



Rakiura Māori Lands Trust

THE NECK RESTORATION PROJECT

2007 - 2019

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INTRODUCTION

Vision

After commissioning an independent report on the condition of The Neck and the key land management issues it faced (R. Lough, 2007), the Rakiura Māori Lands Trust (RMLT) developed a vision for The Neck in consultation with the beneficial owners. As a result, the following vision was adopted at the Rakiura Maori LandsTrust AGM held in Bluff on 30 September 2007.

1. To pro-actively manage 'The Neck' for the advantage of all beneficial owners in accordance with the requirements of the Trust Deed.
2. To preserve, respect, and protect the historical sites of 'The Neck' placing special importance on our urupa.
3. To put the lands where possible into productive use to fund the vision and generate benefits in an equitable way to all owners through sustainable and eco-friendly business developments.
4. To remove animal pests and progress 'The Neck' closer to pre-settlement conditions that will promote the survival and development of the native flora, fauna and landscape.
5. Where possible and appropriate provide occupancy that is eco-friendly in presentation and use to the surrounding environment.

This report summarises the land management actions that have been taken in response to the owners' vision in points 1 to 4 above.

Key actions taken

- Putting an end to burning and discouraging the presence of dogs
- Building a boundary fence above Lowrys Beach to exclude all livestock
- Establishing regular photopoint vegetation monitoring to assess progress and to aid management
- Track & shelter established for land management access and potential tourism enterprises
- An ecological approach to gorse management
- Implement shed built at Lowrys Beach
- Plant and equipment purchase for land management
- Ground-based possum control and ongoing trapping
- Weed survey with DOC expertise/assistance
- Employment of part time staff
- Limited rat and cat trapping
- Assessment of deer impacts, deer fence built and control operation underway
- Urupa protected by removal of livestock, fencing (one site) and clearing gorse
- Creation of Rakiura Wildlife Enterprises Limited (RWEL)
- RWEL commissioned reports on Kiwi, Hoiho, track extension, urupa mapping
- Seeking/obtaining DOC funding for animal pest management
- Liaising with DOC and obtaining professional advice/technical expertise



Fence to exclude livestock



Photopoint monitoring



Clearing gorse at urupa



Headstones protected



Shelter



Norski toilet



Deer fence



The Neck: Topographic

Boundaries shown here are approximate
 Sections 11, 16A and 16B are not
 administered by the Rakiura Māori Lands Trust



Title boundaries

CONDITIONS ON THE NECK PRIOR TO THE RESTORATION PROJECT

Settlement history

Archaeological evidence from the low sandy isthmus east of Cow Island indicates its use by Māori for at least 700 years. When, John Boulton, an early European visitor came to The Neck in 1827 he reported a population of “no more than 20 ... living on top of a hill” (Hall-Jones, 1994). In 1836, Captain James Joss and William Anglem each purchased a section of land from chief Tuhawaiki on The Neck’s northern peninsula and whalers and sealers began to settle there and intermarry with Maori. By 1846 the population had reached 60. In 1863, the geologist James Hector recorded “16 to 20 houses and a good deal of tilled land on The Neck” (Hall-Jones, 1994).

The Neck was reserved for half-caste settlement after the Crown purchased Rakiura in 1864 - with 10 acres granted to each man and 8 acres to each woman (Stewart Island Grants Act 1873). The school was built in 1878 beside what is now a large stand of macrocarpa trees above Schoolhouse Point and by 1879 it had a role of 30. The settlement apparently grew to about 200 people by about 1900, but by 1920 it was virtually deserted (Samson, 1982). From a distance, there is little visible evidence of the former settlement.

Vegetation cover

Before human settlement, the indigenous flora was likely to have been characterised by two broad vegetation types: podocarp/broadleaf forest in higher or sheltered areas beyond the influence of salt spray; and coastal low forest and shrubs on the exposed margins and on low narrow parts of the northern peninsula, especially on east and southeast aspects open to the sea. The sand dunes between Lowrys and Back Beach may have been lower and more open, with some coastal shrubs.

