further declines in long-tailed cuckoos.

The migratory behaviour of cuckoos means they are susceptible to changes elsewhere. Both cuckoos over-winter in the tropical Pacific, an area of rapid



COMPARATIVE ROCK WREN & ALPINE GROUPED HABITAT

Rock Wren

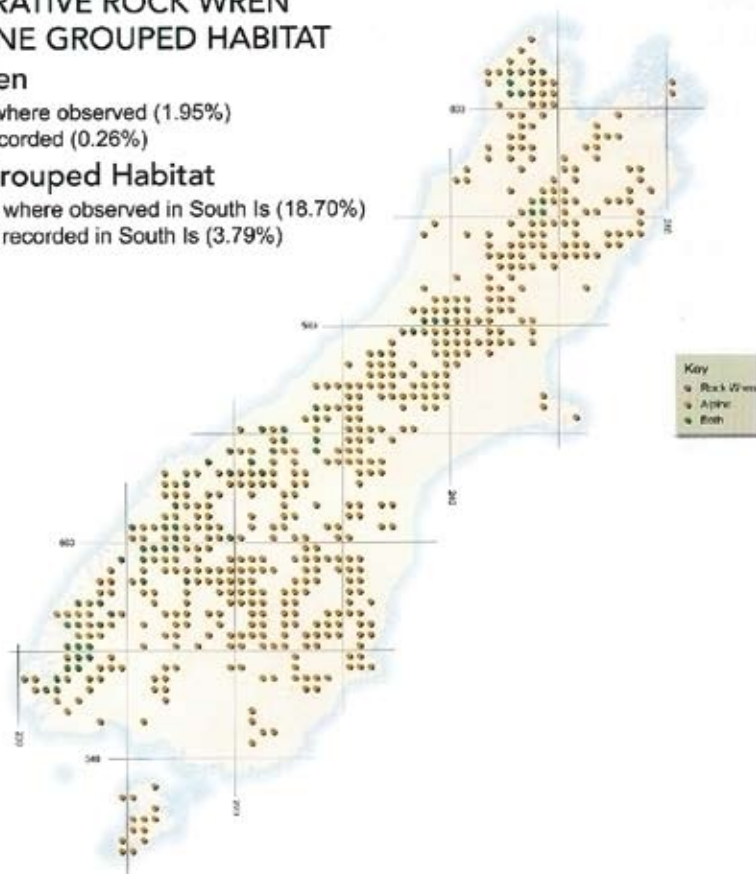
60 squares where observed (1.95%)

83 sheets recorded (0.26%)

Alpine Grouped Habitat

579 squares where observed in South Is (18.70%)

1207 sheets recorded in South Is (3.79%)



alpine habitat grid squares surveyed in the new atlas, rock wrens may be completely and alarmingly absent from the vast majority of currently suitable habitat – habitat that itself may be under threat from climate change and invading exotic pines. Without a concentrated effort to understand the distribution, ecology and conservation needs of this species, we risk losing yet another of our unique, ancient wrens.

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North Island kokako

The new atlas shows a continued reduction in the distribution of the North Island kokako, from 4.6% of squares in the previous atlas to just 0.94% of squares at present. This reduction includes both contractions in former strongholds (such as Waikato and Bay of Plenty) and losses of small, isolated populations (Great Barrier Island and Coromandel).

This dramatic reduction is not, however, as alarming as it may appear. All remaining kokako populations are now managed, and have been steadily increasing over the last eight years; the estimated number of pairs has grown from c. 400 in 1989 to 860 in 2007. Translocations have established populations on Little Barrier, Tiritiri

Matangi, and Kapiti Islands and returned kokako to mainland areas from which they had vanished. Additional translocations will continue this range expansion in the next few years, with projects slated for the Waitakere Ranges (Auckland), Maungatautari (Waikato), and Moehau on the Coromandel Peninsula. The last individuals of two lost populations, Puketi (Northland) and Taranaki, are currently contributing to captive and island breeding programs in the hope that their descendants can eventually be returned to their ancestral homes in the wild.

