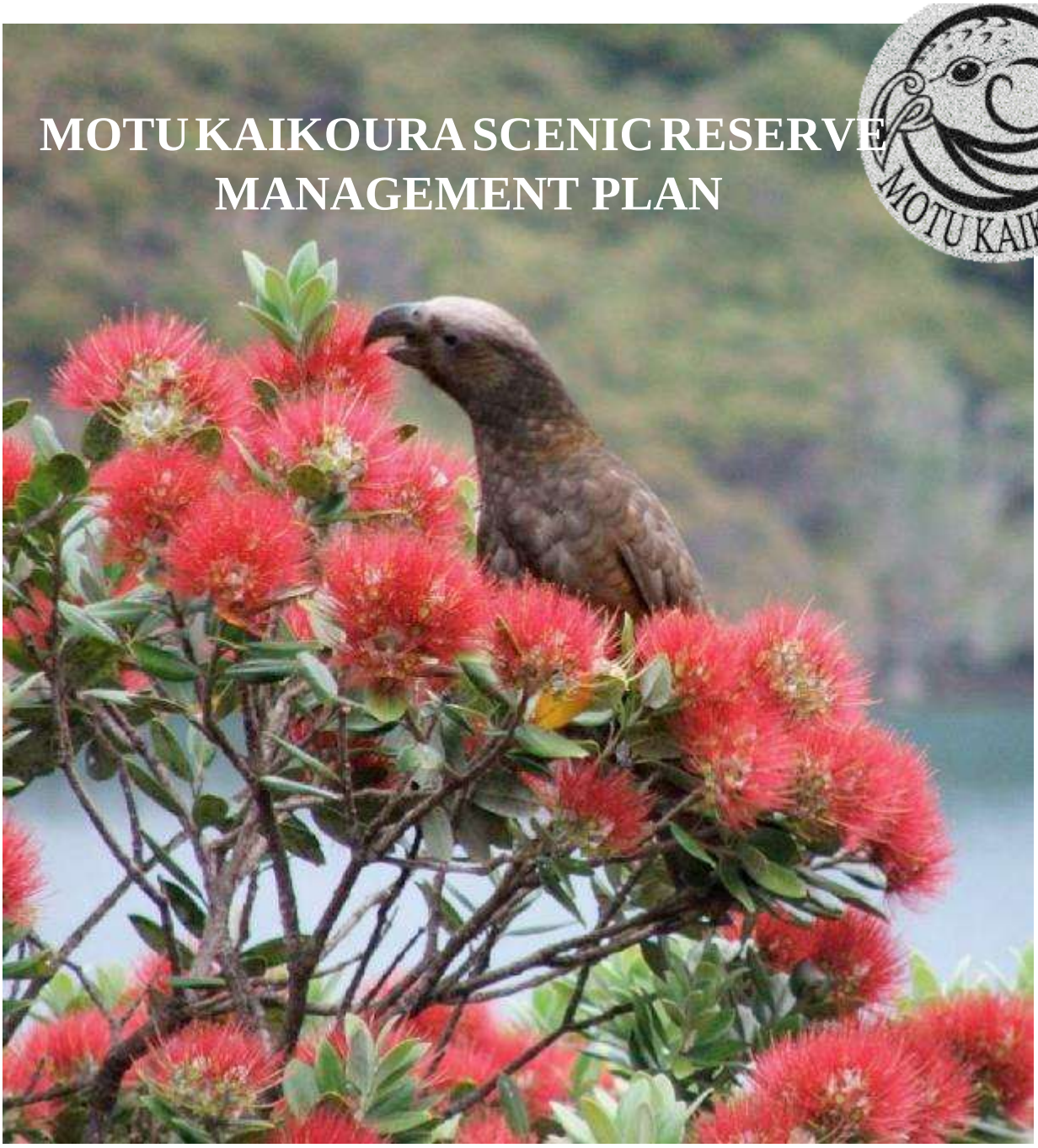
MOTU KAIKOURA SCENIC RESERVE MANAGEMENT PLAN



Neil Davies

THE MOTU KAIKOURA TRUST 2020

www.motukaikoura.org.nz

Table of Contents

FIG. 2: MOTU KAIKOURA (Andris Apse – Nature Heritage Fund)

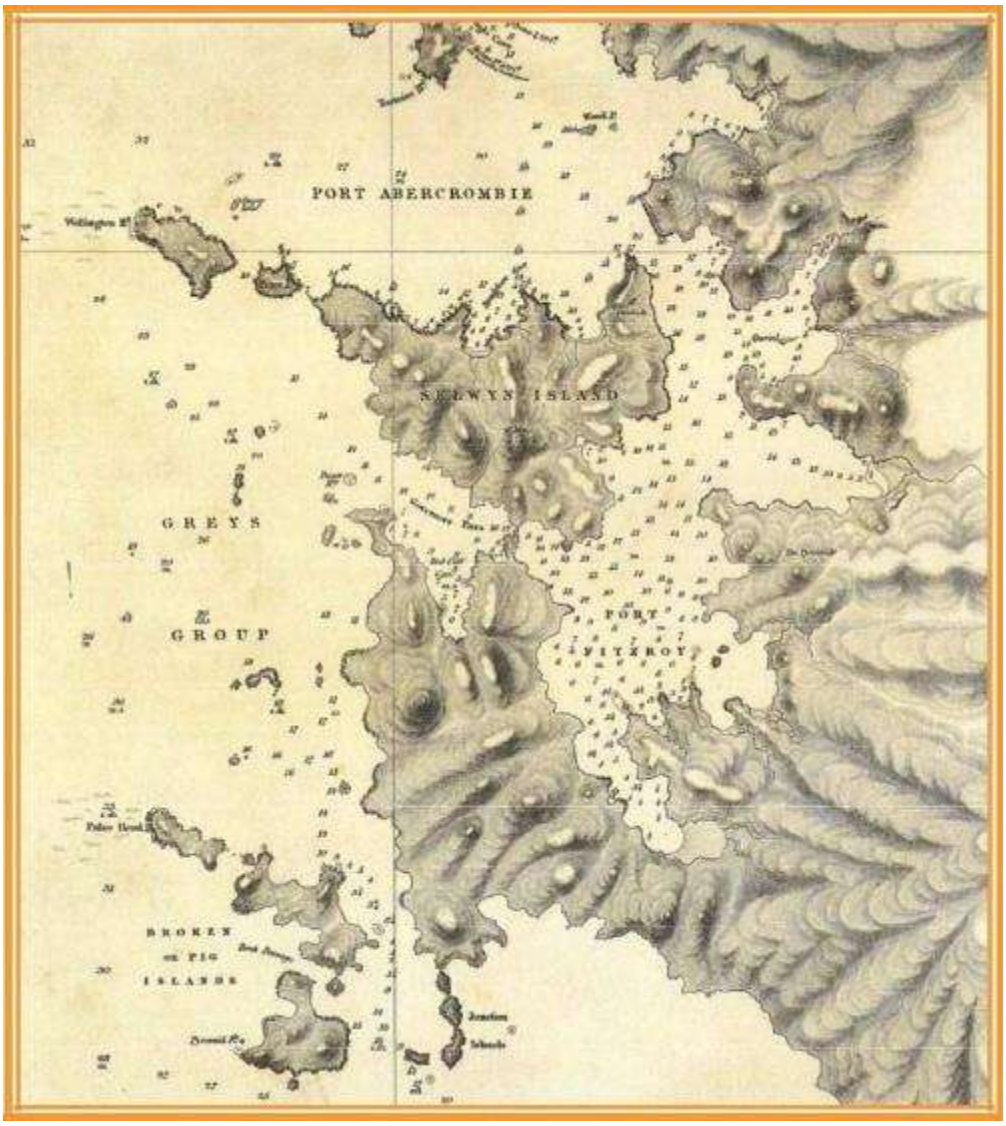


FIG. 3: GREAT BARRIER ISLAND PORTS AND ANCHORAGES SURVEYED BY CAPTAIN J.L. STOKES AND THE OFFICERS OF H.M.S. ACHERON, 1849 (N.Z. MAP NO. 3914, CLASSIFICATION D, 995.135aj).

(*Source:* Special Collections, Auckland City Libraries, N.Z.; Ref. 2007-91)

A. MOTU KAIKOURA - THE VISION

Motu Kaikoura was purchased into public ownership by the government in 2004 after a 10-year campaign supported by the people of the Auckland region, with funds from the Nature Heritage Fund and significant additional financial contributions from the former ASB Community Trust (Foundation North), Auckland Regional Council, Auckland City Council, and other territorial local authorities. Motu Kaikoura is a gazetted scenic reserve under the Reserves Act 1977 and vested in the Crown. The Motu Kaikoura Trust Board was appointed to control and manage the reserve under Section 29 of the Act, subject to the Heads of Agreement between the Minister of Conservation and the Trust. Also refer to Appendix 1 Acquisition of Motu Kaikoura into public ownership and the establishment of the Motu Kaikoura Trust.

Motu Kaikoura is valued for its scenic qualities and landscape and that it offers respite to visitors in a quiet natural setting that is relatively free of development. It has an interesting Māori and European history. Above all Motu Kaikoura is an island with significant potential for conservation purposes and can contribute to New Zealand's need for more secure sanctuaries for native wildlife. The management objective of the island is to the restore the viability of its natural ecosystems through natural regeneration of the native biodiversity, free of invasive plants and animals.

The Trust will work in collaboration with the Department of Conservation, Auckland Council and Ngāti Rehua to achieve the following vision:

MOTU KAIKOURA – THE VISION

A publicly owned environmentally restored island sanctuary with healthy eco-systems and flourishing native flora and fauna, and protected cultural heritage sites, which promotes outdoors recreation and education, in the Hauraki Gulf Marine Park

The **objectives** for the management of Motu Kaikoura are:

1. To protect and enhance the values of Motu Kaikoura, the scenic qualities, natural beauty and landscape
2. To encourage and facilitate public access to the island
3. To sustainably manage the amenities and facilities of the island
4. To manage and protect the historic, archaeological, geological, biological and other scientific features present on the island.
5. To conserve the soil, water and forest on the island.

To achieve the Vision and Objectives the **Motu Kaikoura Trust** will:

6. Work towards managing animal pest and plant pest species to zero density
7. Restore the island's indigenous flora and fauna, and damaged and disrupted ecological processes, while encouraging public and community participation in ecological regeneration activities and encouraging tertiary institutions and research agencies to undertake scientific research on Motu Kaikoura.

8. The **Motu Kaikoura Trust** will work with Ngāti Rehua – Ngāti Wai ki Aotea to recognise and protect in particular features and archaeological sites of historic and cultural importance to manawhenua.

9. The **Motu Kaikoura Trust** will enable a first-class outdoor recreation experience for all visitors by:
   - maintaining walking tracks, interpretive signage, buildings, accommodation and all infrastructure
   - encouraging outdoor education for young people in particular
   - maintaining good relationships with neighbouring landowners, the Great Barrier community and the Great Barrier Island Local Board.

Notice

The policies of this Management Plan are based on the provisions of the Heads of Agreement between the Minister of Conservation and the Motu Kaikoura Trust Board signed on 28 April 2008 (see Appendix 2). The ecological restoration objectives and chapters relating to conservation management should be read in conjunction with the Motu Kaikoura Biodiversity Management Plan.

The Plan sets out the objectives and policies designed to achieve the above vision for a range of management actions. The objectives express the intention or outcome sought and are designed to assist explain the aim of the policies. The objectives also provide a framework for the consideration and will be used in any situation where discretion is necessary. The policies are designed to be more directive where certainty of the outcome or the role of the agency identified in the policy is necessary. In most cases the Trust will be the responsible agent unless otherwise stated. The Trust is a voluntary agency with limited resources and all policies are therefore subject to the caveat ‘as resources allow’.

Administration of Motu Kaikoura Scenic Reserve

Motu Kaikoura is a held as a Scenic Reserve in terms of Section 19(1)(a) of the Reserves Act 1977 (refer to Appendix 7). These reserves are established to protect and preserve in perpetuity, for their intrinsic worth and for the public benefit, enjoyment and use, such qualities of scenic interest or beauty or natural features worthy of protection in the public interest.

The Motu Kaikoura Trust Board (the Trust) was appointed as the administering body to control and manage the reserve under Section 29 of the Act, subject to the Heads of Agreement (refer to Appendix 2) between the Minister of Conservation and the Trust and subject to the special condition that the reserve is to be available for outdoor/environmental education for youth in particular and for provision of facilities to achieve this.

The Heads of Agreement empowers the Trust to;

- Prepare and administer a management plan under Section 41 of the Reserves Act 1977.
- Encourage and facilitate public access to the island, particularly by youth undertaking outdoor and environmental education.

- Preserve and protect the native flora and fauna.
- Work towards the eradication of pest animal such as deer and rats.
- Prepare a schedule of archaeological remains and geological features.
- Maintain and manage the structure and buildings, including the airfield, the wharf, moorings and pontoons. The Trust must gain the Department of Conservation's prior approval for any new buildings or structures.
- Prepare a health and safety plan, ensure there are no fire hazards and maintain insurance policies against public and regulatory liabilities that may arise from managing the island.
- Comply with any regulatory or statutory requirements, such as building consents.

The Heads of Agreement enables the Department of Conservation to provide advice, guidance and technical assistance to the Trust. This includes assisting the Trust in the promulgation of bylaws and making available the rentals for the cellphone tower facilities for the maintenance of the island including the wharf, moorings and pontoons.

The Trust also works in collaboration with other organisations. These include;

- The Auckland Council on biosecurity matters, such as pest animal and plant control.
- Ngāti Rehua – Ngāti Wai ki Aotea and its Hapū Management Plan on matters such as the cultural heritage of Motu Kaikoura
- Conservation groups
- Outdoor recreation and education groups
- Science and research bodies
- Reserve users and concessionaires

Motu Kaikoura is in the Hauraki Gulf, and the Hauraki Gulf Marine Park Act 2000 applies.

B. THE LANDSCAPE AND GEOLOGY

Motu Kaikoura (564.13 ha), (36°10'41"S, 175°19'28"E) is located 90 km northeast of Auckland. It lies off the western coast of Great Barrier Island (Aotea) (28,500 ha), helping form the harbour of Port Fitzroy.