It is hard to assess what impact pre-European Māori had on the vegetation of The Neck. However, 80 years of post-European settlement with up to 200 residents, together with introduced animal and plant pests, would have led to significant changes. The present locations of remnant podocarp/broadleaf forest, coastal forest and regenerating species, suggest that large areas of the Neck were burned and/or cleared for housing, access, gardens, firewood, timber and crops, including the Northern peninsula. James Joss was said to have had land under cultivation at Joss Bay for potatoes, wheat, peas, beans and strawberries and there was said to be an abundance of pigs there for meat (Hall-Jones, 1994). Wheat was also grown above Eastern Bay.

By 2007 the vegetation cover broadly comprised:

- Remnant podocarp/broadleaf forest of varying density through the central part of The Neck and out towards the easternmost point, and pockets of remnant coastal forest, mainly on steep coastal faces.
- Species such as manuka and water fern in once-cleared areas in a process of succession to native forest.
- Recently burned areas - forest margins, forest patches, shrub land, gorse and fern.
- Isolated patches of old established pines and macrocarpa with new wilding trees spreading downwind. A few gums behind Cooper Bay and at Papatiki.
- Dense stands of gorse subject to regular burning and unburned areas of gorse with native forest species regenerating through it.
- Isolated patches and individual plants of gorse in open grassland and fern.
- Rough grazed tussock/fern/rushes/gorse across the northern peninsula, along margins from Schoolhouse Bay to Lowrys Beach and at Jacky Lee Bay.
- Marram grass on sand dunes between Lowrys Beach and Back Beach and on the Spit/Old Neck south of The Neck (page 14)



The kaiki at The Neck of Stewart's Isle [1860s?].
Ref: E-296-q-158-1. Alexander Turnbull Library,
Wellington, New Zealand



Site of former Mission (Photo: Rakiura Museum)



School & Traill home, The Neck, Stewart Island,
circa 1880, Dunedin, by Burton Brothers studio. Te
Papa (C.016171)

Land cover

The photographs below indicate that much of the forest clearance around the margins of The Neck occurred at least 60 years ago. Gorse has spread to occupy many of these areas.

Vegetation is typically:

- Remnant taller forest of varying density through the central part of The Neck and out towards the point southeast of Back Beach. Broadleaf (*Griselinia littoralis*), southern rata (*Metrosideros umbellata*), Kamahi (*Weinmannia racemosa*), stinkwood (*Coprosma foetidissima*), Supplejack (*Ripogonum scandens*), bush lawyer, crown fern (*Blechnum discolor*), Wheki (*Dicksonia squarrosa*), soft tree fern (*Cyathea smithii*), tree fuchsia (*Fuchsia excorticata*) especially on forest margins, and stands of manuka (*Leptospermum scoparium*).
- Pockets of remnant coastal forest mainly on steep coastal faces but also extending in an unbroken band between the eastern and western coasts at the northern end of the Spit - muttonbird scrub (*Brachyglottis rotundifolia*), leatherwood (*Olearia oporina*, *O. colensoi*) and turpentine scrub (*Dracophyllum longifolium*).



The Neck: 1958 (Photo: Environment Southland)



The Neck: 2018 (Photo: Digital Globe, Earthstar Geographics)

KEY MANAGEMENT ISSUES IDENTIFIED IN 2007 (R. Lough, 2007)



2007: Pugging of soils at The Neck by livestock

The impacts of livestock and associated 'farming' practices on the land, its waters, its native vegetation and its wildlife

- Sheep and cattle were found to be grazing across much of the land, penetrating bush margins, heavily grazing and trampling the understory in places and tracking through these areas to reach grazing beyond.
- No adequate fencing was in place to prevent the unauthorised grazing of any of the administered land.
- Cattle were contaminating pristine beaches and streams and trampling through yellow-eyed penguin and kiwi habitat.
- Severe pugging of soils, primarily by cattle, had occurred in wetter areas that may once have been small wetlands. Heavy tracking by deer and cattle was common in forest areas.
- Deep tracking had also occurred in sandy soils causing slumping behind beaches and along streams, potentially exposing culturally sensitive sites.
- Livestock had trampled unmarked graves amongst weeds and gorse below the site of the former mission and many headstones had been knocked over, presumably by cattle, at the 'Cemetery Reserve' (near the site of the present shelter).
- The condition of the vegetation and obvious recent evidence indicated that frequent burning of gorse had been occurring at The Neck. Gorse responds strongly to burning, which helps to germinate its hard seed. On its own, burning is not an effective control measure.
- Forest margins had also been badly damaged by fire in many places, including areas where no gorse was present.
- There was rubbish near the buildings and Back Beach. A sheep dip on Section 7 was potentially a contaminated site.

