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RARE BITS

THE NEWSLETTER ABOUT THREATENED SPECIES WORK

This newsletter is produced primarily as a vehicle for information exchange between departmental staff involved in threatened species recovery and ecological restoration programmes. In recognition of wider interest, however, "Rare Bits" is also provided to non-departmental groups on request. The newsletter's informal style may occasionally lead to misunderstandings for some of those readers. Views expressed by the authors are not necessarily those of the Department of Conservation.

FEATURE ARTICLE

Stoat control in the Eglinton Valley

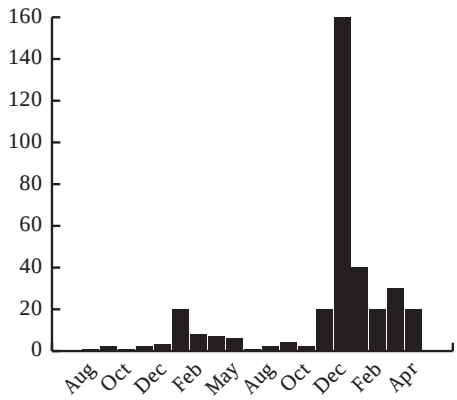
from Peter Dilks

Various stoat control research projects have been carried out in the Eglinton Valley since 1990. Over the past 2 years continuous, low intensity stoat control has been undertaken using Mk VI Fenn traps. Trap sites are spaced at 200 m intervals along a 45 km line that runs the length of the valley, with a short line across the valley at the top and bottom. Each of the 198 sites consists of a wooden tunnel with two Fenn traps. Traps are baited with a hen's egg or/ and a piece of meat. The trapline takes 1+ days to service and is usually checked monthly. This stoat control research is a joint project between Science & Research and Te Anau Area Office staff.

The effectiveness of this stoat control is evaluated by monitoring breeding and survival of colour-banded mohua and radio-tagged female kaka.

Stoat trapping

Stoats caught in the valley since August 1998 are shown below.



1999 was a beech mast year, and a stoat population irruption occurred during the following summer in response to the huge increase in rodent numbers.

Bird monitoring

Kaka

The beech forest seeded heavily in 1999 and in 2000, and kaka breeding was widespread. Kaka in the Eglinton Valley generally start nesting in January when stoats are most abundant. Overall we monitored 25 kaka nests by 13 different females. Twenty nests successfully fledged 55 young. One female double brooded in 1999 rearing 5 then 2 chicks. In 1999 two nests failed at the chick stage owing to predation by either a stoat or possum but both females survived. This season we lost three nests, one with eggs and two with chicks, and 2 females were killed probably by a stoat. All five nests that have been lost were the most distant from the trapline.

Mohua

Intensive monitoring of 27 breeding pairs (38 nests) was carried out this past summer. No mohua fledged before juvenile stoats were being caught in the Fenn traps. Results:

- 25 nests fledged chicks successfully
- 3 failed (female OK)
- 10 failed (female killed)
  - 6 rat predation
  - 1 probably falcon

Department of Conservation
Te Papa Atawhai

- 3 unknown (2 tree unclimable, 1 possible stoat/rat?)

So 66% of nests fledged, 37% of females were lost but a stoat may have killed only one of these.

An unusual feature of this breeding season was the high level of predation by ship rats - unrecorded in the Eglinton in previous 6 years of intensive nest monitoring.

Effectiveness of stoat control

It appears that stoat control carried out at this low intensity provides sufficient protection to markedly reduce stoat predation on breeding mohua and kaka. Kaka breeding success is up with the best recorded anywhere. In similar beech forests Ron Moorhouse has recorded 9 of 10 kaka nests failed at Rotoroa with no stoat control and 3 of 5 females were killed this season alone. Landcare Research also recorded only 10% of nests fledging young during their 9-year study. However, within the Mainland Island at Rotoiti 8 of 10 nests have been successful. Over the past two seasons in the Eglinton we have recorded 80% of nests successfully fledging young. We have recorded no mortality of 17 fledglings that have been radio tagged over the past 2 years (35% mortality has been recorded for Rotoiti fledglings).

Stoat control also appears to be effective for mohua breeding because during the 1990 stoat irruption we lost 60% of females and nests in an untrapped area. This summer we may not have lost any nests to stoats, but the huge increase in rat numbers and the associated rat predation is a major concern.

The Te Anau area has had two mild winters and there is some suggestion that this results in high rat populations in beech forest. High rat numbers have been recorded elsewhere in South Island beech forests this past summer – in areas where no stoat control has been undertaken.

If a permanently higher rat population were a result of continual stoat trapping, there would be serious consequences for many bird species. It could be suggested that stoat trapping be initiated only following beech mast years, but for kaka, at least, stoat control would need to occur during the previous summer when beech flowering initiates widespread breeding. If some kaka breeding occurs in all years then continual stoat control is preferable, because we knew of no successful kaka nests in the Eglinton Valley before we initiated stoat control.

To keep the stoat population at a low level with a low density of traps probably requires continual trapping. Further work is needed here on rat population dynamics in beech forests to determine whether lack of predators means a larger irruption in mast years or if climate is the major influence.

CONSERVANCY NEWS

NORTHLAND

from Nicky Syddall, Lisa Forester, and Andrea Booth

Christella dentata planting at Lake Ngatu

Just over 12 months ago, the Kaitaia Area took over 'guardianship' of the very rare fern *Christella dentata*. Approximately 160 plants had been cultivated from the last remaining few found on private property in Awanui. A keen local botanist had taken the initiative for this action, and he then handed the plants to DoC to manage.

Approximately 120 of these plants went back into the property from which they came, and then finally on 5 July most of the remaining plants were planted around Lake Ngatu. Permission was needed from Te Rarawa and Ngai Takoto to move the ferns from one rohe to another. Permissions were granted, the programme manager was invited to speak to a group of people from Ngai Takoto who are the kaitiaki of Lake Ngatu, and then in the afternoon the planting went ahead with great success. The planting was a community effort including many of the people and children from the marae, Conservation Corps students, DoC staff and volunteers from Bushlands Trust.