The island's topography varies from rolling to rugged grades with prominent ridges and spurs and essentially no naturally flat land. The highest point, Kohatu Titore (Mitre Peak) is 184 m high. The central, northwest-northeast oriented divide has prominent andesitic tufts and rocky outcroppings. The region south of the divide contains ridges and valleys covered with relatively fertile soil and clad with remnants of mature podocarp and broadleaf forests and extensive areas of tea tree and occasional wilding pines. In places the soils have been eroded primarily by past overgrazing to reveal clay and/or rocky pans almost completely lacking in vegetation.

The island has a coastline of steep cliffs of varying height, with pohutukawa growing over cliff faces having exposed volcanic agglomerates. There are a few perennial streams occurring as small summer flows in the larger catchments. A sandy beach exists at Bradshaw Cove on the northern shore.

The central wing-shaped, northwest-northeast divide has prominent rocky escarpments and outcrops, including Kohatu Titore all andesitic remains of an ancient stratovolcano.

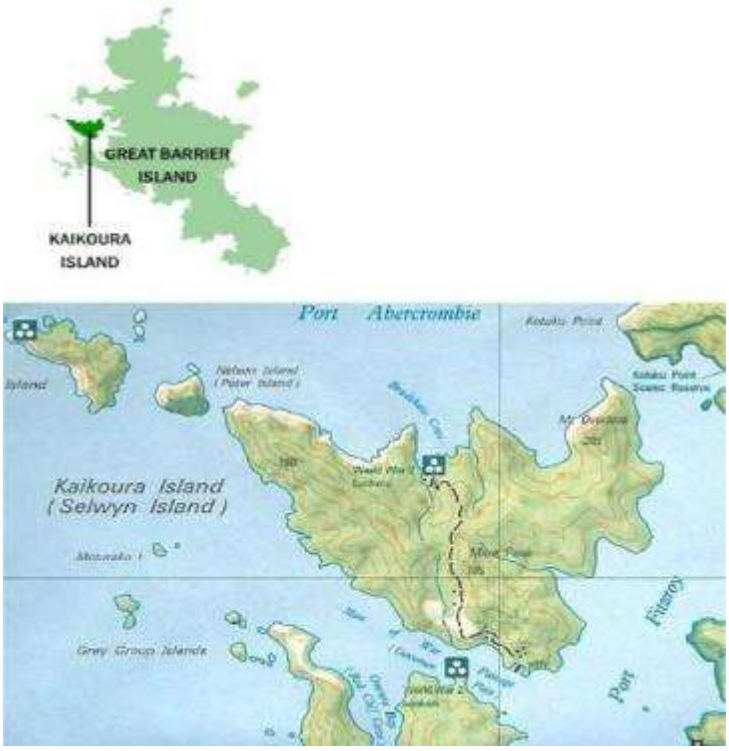


FIG 4: Location of Motu Kaikoura off Port Fitzroy, Great Barrier Island.

Geologically, the island was formed during the Pliocene and Miocene epochs from strato-volcanic eruptions that resulted in poorly sorted andesitic breccias, tuffs and agglomerates (Figs. 4 & 7). The present-day soils are predominantly FitzRoy Hill soils mixed with Barrier Steep Land soils, rocky clay loam and clay loam. Smaller areas of FitzRoy clay loam and bouldery clay loam occur on the central ridge, farm gully and spurs of the northern coastline.

FIG: 5: Motu Kaikoura's southern volcanic coast line just west of the Man-of-War Passage (Governor's Pass). The volcanic origins of the island are evident from the globular agglomerates present in the cliff face along the shoreline. (A. Bellvé)

C. THE NATURAL ENVIRONMENT

C.1 Motu Kaikoura Biodiversity Management Plan

The Motu Kaikoura Biodiversity Management Plan (https://www.motukaikoura.org.nz) is a 'how to' document that details the methods and timeframes of different tasks that will work towards achieving the objectives and overall vision for the Island that is detailed below. These recommendations and tasks have taken into account the previous actions and successes of the management of Motu Kaikoura thus far. While the Plan covers a period of 10 years, where appropriate some recommendations give consideration to timeframes beyond this scope.

Since the formation of the Motu Kaikoura Trust a major effort has taken place to rid the island of exotic mammals and rats. Fallow deer, pigs, cats and rabbits were eradicated in the period up to and including 2008. After an unsuccessful attempt in 2008 to eradicate rats by means of an aerial operation, rats are being routinely managed at or around 5% relative index during the late winter, spring – early summer. This has resulted in accelerated natural regeneration of flora and fauna.

C.2 Flora

As indicated the island's native forest cover is rapidly regenerating following the eradication of fallow deer in 2009 and commencement of island-wide rodent control in 2014.

C.2.1 Kanuka woodlands

Extensive areas of tall kanuka, especially on the southern, western slopes and northern slopes of the island, form the predominant vegetation. The under storey is regenerating led by deer-browse resistant species, e.g. *Coprosma rhamnoides, Lepidosperma laterale*, trunkless ponga (*Cyathea dealbata*), locally *Olearia furfuracea*, and *Microlaena stipoides* swards as ground cover. Parsonsia (*Parsonsia capsularis*), the main vine, often forms tangles on the ground, and bush lawyer (*Rubus cissoides*) is common locally.

C.2.2 Broadleaf forest

Extensive coastal broadleaf forest occurs in the southwest region of the island (S08 191548), extending c.300m along the coast and c.300m inland. The canopy is 12-15m tall and dominated by taraire (*Beilschmeidia tarairi*) with trunk diameters of 25-15 cm. Other canopy trees include the occasional puriri (*Vitex lucens*) with trunks to 1-m diameter, kohekohe (*Dysoxylum spectabile*), tawaroa (*Beilschmiedia tawaroa*), pohutukawa (*Metrosideros excelsa*), karaka (*Corynocarpus laevigatus*), a few tawapou (*Pouteria costata*) near the coast, hinau (*Elaeocarpus dentatus*) at least four trees away from the coast, mamaku (*Cyathea medullaris*) with mainly dead standing trunks, miro at least two trees away, wharangi (*Melicope ternata*) near the coast; and individual trees of mahoe (*Melicytus ramiflorus*), coastal maire (*Nestegis apetala*), rewarewa (*Knightia excelsa)*, and lacebark (*Hoheria populnea*). Tall kanuka occurs on the forest margins with an under storey of ponga. Climbers present include: parsonsia, (*Metrosideros perforata*) (mainly along the ground), supplejack (*Ripogonum scandens*) in small patches, bush lawyer and a single native passionfruit (*Passiflora tetrandra*). A particular feature of this area is the diminutive and rare saprophytic orchid (*Danhatchia australis*).

Epiphytes are not common; the main one, (*Collospermum hastatum*), occurs in occasional clumps, and there are several fern species. Understory and ground cover plants are now

flourishing; large rocks are common. Locally there are seedlings of kohekohe and mapou (*Myrsine australis*), tiny kawakawa (*Macropiper excelsum*) (<5cm tall), and small kawakawa shrubs on steeper faces.

Currently, pohutukawa mainly occur along the coast and on rocky outcrops (e.g. Kohatu Titore). In the absence of browsing mammals pohutukawa are expected to increase and dominate the coastal forest.

C.2.3 Kauri associated forest

A large kauri tree (*Agathis australis*) grows east of Houseboat Bay (2721012, 6555350), and is accompanied by saplings and seedlings. Shrubs of *Brachyglottis kirkii*, *Pimelea tomentosa* and *Hebe macrocarpa* were common in this area. When surveyed in 2007 the under storey was thick with little sign of deer browsing. The lack of browsing damage differed markedly from the heavily browsed forest areas along the southwest coast. Solitary kauri rickers are found across the island.

C.2.4 Pine areas

In the area south and east of Kohatu Titore (Mitre Peak) two emergent pine species (*Pinus pinaster, P. radiata*) dominate the vegetation (Fig. 35). These appear to be naturalised rather than planted. Wild pines are present outside this area, but only in sparse numbers.

C.2.5 Ferns and herbs

Botanically interesting shaded bluffs form the upper margins of the broadleaf forest in Taraire Valley. Most bluffs are vertical, 4 - 8m tall, and contain bryophyte mats with filmy ferns (*Hymenophyllum sanguinolentum*) being the most common. Also present are: *Asplenium haurakiense*, rengarenga (*Arthropodium cirratum*), *Hebe pubescens* and occasional large-
leaved shrubs (out of deer browsing reach). Specimens of native Mountain Daisy (*Celmisia major*) were found perched on andesitic outcrops adjacent to the Parihãkoakoa Track.

TABLE 1: Motu Kaikoura Plant Groups Assigned to their Native and Naturalized Status (Cameron 2007)

Plant groups	Native	Naturalised	Totals
Ferns & fern allies	68	2	70
Conifers	6	3	9
Dicotyledons	118	83	201
Monocotyledons	85	37	122
Total	277	125	402

C.2.6 Stream margins/wetland plants

The main perennial streams are at Bradshaw Cove, Houseboat Bay and the valley west of Crawford's Bay. Also, three valleys on the southwest coast had small flows that disappeared into coastal sands. Damp areas are present at the head of most bays along the southern coast, and locally mats of *Ranunculus acaulis* were present with koromiko (*Hebe pubescens*), hangehange (*Geniostoma ligustrifolium*).

The largest wetland was part of the stream below Top House, which included a pond area formed by an earthen dam. The pond is dominated by *Potomogeton cheesemanii, Persicaria decipiens and Eleocharis acuta*. Locally, around the margins, there is swamp millet (*Isachne globosa*), *Carex virgata* and various rushes (*Juncus* spp.). Upstream of the pond under a manuka canopy (c.3m tall) the ferns (*Diplazium australe*) and (*Adiantum aethiopicum*) dominate the valley bottom. The Trust will continue to support botanical surveys and vegetation monitoring including monitoring for lichen and will maintain farmhouse orchard for specific lichen.

C.2.7 Objectives for native flora management

1. To restore the role of the native forests in a healthy functioning ecosystem
2. To preserve and protect the native flora
3. To facilitate the regeneration of the native flora
4. To manage the threats to native fauna, such as animal and plant pests and adverse disturbances to their habitats by human activity and development
5. To conserve the soil, water and forest.

C.2.8 Policies for native flora management

1. Continue the monitoring of flora and report periodically as set out in the Motu Kaikoura Biodiversity Management Plan
2. Progressively remove all pest plants in accordance with C.4.3 Policies
3. Use a non-interventionist approach to the regeneration of native flora subject to C.3.4 Policy 5 with respect to the establishment of flax as a nectar source
4. Evaluate the status of all nationally threatened vascular plant species on the island to see if any require specific management other than continued pest animal and plant management.

C.3 Fauna

C.3.1 Forest birds

Birds have been surveyed annually since 2006 (Galbraith and Jones 2010). The current record is 41 bird species on the island, of which 29 species are indigenous and 12 are exotic.

Refer to Appendix 4. *Baseline Bird Survey Report*. With the significant decrease in rats through ongoing control there are indications of increased numbers of birds on the island. Kaka (*Nestor meridionalis*) are locally common on Motu Kaikoura. The southeastern pine block cones appear to be an important food source. Pines on the island, particularly *P. pinaster* also provide a food source for kaka and their removal should be progressively staged over a period of time. Kereru (*Hemiphaga novaeseelandiae*) and tui (*Prosthemadera novaeseelandiae*) are present in increasing numbers and banded rails (*Gallirallus phillippensis*) are locally common, especially noticeable around the settlement. Kingfisher (*Todiramphus sanctus*) and morepork (*Ninox novaeseelandiae*). Brown teal (*Anas aucklandica*) have recently been recorded breeding on the island. There are occasional reports of bellbirds (*Anthornis melanura*) and red-crowned parakeets (*Cyanoramphus novaezelandiae*), and in 2016 a long-tailed cuckoo (*Eudynamys taitensis*) was seen.

C.3.2 Seabirds

The Hauraki Gulf is a particularly rich area for seabirds and considered a global 'hot spot' with 25 breeding species, including a number of threatened species. Seabirds are known to enrich terrestrial systems through the transportation of marine nutrients and borrowing in soil and can be the ecological 'drivers' of terrestrial communities on islands. It is highly likely that, historically, Motu Kaikoura would have supported large populations of seabirds. Although seabirds are present in the waters surrounding the island, no burrow-nesting species are known to be present at this point. Cook's petrels (*Pterodroma cookii*) have been sighted over- flying the island and a carcass of this species was found in Bradshaw Valley in November 2014. The principal breeding area for Black petrels (*Procellaria parkinsoni*) is on Great Barrier, with nesting sites recorded as close as 2 km away from Motu Kaikoura in the Glenfern Sanctuary. The blue penguin (*Eudyptula minor*), was once very common breeding along Great Barrier's rocky coastline, nests on Motu Kaikoura. There is also regionally significant breeding colony of pied shag (*Phalacrocorax varius*) on the island's southern side. Many of the smaller islands and stacks i.e. The Grey Group in the vicinity of Motu Kaikoura still support small numbers of seabirds.

In terms of bird translocation, (see policy C.2.3), likely candidates listed should include bush birds and other species recently extinct on Great Barrier and those given national species recovery priorities as set out in the operative Motu Kaikoura Biodiversity Management Plan (see https://www.motukaikoura.org.nz). Seabirds that nest on the island are a potential source of nutrients for the island ecosystems. Burrowing seabirds are considered soil 'engineers' and their importation and recycling of marine nutrients are an essential element in restoring the health and function of island ecosystems. The role of seabirds, burrowing petrel and shearwater species in particular, are now widely recognised as crucial to any island ecosystem restoration plan. Consideration may therefore be given to attracting seabirds to nest in appropriate locations on the island through the use of audio attraction techniques. To discourage invasive weeds colonising open areas such as new slip faces consideration will be given to sowing flax (Phormium spp.) seeds in these areas. This will also provide a source of nectar for birds.

Fig: 6: A work-up of seabirds off the nearby Mokohinau Islands (Chris Gaskin).

C.3.3 Objectives for the management of native birds

1. To restore the role of the native forests in a healthy functioning ecosystem
2. To preserve and protect the native birds
3. To preserve and protect the habitats for native birds
4. To manage the threats to native birds, such as animal and plant pests and adverse disturbances to their habitats by human activity and development.