Animal pests

- There was abundant sign of deer and possums, with heavy browsing and dieback of favoured native tree species. Rats and wild cats were clearly present. The podocarp forest and the indigenous species that depend on it were facing heavy pressure from animal pests, as in other eastern areas of Rakiura where they have significantly depleted native flora and fauna and constitute a threat to the continued existence of the current forest types.

Wilding trees

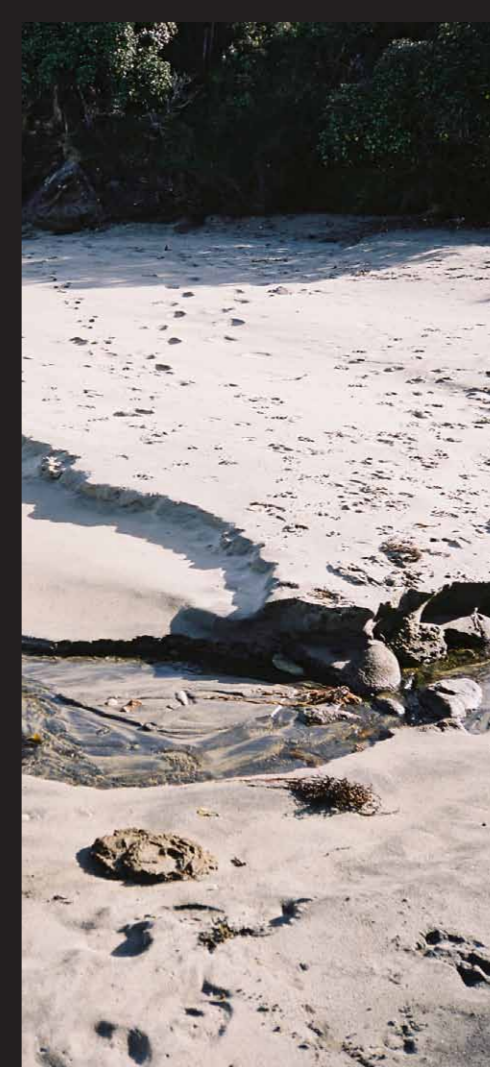
- Most of the isolated older macrocarpa and pine trees had seeded the spread of wilding trees and will continue to do so if open areas are available. These species do not readily establish under forest but can have a marked impact on otherwise natural landscapes.



2007: Toppled headstones



2007: Burnt forest margins



2007: Deep tracking and contamination of beaches and streams



TRACK DEVELOPMENT

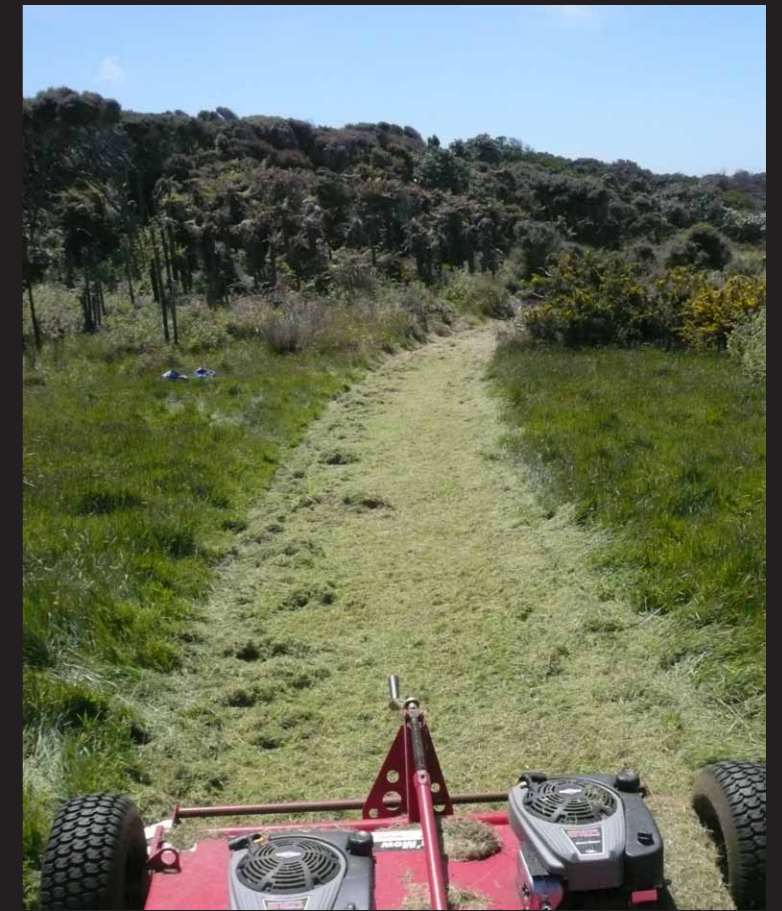
The Rakiura Māori Lands Trust wished to establish a walking track that could serve a potential tourism enterprise while also providing practical access for land management purposes. A crushed shingle track such as on Ulva Island would have been prohibitive (potentially \$100 per metre) and would have left a lasting impact on the land. Instead the Trust chose a conservative low impact approach costing about \$2 per metre with a low maintenance mown grass surface sited to minimise soil disturbance and drainage requirements. It has a two metre wide profile to reduce the intensive wear and tear that occurs on narrower trails.