Threatened plant surveys

The Northland threatened plant re-survey of older (pre-1980) records is almost finished. The data is now being loaded onto the database and mapped. Around 200 sites were field surveyed, with only 47% of the plants being successfully relocated. These poor returns could be attributed to several causes, with the main one being land clearing, especially around the Kaitaia area where positive returns were low. Not all sites could be surveyed owing to lack of site information especially for the earlier records; 25 records had to be missed out. A positive spin-off, however, has been the addition of a further 55 new threatened plant sites to the database, including range extensions for a few species. Some of these records are purely serendipitous as result of surveyors finding themselves at the wrong site, e.g. a new major site for *Mazus novaezelandiae* in Warawara Forest in the next catchment over from the original record! Being able to get more accurate population information for many of these older records is another good outcome of the survey.

...Some records are purely serendipitous as a result of surveyors finding themselves at the wrong site...

Work continues on finding the identity of the odd cunonia-like tree discovered near the Hokianga, using genetic and morphological techniques. Eleven plants have been found so far, and one old fallen inflorescence. Another visit will be made soon to look for flowers.

Northland mudfish survey

Survey work continues for this Northland-endemic mudfish species, which was discovered in 1998. Mike McGlynn has been trapping for mudfish at all likely-looking sites in the Kerikeri area and has so far come up with some very exciting results. This species was previously known from only two sites, which makes it one of the most threatened fish species in the country. In the past few weeks, Mike has discovered Northern mudfish at four new sites, which has significantly extended its range. The new sites range from 10-240 m a.s.l. and are a combination of conservation and private land. None of the new sites have had mudfish present in high numbers, and some sites are threatened by development, farming practices, and mosquito fish. Mike still has several sites to survey, so we may end up with even more sites for Northern mudfish.

CONSERVANCY NEWS

AUCKLAND

from Bec Stanley

Rare plant bits

It may be the most common leafy mistletoe in the country, but in Auckland *Ileostylus micranthus* remains at just six sites, only one of which is on protected land. Our kaiaua population is on a roadside, and it's running out of hosts, as they gradually die of both old age and exposure to the elements. *Coprosma propinqua* and saltmarsh ribbonwood (*Plagianthus divaricatus*) are the main hosts here. This population borders a DoC reserve so we were able to plant eco-sourced hosts (and other species) immediately behind our mistletoes. We hope that when the planted shrubs get bigger, they will provide more habitat for the mistletoe, and it will spread onto the new hosts in the DoC reserve. Forty eager volunteers planted around 900 shrubs.

The first *Tupeia antarctica* has been found on Fanal Island in the Mokohinau Islands by Phil Todd from the Great Barrier Area Office. *Tupeia* was once know on the mainland in Auckland, but there haven't been any plants found for over 50 years so it was presumed extinct in the conservancy. Phil found 2 plants on a maire (*Nestegis apetala*).

The coastal cress (nau) species *Lepidium flexicaule* has been re-introduced into the wild in Auckland on Rangitoto Island. In a joint Auckland Regional Botanic Gardens and DoC project, 150 small plants and also some seed and seedlings, were planted on Rangitoto Island. *Lepidium flexicaule* is extinct in the North Island, but was once found at many coastal sites in Auckland including North Head, Takapuna, Onehunga, Rangitoto, Waitakere and Te Henga (the most recent record of this species in Auckland from the 1930s). Monitoring of the new arrivals will start in spring and continue through summer.

Our mawhai *Sicyos australis* at Otuataua Stonefields is proving to be a little tricky to manage. After re-locating one plant, it was promptly eaten by wayward cows. Another then sprung up and was sprayed deliberately by an adjacent landowner. We are waiting and hoping another will appear. Seed collected off the plants were taken to the botanic gardens, but they did not germinate.

...one plant was promptly eaten by wayward cows. Another was sprayed deliberately by an adjacent landowner...

BAY OF PLENTY

from Paul Cashmore and Keith Owen,

Dactylanthus

Staff have just finished checking seed set at sites around the conservancy with similar levels to last year being recorded at most sites. Six more cages have been added to the Paeroa Range sites. Eighty-five standard and 5 custom cages were added at the Oropi site with the help of volunteers. Staff in Tauranga have checked out a couple of reports from the Otanewainuku-Oropi area but have not been able to confirm *Dactylanthus* at either site.

Rorippa divaricata

This year's annual survey at Lake Okataina has substantially increased the known distribution and number of *Rorippa* plants at this site. The known population has increased from 6 plants (1998), 26 plants (1999), to 109 plants in 2000. The increase appears to be due to further searching this year revealing more plants (thanks in part to help from a keen local amateur botanist who regularly fishes on the lake) plus an increase in plants at most existing sites. This work reinforces the important point that Okataina is currently the largest known population of *Rorippa* on mainland New Zealand.

Mokoia Island, Lake Rotorua

Staff have just finished planting *Dactylanthus taylorii* seed on Mokoia Island. They planted an estimated 70,000+ seeds at six sites around the island mainly near mahoe and kohuhu host trees in a 2-day operation. This planting is a *Dactylanthus* Recovery Group priority and has been several years in the planning following consultation and approval from the Mokoia Island Trust Board last year. This is only the second predator free island in the country where *Dactylanthus* has been introduced. Staff will monitor sites annually for any sign of germination or flowering, but it is likely to be many years before we know if this planting has been successful. With plenty of young host trees and no possums or rats Mokoia has long been considered an ideal habitat for establishment of *Dactylanthus*.

Staff spent another day on the island checking on the survival of two other threatened plant species introduced to the island late last year as part of the island's ongoing restoration. Mistletoe (*Tupeia antarctica* and *Ileostylus micranthus)* seed was planted on a range of host trees around the island but so far does not appear to have established. However the endangered native cress *Rorippa divaricata* has faired better with 50% of the original plantings having established and set seed, although half of these have died off over winter. The plentiful seed gives us hope that new plants will establish in the spring and viable populations result.