C.3.4 Policies for the management of native birds

1. Continue regular annual bird monitoring across a variety of habitats to track changes in species presence and abundance on the island
2. Work towards the eradication of rodents from Motu Kaikoura with an initial goal of achieving ≤5% relative abundance density with progress monitored quarterly with independent monitoring undertaken every two years
3. For kaka, maintain mature *P. pinaster* until mature native canopy species are established and are more widespread
4. Maintain a list of bird species for potential future translocation
5. Where appropriate sow flax (*Phormium* spp.) seeds in open areas to provide a nectar source for birds and reptiles and to combat invasive weeds
6. Encourage seabird re-establishment by audio attraction techniques.

C.3.5 Reptiles

Reptile surveys, assisted by the use of artificial cover objects (ACOs), have been undertaken periodically from 2008 (Martin 2012). Cameron *et al.* (2007) recorded the presence of moko skink (*Oligosoma moco*) as well as copper skink (*Cyclodina aenea*) during a vegetation survey. Martin (2012) reports that moko skink and copper skink are widespread throughout the island in forest and shrubland habitats, and shore skink (*Oligosoma smithi*) are present on the boulder beach below Mount Overlook. Gecko species have not yet been confirmed despite extensive searches under logs, rocks and debris, and spotlighting within forest, shrubland, and coastal cliff habitats at night. Many more species of reptile are likely to have been present on Motu Kaikoura prior to human settlement. Forest gecko (*Hoplodactylus granulatus*), Pacific gecko (*H. pacificus*), common gecko (*H. maculatus*), and Duvaucel's gecko (*H. duvaucelii*) would all have been present, along with ornate skink (*C. ornata*), striped skink (*O. striatum*), and egg- laying skink (*O.suteri*). These species may all still be present, albeit in very low numbers. Hochstetters frog (*Leiopelma hochstetteri*) has been located in streams on nearby northern Great Barrier, Te Paparahi. Tuatara (*Sphenodon punctatus*) were formerly on Great Barrier and may have been present on Motu Kaikoura. Mokohinau skink (*O.townsi*), common green gecko (*Naultinus elegans)* and chevron skink (*O. homalonatum*) are still present on Great Barrier and their possible presence on Motu Kaikoura cannot be ruled out.

C.3.6 Objectives for the management of native reptiles

1. To restore the role of the native forests in a healthy functioning ecosystem
2. To preserve and protect the native reptiles
3. To preserve and protect the habitats for native reptiles
4. To manage the threats to native reptiles, such as animal and plant pests and adverse disturbances to their habitats by human activity and development.

C.3.7 Policies for the management of native reptiles

1. Undertake monitoring of reptiles to track changes in species presence and abundance on the island and periodically report as set out in the Motu Kaikoura Biodiversity Management Plan.
2. No translocations will be considered for a minimum of 10 years (from 2012) to allow remnant populations of species to be detected and expand naturally.

C.3.8 Native Mammals – terrestrial and marine

Limited bat information is available for Motu Kaikoura as no formal surveys have yet been undertaken. Long-tailed bats (*Chalinolobus tuberculatus*) are present on Great Barrier Island and are good fliers. It is possible that long-tailed bats are periodic visitors to the island and the rapidly regenerating forest is likely to provide suitable habitat.

The outer Hauraki Gulf, including around Great Barrier Island, is recognised as an important nursery area for marine mammals, such as the common dolphin (*Delphinus delphis*) and the bottle-nosed dolphin (*Tursiops truncatus*). Research on habitat utilisation, abundance and density of these dolphins is being undertaken by Massey University using Motu Kaikoura as a base.

C.3.9 Objectives for the management of native mammals

1. To restore the role of the native forests in a healthy functioning ecosystem
2. To preserve and protect the native mammals
3. To preserve and protect the habitats for native mammals
4. To manage the threats to native mammals, such as animal and plant pests and adverse disturbances to their habitats by human activity and development.

C.3.10 Policies for the management of native mammals

1. Undertake monitoring for bats to identify if they are present on the island
2. Support research of the status of suitable food species for bats in the future once natural regeneration of coastal forest species has occurred
3. Encourage the present use of Motu Kaikoura as an important base for marine mammal research.

C.3.11 Freshwater fauna

The following freshwater fish species are known to live on Great Barrier Island:

- longfin eel (*Anguilla dieffenbachia*)
- shortfin eel (*A. australis*)
- inanga (*Galaxias maculatus*)
- banded kokopu (*G. fasciatus*)
- giant kokopu (*G. argenteus*)
- redfin bully (*Gobiomorphus huttoni*)
- giant bully (*G. gobioides*)
- common bully (*G. cotidianus*)
- bluegill bully (*G. hubbsi*)
- cockabully (*Grahamina nigripenne*)
- freshwater crayfish, kōura (*Paranephrops planifrons*)

It is likely that some of these species, such as longfin eel, short fin eel, banded kokopu, and common bully are present on Motu Kaikoura. Fortunately, Great Barrier Island (and therefore, it is assumed, Motu Kaikoura) is free of invasive freshwater pest fish.

C.3.12 Objectives for the management of native freshwater fauna

1. To restore the role of the native forests and waterways in a healthy functioning ecosystem
2. To preserve and protect the native freshwater fauna
3. To preserve and protect the habitats for native freshwater fauna
4. To manage the threats to native freshwater fauna, such as animal and plant pests and adverse disturbances to their habitats by human activity and development.

C.3.13 Policies for the management of native freshwater fauna

1. Support the collection of baseline data for freshwater fauna and report periodically as set out in the Motu Kaikoura Biodiversity Management Plan
2. Prevent the introduction of invasive freshwater pest fish into the Motu Kaikoura freshwater ecosystem.

C.3.14 Invertebrates

A single individual of the Great Barrier paua slug (*Schizoglosaa novoseelandica*) was noted by Cameron (2007) in the taraire forest on the south-west coast. Further surveys of terrestrial invertebrates and invertebrates need to be completed. A number of weta boxes have been set up on some track lines to provide baseline data for weta numbers.

C.3.15 Objectives for the management of native invertebrates

1. To restore the role of the native forests and waterways in a healthy functioning ecosystem
2. To preserve and protect the native invertebrates
3. To preserve and protect the habitats for native invertebrates
4. To manage the threats to native invertebrates, such as animal and plant pests and adverse disturbances to their habitats by human activity and development.

C.3.16 Policies for the management of native invertebrates

1. Continue annual weta surveys and report periodically as set out in the Motu Kaikoura Biodiversity Management Plan
2. Support the collection of baseline data for invertebrates and report periodically as set out in the Motu Kaikoura Biodiversity Management Plan.

C.4 Pest Management and Biosecurity

C.4.1 Pest plants

Pest plants present on the island originate from previous farm gardens, the presence of livestock, wind dispersed seed from Great Barrier or from being attached to or within birds. Fortunately the lack of habitat on the island means that many weeds present on Great Barrier are absent from Motu Kaikoura, such as wandering Jew (*Tradescantia fluminensis),* sweet pea shrub (*Polygala myrtifolia)*, kahili ginger (*Hedychium gardnerianum)*, climbing asparagus *(Asparagus scandens)*, jasmine *(Jasminum polyanthum)* and Japanese honeysuckle *(Lonicera japonica)*.

Pest plants considered in this plan are environmental weeds only and do not include pasture, grass or annual weed species. Control of weeds has been undertaken by the Auckland Council Biosecurity Team and the Motu Kaikoura Trust. Auckland Council has implemented pest plant surveys and control work on the Island for the past five years and have documented infestations of environmental weed species as listed below in Table 4 (Cox 2010).

Also present are wilding peaches (*Prunus persica)*, prickly hakea (*Hakea sericea*), gorse (*Ulex europeaus),* macrocarpa (*Cuppressus macrocarpa*) and large areas of two pine species (*Pinus pinaster* and *P. radiata*). Some infestations such as moth plant, hakea, and pines are quite widely dispersed, but most occur only in localised sites. The implication of current distribution is that most species can be eradicated in the short to medium term. Council efforts to date have already resulted in the eradication of three pest plant species - Cape honey flower (*Melianthus major*), smilax (*Asparagus asparagoides*) and aloe (*Aloe arborescens*).

Table 4: Pest plants present on the island 2010 (Cox 2010)

Common name	Latin name
arum lily	*Zantedeschia aethiopica*
black passionfruit	*Passiflora edulis*
buttercup bush	*Senna septemtrionalis*
Chinese privet	*Ligustrum sinense*
cotoneaster	*Cotoneaster sp*.
elephant's ear	*Alocasia brisbanensis*
hydrangea	*Hydrangea macrophylla*
Madeira vine	*Anredera cordifolia*
monkey apple	*Syzygium smithii*
moth plant	*Araujia sericifera*
pampas	*Cortaderia sp.*
periwinkle	*Vinca major*
mist flower	*Ageratina sp.*
Australian sedge	*Carex longebrachiata*
Mexican daisy	*Erigeron karvinskianus*

The timing of pest plant surveys should be at key flowering times such as early summer for moth plant. To increase efficiency and progress more rapidly with surveys and control work it is recommended that Auckland Council staff visits are augmented with either Motu Kaikoura Trust members or DOC staff. Any new species of pest plants detected during future surveys need to be added to the future actions list of the corresponding year's report. Note that some weeds such as pampas are located in inaccessible steep areas

and require either aerial spraying (carried out in conjunction with DOC) or control by a specialised abseiling team. Control of gorse and prickly hakea is not considered necessary as these plants are becoming shaded out by regenerating native species. To discourage invasive weeds colonising open areas such as new slip faces consideration should be given to sowing flax (*Phormium* spp.) seeds in these areas. This will also provide a source of nectar for birds.

C.4.2 Objective for the management of pest plants

1. To work towards the eradication of all pest plant species as defined in the operative Auckland Regional Pest Management Strategy and Biosecurity Act 1993 and as required by the Heads of Agreement.

C.4.3 Policies for the management of pest plants

1. Provide for continued annual surveying of the island for pest plants (both on foot and by boat)
2. Manage pines in accordance with the Control Strategy for Control of Exotic Pines as set out in Appendix 3 of this plan, or any updated Strategy
3. Adopt a generally non-interventionist approach to the management of prickly hakea and gorse
4. Control *Macrocarpa* where access to light may give it an advantage over native species
5. Control all other pest plants in accordance with Appendix 3 of the Motu Kaikoura Biodiversity Management Plan, or any updated plan.

C.4.4 Pest animals

Fallow deer, pigs, cats and rabbits have been eradicated in the period up to and including 2008. The removal of deer, in particular, has notably accelerated the process of native forest regeneration. However, at the time of the establishment of the Trust, like neighbouring Great Barrier Island, Motu Kaikoura was infested with ship rats (*Rattus rattus*) and kiore (*R. exulans*). House mouse (*Mus musculus*) has not been detected on the island. Rats appear to be the only animal pests still present. Current reptile survey efforts have not detected plague (rainbow) skinks (*Lampropholis delicata*); nor Argentine ants (*Linepithema humile*), which are present on Great Barrier Island at localised sites. Pet animals can be a threat to fauna on the island are will generally be prohibited unless specific approval is obtained from the Trust. Note also that the islands of the Hauraki Gulf are contained within the Hauraki Gulf Control Area as declared under the section 131 of the Biosecurity Act 1993. It an offence under the Auckland Pest Management Strategy to transport, move or distribute certain species into the area or between islands in the area (https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/topic-based-plans-strategies/environmental-plans-strategies/Pages/regional-pest-management-strategy.aspx).

C.4.5 Rodents – attempted eradication 2008

The obligation of the Trust to work towards the eradication of rats from Motu Kaikoura is embodied in the Trust's original Heads of Agreement (2008) with the Minister of Conservation (see Appendix 2, s3(e))

> Keep and maintain the Reserve free of litter and work towards the eradication of all plants and animals (including the eradication of fallow deer, pigs and rats) identified in the operative Auckland Regional Pest Management Strategy and the Biosecurity Act 1993

In August 2008 an attempt was made to eradicate rats from the island with two aerial applications of 'Pestoff 20R' (brodifacoum-based). The operation was at first believed to have been successful but after seven months, ship rats were detected on the island. The adjacent mainland is only 80 metres away at its closest point, easily within the swimming range of ship rats which reach the island especially in late summer (Bagasra 2013). However, the presence of kiore, known to be poor swimmers, confirmed by DNA identification (Fewster *et al.* 2011) gave strong grounds to assume that the aerial operation failed as kiore are most unlikely to have reached the island unassisted.

After seeking expert advice (not all of it consistent) and undertaking a period of review and analysis the Motu Kaikoura Trust formally resolved to manage the island as a 'mainland island', treating the water barrier as a 'fence' and relying on manual methods to control rats on a permanent basis. This is a key objective of the *Motu Kaikoura Biodiversity Management Plan*.

C.4.6 Manual rat control operation

'Animal pest control recommendations. Method of control. Target all rodent species (ship rats, kiore) and aim to contain <5% relative abundance (as measured by rodent monitoring…) by establishing a 100 x 100m grid of bait stations.'

To achieve this objective (but also to enhance visitor amenity) a 15 km perimeter track, encircling the island was constructed in 2012/2013. For operational purposes known as 'East Track' & 'West Track', the new perimeter track forms the back-bone of the rat control network, in addition to the Parihakoakoa (Ridge) and Pahangahou tracks built by the Trust in 2006, and the cross-island farm road and original rudimentary West Track. During this period rat numbers continued to increase at a significant rate (monitored index levels during this period ranged between just under 60 to 80%). A plan based on an island-wide network of bait stations to be progressively expanded to form a 100m x 100m grid, with the objective of reducing rodent population levels to 5% relative density was formally approved by the Trust in February 2014.

Island-wide baiting using 'motels' and hoppers (Philproof) (4 x blocks per station) on a fortnightly basis commenced in March 2014, while the network was progressively expanded. In November 2014 with rat numbers reduced to manageable levels, snap-traps were phased in. Bait stations and traps reloading have now been reduced to a monthly basis and bait placement has been reduced from 4 blocks to 2. See *Motu Kaikoura rat management progress reports* (Dec 2014, July 2015, Dec 2016, Dec 2017, Dec 2018). Operations are carried out by island ranger Clint Stannard. Rat numbers are now being maintained at low levels and a year-long. Island-wide sampling survey in 2017 for DNA analysis by Eco Gene Laboratory, Landcare Research, funded by Auckland Council Biosecurity, revealed that out of 25 samples 68% were kiore and 32% ship rats.