Two small wooden footbridges were then built and a shelter erected at the end of the track with spectacular views.

In December 2009, the nearly 3 kilometre main track was largely established in about 4 days by Ian Munro, Roger Lough and volunteer Luca from Italy.

Most of the work was done with a tow-behind mower with Ian doing minimal excavation and levelling with his digger as necessary. Only one or two native shrubs were affected.

Most of the track is sited on outward sloping contour to minimise drainage requirements. Standing dead tree fern trunks (resulting from former burning regime) were then utilised for creating a 'corduroy' pathway in wet spots.



A wet track section requiring treatment

Local resource - dead burnt tree ferns

'Corduoy' laid laterally to enable water flow

Track now naturally grassed over, firm and dry

TRACK DEVELOPMENT CONTINUED

The track now provides very useful management access, clear opportunities for easy guided walks and the potential to be extended with a forest walk to the Spit/Old Neck. It provides a natural experience with spectacular views. Kiwi commonly use the track and weka have now appeared there as well. Hoiho are still seen on the coast beyond the shelter, and hookers sea lions often visit Lowrys and Back Beach. It takes about 2 hours to mow the track and it has generally required little other maintenance.

In 2010, an attractive shortcut trail was established through the forest to provide for occasional use as a shorter and more sheltered alternative return route. It was established in less than a day with minimal impact on the vegetation and reduces the walk by about 800 metres (refer to map at right and photo below).



The 'shortcut' forest trail



The shelter



The implement shed above Lowrys Beach



Location of main track, the shortcut and the route used for management access



The track, depicted here by the pale line, has had a negligible impact on the landscape