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Yellowhead and brown creeper

The yellowhead or mohua is a small, endangered, insect-eating bird that is confined to the South Island. In the 1800s, it was one of the most abundant and conspicuous of our forest birds. By 1900, the bird was disappearing from many of its traditional areas and the new atlas shows the declines have continued through to the modern day. Now the species occurs in less than 3% of its former range. The major threat is predation by introduced rats and stoats. The Department of Conservation now manages 18 sites

for yellowheads that cover an area of 61,000 ha. On the mainland, pest control to protect yellowheads is undertaken at nine sites (Hurunui Valley, Hawdon Valley, Landsborough Valley, Makarora, Dart Valley, Caples Valley, Iris Burn, Eglinton Valley, and Catlins). Birds have also been established on nine predator-free islands that total 4170 ha (Nukuwaiata, Centre, Pigeon, Breaksea, Ulva, Codfish/Whenua Hou, Chalky, Coal, and Anchor Islands). Continuing research aims to develop more effective pest control strategies and ways to predict when pest control is required to protect yellowheads. High predator numbers do not occur every year but follow periodic seeding of beech trees.

Recent declines in the closely related brown creeper have not been apparent, although the new atlas suggests some reduction in range. Declines probably occurred at least up until the early 1990s, particularly in North Westland, due to the logging of indigenous forests. Although this species occurs in similar habitats to yellowheads they do not nest in tree cavities and are less vulnerable to predation by introduced mammalian predators.

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Above: Yellowhead or mohua (*Mohoua ochrocephala*). This species has undergone dramatic declines in distribution between atlas surveys.
Photo by Colin O'Donnell

New Zealand pipit

The New Zealand pipit initially increased as bush was converted to pasture in the 19th century. The populations appeared to have declined in the 20th century, coinciding with wetland degradation and increasing intensification of farming and forestry. Predators may have also been responsible as the ground-nesting pipits have noisy nestlings. The new atlas confirms a continuing decline in the distribution of pipits in both the North and South Islands, especially in more intensively farmed areas and following the sealing of rural roads.

Left: Rifleman (*Acanthisitta chloris*), the only one of the endemic New Zealand wrens that remains widespread, yet even it underwent a dramatic decline between atlas surveys.

Photo by Jim Briskie

The magnitude of the decline is shown by the size of late summer flocks in the rhyolite zone of the Volcanic Plateau. Common flock sizes were 50-100 birds in the 1880s and 1920s, 40 birds during late 1940s, and today average 3 (maximum 14). Pipits have disappeared from areas after major droughts and are slow to recolonise. Pipits are now either absent or less common above the snowline on both main islands.

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POST-HUMAN COLONISERS AND INTRODUCED SPECIES

Of those introduced birds whose distributions were mapped in both atlases, 17 have increased in distribution since the first atlas, for eight there has been no measurable change, while six species have declined in range. Of those introduced species that have declined, all but the chukor remain widespread and, while some such as the skylark have declined in their native ranges, none is yet listed by *BirdLife International* as threatened. Several of those introduced species that have increased, for example the sulphur-crested cockatoo, eastern rosella and rook, appear

to have the potential to expand further. Both of the parrots utilise native forests but the impact they may have on native species or indigenous ecosystems has not been assessed. A third parrot, the Australian galah was recorded in eight North Island squares in the new Atlas, but in none in the previous atlas. The rook is considered a threat on agricultural lands and is subject to some control measures.

In addition to the species that were deliberately introduced since European settlement, 15 other species have self-colonised New Zealand since people first arrived. Six of these native species are believed to have colonised New Zealand prior to 1800, but after settlement by Maori. Nine species have self-colonised New Zealand since European settlement, eight of which became established here during the twentieth century, although some were previously recorded as vagrants. Three other species, cattle egret, nankeen night heron and chestnut-breasted shelduck, have yet to establish sustained breeding populations.