EAST COAST/HAWKE'S BAY

from Rhys Burns and Steve Cranwell

Northern Te Urewera Ecosystem Restoration Programme (NTUERP)

The NTUERP continues to show impressive results following another season of pest control and outcome monitoring. Performance-based contractors, who trap possums to less than a 5% residual trap catch, cover 50,000 ha of the northern Te Urewera National Park. Interspersed amongst this are 'core areas' where more intensive pest management takes place. At present there are four core areas: Otamatuna, Onepu, Mangaone and Waikokopu.

At Otamatuna, stoat control has resulted in 70% of monitored kiwi chicks surviving to over 1000 g (the 'stoat-proof' weight) during the past 4 years of management. This compares to a 5% survival rate in other unmanaged North Island sites.

A breakthrough in stoat control developed by NTUERP may have been achieved using freeze-dried rats as a lure to trap stoats. When placed under a plastic cover these rats have remained effective in trapping stoats for up to 6 weeks under field conditions.

Two hundred and eighty tunnels each containing two Fenn traps were set along 42 km of lines on ridges, spurs and streams covering 1500 ha. The tunnels were alternately lured with a freeze-dried rat and plastic egg (which, along with hen eggs, are currently the best long-lasting stoat lure) in one tunnel, followed by a plastic egg in the next. Over a 3-month period 57 stoats were caught. Fifty (88%) were caught in tunnels containing the freeze-dried rats, which is significantly higher than the number caught using plastic eggs alone ($p<0.001$, Fischer's exact test).

Kokako numbers continue to increase at a rapid rate, despite the 1999/2000 season being a relatively poor breeding season. Monitored nests at Otamatuna had a 42% success rate. Kokako at Onepu and Mangaone both achieved a 50% success rate. Waikokopu, in its first year of intensive pest control, yielded a 20%

nesting success. This compares to nesting success rates ranging from 66-88% at Otamatuna over the past few seasons.

At Otamatuna, only 8 pairs of kokako were known in 1995, but a census in May/June this year revealed that 44 pairs are now present (up from 28 pairs in June 1999). Onepu pair numbers have increased from 5 pairs in 1996 to 14 pairs this autumn, while Mangaone now also contains 14 pairs, an increase of 4 pairs since intensive pest control began two seasons ago.

Two of these areas (Otamatuna and Mangaone) used 'Pindone' poison to control rats, whereas Onepu and Waikokopu used the novel non-poison technique of trapping rats in corflute tunnels baited with peanut butter. Surprisingly, the trapping outperformed the poisoning method, reducing rat tracking indices much faster and keeping them at very low levels for longer than the poisoning method.

Boundary Stream Mainland Island

The 3 Operation Nest Egg kiwi released into Boundary Stream from March 2000 to May 2000 have responded positively to their new surroundings. Progressive weight gains having been made among all three with the first of the released birds now at 1300 g and the latter two at 975 g. The birds' movements have been largely confined to the reserve, although one foray was made some 2 km from the reserve onto the other side of the range.

Monitoring of adult male kiwi within the eastern Kawekas has resumed. The number of transmitted birds has been increased from 5 to 8. With incubation having started amongst some of these kiwis, it is hoped a larger number of juveniles will be released into Boundary Stream over the coming season.

A trial to test the effectiveness of a rodent-based formula of Cholicalciferol (Feracol) in maintaining rat activity below a 5% tracking tunnel index appears promising. After 1 month of the baits having been available activity levels have been reduced to zero in the treatment area, and remain at 40% in the non-treatment site. The trial will conclude at the end of August.

TONGARIRO/TAUPO

from Cam Speedy and Nick Singers

Mistletoe

An excellent report entitled "Impact of possum browse on *Tupeia antarctica* at Ketetahi (Tongariro National Park)" has been received from volunteer Phil Eades. This information will provide an excellent basis to monitor ongoing possum impacts if and when future control occurs. It seems this species is a particularly sensitive measure of possum impact. Foliar browse methodology showed that 62% of 79 plants had no leaves at all 5 years after an October 1995 aerial possum control operation.

Kiwi

Four sub-adult kiwi have recently been released into the Karioi Rahui on the southern slopes of Mount Ruapehu. These birds were removed as eggs from nearby Waimarino Pine Forest and raised as part of Operation Nest Egg. Together with integrated pest control over an increasing area at the Rahui it is hoped these birds will seed a kiwi population recovery. Meanwhile in Tongariro Forest 21 Operation Nest Egg birds have now been released since 1997. Despite at least three deaths (ferret, pig & misadventure) and five transmitter failures, the remaining 13 birds are doing well and all remain within various parts of Tongariro Forest.

WANGANUI

from Rosemary Miller and Graeme La Cock

Yes, it's a short-jawed!

Stratford Area Office short-jawed kokopu spawning site hunters have finally been rewarded with success! Last year the team tracked down the first ever record of a koaro spawning site which fuelled the enthusiasm to crack the elusive short-jawed kokopu. A new recruit to the team (Jazz, the dog) may have been the secret! Eggs extracted from under boulders about 20 cm above the water level were positively identified through genetic analysis as being short-jawed kokopu. Eggs found on gravel amongst sticks (also located above the water level just above a pool where banded kokopu are known to hang out) turned out, not surprisingly, to be banded kokopu.

Brown mudfish habitat restoration work

Stratford Area staff have enhanced the habitat at a mudfish site with the addition of 400-plus plants. Once established, the planting will triple the amount of available habitat at this site. Other planting filled in gaps in the secondary growth in the area fenced last year. If habitat enhancement proves successful further trials of translocating fry will follow. Assessing the success of last year's fry transfer programme is on hold, pending the arrival of some 3-mm Gee-minnow traps ordered from America and presently held up in customs.