VEGETATION MONITORING

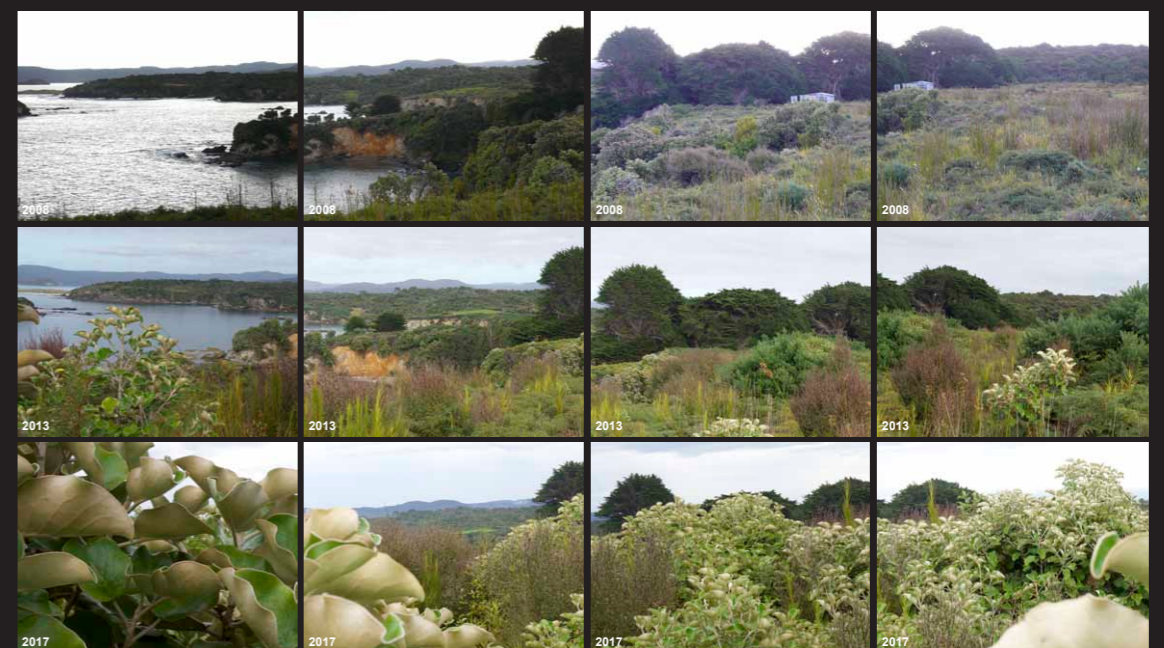
Vegetation monitoring was established to assess changes in vegetation at The Neck, especially in response to land management decisions/actions, and to help determine priorities for future action. A low level photopoint monitoring approach was taken to establish a baseline against which to detect subsequent trends/changes. This was more affordable than more expensive comprehensive monitoring methodologies. More than 20 fixed photopoints were established around the Neck with a replicated set of photographs taken at each re-measurement.

A number of the images in this report have been drawn from that database and show the usefulness of the monitoring in demonstrating broad changes in vegetation following the cessation of burning, removal of livestock, and animal pest control. The monitoring has also shown what has not changed, such as the ongoing suppression by deer on palatable species within their reach such as broadleaf, fuchsia, red matipo, lancewood, shining karamu, wheki, schefflera digitata and haumakōroa. Seedlings of these species are rarely found at The Neck except as epiphytes above the reach of deer.



KEYSITE: The Neck		PSITE NO. 11
SITE: 11		
GRID REF: E2143384 N5352529		
SPECIFIC LOCATION: Mound near cliff edge east of Dawsons hut		
DATE ESTABLISHED: 24/02/08 ESTABLISHED BY: R Lough		
ON SITE LOCATION	PEG PLACED <input checked="" type="checkbox"/>	PHOTO OF SETUP <input checked="" type="checkbox"/>
Sketch of location & reference points		
Reference Point 1	Reference Point 2	Reference Point 3
Cliff edge	Cliff edge	Eastern tip Cow Island
Dist. to peg:	Dist. to peg:	Dist. to peg:
Brg. from peg:	Brg. from peg:	Brg. from peg:
Photoframes established from this photopoint		
Date	Frame reference	Frame name
24/02/08	11	11.6 to 11.26 inclusive
PHOTO FRAME SHEET		
INITIAL SETUP <input type="checkbox"/> REPLICATION <input checked="" type="checkbox"/>		
PSITE NO. 11		
FRAME REF: 11		
FRAME NAME: 11.6, 11.7, 11.8, 11.9, 11.10, 11.11, 11.12, 11.13, 11.14, 11.15, 11.16, 11.17, 11.18, 11.19, 11.20, 11.21, 11.22, 11.23, 11.24, 11.25, 11.26		
SPECIFIC LOCATION: Mound near cliff edge east of Dawsons hut		
FORMAT: <input type="checkbox"/> Horizontal <input type="checkbox"/> Vertical	SHOT TYPE: <input type="checkbox"/> Impact specific <input type="checkbox"/> Overview <input type="checkbox"/> Panorama/arc angles	
FRAME DESCRIPTION: Pan of grassland at Dawsons		
ARC ANGLES: 21 frame pan from 227° T through to 116° T		
Initial Setup		
Date	24/02/08	21/2/17
Time	7:21 PM	10:30 AM
Weather	Nor'west cloud, late sun	70% cloud
Photographer	R Lough	R Lough
Camera Model: Lumix DMC-FX30		
Lens Model: Leica		
Filter: Sony 18-55		
Focal Length: 12 mm		
Film Name: -		
ASA/ISO Rating: 100		
Aperture: 4.5		
Shutter Speed: Auto		
Tripod Height: 900 mm		
Release Method: Manual		
Flash Type: -		
Flash Strength: -		
Film Roll No.:		