C.4.7 Motu Kaikoura rat control network

The amount of bait set out on the island was reduced in January 2018 from 4 blocks to 2 blocks per station. The island rat control network as at December 2018 comprises a network of 572 stations, comprised of 410 x 'rat motels' (based on the design of Rowley Taylor) fitted in most cases with two snap-traps ('T-Rex') baited with peanut butter (total 843 traps), with 2 x bait blocks; and 139 x waterproof hoppers ('Philproof'), with 2 x bait blocks. The rodent control operation will become progressively reliant on manual snap traps.

Rat control network

Number of rat 'motels' **410** (plus 2 on Nelson Island). Number of Philproof hoppers **139.**
Number of corflute trap stations **23** (paired with hoppers).
Total number of stations 572 (plus 10 off island). Total number of snap-traps 843.
Total length of formed operational tracks and roads: **29.8 km.**
Total length of coastline network**: 16.5 km.**

Monitoring network

Tracking tunnels **50** in **5** lines of 10 located strategically across the island and one line of 10 on the nearby mainland at Bunker Point (Stellin's Peninsula).

Off Island

A line of bait stations (hoppers) on the mainland at Stellin's Peninsula, a confirmed source area for rats swimming to the island, has now been expanded to 12.
Nelson Island (12 ha), 2 x motels have been placed on the island since late 2016 by arrangement with the owner Bryan King and serviced every month.

C.4.8 Objective for animal pest management and control

1. To work towards the eradication of all pest animal species as defined in the operative Auckland Regional Pest Management Strategy and Biosecurity Act 1993 and as required by the Heads of Agreement.

C.4.9 Policies for animal pest management and control

1. Work towards the eradication of rodents from Motu Kaikoura with an initial goal of achieving to <5% relative abundance density measure and monitor progress on a quarterly basis, with independent monitoring every two years
2. Work collaboratively with neighbours and the Department of Conservation in achieving this goal
3. Work with the private owners of Nelson Island and Motu Haku to manage rats on those islands
4. Support Auckland Council's work with Ngāti Rehua to manage rats on the Māori owned Grey Group
5. Prohibit pet animals including cats and dogs (except dogs defined as 'working dogs' under the Dog Control Act 1996) unless approved by the Trust.

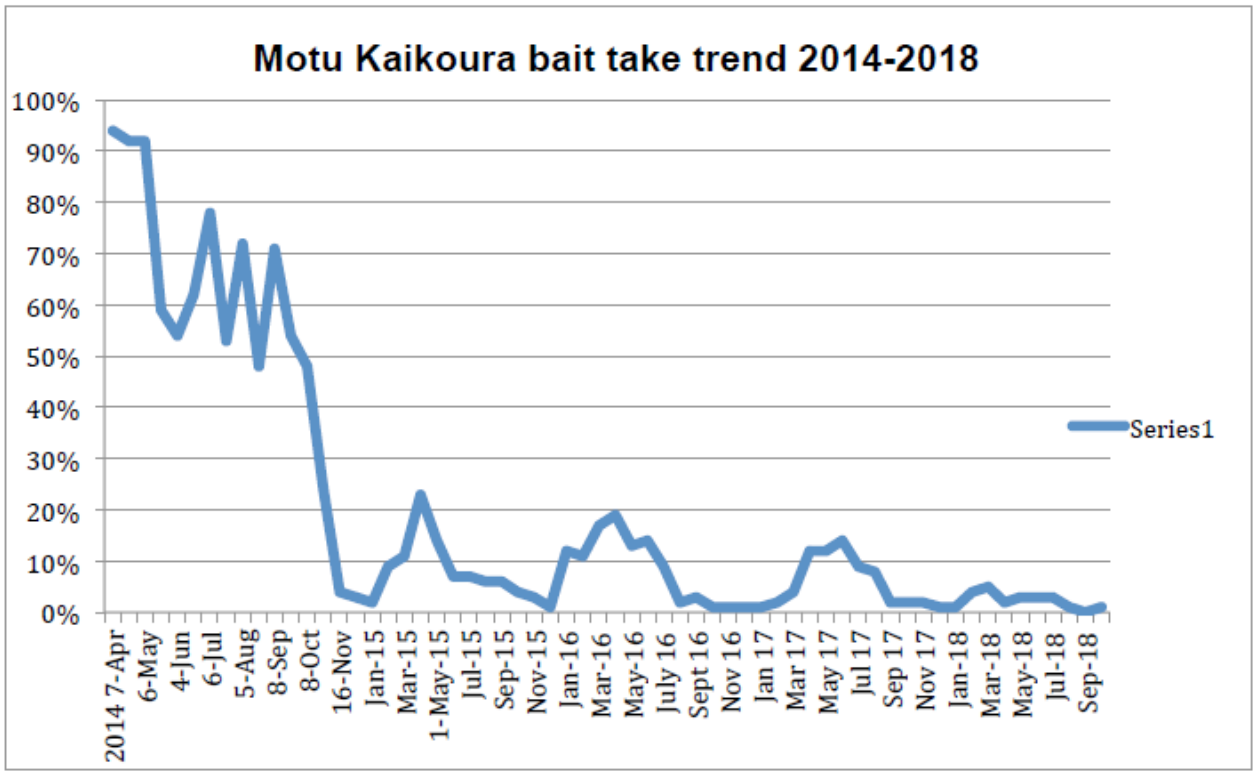

Motu Kaikoura bait take trend 2014-2018
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
2014 7-Apr
6-May
4-Jun
6-Jul
5-Aug
8-Sep
8-Oct
16-Nov
Jan-15
Mar-15
1-May-15
Jul-15
Sep-15
Nov-15
Jan-16
Mar-16
May-16
July 16
Sept 16
Nov 16
Jan 17
Mar 17
May 17
Jul 17
Sep 17
Nov 17
Jan-18
Mar-18
May-18
Jul-18
Sep-18
Series1

FIG. 8

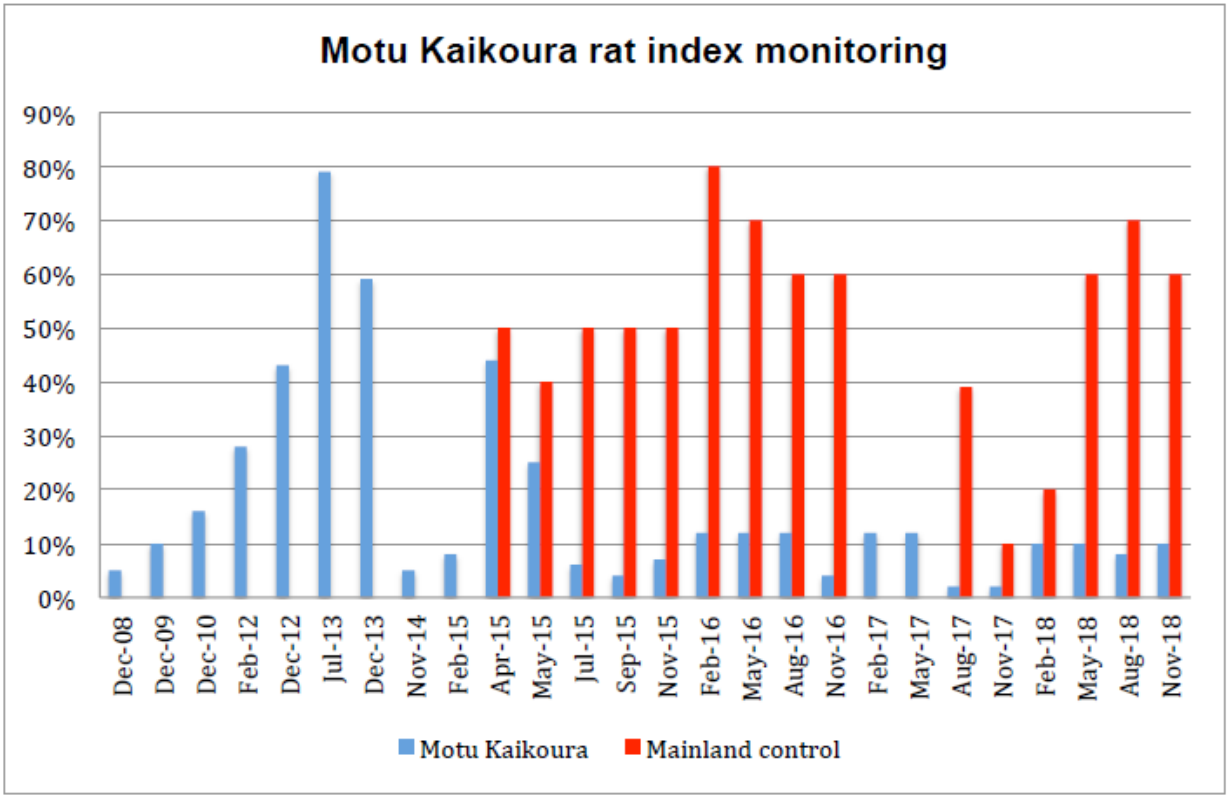

Motu Kaikoura rat index monitoring
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Dec-08
Dec-09
Dec-10
Feb-12
Dec-12
Jul-13
Dec-13
Nov-14
Feb-15
Apr-15
May-15
Jul-15
Sep-15
Nov-15
Feb-16
May-16
Aug-16
Nov-16
Feb-17
May-17
Aug-17
Nov-17
Feb-18
May-18
Aug-18
Nov-18
Motu Kaikoura
Mainland control

FIG. 9

C.4.10 Biosecurity

Early detection is paramount in preventing other pests from establishing on the island. Border security measures as recommended in the policies below should minimise the arrival of pests, including mice, plague (rainbow) skinks and Argentine ants, myrtle rust and Kauri Die-Back. On-going reptile monitoring should reveal the presence of plague skinks should they ever reach the island. Island staff should all be trained in recognising sign of these biosecurity threats. If sign is found the Trust must be informed immediately so that a control programme can be initiated. Note also that the islands of the Hauraki Gulf are contained within the Hauraki Gulf Control Area as declared under the section 131 of the Biosecurity Act 1993. It an offence under the Auckland Pest Management Strategy to transport, move or distribute certain plant species into the area or between islands in the area.

C.4.11 Biosecurity measures required

Pre-border:

- Arrivals (including cargo and luggage) from Great Barrier and surrounding islands should be checked for the presence of all pests
- All footwear must be cleaned and sprayed with trigene to combat spread of Kauri Die-Back
- Cargo and luggage from outside of Great Barrier should be checked for Norway rats, possums, mustelids and hedgehogs
- Inspect all materials/machinery/equipment before arrival to ensure no pest stowaways are present. Undertake preventative treatment
- No plant material or soil mixes are to be taken to the island as they constitute a major biosecurity risk.

At border:

- Undertake biosecurity check of all visitors and their luggage either in the biosecurity shed on the wharf, or in the biosecurity shed on the airfield
- Ensure all food arriving on the island is packed in rodent-proof containers
- Remove all leftover food scraps containing seeds from the island
- Undertake visual inspections of all equipment before unloading.

C.4.12 Biosecurity policies for pest plants and animals

1. Maintain biosecurity controls in accordance with a current biosecurity maintenance plan approved by the Trust in order to minimise the likelihood of any pests arriving especially rodents, plague skinks, Argentine ants, Kauri Die-Back and myrtle rust. Refer to the Motu Kaikoura Biodiversity Management Plan

D. HISTORICAL AND CULTURAL HERITAGE

D.1 Aotea me Motu Kaikoura – i nga wā o mua

Ancestral people originally inhabiting Aotea and Motu Kaikoura are reputed to be Tutumaiao, Maewae or Tūrehu. Later, in the 15th Century the island was occupied by iwi known as Ngāti Tai, including the Ngāti Te Hauwhenua in the north and Ngāti Tai Manawa in the east. Ngāti Te Wharau of Arawa and Tainui descent, respectively, occupied the south and west, including Motu Kaikoura.

Ngāti Wai's mana whenua originates from their successful conquests toward the end of the 17th century. Rehua of Te Kawerua descent and his son, Te Rangituangahuru defeated Ngāti Tai for *utu* over the death of the daughter of Ngāti Manaia rangitira, Te Whaiti, at Harataonga. Ngāti Rehua claimed links with Aotea through Hoturoa of the Tainui waka and Turi of the Aotea waka. Afterwards Rehua settled in the Whangapoua area, and an interim peace agreement was reached on Motu Kaikoura through the marriage of Te Rangituangahuru to Rangiarua, a daughter of Ngāti Te Wharau rangatira, Taihikingarangi, who lived on Motu Kaikoura and controlled the western coastline of Aotea. Ngāti Wai tangata whenua also arrived on Aotea and were given land and eventually inter married with Ngāti Rehua. The two groups became known collectively as Ngāti Wai ki Aotea.

Peace was broken with the killing of Rehua by Mataa of Ngāti Tai at Motu Rakitu, with Te Mataa fleeing to the Alderman Islands. In response, Taihikingarangi and the remaining Ngāti Tai and Ngāti Wharau were driven from Aotea by Te Rangituangahuru, and his Kawerau relatives from Mahurangi and Ngāti Manaia. This tribal grouping later became known as Ngāti Wai. Te Rangituangahuru and other descendants of Rehua became Ngāti Rehua, who populated both Aotea and Motu Kaikoura.

D.2 Ngāti Rehua occupation of Motu Kaikoura

The Ngāti Rehua became the exclusive occupants of Motu Kaikoura after the expulsion of the Ngāti Tai. In terms of sustenance, Ngāti Rehua placed considerable value on the island's seafood resources, particularly crayfish (kōura), while the island itself was considered to be relatively infertile. To this end, two fishing pā, Motu Karaka and Pahangahou, were constructed on prominent headlands.