Of the 12 species of native birds that increased their distributions between atlases nine are species that have colonised New Zealand since first human settlement. The others are species that are widespread in Australia and also occur in other countries.

These recent colonising species and the increasing range of many of the introduced birds show that the New Zealand avifauna

is still undergoing rapid change in its composition and abundance. At least some of those species have potential to further invade native habitats and possibly compete with longer established species. The once highly distinctive New Zealand bird fauna, previously dominated by endemic species continues to become increasingly cosmopolitan.

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SPECIES THAT DID NOT APPEAR IN THE FIRST ATLAS

A number of species were not mapped in the first atlas but make an appearance in the new atlas. The first atlas did not map the distributions of any albatrosses or petrels nor did it map any but the most common of the migratory wading birds. Many of these species are shown in the new atlas but their appearance in the second atlas does not mean their abundance has increased, only that the second atlas is more comprehensive.

The other species that appear for the first time have undergone real increases in distribution, and presumably abundance, during recent decades. The Cape Barren goose, feral goose, Muscovy duck, feral

Below left: New Zealand pipit (*Anthus novaeseelandiae*). Although still widespread the new atlas suggests the pipit's range has contracted between atlas surveys.

Photo by **Tony Beauchamp**



Below: Starling (*Sturnus vulgaris*) introduced from Britain in the 19th Century, the starling is now common over much of New Zealand.

Photo by **Jim Briskie**



turkey, guineafowl, and Barbary dove are introduced species that have all shown significant increases in range since the previous atlas. All but the Barbary dove were probably more widespread than shown in the old atlas and perhaps also the new atlas, as many observers may have assumed the birds they saw were domesticated or farmed animals. Despite this, all these species have increased in range and now have truly feral populations. The Cape Barren goose, Muscovy duck, guineafowl, and turkeys on the South Island still have relatively small and scattered populations. At the

time of the previous atlas, this was also the case for North Island turkeys, feral goose and Barbary dove. During the last three decades feral geese, and turkeys in the North Island have become well established, now occurring in 729 and 870 squares respectively. At the time of the first atlas the Barbary dove was recorded in only seven North Island squares; in the new atlas they were found in 73 squares

including five in the South Island. The feral turkey, guineafowl and Barbary dove have markedly extended their ranges southwards since the previous atlas. These introduced species would appear to have the potential to spread even further with unknown impacts on the ecosystems they invade. All these species were mostly recorded in wetland or farmland habitats. Two species that did not appear in the