Set up page: Photopoint 11



Photopoint 11 - 2008 to 2017

POSSUM CONTROL

In 2007 the forest canopy was severely affected by possum browsing, with fuchsia/ kōtukutuku (see photo below) and southern rata clearly under stress. Successful ground-based poisoning in 2008, using bait stations on a 100 x 50 metre grid, reduced the possum population to near zero. A 'virtual fence' of elevated kill traps to impede possum re-infestation was then established in the forest just north of the Spit/Old Neck. Associated rat trapping was used to reduce rat interference with possum traps. Traps were also installed near Lowrys to intercept possums invading from untreated land at the north of The Neck not under RMLT administration (Sections 16a and 16b). The owners of Section 11 agreed to possum control on their land. The operation was undertaken by Contract Wild Animal Control Ltd.(CWAC).

In 2017, generous DOC Community Funding enabled a second bait-station CWAC operation after possum sign began to increase. As in 2008, no surviving possums were detected in monitoring after the 2017 control operation. Possum control has enabled the canopy to flourish with increased flowering and seed production and has improved the habitat for native species. The removal of possums is also likely to have reduced competition from possums for kiwi nesting sites.



2008
Possum browse damage to forest canopy, especially fuchsia/kōtukutuku at 'A' on map above (photopoint 18)



2008
Possum impacts at 'B' (photopoint 6)



2019
Same site as above after ongoing suppression of the possum population



2019
Same site after possum control

DEER CONTROL

While successful possum control at The Neck has enabled the forest canopy to flourish and increase seed production, vegetation monitoring there shows that deer browsing and damage to saplings (example below left) has kept the forest floor almost devoid of palatable species.

The Mamaku Point Conservation Reserve north of Oban demonstrates the importance of controlling deer as well as possums (they have also targeted rats and cats). The dense sub-canopy of lush vegetation regenerating at Mamaku Point stands in stark contrast to The Neck, especially in areas of canopy dieback or in clearings created by fallen trees. Ulva Island provides another example of a deer-free environment, as do deer exclosures further to the south.

The deer fence erected at the Old Neck in 2017 now provides a management boundary to limit the re-infestation of deer after control work. Deer control (by shooting) began in earnest in 2019 and its success will be assessed by the response of palatable native species. A single browsing deer can damage or destroy a great many young seedlings in a day, especially in an open forest floor, so even one or two surviving deer could prove to be too many for The Neck.



Stag damage to more than 20 young miro in one clearing at The Neck. Note also the lack of seedlings on the forest floor. Without deer browsing this clearing could be expected to be lush with regenerating native species similar to the photo at right.



Possum control in the Mamaku Point Conservation Reserve began at about the same time as at The Neck. But, in contrast to The Neck, effective deer control at Mamaku Point has allowed deer palatable species to flourish again.