The last inter-tribal battle of Aotea occurred in 1838 when Ngāti Kahungungu part of a raiding party of 120 warriors, under the command of Te Mauparaoa, from Hawkes Bay, stopped at Aotea to stock provisions. While the local men were away gathering mutton birds at Hauturu and Pokohinu (Mokohinau), the Ngāti Kahungungu raided Te Kawa near Motairehe. However, with the assistance of Ngāti Naunau and Horeta Te Taniwha of Ngati Whanaunga, Rehua defeated Te Mauparaoa's *ope* at Te Parekura near Whangapoua, although they suffered heavy losses during the confrontation.

There are a number of sites and wāhi tapu on Motu Kaikoura of importance to Ngāti Rehua. Notable prehistoric archaeological sites are the stonewalled Pa (S08/433) and the stone alignments (S08/424), both of which are situated on the central northwest ridgeline.

D.3 Early European History of Motu Kaikoura

Captain Cook sailed by in *Endeavour* November 1769 and named Aotea, 'Great Barrier'. Dumont d'Urville sailed past in the *Astrolabe* in February 1827, and charted 'Otea' and nearby islands including Cuvier, Aride (Rakitu), Aigulles (the Needles') Fanal and Navire (Mokohinaus) and Les Piroques. He was not close enough to survey in detail the Fitzroy area but named the Motu

Kaikoura group (apparently including Motuhaku and Nelson) Île d'Anville after a French geographer of the 18th century (a name which later 'migrated' south to become an English name for Mahuki, 'Anvil Island').

The first European purchase of Motu Kaikoura and 'Great Barrier Island' occurred on 20th March 1838 to William Webster, Jeremiah Nagle and William Abercrombie, for £1,140 in goods and a large amount of guns and ammunition. The purchase was signed in Coromandel by Te Horeta Te Taniwha and his son, Kitahi. On investigation the sale was declared invalid, having been carried out by persons who did not rightfully own the land. At the time, Ngāti Rehua were occupying Motu Kaikoura. In 1840 Sir George Gipps, Governor of New South Wales, issued a proclamation to forbid direct purchase of land from Māori, including the above purchase by Webster, Nagle and Abercrombie. In 1854, the early claims were revisited again by the Crown with Webster, Nagle and Abercrombie being required to validate their original bill of purchase. The collective grants, totalling: 24,269 acres were surrendered and never disputed. The land was granted to William Smellie Graham on 29th December 1854, who sold the property on 17th January 1856, to Theophilus Heale, a surveyor and judge on the Native Land Court. On 30th June 1859 Healy sold the island to the 'Great Barrier Land Harbour and Mining Company', which established farms on Motu Kaikoura, Mohunga, Kairara and Kiwiriki. Motu Kaikoura was sold by indenture on 21st April 1863 to Pittar, Wright and Albert Allom of Great Barrier, and the island was developed into the 'Waikoura Farm and Sheep Station'.

Following these early transactions, Motu Kaikoura, Nelson and Motu Haku islands were set aside from the rest of the block and sold (£250) to George Laurie on 26th February 1879. Motu Kaikoura was sold (£500) a few weeks later to Manuel Silva, on 25th March 1879, while Laurie retained Nelson (Peters) Island and Motu Haku. Manuel Silva was reported to have built a house in Augustus Cove, giving it the name 'Old House Bay' (now Bradshaw Cove). Manuel Silva sold Motu Kaikoura to a friend, Antonio de Varga (Martin), on 19th August 1881. Martin died just a year later and even though the island was inherited by his widow, it reverted to Manuel Silva on 3rd March 1883. When Manuel Silva drowned in Port FitzRoy, Motu Kaikoura was inherited by his wife, Mary Silveira, who sold it to Ernst Engster in 1885.

In November 1885, Motu Kaikoura was sold again, this time to Allen Ashlin Taylor and Edward Paddison. Allen Taylor's wife, Susan, bought out Paddison, and the couple then built the first permanent house on the island in Governor's Pass. Unfortunately, Allen Taylor too drowned in a boating accident, while fetching a doctor to tend to his wife's child birthing. Afterwards, Mrs. Taylor went into Auckland and the house burned down while occupied by the farm manager. The island was then purchased by Edward and Mary Darton in 1893.

D.4 Kaikoura Island in the 20th century

In the 20th century the land went through a succession of owners, Theophilus Wake (1907), Charles Owen (1909) and then George Thomas Bayly (1911 - 1941) of Port Fitzroy. The Baylys, who owned the island for 30 years, introduced the fallow deer from the late 1920's to early 1930's. The Baylys sold the island to William Warren in 1941.

The German raider, *Orion*, was in the area in 1940 and laid mines which sunk the RMS *Niagara* in June that year, Thereafter, a 6-inch Howitzer gun was mounted on the southern side of Man-of-War Passage, and Port Abercrombie and Man-of-War Passage were laid with mines (1942-1943). An Observation Post and Bunker were constructed in Bradshaw Cove and both linked to a radar station on Moore's Peak, Nagles Cove, Great Barrier.

FIG. 10 Dido-class **c**ruiser, HMNZS Bellona, in Governors Pass (Man-of-War Passage) between Motu Kaikoura (right) and Great Barrier (left) in 1950. Hauturu (Little Barrier) lies on the distant horizon. (Source: Tudor Collins, via the Crawford Family)

The Observation Post and bunker were abandoned in 1943, and the minefields were detonated in 1944. The community was not warned of the pending detonations and therefore missed the spectacular display. Motu Kaikoura was owned by the Crawford family from 1945 to 1973. After her husband disappeared, Mrs. Crawford lived in Top Farm House along with their son, Cameron for most of the period of ownership. On her death the island was inherited by her son, Cameron Crawford, who sold to a Pukekohe syndicate consisting of Stuart Searle, Barry Preddle and John Burrows in 1973. The Pukekohe syndicate built the 'Lost Resort' above Te Kokoru Waihohonu in 1978. On encountering financial difficulties this operation was closed after an arson attempt failed in 1979. The buildings, with one exception, remain standing today.

- The partners leased the island to commercial fallow deer farmers, until the operation was sold in 1980 to a second Pukekohe syndicate comprised of Joseph Weck, Trevor Muir, Raymond Pilcher and Leslie Sutherland. The second syndicate expanded the operation by erecting deer fences and introducing more fallow deer and also releasing pigs and goats (the latter were eradicated in 1993). Forest clearing ceased on the island in the mid-1980s.
- Eventually, the island was sold to an Auckland businessman, Stuart Galloway. Afterwards, it was sold successively to the Chase Corporation (1988), to Hawai'i based Westy Holdings (1990) for $2.5 million, and then to John and Joy Fasher (1995), who constructed the present airfield. The Fashers sold the island to the government for $10.5m in 2004. (See Appendix 1).

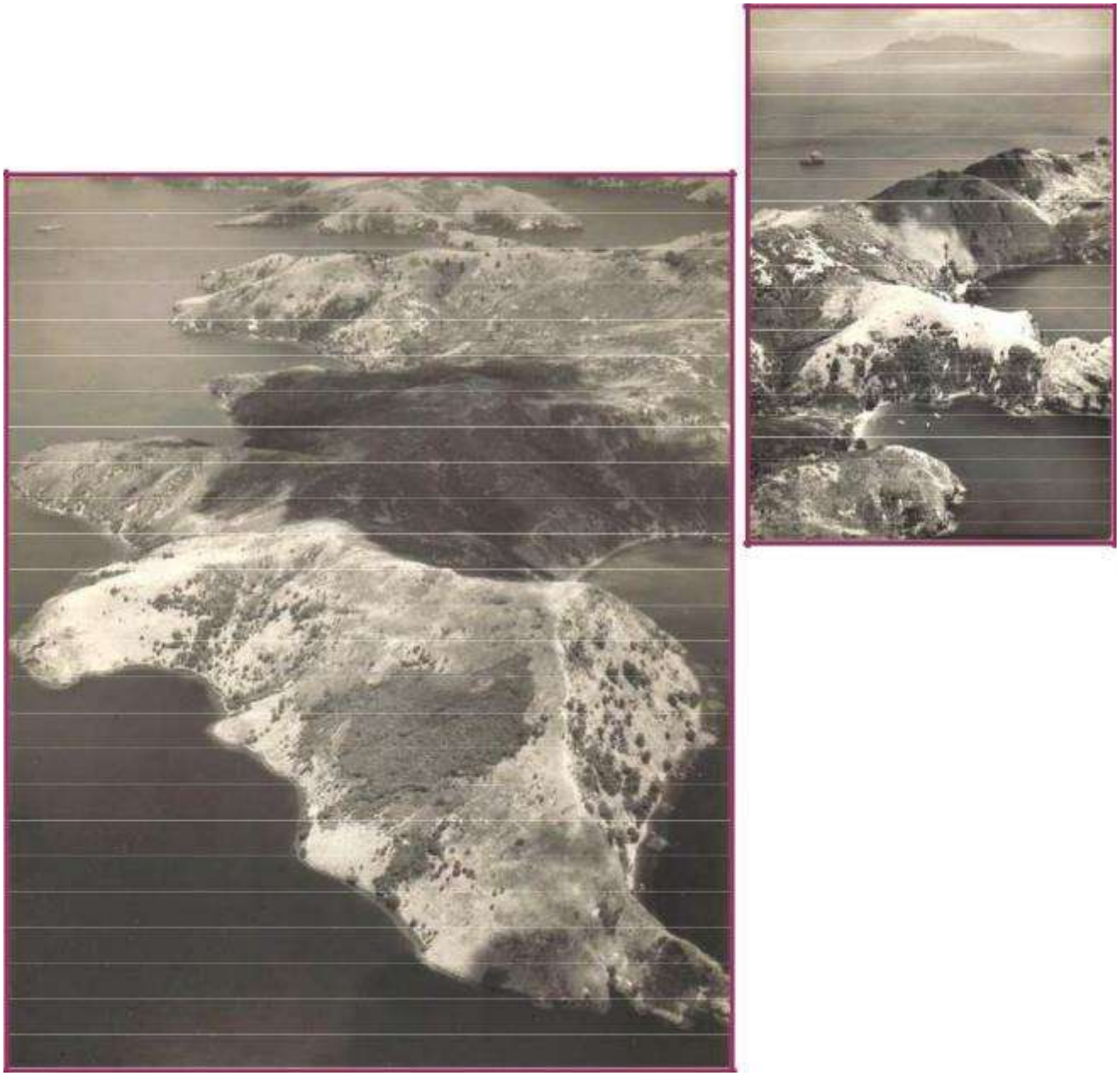


FIG. 11 Motu Kaikoura photographed from the northeast with Mount Overlook in the foreground. The island is shown extending to Man-of-War Passage in the south and along the western peninsula out to Nelson Island and Motu Haku. It is dominated by pastureland, with occasional areas of scattered scrub and stands of forest. Based on historical records the island was being grazed by deer, cattle and sheep. Fallow deer remained on the island until their eradication in 2008. Three boats are anchored in Bradshaw Cove on the north shore. Hauturu / Little Barrier Island) is visible in the distant halo of sunshine. (Source: White's Aviation via the Crawford Family).

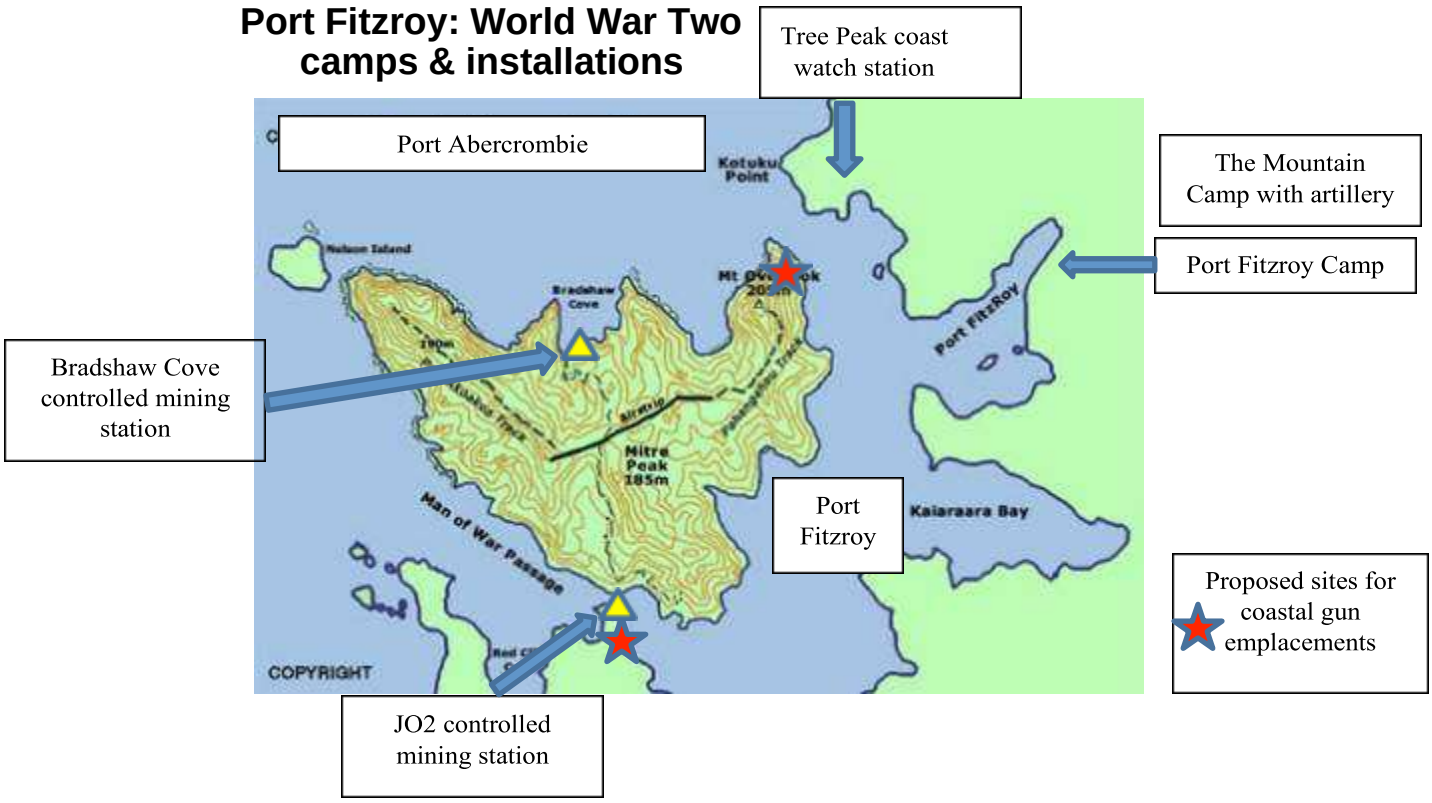


FIG. 12 Motu Kaikoura World War II military installations. (I. Maxwell) – See Appendix 6

An archaeological survey was complete in 2005. The records of this survey are contained in Table 1 of Appendix 5. The Heads of Agreement requires the Trust to record, maintain and protect all archaeological features.