Mudfish in the Manawatu

A student from Massey University has been highly successful in increasing the known mudfish sites in the Manawatu. Previous to her survey, mudfish had been recorded from 1 site, but now 41 fish have been tracked down in 5 locations. Three sites are in native vegetation, one is a pond on a horse stud covered in willows, and the fifth in drains in pasture in sand country. Her largest fish find was 185 mm.

Threatened plant workshop

Jim Campbell put together an excellent workshop for the Whanganui Area staff. The regular contractors (for animal control, weeds etc.) were keen to learn about plants, so they were included as well. All round it was a great 2 days with everybody contributing heaps and learning a lot. Chat to Jim if you want to try something similar.

At the workshop Myles Gembitsky opted to look at the ground for *Alepis flavida* leaves, which proved more successful than searching the trees. So we now have evidence of mistletoes in two more trees at the Raetihi motor camp. Jim Clarkson came across from Stratford to discuss *Dactylanthus* work and caging.

Since this workshop Myles has found two populations of *Brachyglottis turneri* on the Whanganui River. The second population is opposite Tangahoe Landing and has extended the known distribution of the species in the region. This was one of the species that staff were asked to look for.

New and used staff

In Palmerston North Area Office Don Ravine has been given the task of programme manager for plants as well as his previous threatened animal portfolio. Viv Nicholls, who has probably done contracts for most plant people in the lower North Island, has been appointed as a ranger. Her main focus will be threatened plants and PNA. Welcome Viv, but please give the helpdesk a break.

CONSERVANCY NEWS

WELLINGTON

from Philippa Crisp, John Sawyer, Amanda Baird, and Christine Reed

Conservancy Office

A draft mistletoe atlas and guide has been produced for all 8 species found in Wellington Conservancy (Loranthaceous and *Korthalsella* spp.). A bibliography of plant checklists has also been published for the Chatham Islands. This refers to sources of plant information stored on the Chatham Island Flora Database used to map the distribution of all native and exotic plants.

A draft coastal dune vegetation protection and restoration strategy has also been produced that describes the conservancy status, distribution, and conservation needs of dune vegetation (especially pingao, spinifex, sand tussock, sand coprosma and sand daphne).

Wairarapa Area

A new plant species has been confirmed from the northern Wairarapa. First recorded by Andrew Townsend during PNAP survey work *Melicytus* aff. blondin is known from only three sites in the area. Material collected during a recent visit by DoC plant scientist Peter de Lange has been checked by Brian Molloy, and we have been notified that it is a new taxon.

Chatham Area (CA)

Staff have assessed threatened plants planted since 1993 at several protected areas. Eighteen species (of several provenances) have been planted. Plants were raised from seed collected locally and grown at Motukarara Nursery and then at the Chatham DoC nursery.

In Nikau Bush CA Barkers koromiko (*Hebe barkeri* - planted in 1995), Chatham Island (CI) kakaha (*Astelia chathamica*) and rautini (*Brachyglottis huntii*, 1998) have survived and grown well. Blackberry has proved too strong a competitor for some individuals.

At Chudleigh CA, Barkers koromiko (1995), CI ribbonwood (*Plagianthus chathamicus*, 1995 & 1999), CI kakaha (1999), rautini (1998) and toetoe (*Cortaderia turbaria*, 1997 and 1999) have generally done very well. Stock caused some minor losses. The 1997-planted Chatham Island toetoe have survived well.

At Wharekauri CA Chatham Island speargrass (*Aciphylla traversii*) has been introduced. Planting has occurred in five seasons since 1994. Speargrass can do well in fern/pouteretere (*Cyathodes robusta*) habitat as witnessed by growth of 1999 planted material. 1998 plantings were blitzed by pigs. New seedlings have established from the earliest of the planted speargrass.

At Tangepu CA results range from excellent to poor. There were stock problems prior to the fence repair. Species doing relatively well are toetoe, coastal speargrass (*Aciphylla dieffenbachii*), shore spurge (*Euphorbia glauca*) and pingao (*Desmoschoenus spiralis*). Pingao and shore spurge have struggled because of dune profile changes. Unsuccessful plantings include sowthistle (*Embergeria grandifolia*) and Cook's scurvy grass. Chatham Island forget-me-not (*Myosotidium hortensia*) were destroyed by cattle and sheep, although some individuals have grown well and produced seedlings.

CI kowhai (*Sophora chathamica*) planted in 1994 at Smiths Private Reserve has done well only on steep lagoon banks.

Little spotted kiwi

For the first time in New Zealand and possibly the first time in the world, a species has been re-introduced to the mainland following its demise there. Twenty little spotted kiwi were

...possibly the first time in the world, a species has been re-introduced to the mainland following its demise there...

transferred from Kapiti Island to Karori Sanctuary, Wellington, between 4 and 6 July. Six pairs, 2 adult males, 2 adult females and 4 juveniles were all alive and well when released within 30 hours of capture.

The Karori Sanctuary is a former water catchment area in Wellington City, only 3 km from Parliament Buildings. This 240-ha area of mainly native bush was ringed with a predator-proof fence in 1999, and all mammals were removed during an intensive trapping campaign and aerial application of Brodifacoum poison in 1999 (though mice have since reinvaded). The creation of this large predator-free area in the heart of Wellington allowed the reintroduction of a species that had disappeared from its natural range.

Brown teal

Brown teal, bred through the Ducks Unlimited network were transferred to Kapiti and Mana Islands on 14 August. Twenty-three brown teal have been quarantined for 30 days at Hamilton Zoo and have been screened for a wide range of waterfowl disease organisms. Ten female and 5 male birds will be released on Kapiti Island at three sites: Okupe Lagoon, Rangatira and Wharekohu. On Mana Island, 5 female and 3 male birds will be released in the newly created Waikoko wetland.

National Wildlife Health in Conservation Training Course

The course was organised by Wellington Conservancy and the staff of the Institute of Veterinary, Animal, Biomedical Sciences (IVABS) at Massey University during 11-13 July. Fifty-nine participants registered, comprising mainly DoC area staff from almost every conservancy. Private individuals and organisations interested in wildlife conservation also attended.