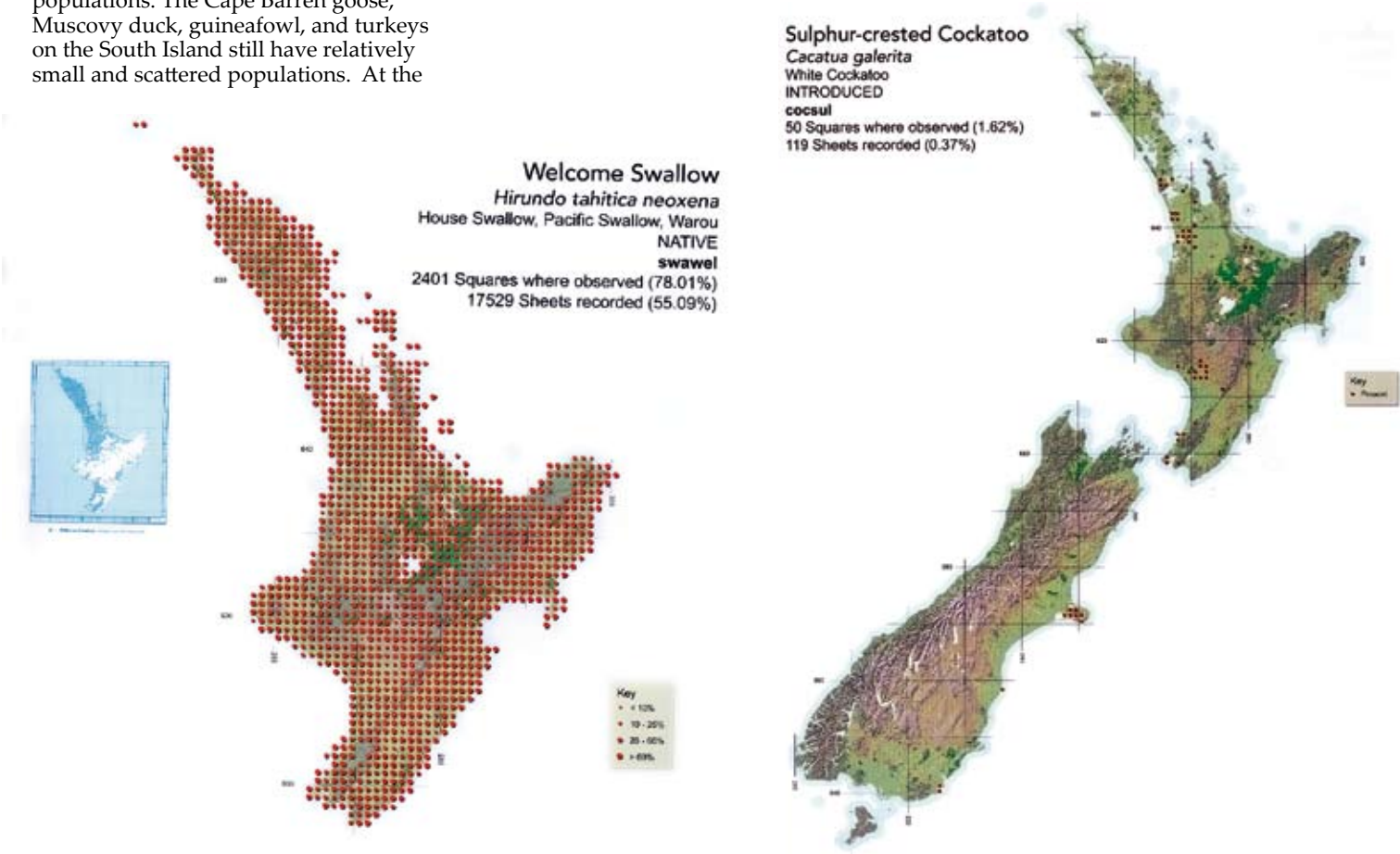
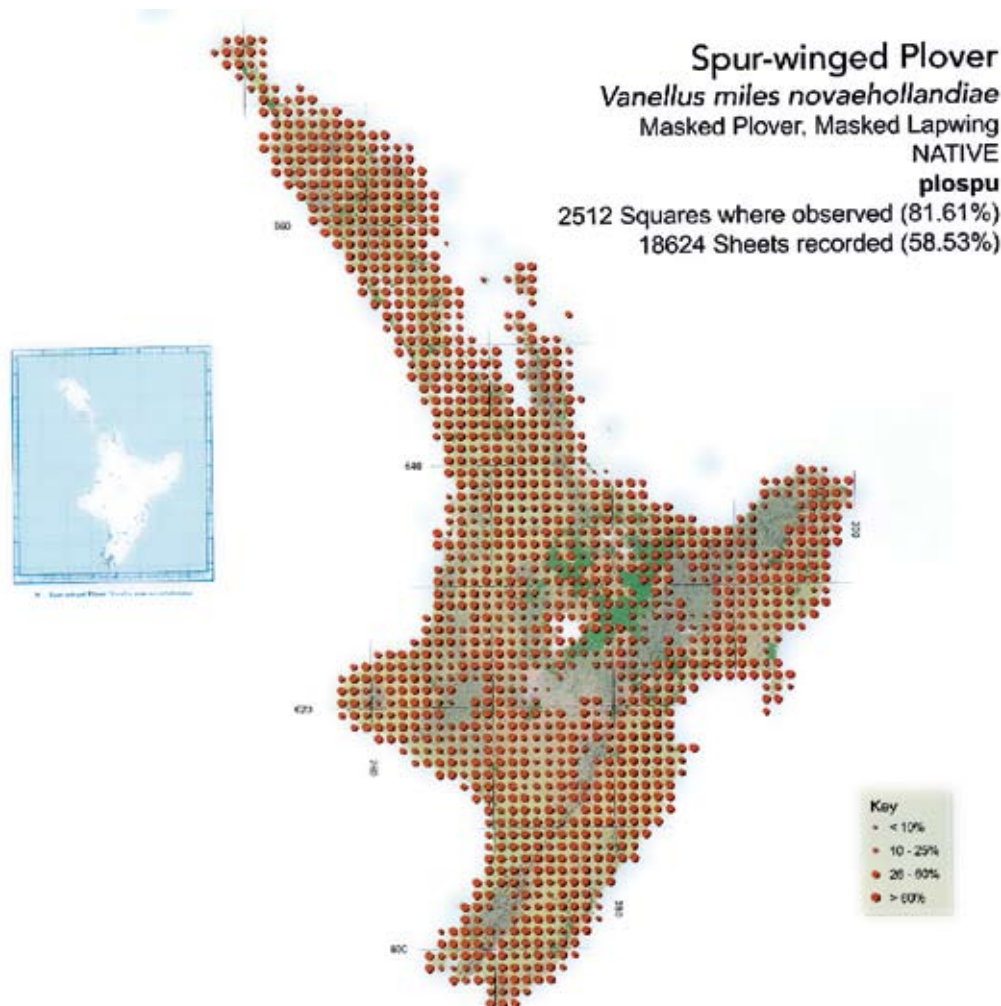