D.5 Objectives for the management of the historic and cultural heritage

1. To protect and manage the historic, archaeological, geological and other scientific features of the scenic reserve.
2. To protect the historic and cultural heritage from adverse disturbance by human activity and development, vegetation overgrowth and fire.

D.6 Policies for historic heritage and archaeological protection

1. Protect archaeological sites and wāhi tapu on Motu Kaikoura in accordance with the provisions of the Heritage New Zealand - Pouhere Taonga Act (2014) and in consultation with Ngāti Rehua Ngāti Wai, Heritage New Zealand - Pouhere Taonga and the Auckland Council's Heritage Department.
2. Work with manawhenua to manage and protect wāhi tapu and Māori cultural, historic and archaeological sites, relics and nga taonga tūturu on the island
3. Protect cultural, historic and archaeological sites from adverse impacts
4. Install interpretation signage at significant sites with information about those sites, including World War II military sites and structures, in consultation with those parties listed in the policy above
5. Prevent damage to identified archaeological sites from vegetation overgrowth
6. Allow appropriate supplementation of the existing historic farm orchard subject to the Trust's approval and a heritage restoration plan prepared under appropriate professional advice and approved by the Trust
7. Prepare and make available a schedule of the geological features of Motu Kaikoura.

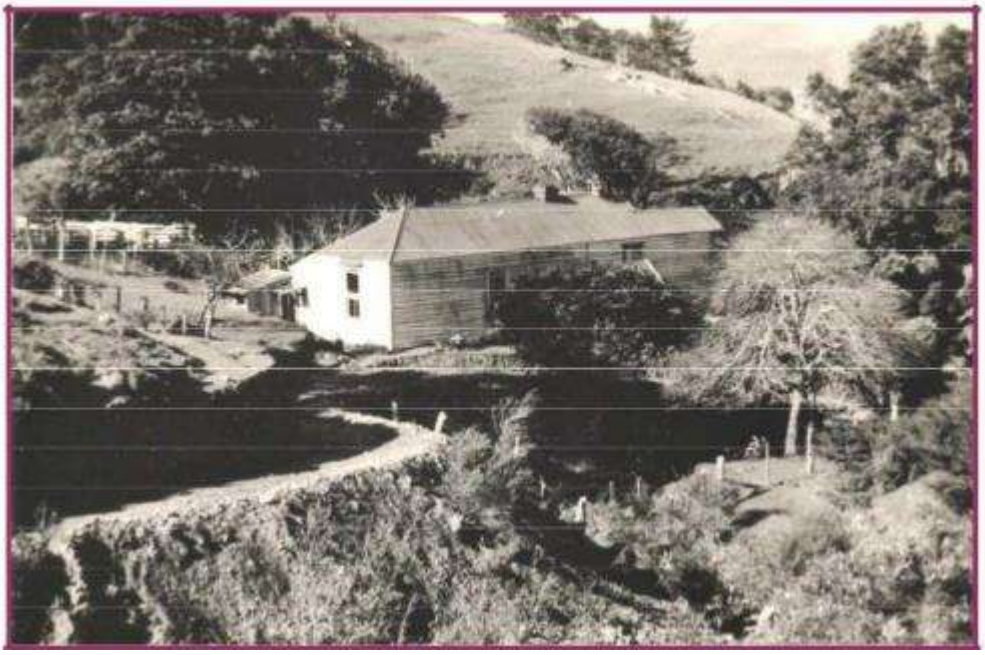


FIG. 13 Old Farmhouse at Crawford Cove on Motu Kaikoura's south shore was located near Governor's Pass (Man-of-War Passage). Allen and Susan Taylor (1885-1903) built the island's first permanent house, which was replaced later by the home of Edwin and Mary Darton (1903-1907). The home's foundations remain today. View is to the northeast. (Source: Tudor Collins, 1950, via the Crawford Family).

FIG. 14. Bradshaw Cove on the north coast. World-War II barrack buildings near the shoreline were built during 1942-1943. The Crawford's Percy Vos-built 'Kaikoura', is moored in the cove (front right) (Source White's Aviation (04.01.1954), Negative 34123, Alexander Turnbull Library Collection).

FIG. 15. Te Kokoru Waihohonu. The wharf and main settlement on Motu Kaikoura, 2017. (M.Lee).

E. PUBLIC ACCESS, INFRASTRUCTURE AND ASSETS

Motu Kaikoura has a number of existing structures and facilities on it. Access to and across the island is provided by a deep-water jetty and two moorings, gravel farm roads and a network of walking tracks. Accommodation is provided by a lodge consisting of seven cabins, an ablutions block and work shed clustered around a newly built lodge.

Other structures include a WWII era cottage and a dilapidated farmhouse with associated orchard. The island is also served by an airfield and two telecommunication facilities.

E.1 Overall objectives for the management of public access, infrastructure and assets

1. To protect significant natural values including soil, water and forest ecosystems from disturbance and contamination and minimise the fire risk
2. To encourage the use of the island for outdoor and environmental education, particularly for young people
3. To provide facilities, including buildings and related amenities, for public educational, recreation and community purposes
4. To manage, maintain and, where necessary improve, the infrastructure on the island consistent with the vision for and values of the island
5. To encourage and facilitate public access except where restrictions are considered necessary for the protection and wellbeing of the scenic reserve or the protection and safety of people using the reserve
6. To manage the pattern of visitor-use and activities and offer a visitor experience that enables visitors to enjoy the reserve without adversely affecting the values of the scenic reserve.

E.2 Jetty, pontoons, moorings and roads

The island's main settlement and administration centre is serviced by the main deep-water jetty at Te Kokoru Waihohonu, on the south coast just east of Governors Pass (Man-of-War Passage).

The deep-water jetty directly enables relatively large vessels to dock and unload passengers and supplies. There are also two moorings. The gravelled farm road allows four-wheel drive vehicles to pass from the lodge over the divide and down to Bradshaw Cove. A large barn is situated 100m up the road *en route* to the airfield. In Bradshaw Cove two World War II-era buildings are located near the beach. Two telephone companies have relay towers on hilltops near the island's southeast corner.

E.2.1 Objectives for jetty, pontoons, moorings and roads

1. To maintain the jetty, pontoons, moorings and roads in working condition to facilitate safe and convenient access to and across the island.
2. To manage, maintain and, where necessary improve, the infrastructure on the island consistent with the vision for and values of the island
3. To protect significant natural values including soil, water and forest ecosystems from disturbance and contamination and minimise the fire risk.

E.2.2 Policies for jetty, pontoons, moorings and roads

1. Maintain the jetty, pontoons and moorings in a safe and working condition
2. Ensure the main road is regularly graded and maintained to a suitable standard for use by 4WD vehicles.

E.3 Motu Kaikoura airfield

(NZKF AD 2 -51.1 AIP New Zealand)

The present grass airfield was constructed by Alan Gray for Don and Joy Fasher in 1995 and required extensive excavation of outcrops of andestic rock. Its position differs from that of the original airstrip, which had been built in the 1980s, further east. The present airfield which has windsocks and parking tie-downs at its southwest end, is well formed and capable of handling light planes and chartered 8- to 12-seat aircraft.

FIG. 16: Light plane parked at the southwest end of Motu Kaikoura airfield (A. Bellvé)

Given the logistical difficulties of accessing Motu Kaikoura the airfield is critical to the ongoing management of the island. Air access enables transport of supplies in small quantities from the mainland when they are required for tasks at short notice and regular working visits by Trust Board members, contractors and visitors, avoiding a 3-hour boat ride from the mainland, or a 40-min flight to Great Barrier along with 1.5-hr car and boat rides to reach Motu Kaikoura. Moreover, it provides rapid plane and helicopter access in the case of a medical emergency.

Helicopters occasionally make use of the island for recreational and operational purposes. They are required to use the existing airfield and landing pads, gain Trust approval to do so and to pay a landing fee.

The Motu Kaikoura airfield is oriented from the southwest to the northeast. Landing requires permission and prior payment of a fee. The cross-island farm road intersects at the airfield's southwest corner and a number of tracks and rodent management lines intersect here.

FIG. 17: Motu Kaikoura airfield is vital for logistic support management of Motu Kaikoura. (K. Howe).

Airfield access presents a significant biosecurity risk. No plant or animal pests are allowed to be brought to the island; including any flora or their seeds, corms, tubers, adventitious roots, or fauna, invertebrates or vertebrates, including deer, pigs, dogs, cats, stoats, weasels, ferrets, rats or mice. Checks have been mandated to ensure all planes are free of vermin on departing from their home airport and on arriving at Motu Kaikoura. All packages must be packed and sealed carefully at the point of origin, and then on arrival examined during unpacking in a designated bio-security room on Motu Kaikoura (*See*: Biosecurity C.4.10 – C.4.12 for further details).

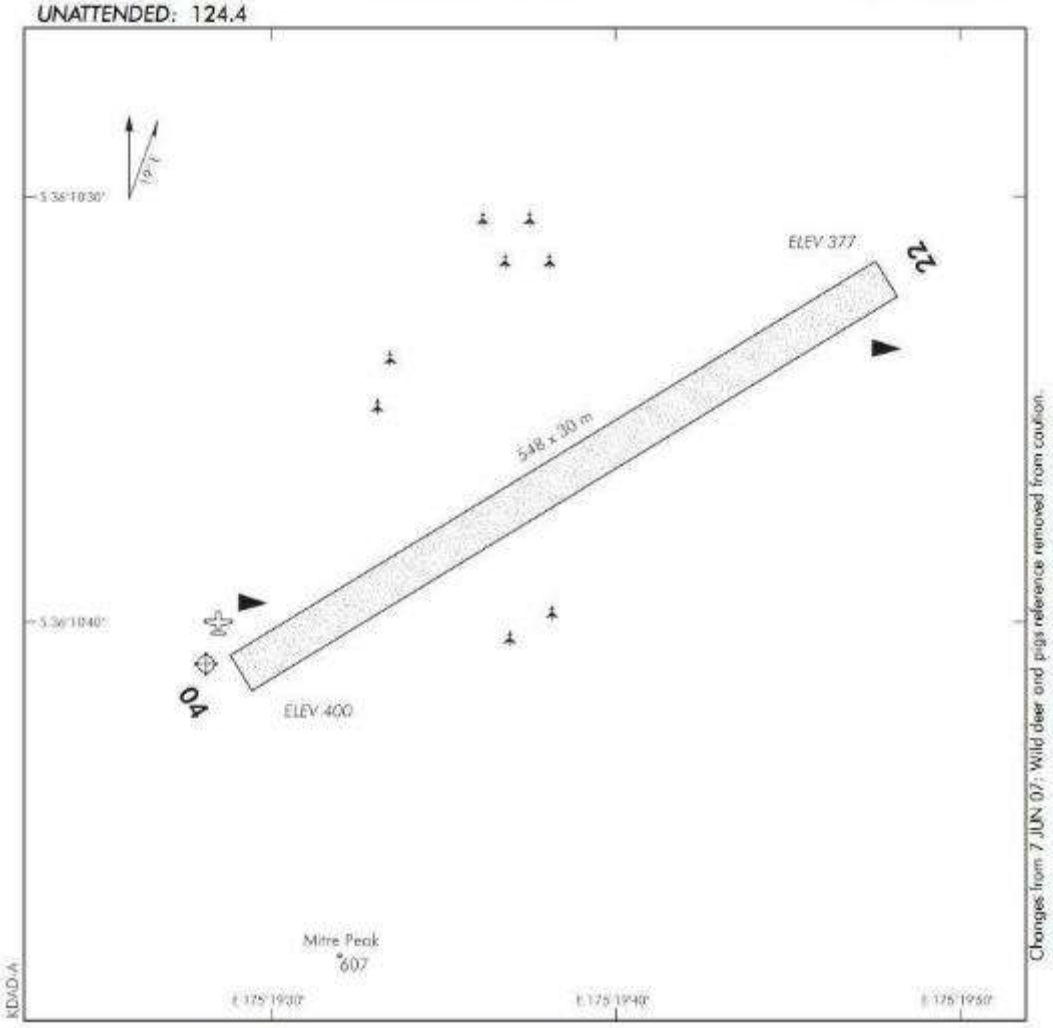
E.3.1 Objectives for the management of the airport

1. To maintain the airport in working condition to facilitate safe access to the island
2. To manage and maintain the airport consistent with the vision for and values of the island
3. To protect significant natural values including soil, water and forest ecosystems from disturbance and contamination and minimise the fire risk for the Airfield and Helicopter landings.

ELEV 400
NZKD
UNATTENDED: 124.4

NON-CERTIFICATED

MOTU KAIKOURA ISLAND AERODROME



1. Circuit direction: RWY 04 and RWY 22 — Left hand
2. **CAUTION:** Severe windshear turbulence in moderate winds — all directions. Birds.
3. Grass cutting and maintenance work may take place at any time.
4. Motu Kaikoura Island is a biosecurity area.
   - Dogs and cats prohibited.
   - No seeds, plants or unwanted pests.
   - As rodent-free island, anticoagulant-type bait (e.g talon, pestoff) to be in aircraft for 3 days prior to each flight which must be biosecurity approved by phoning number in supplementary section.