The objectives of the workshop were:

- To inform species managers about the principles, prevention and management of wildlife disease.
- To demonstrate procedures for examination, sampling and necropsy to determine causes of illness/death.

We were especially privileged to have Dr John and Mrs Margaret Cooper from the University of Kent as specially invited guest presenters. John is a leading wildlife veterinarian, having worked in Central and Eastern Africa, United Arab Emerates, Mauritius and Madagascar. Margaret has a legal background specialising in animal welfare and law. They teach graduate veterinary courses throughout the UK, run courses for veterinarians in Africa, and are advisors to Jersey and London Zoos. John and Margaret were joined by staff with a wealth of wildlife experience within IVABS, and by Dr Richard Jakob-Hoff from Auckland Zoo, and Jerry Pauli who provides veterinary advice to the National Wildlife Centre.

The course covered: defining disease, the value of health monitoring and sampling, case studies from black stilts, takahe, Auckland Zoo and the National Wildlife Centre, zoonoses (disease transmissible between humans and animals), parasitology, disease recognition in the field, physical examination and first aid, obtaining samples for diagnosis, establishing baseline health parameters, genetic sampling, practical disease management, risk assessment in translocations and captive management programmes, oil spills, avian anatomy, euthanasia and post-mortem, and exotic disease.

Staff feedback has been extremely positive with suggestions for potential follow-up events. Veterinary Continuing Education at Massey is keen on an international wildlife disease conference.

Margaret and John have expressed interest in returning to conduct three 1-day workshops on forensic pathology and animal law, wildlife rehabilitation, and reptiles. There is also potential for stronger training links between UK universities and ourselves.

NELSON/MARLBOROUGH

from Shannel Courtney and Jan Clayton-Greene

Threatened plants

Remonitoring of sand spikerush (*Eleocharis neozelandica*) on Farewell Spit in May has revealed that the population, though still small, continues to expand after the huge knock-back from Cyclone Dreena a few years back. Very encouraging is the successful establishment of a new colony, which we transplanted further along the spit last December.

Most of the Biodiversity Section, Technical Support crew spent 2 days on a team-building exercise up the Cobb Valley helping Golden Bay Area staff cage red and orange mistletoes on mountain beech trunks. A total of 13 cages were artfully constructed to protect numerous mistletoes on their 'last twigs' from the ravages of possums and deer.

A general survey into the headwater basin of the Howard River in the upper Buller catchment has revealed a number of threatened plant species. The low-lying topography, numerous wet sites, and the frosty nature of the area gave us a good indication that there could be some interesting finds here. Both leafless mahoe (*Melicytus flexuosus*) and erect hook-sedge (*Uncinia strictissima*) were found on river banks and terraces on adjoining private land. This is the second-known locality for erect hook-sedge in the northern South Island. Small populations of the diminutive native foxglove (*Ourisia modesta*) and red swamp sedge (*Carex tenuiculmis*) were both found on conservation land along forested stream sides and on swampy high terraces under manuka respectively. This makes a total of seven known populations of red swamp sedge in the conservancy, all confined to the upper Buller catchment. The Howard population is the largest of the four known on protected land. None of the Howard flats is fenced from stock from the adjoining farm, and cattle are having a major impact on vegetation structure, processes, and quality.

A July monitoring trip to several islands in the Marlborough Sounds has confirmed the maintenance of very healthy populations of Cook's scurvy grass and muttonbird groundsel (*Senecio sterquilinus*), both being maintained by prolific sea bird numbers and activity. Populations of the coastal *Kirkianella*, gossamer grass (*Anemanthele*), coastal spurge (*Euphorbia glauca*) and the coastal speargrass *Aciphylla squarrosa* also appeared to be either stable or increasing, while fierce lancewood has become locally extinct on one island - presumably from storm damage.

South Marlborough plants

Thirty *Australopyrum calcis* subsp. *calcis* plants, the Category A limestone wheatgrass, were planted this week in South Marlborough in the hope of establishing an insurance population. The subspecies currently grows at only one site around a limestone outcrop on farmland and could easily be wiped out by fire or landslides. Three more populations of *Urtica linearifolia* have been found, two as a result of RM consent inspections. Staff have given talks to the Marlborough District Council and to an NGO meeting about threatened plant conservation and have received a lot of encouragement from council staff and the public.

...13 cages were artfully constructed to protect numerous mistletoes on their 'last twigs'...

WEST COAST

from Jo Crofton, Josh Kemp, Paul van Klink, and Don Neale

Okarito brown kiwi

This season 20 pairs are being monitored for Operation Nest Egg and 10 pairs in the 'study area'. Eleven eggs have been laid so far, and 3 of these were collected for incubation in August. Two Operation Nest Egg chicks are paired with wild birds and 4 Operation Nest Egg chicks are also paired up with each other, no eggs have been laid by these birds, yet. Two wild chicks from 1998 are both still alive, 1 is still with its parents. These are the first wild chicks of known age in the forest since this project began. In October the 13 chicks on Motuara Island will be reintroduced to the forest.

Kea

A kea nest was discovered when hunting the lowland forest of the Paringa Valley. It was in the base of a live silver beech (c. 1.5 m diameter). The burrow was well worn and guano was evident on the forest floor out from the nest entrance. The nest was approximately 1.2 m deep and a torch was required to inspect the occupants. The three downy chicks present were huddled together and the tail of an adult was seen behind the chicks. From the size of the adult's bill it is thought to be a female. The birds acted completely defenceless during the visit and none made any noises during the disturbance.

Powelliphanta annectens

A snail shell found on the outskirts of Hokitika was handed in to us by a local farmer/teacher in June and identified as *Powelliphanta annectens*. Follow-up surveys found 2 live snails in the vicinity, and a proposed burn of the area was put off indefinitely by the farmer who was 'over the moon' about his discovery. The population is undoubtedly the result of a translocation (probably accidental) of the species away from its natural range in the Kahurangi National Park area, so it was decided that the site does not require active conservation management. However, because few such translocations are documented, a full report of the survey was written and is on DOCNet DME file WSCCO-17185.