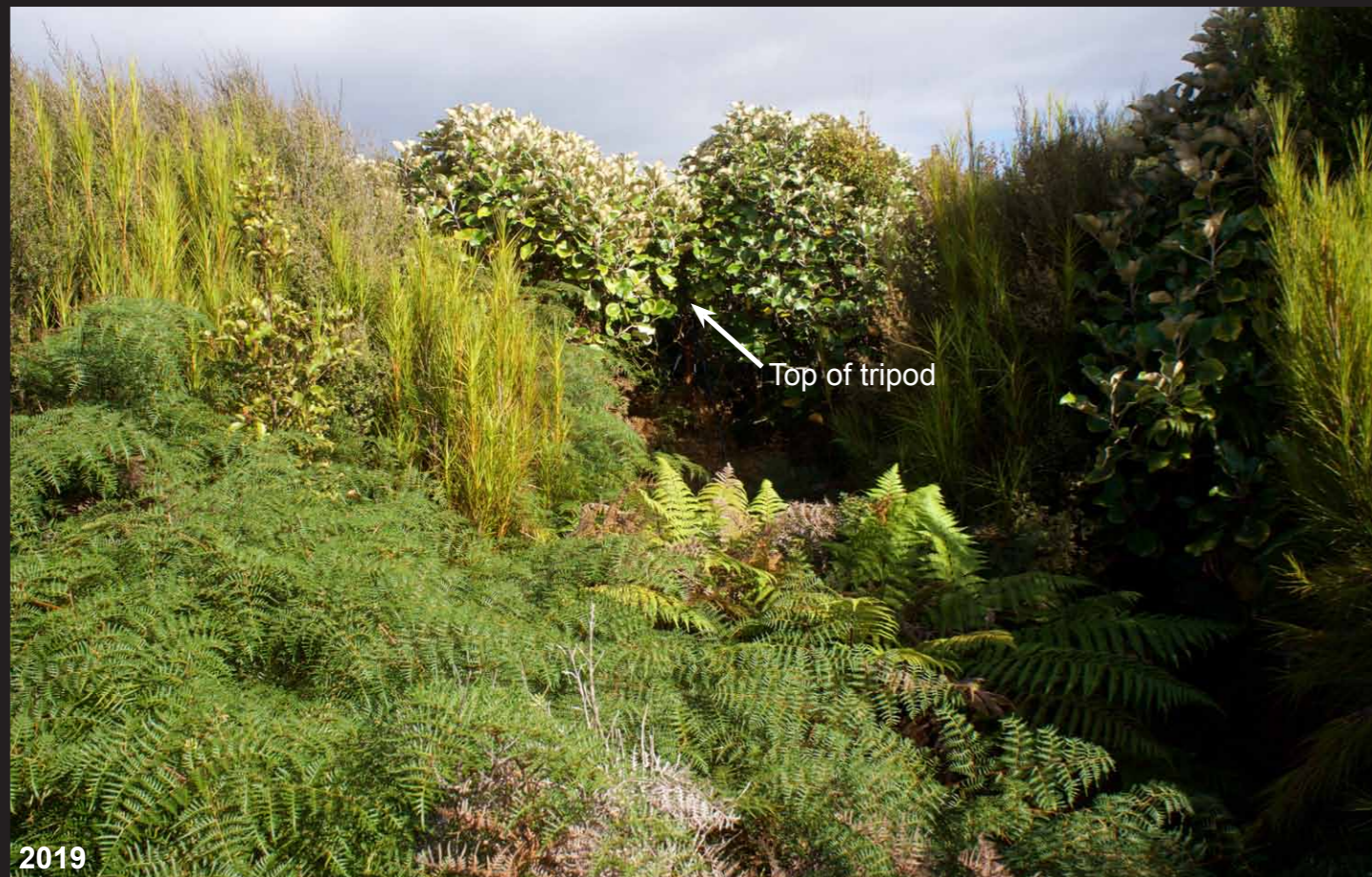
The fence from coast to coast to the north of the Spit/Old Neck now provides a boundary for deer control operations. Note the deer tracking outside the fence from animals trying to enter. Vigilance will always be required as some deer may still swim to The Neck.

RECOVERY OF VEGETATION

A direct result of RMLT management



Photopoint 11: After the former practice of burning vegetation was stopped and the sheep and cattle were removed, a diverse indigenous coastal shrubland has now regenerated at this site. It now overtops the vegetation monitoring photopoint tripod (below) which is in the exact same position as in 2008 (above).



Photopoint 14: By 2008, frequent burning of vegetation had caused severe damage deep into forest margins (above), encouraging gorse germination and preventing the regeneration of native species. The site is recovering after 11 years with no burning (below). Gorse provides a nursery for natives (inset) which then overtop the gorse as it matures and opens up.



GORSE

The yellow flowers in the aerial image below (2010) give a good indication of gorse distribution when the restoration project began. Burning does not control gorse; it promotes it. Left unburned, the gorse is now providing a nursery to natives. As it matures, natives emerge then overshadow the shade intolerant gorse.



Photopoint 14a: Northeast of the former school. With no burning, manuka is replacing the gorse. Beneath the manuka, other native species are establishing.