*S 36 10 41 E 175 19 28**

Effective: 9 NOV 17

MOTU KAIKOURA ISLAND AERODROME

FIG. 18: Motu Kaikoura airfield landing plate

E.3.2 Policies for the management of Motu Kaikoura Airfield

1. Maintain the existing airfield on the reserve to Civil Aviation Authority standards, including mowing the grass as required, and maintaining a windsock
2. Ensure users of the airfield obtain permission from the Trust prior to landing [For approval process please go to www.motukaikoura.org.nz] and comply with the Civil Aviation Authority's Flight Guide
3. Ensure users of the airfield comply with the Trust's biosecurity protocols in accordance with C.4.10 – C.4.12. May grant permission only if the applicant can demonstrate that their proposed use is consistent with the vision and objectives for the island, and will not threaten the values of the island, visitor enjoyment or cause a nuisance, such as excessive noise or other adverse environmental impacts
4. Manage the frequency and volume of aircraft landings and take-offs to minimise impacts on the tranquillity and naturalness of the reserve
5. Limit helicopter landings to the airfield and areas used to service the telecommunication towers unless otherwise approved by the Trust
6. Prohibit drones from Motu Kaikoura except for approved research and monitoring purposes or otherwise as formally approved by the Trust.

FIG. 19: Motu Kaikoura Airfield – looking northwestward (A. Bellvé).

E.4 Accommodation and buildings

Seven cabins, an ablution block and work shed comprise the Settlement clustered around the newly built and formally opened Lodge. The cabins, ablution block and are constructed from wood framing and have corrugated iron walls and roofs. The new lodge has been built with similar materials. The former lodge it replaced was destroyed in an arson attack in 2015. Of the World War II era buildings at Bradshaws the larger cottage has heritage value and is in the process of being restored. An old farmhouse ('top house') and outbuildings which have been in a state of disuse for decades are deemed beyond repair.

FIG 20: The new lodge takes shape November 2017. (P. Hutton).

E.4.1 Objectives for accommodation and buildings

1. To maintain the buildings in working condition to provide safe use and accommodation on the island
2. To manage, maintain and, where necessary improve, the buildings on the island consistent with the vision for and values of the island
3. To protect significant natural values including soil, water and forest ecosystems from disturbance and contamination and minimise the fire risk

E.4.2 Policies for accommodation and buildings

1. Prepare and review annually an Infrastructure Operational and Maintenance Plan setting the priorities and funding for the maintenance and improvement of infrastructure and facilities on Motu Kaikoura.
2. Maintain accommodation and facilities for use by the public, volunteers and researchers
3. Maintain all buildings in good condition in accordance with the maintenance plan approved by the Trust
4. Restore Bradshaw cottage subject to availability of resources
5. Oppose any proposals on adjacent land or within the coastal marine area that threaten values of Motu Kaikoura such as the visual amenity, visitor enjoyment, biosecurity, environmental qualities or causes a nuisance such as noise.
6. Prevent the construction of any new, or use of any facility or structure for exclusive private use
7. Ensure any new structure is necessary to meet the purposes of the reserve and is harmonious with the environment of the reserve
8. Minimise physical human disturbance of the natural values of the reserve during construction and/or maintenance of structures, facilities and other assets on the reserve
9. Ensure that facilities and structures are visually compatible with the scenic reserve environment, except where they are required to stand out for safety reasons
10. Ensure any new structure and facility does not adversely affect the geological values, landscape or scenic features of the reserve
11. Ensure all sanitary facilities are sited and designed to avoid contamination of freshwater and seawater
12. Minimise the soil disturbance required for the establishment and/or maintenance of buildings and structures
13. Take practicable actions to minimise the fire risk to the native forest
14. Take practicable actions to prevent the introduction of fungal and other pathogens that are a potential risk to forest conservation. Refer also to C.4.10 – C.4.12.
15. Obtain the permission of the Minister of Conservation to construct any new building on the island pursuant to section 55(2)(e) of the Reserves Act 1977.

FIG 21: Views from the Parihakoakoa (Ridge) Track looking south-eastward to the Grey Group and Hauturu-a-Toi / Little Barrier Island. (M.Lee).

E.5 Walking Track network

In October 2006, the Parihãkoakoa (Ridge) and Pahangahou Tracks, respectively, were formed along the main central divides extending from the airfield to the northwest and northeast ends of the island, to a minimum width of 80 cm. In 2013/14 a 15km perimeter track encircling the island (subdivided into East and West tracks) was constructed. These tracks have a dual use, as popular visitor amenities affording spectacular views, and also forming the backbone of the rodent management infrastructure. A number of other tracks have been cut to facilitate rodent management.

FIG. 22: View northeast from the end of the Parihãkoakoa Track, Motu Kaikoura, with Port Abercrombie in the background. (A. Bellvé).

FIG. 23: Deep-fingered Stoney Bay on the northeast shoreline of Motu Kaikoura. A walkway affording views of splendid seascapes has been constructed around the island's perimeter. The airfield is visible in the background. (A. Bellvé).

The Motu Kaikoura Walking Track Network

The perimeter track (East Track and West Track) is a public walkway providing outstanding views and seascapes for visitors. The main tracks are as follows:

East Track, West Track, Parihakoakoa (Ridge), Cross Island Road, Overlook – Slip Track , Pahangahou, House Track, Airfield, Bradshaw's, Wharf Line, Towers Track, Barn Track

Motu Kaikoura is a remote island offering a wilderness experience. Many of the tracks on the island are only suitable for trampers with a moderate level of fitness. Specific provision has not therefore been made for people with limited access abilities. However, some tracks are accessible for people with limited mobility and assistance may be able to be provided where practicable.

E.5.1 Objectives for the management of the track system:

1. To maintain the tracks and roads in working condition to facilitate safe and convenient access to and across the island.
2. To manage, maintain and, where necessary improve, the track network on the island consistent with the vision for and values of the island
3. To protect significant natural values including soil, water and forest ecosystems from disturbance and contamination and minimise the fire risk.

E.5.2 Policies for the Motu Kaikoura walking track network

1. Maintain a track network on the island and subject to availability of resources upgrade tracks to a higher standard
2. Maintain scenic viewshafts and lookouts by controlling vegetation
3. Locate park seats at scenic lookouts
4. Install and maintain wayfinding signage on the track network.

FIG. 24: Bradshaw Cove. The beach is flanked by headlands and backed by a sheltered valley with three streams, two of which converge just short of the beach. Two World War II barrack-style buildings are located close to the beach (A. Bellvé).

E.6 Telecommunications facilities

Two telecommunications facilities exist on Motu Kaikoura. These facilitate mobile communications on Great Barrier Island and are recognised as:

- Providing for public health and safety through the provision of lifeline utility service
- Enabling communication and enhancement of quality of life for people and communities
- Providing technologies for future wildlife monitoring and studies.

The maintenance of these facilities is considered essential, including the towers, helicopter landing pads and access tracks and the operational functioning of the sites by way of vegetation trimming or clearance. Also, it is accepted that flexibility is required to accommodate future upgrades and advances in technology that provide improved communication services subject to the Trust being satisfied that these are consistent with the vision and objectives for Motu Kaikoura and that any future development can avoid, remedy or mitigate adverse effects on the environment, community health, safety and amenity.

E.6.1 Objectives for telecommunications facilities

1. To accept the existing telecommunication facilities as essential services on the island and surrounding areas and make provision for their maintenance and appropriate upgrades
2. To ensure the telecommunications facilities are maintained in working condition and where appropriate improved. consistent with the vision for and values of the island
3. To protect significant natural values including soil, water and forest ecosystems from disturbance and contamination and minimise the fire risk.

E.6.2 Policy for telecommunications facilities

1. Telecommunication operators shall, within their leased areas:
    a) Maintain the telecommunication towers, including helicopter landing pads and tracks, to achieve full operational functionality of the sites
    b) Allow for the upgrade and improvement of telecommunications infrastructure and supporting development, in consultation with the Trust, and subject to avoiding, remedying and mitigating the adverse effects of any structures or development on the environment, community health and safety and amenity of the reserve
    c) Ensure all users and contractors comply with the biosecurity protocols outlined in C.4.10 – C.4.12.

F. OUTDOOR EDUCATION AND RECREATION

Motu Kaikoura offers the opportunity for a range of outdoor recreation activities and challenges, including tramping and water-related activities such as kayaking, rowing, sailing, snorkelling and swimming. These offer the opportunity for confidence building activities, learning survival skills, risk management and bush craft. The island also offers people, and particularly youth, the opportunity to learn about the environment while participating in such activities or volunteering for a range of conservation and scientific ventures on the island. The Trust encourages and will facilitate school children, tertiary students and research agencies to make use the facilities on the island to learn more about and contribute to our knowledge of the history and ecology of the island, including pest management and regeneration techniques.

F.1 Objectives for outdoors education and recreation

1. To facilitate the use of the island and its facilities for outdoor recreation and environmental education purposes.
2. To encourage public and community participation in ecological restoration activities.

F.2 Policies for outdoors education and recreation

1. Encourage the use of the island for recreation appropriate with the scenic reserve status of Motu Kaikoura by making facilities available for outdoor and environmental education groups and individuals
2. Encourage the use of the island for outdoors education and research, including tertiary institutes and research agencies
3. Provide information to visitors to improve their experience and understanding of the island's values and conservation programmes.

FIG 25: The cutter schooner S*pirit of New Zealand* anchored in Port FitzRoy, April 2007. (A. Bellvé).

G. SUSTAINABLE MANAGEMENT AND PUBLIC HEALTH AND SAFETY

Motu Kaikoura Scenic Reserve Management Plan environmental policies shall to be consistent with safe, sustainable living, in part by adhering to established guidelines and by adopting innovative concepts in mitigating carbon emissions which contribute to climate change. The health and safety of visitors and workers is of the highest importance. The Trust is required to adhere to the provisions of the Health and Safety at Work Act 2015 and other relevant legislation such as the Fire and Emergency New Zealand Act 2017. One of the obligations is to prepare and keep relevant a health and safety plan for people working on and visiting the island. The Health and Safety Plan addresses the following issues:

- Identifies potentially significant hazards
- Specifies the measures that will be taken to eliminate, isolate or minimise identified hazards
- Identifies topics and the level of detail to be provided in visitor briefings and how the Trust will ensure these briefing will occur
- Outlines methods that will be used to protect people visiting, including members of the public, and undertaking activities on the reserve
- Identifies reporting procedures for hazard identification and the processes for dealing with these.

The Motu Kaikoura Health and Safety Plan covers all activities undertaken by the Trust and will be reviewed on a regular basis (a minimum of three years) and whenever the Trust becomes aware of any issues that need to be incorporated or revised.

Please see the Motu Kaikoura Trust Health and Safety Plan, available on the island and on our website: www.motukaikoura.org.nz

A pack in, pack out' rubbish management policy is in force which best meets the Trust's obligations under the Heads of Agreement to keep the Scenic Reserve free of litter.

G.1 Objectives for sustainable management and public health and safety

1. To protect significant natural values including soil, water and forest ecosystems from disturbance and contamination and minimise the fire risk.
2. To provide a safe and welcoming environment for visitors.

G.2 Policies for sustainable management and public health and safety

1. Take all precautions to ensure there are no fire hazards on Motu Kaikoura and comply with the provisions of the Fire and Emergency New Zealand Act 2017
2. Prohibit all open fires at all times
3. Ensure all visitors comply with the 'pack-in, pack-out' rubbish policy
4. Maintain and regularly review a Health and Safety Plan at a minimum of every three years or whenever the Trust is aware of an issue that needs to be incorporated or revised
5. Ensure all visitors undertaking work on the island are given a health and safety briefing on arrival on the island and the general public are informed of known hazards through signs at arrival areas or track entrances
6. Ensure all work implemented on Motu Kaikoura is conducted in the most environmentally sustainable manner
7. Where applicable, trial innovative environmental management techniques that are in accordance with the vision and objectives for Motu Kaikoura
8. Permit the production of subsistence food i.e. fruit from the existing historic farm orchard) and vegetables from the existing garden, by resident staff in order to support healthy sustainable living.

H. CONCESSIONS

Motu Kaikoura offers a range of opportunities to enhance the conservation, education and recreation on the island through concessions. These are also a potential source of funding for the Trust and its activities on the island. While the Trust is supportive of allowing commercial ventures that enhance the visitor experience on the island, it is paramount that these activities are fully consistent with the Trust's legal obligations under the Reserves Act 1977, the Resource Management Act 1991, the Hauraki Gulf Marine Park Act 2000, and are fully consistent with the vision for and objectives of the Motu Kaikoura Management Plan. These ventures will only be considered as concessions to operate on the island and/or use its infrastructure with a limited tenure. The Trust will not consider agreements that take the form of a lease which create a proprietorial interest in the island or its infrastructure.

Two licences exist for telecommunication towers on the island. These are administered by the Department of Conservation but the rental fee comes to the Trust to help support the Trust's activities on the island.

H.1 Objective for concessions

1. To allow concessions that enhance the visitor experience and conservation programmes and do not threaten the vision for and values of the island as a scenic reserve and wildlife habitat.

H.2 Policy for concessions

1. May grant concessions for ventures on the island only where consistent with the Trust's legal obligations, with the vision for and objectives of the Motu Kaikoura Scenic Reserve Management Plan and which do not pose a threat to the values of Motu Kaikoura or the quality of the visitor experience.

Motu Kaikoura People

The Trust: **Chair** Rod Miller, **deputy chair** Geoff Davidson, **secretary** Rosalie Miller, **treasurer** Peter Hutton (to 2018), Kim Grove, **trustees**: Harry Doig, Mel Galbraith, Mike Lee, Lynette Hoey, Sue Daly and Gemma Parkin.
Island Ranger: Clint Stannard. Ranger support Jacinda Stannard.

Ngā Mihi

This Management Plan was originally authored by former trustee Anthony Belvé in 2006. It was redesigned and extensively updated by trustee Mike Lee, with support of fellow trustees and with valued advice of John Galilee and Stephanie Bowman of the Department of Conservation. The draft Plan was notified for public submission in August 2018 under s41(6)(b) of the Reserves Act 1977 and in December 2018 was the subject of a formal hearing process before a panel of trustees, under s41(6)(d) of the Act. We wish to thank all those who submitted on the Plan. We also thank consultant planner Neil Olsen who was present at the hearing and post-hearing deliberations, who made recommendations on all the submissions and who incorporated allowed submission points into the Plan. Finally, the Motu Kaikoura Trust wishes to acknowledge and thank all those who contributed in any way to the completion of the Plan, many of whom are acknowledged by name within the document but also to the many who are not. The Motu Kaikoura project is a collaborative effort by dedicated environmentalists and community-minded citizens who freely contribute their time and labour gratis to the restoration and conservation of the island. These same volunteers support other projects that contribute significantly to nature conservation in the Hauraki Gulf. They merit special appreciation and we acknowledge them with grateful recognition.