...the farmer was over the moon about his discovery of Powelliphanta annectens...

OTAGO

from John Barkla

Alexandra grasshoppers

Mike Tubbs at Alexandra has been analysing data from last summer's grid search monitoring of Alexandra grasshoppers. Looking at two sites he counted them both on different days. The results confirm that numbers of these animals can vary wildly over short periods of time. Mike has also confirmed that temperature effects are crucial in determining whether the grasshoppers are out at all. The November 1999 floods in Alexandra inundated the key site at Earncleugh Tailings Historic Reserve for up to 4 days. Searches so far have not been successful in relocating grasshoppers at this site.

Mice and beech seed

Dawn Palmer at Queenstown reports that the quarterly mouse tracking lines and beech seed fall in the Caples and Dart Valleys have been completed. Both indices are up with mouse tracking rates averaging 43% in the Caples Valley and 73% in the Dart. Beech seed fall in the Dart is tapering off after reaching 3968 seed per square metre in March and 2336 in May this year. This is the third year that large numbers of beech seeds have been produced in the Dart.

Stoat trapping

Bruce McKinlay and Barry Lawrence have been tidying up the results from an investigation into the microsite factors

that might affect trap success when trapping for stoats in beech forest. The results, which featured on a recent TV3 news story, indicate that to increase the probability of trapping stoats, tunnels should be placed in close cover. Other factors such as the close presence of a tree or a track did not improve trap success.

Coprosma obconica

This vulnerable shrub was until recently known from just two sites in Otago, both discovered within the last 3 years. In the last month a further two sites have been found: Nugget Point and lower Taieri Gorge. At three of the four sites it is among dry coastal shrubland and low forest in association with another threatened plant, *Olearia fragrantissima*.

Mazus novaezeelandiae subsp. impolitus

Several historical sites for this vulnerable herb are known from Central Otago and are a priority for survey. John Barkla and Amanda Smale recently carried out a search of one such site at Luggate Creek, a tributary of the Clutha River. They first familiarised themselves with the species and its habitat at a site near the Clutha outlet which still has a good population. Despite a couple of hours of intensive searching no plants were found.

SOUTHLAND

from Brent Beaven, Pete McClelland, Wynston Cooper, Murray Willans, and Brian Rance

Southern NZ dotterel

The southern subspecies of the NZ dotterel breeds above bushline on Stewart Island (Rakiura). The total population of the subspecies had been reduced to c.65 in 1994 but rose to c.150 in 1999 and 185 this season following cat poisoning operations undertaken around key breeding sites on Stewart Island. This is an increase of almost 150% since 1995. Protection occurred at five key breeding sites on Stewart Island and targeted the control of rats and cats by using 'Baitek' (1080 cat bait) and 'Rentokil' (bromodiolone rat bait) in bait stations.

Owing to the success of this management, a greater number of birds may now be breeding outside the treatment areas where they are vulnerable to predators. A distribution survey is planned for this coming breeding season to determine where birds are breeding on Stewart Island. This survey may also reveal breeding areas that could be incorporated into the protection programme.

Following the breeding season on Stewart Island, all birds descend to the coast and form winter flocks, which stay together until August. Some birds cross Foveaux Strait to winter in coastal Southland, particularly in Awarua Bay. This is the only post-breeding flock of the species known from outside Stewart Island and can comprise up to c.30% of the total population. The count undertaken at Awarua Bay in early April this year as part of the annual census found 51 birds. This is the highest number recorded at the bay since 1972.

Stewart Island stoats

After the discovery of prints that looked suspiciously 'stoatish', and a history of potential sightings, traps were set in eight locations to determine the status of stoats on Stewart Island. Over 28 000 trap nights failed to capture any stoats. This suggests that they are either absent from the island, or only present in extremely low numbers.

Survey trapping will be conducted for 1 month every 2 years to monitor the situation.

Snares Islands weeds

Chrissy Wickes has undertaken a feasibility study for the eradication of weeds from the Snares Islands.

Campbell island rat eradication

Following the allocation of funds for this project advanced planning is underway.

Blue Mountains mohua

The two predator guild monitoring trap lines were operated in the Blue Mountains again last summer. A total of 12 stoats were caught in 35,280 corrected trapnights (CTN). Over the five summers that the lines have been operated the number of stoats caught tallied 13, 6, 12, 5, and 12 respectively.

Because of the extremely heavy beech seedfall of the preceding autumn and the predicted consequent mouse and stoat plague, a further three trap lines were installed in and about an area with a particularly high Mohua population. These lines were operated over November and December only and accounted for 11 stoats in 13,556.5 CTN. Given that the mouse index trapping undertaken in November 1999 resulted in a 33-fold increase in numbers caught compared with any of the preceding 5 years, the lack of a significant increase in the number of stoats caught was somewhat unexpected. Therefore one tends to the conclusion that for reasons unknown in the Blue Mountains there is a low population of stoats and/or that a stoat irruption does not necessarily follow a major beech mast year and a subsequent significant increase in mouse numbers. (It's something of a case of the more we find out the less we really know!)

Coprosma pedicellata

While on an inspection of Waituna Scenic Reserve and a nearby proposed QEII covenant *Coprosma pedicellata* was found. The scenic reserve contained a small to moderate population, while the proposed covenant contains at least several hundred adult plants of a healthy mixed-age population.

Te Kakahu

Staff have just returned from a trip to Te Kakahu and, once again, no sign of stoats was detected.

The trap line on the adjacent mainland (a distance of 1100 m away) was checked again but not cleared and approximately 80% of the 108 traps set was still available to catch stoats. Only 5 stoats and a few rats were in the traps. This trap line was last cleared during February 2000. This is particularly encouraging, because even after a stoat plague year it looks as though two trap checks per year will be sufficient on the mainland.