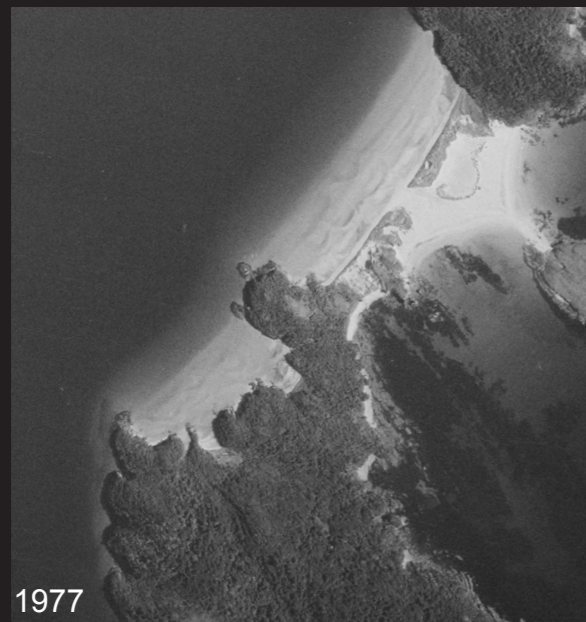
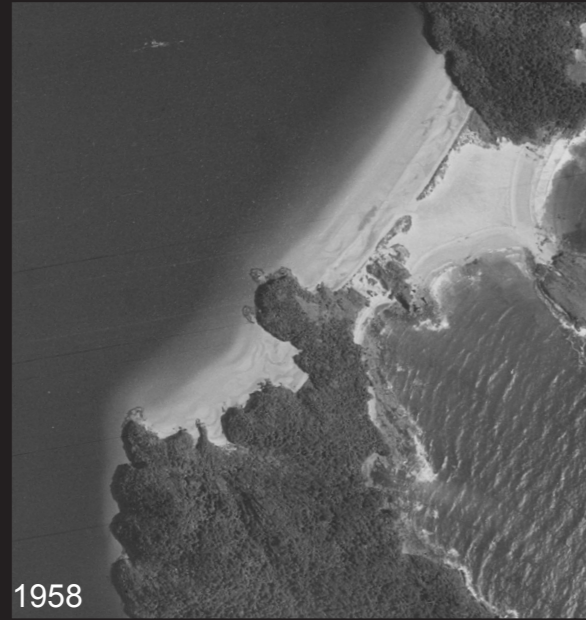
Former Mission site from photopoint 3: In 2008 gorse plants were responding strongly to burning while most native species had not survived fire.



Same site as above. With no more burning, the forest margin is recovering. The gorse canopy is not yet opening up but native shrubs are already emerging.

THE SPIT/OLD NECK

Marram grass invasion at the Spit/Old Neck has drastically modified the ecosystem. Once a changing and predominantly sandy isthmus, it has now become a largely permanent feature



(Images: Environment Southland)

SUMMARY

- The Neck is recovering well from the former regime of burning and uncontrolled grazing.
- The 2009 bait station possum control operation was very successful. The ongoing trapping programme at the Spit and near Lowrys Beach helped to achieve an eight year interval before possum populations began to increase to a level requiring a second bait station operation.
- Ongoing vigilance in maintaining the 'virtual fence' of possum kill traps is key to extending the interval between expensive ground-based poison operations.
- With DOC Community Fund support, and skilled contractors, the 2017 possum bait station operation also resulted in no surviving possums being detected by RTC monitoring.
- The photopoint monitoring has been a very useful tool to track progress and support management decisions.
- Monitoring shows a marked recovery in the canopy of tree species targeted by possums.
- Monitoring also shows that deer have been preventing the recovery of palatable understory, impeding forest regeneration.
- With the new fence at the Spit/Old Neck to reduce re-infestation by deer, active control has now commenced. Future vegetation monitoring will help to assess its success.
- The established tracks have remained in very good condition, with only minimal maintenance required other than periodic mowing.
- In addition to providing good access for land management, the main walking track and shelter are ready for use for any guided walking venture.
- The ecological approach to taken to gorse management, in which it provides a nursery for natural regeneration of native species, is already showing good success at some sites.
- Urupa are no longer subjected to livestock trampling and damage.
- The RMLT has developed a strong beneficial working relationship with the Department of Conservation and have a proven track record in obtaining professional advice when appropriate.
- Rat control has been limited to a few targeted areas, primarily to reduce their interference with possum traps. However the Trust is seeking government funding to assist with systematic rat, cat and deer control. This will build on the 11 years of successful possum control at The Neck. It would reduce predation of vulnerable native bird species, increase the abundance and diversity of flora vulnerable to rat and deer browse, and reduce the risk of rat migration to Ulva Island.