Table 2 Native species that have colonised New Zealand since first human settlement. Species list based on Holdaway et al. (2001).

	Colonised before or since 1800	Increased or declined between the two atlases
Australasian little grebe	Since	Increased
Soft-plumaged petrel	Since	No information
Little black shag	Before	Increased
White-faced heron	Since	Increased
Cattle egret	Since, no breeding population yet	Increased
Nankeen night heron	Since, no breeding population yet	Arrived since last atlas
Australasian bittern	Before	Decreased
Royal spoonbill	Since	Increased
Chestnut-breasted shelduck	Since, no breeding population yet	Arrived since last atlas
New Zealand shoveler	Before	Increased
Australasian harrier	Before	No change
Pukeko	Before	Increased
Australasian coot	Since	Increased
Pied stilt	Before	No change
Black-fronted dotterel	Since	Increased
Spur-wing plover	Since	Increased
Welcome swallow	Since	Increased
Silvereye	Since	No change



previous atlas have expanded their range without human assistance. The chestnut breasted shelduck is an Australian species that is being seen in New Zealand with increasing frequency. They have not yet bred in this country and the extent to which they might compete with the endemic paradise shelduck is unknown.

The grey ternlet was recorded in only three squares in the first atlas but has now spread south. This species bred on the Kermadec Islands since at least the 19th century but then sometime during the 20th century grey ternlets colonised the Three Kings Islands. Since the late 1940s they have been seen in Northland waters, and in 1970 they were recorded on the Volkner Rocks in the Bay of Plenty where they began breeding in the early 1990s. Has this tropical species extended its breeding range southwards as a result of climate change?

The impact these recent arrivals may have on native species or indigenous ecosystems has not been assessed. Nor for most has their potential pest status in the agricultural or horticultural landscape been evaluated.