If no further sign of stoats has been detected on either the Passage Islands or Te Kakahu by February 2001 we expect to be able to say with some confidence that all stoats have been eradicated. By then the project will have been through consecutive stoat plague years on the mainland and two stoat breeding seasons on Te Kakahu, and it will have been 20 months since the last stoat sign was recorded.

Trained stoat dogs are also taken on each trip to Te Kakahu and have yet to find any sign there.

Stoat Island immigration study

This work has been funded by the stoat research group and is aimed at determining how often stoats swim to islands of varying distances (150-1150 m) from a source population.

Twenty five islands have been identified in Doubtful, Breaksea and Dusky Sounds for this work. Standard trap tunnels and density of tunnels will be placed on each island and checked twice annually for 5 years. Islands without rodents and of a size insufficient to hold a resident stoat population have been chosen.

OTHER BITS

AERIAL POSSUM CONTROL AT WHIRINAKI AND IMPACTS ON KERERU AND KAKA

from Ralph Powlesland, Science & Research Unit

This project is funded by the Animal Health Board, Science & Research Unit, and Rangitaiki Area Office of DoC. Its objectives include determining the costs (mortality as a result of the poison operation) and benefits (reduced mortality and increased breeding success after the poison operation as a result of poisoning introduced mammalian predators and competitors) of an aerial 1080 possum poisoning operation to kereru and kaka in Whirinaki Forest Park. This requires the radio-tagging and monitoring of kaka and kereru in a treatment area (Otupaka Ecological Area) and in a non-treatment area (Oriuwaka Ecological Area).

The project began in October 1998. To date, 63 kereru have been captured and survived at least a fortnight after being radio-tagged. Of these, 28 (44.4%) have died, giving a mean life expectancy of just 0.9 years! Although the cause of death or species of predator involved is not always obvious, the following are the assumed causes: 1 died on a nest, 2 collided with vehicles, 5 killed by cats, 6 killed by mustelids, 5 killed by falcon/ harrier, 2 killed by poachers, and 8 killed by unknown predators. Most of the deaths were in autumn (43%) and winter (29%), when the kereru were feeding mainly on miro fruit. A diet of miro fruit makes the kereru thirsty. The birds drink at puddles and streams in the forest where they are vulnerable to predation by cats and stoats. A further 25% of the dead birds were found in spring 1999 when little fruit was available and many kereru were feeding on foliage in the understorey. One of the birds had been caught by a cat while feeding a couple of metres above the ground.

Fifty-three kaka have been captured and survived at least a fortnight after being radio-tagged. Of these, 3 (5.7%) have died, giving a mean life expectancy of 20.5 years. All 3 kaka that died were females killed by unknown predators.

The carrot-1080 aerial possum poisoning operation occurred in May 2000. The pre-feed baits were distributed at 5 kg/ha by the contractor, Epro Ltd of Taupo, on 1 May. The poison bait (10 kg/ha, 0.08% 1080, 2435 ha treatment area) was distributed on 17/18 May. Monitoring of bait distribution (10 lines each of 1 km long, with the requirement that there be at least 1 bait in each 50 m segment) indicated a 99.5% coverage. None of 17 kaka (10 male, 7 female) in the treatment area, and 20 (9 male, 11 female) in the non-treatment area died during the fortnight following the poison drop. Similarly, none of 15 kereru in the treatment area died after the poison drop, but 1 of 11 (9.1%) died in the non-treatment area. Five dead birds were found in the treatment area: 3 tomtits, 1 chaffinch and 1 hedge sparrow. Muscle samples have been taken from each and will be tested for 1080 in due course.

Possum monitoring in the treatment and non-treatment study areas (six lines of 20 traps in each) during February 2000 resulted in 31.4 and 32.9 captures/100 trap nights respectively. Monitoring was repeated in the treatment area following the poison operation (12-16 June 2000) resulting in 4.4 captures/100 trap nights, just below the objective of 5% RTC.

Likewise, the impact of the poison operation on rodent and mustelid populations was monitored using tracking tunnels (10 lines of 10 tunnels in each study area), pre-operation monitoring in April 2000 and post-operation in June, 3 weeks after the drop.

The tracking index for rats went from 56 to 76% in the non-treatment area, but 43 to 5% in the treatment area. All rat prints were in one line of tunnels near the boundary of the drop zone. The mouse index declined in the non-treatment area (30 to 14%), but increased in the treatment area (23 to 30%). The mustelid index declined from 2 to 0% in the non-treatment area, and 6 to 0% in the treatment area between the two monitoring sessions.

In conclusion, the results to date indicate that the aerial 1080 possum poisoning operation has not had a detrimental impact on the tagged kereru and kaka. A large proportion of possums and rats were killed. This latter outcome is expected to result in greater food resources (particularly flower buds, flowers and fruit) and reduced predation of eggs and chicks of kereru and kaka in the treatment area next summer. Monitoring will continue to determine whether such benefits do eventuate for the radio-tagged birds.

SHORE PLOVER REINTRODUCTION

from Shaun O'Connor

Last season saw a milestone for the reintroduction of shore plover to 'mainland' New Zealand. A shift in release sites has brought speedy progress.

The reintroduction programme shifted site in mid 1998 following the wind up of large-scale releases on Motuora Island after further clear evidence of morepork predating and scaring released birds from this island. The new site, a privately owned island free of significant introduced predators and morepork, has subsequently seen three annual releases of shore plover since 1998. (The island is not being named to respect the owner's wishes.)

...the Motuora programme claimed success with the first breeding of wild shore plover on mainland New Zealand...

In contrast to Motuora, post-release survival and residency has been high at the new site. There have been no recorded deaths of released birds on the island. Eighteen months after the first release, residency was 53%. In October 1999 territorial aggression levels rose noticeably, particularly amongst the first release birds. Three birds dispersed to the mainland between September 1999 and February 2000 following this increase in social pressure. However 5 pairs subsequently formed over the 1999/00 season and successfully bred, fledging 4 chicks. These 4 juveniles are still resident, and the total population currently stands at 28 birds (63% residency).

In the meantime, the Motuora programme claimed success – the first breeding of 'wild' shore plover on 'mainland' New Zealand this century with one staunch pair fledging young in the 1998/99 season. Unfortunately, of the 2 chicks produced 1 was predated and the other died from a leg injury. The same pair pulled it off again in the 1999/00 season, fledging 1 chick, which was seen recently on a neighbouring island with a male released in early 1998. The successful pair is still resident on Motuora; they have obviously learnt to survive in the presence of morepork.

Over the last month shore plover at the second release site have began squabbling and drawing boundary lines on their patches for the coming season. Watch this space!

NEW *SEBAEA OVATA* POPULATION

from Jim Campbell

For several years the Whanganui Area Office has had the dubious honour of managing this critically endangered gentian which, despite our best efforts, seems destined to slide towards extinction. *Sebaea ovata* occupies a very small area

in the coastal Whitiau Scientific Reserve. This last known New Zealand population is under severe pressure from encroaching weeds, trespassing stock, habitat degradation and possible mineral deficiencies. NIWA research contracts, ex-situ growing trials, experimental habitat manipulation are some of the suite of tools being used to gain information to halt the decline. While we have had our successes, things have looked fairly grim for *S. ovata*.

However, while Justin Rehia (Taumaranui Field Centre) and I were carrying out weed transects in Hawkens Lagoon, another coastal reserve, a likely looking ephemeral wetland was noticed. A quick detour and subsequent search turned up an extremely healthy, vibrant population of *Sebaea ovata*. All plants in this small area are in various stages of reproduction. Immature, flowering (unusual for this time of year), and seeding plants were all found.

After a quick phone call, Colin Ogle (Wanganui CAS) arrived to confirm the find. Samples were taken for NIWA and CHR. The immediate area was surveyed but only turned up a large area of pampas, which without immediate control is likely to over-run this new plot of *S. ovata*. A great find for the future of this plant, and it goes to show that it sometimes pays to deviate from the line!

TAKAHE PROGRAMME 1999/ 2000 UPDATE

from Dave Crouchley

End of season figures show that total adult takahe numbers increased from 216 last season to 221 (2.3 % increase). The total number of adult birds on the four islands remained at 59 while the number of adults birds in the Murchison Mountains increased from 124 to 133 this year (7.2% increase), and the number of pairs increased from 47 to 49 (4.2% increase).

Ten captive-reared takahe yearlings from Burwood were released at three locations in the Murchison Mountains in October. Thirty-eight of the 49 pairs located in the Murchison Mountains are known to have nested. They laid 48 clutches, producing 80 eggs. Thirty-nine chicks hatched. Nine chicks and 1 egg were transferred to the Burwood Bush Captive Rearing Unit. Twelve were confirmed still alive in the Murchison Mountains in February. Six chicks were reared successfully on the islands this year.

Three of the 5 pairs at Burwood nested and produced 10 eggs. Six chicks were reared from these eggs. A total of 15 chicks were successfully raised at Burwood this season.

Between 30 and 45 takahe were monitored using radio transmitters in the Murchison Mountains over the 1999/2000 year. This work is aimed at assessing survival and productivity differences between captive reared and wild reared takahe and determining causes of mortality. We have recently changed our transmitter design following an energetics study that showed significant cost for the birds in wearing transmitters. We will be preparing an article on this for the next issue of *Rare Bits.*

Egg and chick production from 9 pairs in the McKenzie block of the Murchison Mountains, was intensively monitored for the third year running. We have been using temperature data logger eggs, time lapse video, and small chick transmitters. This takahe egg and chick mortality study is due to be completed in the 2000/2001 year.

The annual harvest target (140) for deer control operations in the Murchison Mountains was achieved with 146 deer being removed in official control

operations. Increased effort in monitoring and data collection since the 1996/1997 review of the programme has enabled the calculation of population estimates and harvest targets to achieve a desired level of control. The good results achieved in the 3 years since the review reflect the skill and hard work of the contractors/operators involved, as well as the improved planning and increased resources.

A stoat-trapping programme, aimed at protecting nesting takahe, was established in Mystery Burn, Point Burn, and Takahe Valley. Ninety-two trap stations were serviced between September and May. A total of 149 stoats were caught. This includes 30 stoats caught in three traps operated by Fiordland Travel staff at the tourist caves and some stoats caught during a radio-tracking study in the Mystery Burn and William Burn. Des Smith of Otago University is undertaking an MSc study in the area looking at home range, habitat use, and diet of stoats in the area. He will be carrying out further fieldwork this coming summer. We plan to use the results of his work to help us design a landscape style stoat trapping programme covering the SE sector of the Murchison Mountains (14,000 ha). This programme should help determine the effect of stoats on the takahe population through a research-by-management approach. There should also be considerable benefits for other species such as kiwi, mohua, and blue duck.

Monitoring of climate and mountain beech seedfall in Takahe Valley has continued. The 2000 autumn produced a moderate mast of beech seeding (high-ish stoat numbers again next summer). Five yearly re-measure of tussock monitoring lines in Takahe Valley and Chester Burn was completed this summer.

The takahe database has now been installed on the DoC Citrix network in Access format. Data checking and entry work to complete the installation of the data from 19 years work in the Murchison Mountains has been a bigger job than expected. This should be completed by end of September.

Rare Bits is issued four times a year by the Biodiversity Recovery Unit (BRU), Department of Conservation, Tory Street, Wellington.

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Articles about threatened species management issues are welcome from anyone. Send them to the Editor, *Rare Bits*, BRU, Department of Conservation, PO Box 10-420, Wellington, in Word, on a floppy disk, or as an Email attachment (internet mail: smoconnor@doc.govt.nz).

Please follow these word limits: Conservancy News 800 words, Restoration Resumé 500 words, Island Roundup 1000 words, Other Bits 900 words, Feature Article 800 words.

Articles should be clean (ie, free of any formatting) and any graphs or figures should be saved as TIF files.

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