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FURTHER READING

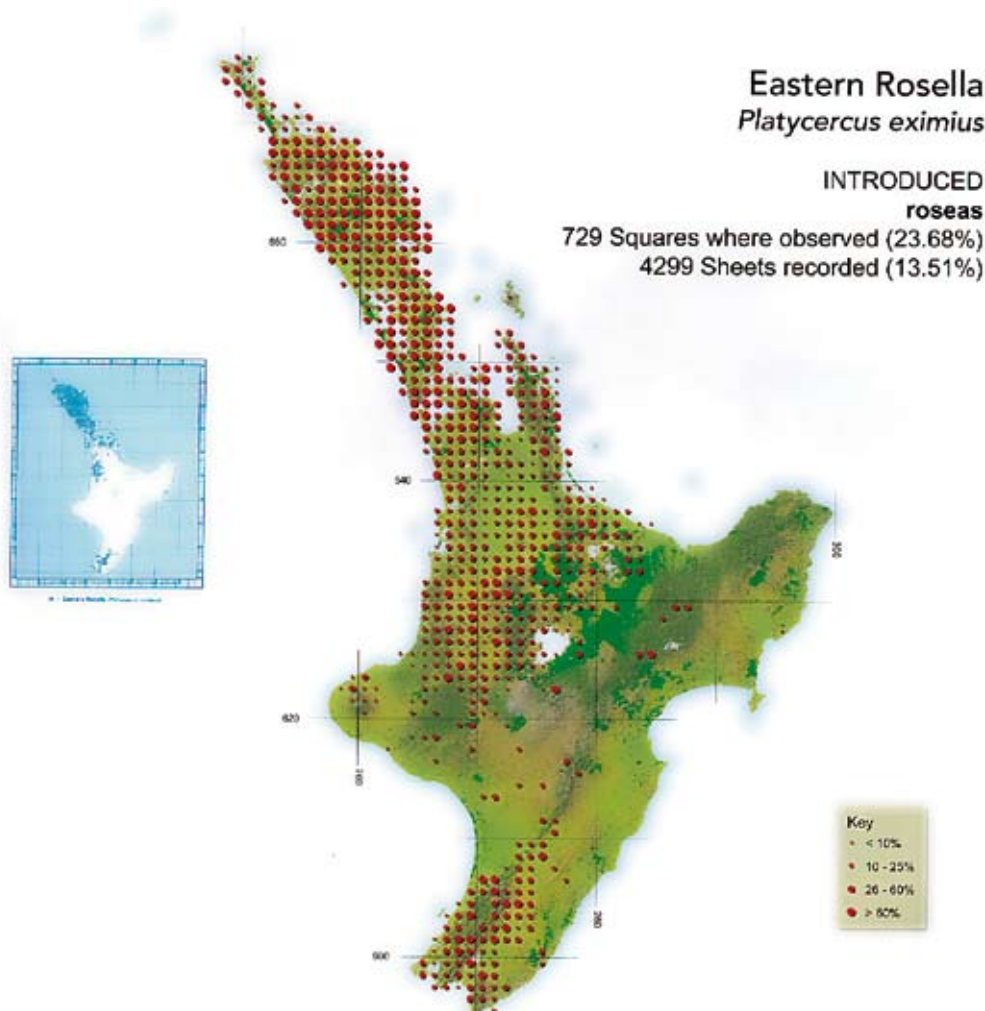
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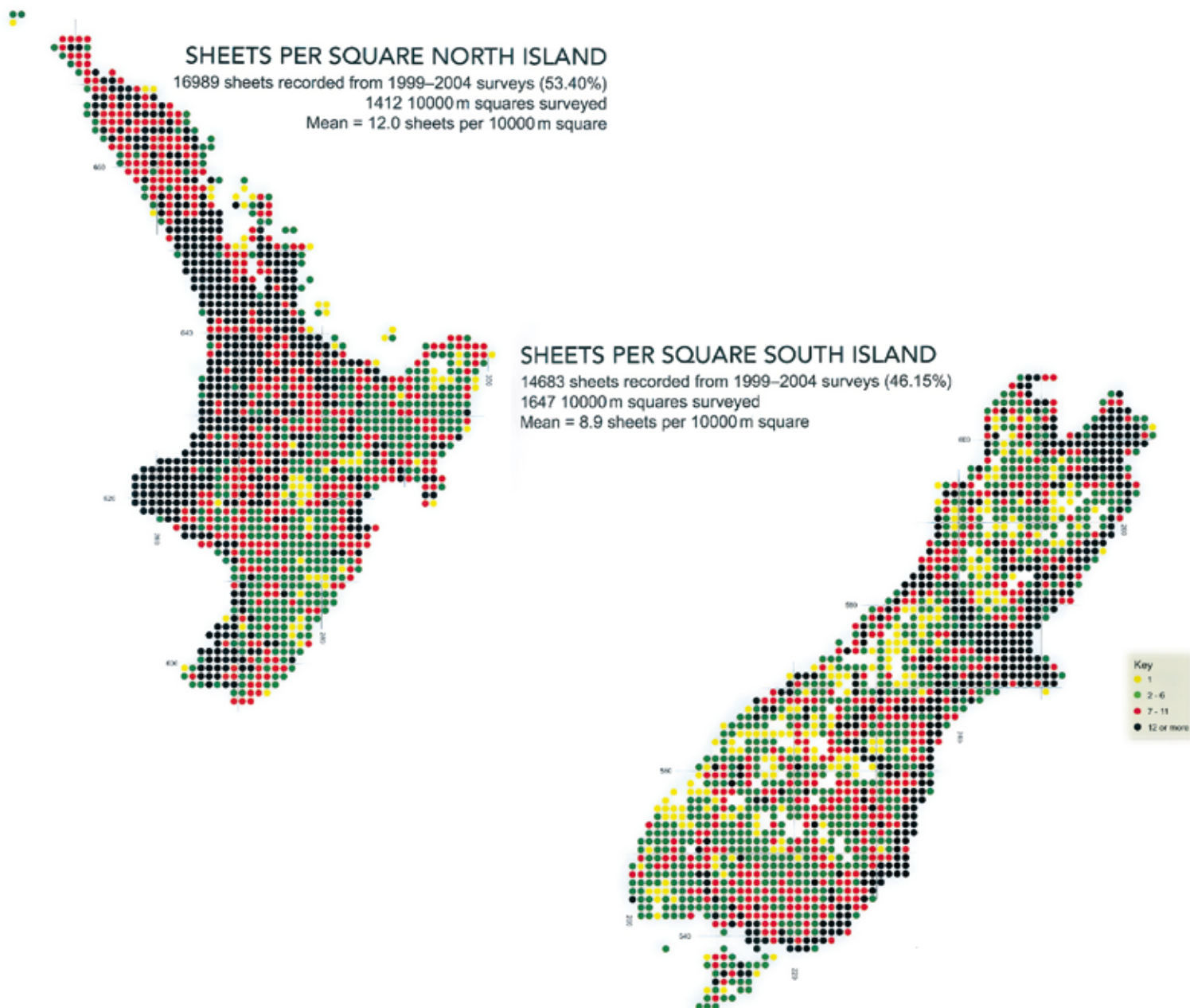
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The bellbird (*Anthornis melanura*) is common in some parts of the country, but gone from others, for reasons that are still unknown.
Photo by **Jim Briskie**

South Island robin (*Petroica australis*). Despite previous concerns for the robin's future, the atlases suggest the distribution of New Zealand robins changed little in recent decades.
Photo by **Kerry-Jayne Wilson**



The kea (*Nestor notabilis*) can be seen at most alpine resorts but their abundance may be more apparent than real.
Photo by **Kerry-Jayne Wilson**

This report has been written by New Zealand ornithologists who share a concern for the well being of our birds and their habitats. We hope this publication will highlight the plight of endemic species that are in decline and in need of further conservation management, and those invasive bird species that have the potential to further degrade indigenous ecosystems or threaten agriculture, horticulture or forestry. Our objective is to help raise awareness of the plight of our birds and encourage the Department of Conservation, universities, research organisations, NGOs, and others to focus on solutions that address the problems we identify.