FIG 26: Kaka at dusk**.** Port Fitzroy. (S. Farquhar).

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APPENDIX 1.

Acquisition of Motu Kaikoura into public ownership and the establishment of the Motu Kaikoura Trust

A1. PURCHASE OF MOTU KAIKOURA INTO PUBLIC OWNERSHIP

Commissioner for Crown Lands D'Arcy O'Brien, endeavoured to purchase Motu Kaikoura (Selwyn Island), in the 1970's on behalf of the Hauraki Gulf Maritime Park Board for the people of New Zealand. This effort was unsuccessful; instead, the island remained in private ownership.

'Save our Islands Trust' (SOIT) launched a bid to purchase Kaikoura Island in 1995. The trust was established by Michael (Mike) Lee, chairman ARC Regional Parks Committee and Ben Dunbar-Smith, journalist and public relations consultant, after lobbying by Will Scarlett, then chair, Great Barrier Island (Aotea) Section of the Royal New Zealand Forest & Bird Protection Society, and Chair, Northern Barrier Residents' and Ratepayers' Association. The Trust was chaired by Mrs Whetu McGregor, Kaumatua of Ngati Rehua hapu of Ngāti Wai and member, Auckland Conservation Board, Deputy Chairman, Professor John Morton, Emeritus Professor Zoology, University of Auckland, trustees, Hon Philip Amos, QSO, a former cabinet minister, Ted Lees, a businessman and former member, Auckland Harbour Board and Hauraki Maritime Park Board, Mike Lee and Ben Dunbar-Smith. The purchase was supported in principle by the Auckland Regional Council, Auckland City Council, Auckland Conservation Board, North Barrier Residents' and Ratepayers' Association, Inc., and Port FitzRoy Boat Club, Inc. Unfortunately the effort failed to obtain funding from the Lottery Grants Board or the Forest Heritage Fund (later the Nature Heritage Fund).

In May 2003, NHF Manager, Allan McKenzie with Mike Lee by then a member of the Nature Heritage Fund Committee endorsed another effort to purchase Motu Kaikoura. The challenge was accepted enthusiastically by Geoff Davidson, Jim Dart, Brian Davis, Helen Lindsay and Colleen Newton, of the New Zealand Native Forest Restoration Trust (NZNFRT). Their application was approved by the Nature Heritage Fund committee in July that year and recommended for purchase to the Minister of Conservation, Hon Chris Carter. Meanwhile a campaign led by Brian Rudman of the *NZ Herald* gained widespread public support.

Funds for the actual purchase of Motu Kaikoura came from the Minister of Conservation's Nature Heritage Fund ($8 million), ASB Community Trust ($2m); Auckland Regional Council ($281,250); Auckland City Council ($83,000); Manukau City Council ($63,346); North Shore

City Council ($46,125); Waitakere City Council ($37,273); Rodney District Council ($16,729); and Papakura City Council ($8,000). The purchase of Motu Kaikoura into public ownership was finally completed on 13th April 2004.

2. APPOINTMENT OF MOTU KAIKOURA TRUST

The Minister of Conservation, under Section 29 of the Reserves Act 1977, appointed the MOTU KAIKOURA TRUST in April 2004 to control and manage the reserve described in the Schedule as a classified scenic reserve, for the purposes specified in Section 19(1)a of that Act and subject to the following special conditions:

1) The reserve is to be available for outdoor/environmental education for youth in particular and for the provision of appropriate facilities;
2) The trust shall submit to the Minister for his/her approval a management plan for the reserve within two years after the date of its appointment; and;
3) The appointment of the trust as the administering body of the reserve is to be reviewed after seven years.

VESTING OF INTEREST

The original board was comprised of representatives of NZNFRT, Royal NZ Forest & Bird Protection Society, Supporters of Tiritiri Matangi, Great Barrier Island Trust, Outward Bound, Outdoor Pursuits Centre of NZ, and Ngati Rehua Tangata Whenua.

SIGNATORIES TO THE CONSTITUTION

The constitution was signed on 25th November 2004 by: Anthony Bouzaid, Geoffrey Ronald Davidson, Ronald Fletcher Faber, Simon Nicholas Fordham, Judith Isobel Anne Grant, Michael Edward Lee, Mervyn McGee, Angela Rose McGregor, David Errol Pattemore, David Rawiri Wharemate, Rupert John Wilson, Melvyn Peter Galbraith and Cedric Allan.

OPENING CEREMONY

Motu Kaikoura was opened on 7th May 2005 by Prime Minister Rt Hon Helen Clark in a ceremony at the Port FitzRoy Boat Club on Great Barrier Island.

A powhiri led by the late Mervyn McGee, Chairman, Ngāti Rehua Trust Board and Ngāti Rehua Tangata Whenua welcomed the officials and 300 guests. Ngāti Rehua rangatira expressed the hope that the island's mauri (life force) would be re-established as nature's creations were restored. Mike Lee, Chairman, Auckland Regional Council recalled events leading to the purchase of Motu Kaikoura. Hon.

Chris Carter, Minister for Conservation, who had vested the island's care with the MOTU KAIKOURA MANAGEMENT PLAN, introduced Rt. Hon. Prime Minister Helen Clark. The Prime Minister announced a fund for pest eradication on Waiheke, Motuihe, Motutapu, Rangitoto and Great Barrier islands and for track development on Motu Kaikoura. The Prime Minister then officially opened the Motu Kaikoura Scenic Reserve, unveiling a commemorative plaque.

FIG 26: Prime Minister, the Rt. Hon. Helen Clark opens the new publilcy owned Motu Kaikoura Scenic Reserve, 7 May 2005. (A. Mckenzie).

APPENDIX 2.

HEADS OF AGREEMENT BETWEEN THE MINISTER OF CONSERVATION AND THE MOTU KAIKOURA TRUST BOARD

HEADS OF AGREEMENT
(pursuant to Section 39 of the Reserves Act 1977)

This Agreement dated the 28th **day of** April **2008**

PARTIES:

1. **THE MINISTER OF CONSERVATION** acting through the Auckland Conservator, Department of Conservation ("DOC")

2. **THE MOTU KAIKOURA TRUST BOARD** as the Administering Body ("the Trust")

BACKGROUND

A. The Motu Kaikoura Island Scenic Reserve ("the Reserve") is a classified Scenic Reserve located in the area administered by the Auckland Conservancy of the Department of Conservation and is vested in the Crown pursuant to the Reserves Act 1977("the Act");

B. The Reserve is included in the Hauraki Gulf Marine Park ("the Park") by virtue of Section 33 of the Hauraki Gulf Marine Park Act 2000 and shall be controlled and administered to give effect to the purpose of the Park.

C. The Trust has been appointed under Section 29 of the Act as the administering body to control and manage the Reserve;

D. As a condition of its appointment to control and manage the Reserve, the Trust is required to complete a Management Plan under Section 41 of the Act within two years of the date of its appointment or such extension of time approved by the Minister;

E. DOC is authorised under Section 39(a) of the Act to provide advice, guidance and technical assistance to the Trust in undertaking its functions under the Act;

F. The parties, pending the completion of the Management Plan by the Trust, wish to record the terms and conditions of their arrangements and are satisfied they have power to enter into this agreement

IT IS AGREED:

1. This Agreement shall form part of the Management Plan to be prepared in terms of Paragraph C and approved by DOC pursuant to Section 41 of the Act, and shall expire on such date as may be agreed by the Parties.

2. DOC shall provide advice, guidance, technical and related assistance to the Trust as follows:

   (a) make the rental monies received by DOC from the Telecom and Vodafone Concessions (and any future concessions) available to the

Trust to be used exclusively for the development and maintenance of the Reserve including the wharf, moorings and pontoons;

(b) proffer advice to the Trust on the preparation of the Management Plan;

(c) assist the Trust with advice for the promulgation of Bylaws for the Reserve;

(d) assist the Trust with such other related matters as and when requested.

3. The Trust agrees to administer, manage and control the Reserve for the purpose for which it is classified and to give effect to the purpose of the Park in terms of its appointment and the means at its disposal, and pending completion of the Management Plan the Trust shall:

(a) encourage and facilitate the general right of the public to access the Reserve, and in particular, by youth undertaking outdoor and environmental education;

(b) comply with the requirements of and its responsibilities under the Health and Safety in Employment Act 1992 and i particular sh.µl prepare a health and safety plan to cover all activities undertaken by the Trust that will identify potentially significant hazards and specify measures that will be taken to eliminate, isolate or minimise those hazards;

(c) give priority to any Health and Safety works necessary to protect people undertaking activities on the Reserve and members of the public and where necessary, erect protective signposts warning the public of any dangers they may encounter n the Reserve;

(d) preserve and protect the existing native flora and fauna on the Reserve and comply with any revegetation or restoration programme to be provided for in the Management Plan;

(e) keep and maintain the Reserve free of litter and work towards the eradication of all plants and animals (including the eradication of fallow deer, pigs and rats) identified in the operative Auckland Regional Pest Managemer.t Strategy and the Biosecurity Ac;t 1993;

(f) keep and maintain all the structures and facilities including the sanitary facilittes on the Reserve, and the wharf and mooring pontoons, in good repair and working order and in terms of any condition schedule agreed with DOC and the relevant resource consents a d compliance schedules as defined in the Building Act 2004;

(g) pay any rates, coastal occupation charges or other levies imposed by the local or other relevant authorities incurred as a result of the occupation of the Reserve and/or coastal facilities;

(h) provide a schedule of all archaeological remains and geological features to be recorded, maintained and protected by the Trust and as required by the Historic Places Act 19_93;

(i) obtain DOC's consent prior to the erection of buildings and/or structures on the Reserve.

(j) comply with all statutory requirements including obtaining building consents and Code of Compliance Certificates under the Building Act 2004 when erecting or altering any structure on the Reserve and on termination of the appointment of the Trust as the administering body, DOC shall have the option of requiring the Trust to either remove all or some of the improvements from the Reserve or make payment to the Trust of such fair and reasonable compensation as determined by an independent and qualified assessor for those improvements it wishes to retain;

(k) maintain the existing non-certificated airfield on the Reserve, to the licensing standards of the Civil Aviation Authority. Users of the airfield are to obtain the Trust's prior consent before use and the Trust will follow up any non-compliance that it is made a ware of. Users shall comply with the relevant published data in the Civil Aviation Authority Flight Guide;

(1) t ake all reasonable_ precautions to ensure there are no fire hazards on the Reserve and comply with the provisions of the Forest and Rural Fires Act 1977 including all fire safety requirements and reviews made in conjunction with the Auckland City Council being the Great Barrier Island Fire Authority;

(m) apply all concession and rental monies towards the meeting the objectives of the approved Management Plan inclu ing the maintenance and upgrading of structures and facilities on the Reserve and the wharf, moorings and pontoons;

(n) comply at all times with all statutes, ordinances, regulations, bylaws or other enactments affecting or relating to the Reserve and its facilities or affecting or relating to the management activity;

(o) comply with the financial management provisions of Part IV of the Act while the annual statement of accounts required to be prepared by the Trust under Section 88 of the Act and submitted to the Minister and the Great Barrier'Island Area Manager ("the Area Manager")shall include information on the amount of concession and rental monies received and expended by the Trust pursuant to clause 3(1) of this Agreement;

(p) keep and maintain a policy or policies of insuranc_e with an in urer approved by DOC against any liability (including statutory and public liability) that may arise out of the conduct of its management activities;

(q) prepare Bylaws pursuant to the Act that will govern the behaviour and general control of the public entering the Reserve;

(r) comply with all sta utory requirements for the maintenance of the Trust's registration as an incorporated society as required by the Incorporated Societies Act 1908.

4. The Trust shall prepare the Management Plan for the Reserve in terms of Paragraph C and seek approval from the Minister for any extensions of time that may be required under Section 41(2) of the Act. In addition to the matters set out in Clause 3, the Management Plan shall include the following objectives:

(a) the proper and beneficial management, use, adminfatration and control of the Reserve for the purpose specified in the classification;

(b) any other matter that may be considered desirable or necessary for the proper and beneficial management, administration and control of the reserve.

5. The parties agree to meet as necessary to discuss matters of mutual interest and concern regarding the management of the Reserve. This may also be acc?mplished by telephone conf rence or in a series of email messages.

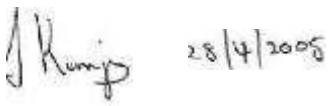
6. If matters arise that may be of interest to either party, the contact person designated by each party is to be informed. DOC shall be represented by the Area Manager and the presiding Chairperson o fthe Trust snail represent the Trust.

7. Neither party shall disclose directly or indirectly confidential information received from the other party relating to the management of the Reserve to any third person without the written consent of that party unless required by the processes under the Official Information Act 1982 in which case DOC will advise the Trust prior to disclosure.

8. All references in this Agreement to the Minister of Conservation acting through the Auckland Conservator shall include the Great Barrier Island Area Manager or officer with delegated authority.

9. Should any dispute or difference arise between the parties concerning the Agreement or any matter arising under it, then the parties will actively and in good faith negotiate with a view to a speedy resolution of such dispute or difference. All matters shall be settled at first instance by the Area Manager and the Chairperson of the Trust, and in the second instance in a forum mutually agreed between the parties.

SIGNED for and on behalf of the
MINISTER OF CO SERVATION
by Matthew Frank Cook, Acting Great
Barner Island Area Manager, Auckland
Conservancy Department of Conservation,
Actin g under delegation in the presence of:



JG n forand on beb.alfo f THE
MOTU KAIKOURA TR T BOARD by
Harry Doig, Chairperson of the Trust
in the presence of:

APPENDIX 3

Botanical Survey Synopsis – vascular flora.

The synopsis below is taken from the report of Ewen Cameron, Botanical Curator, Auckland Museum, and other members of the Auckland Botanical Society. (for unabridged version see Auckland Bot.Soc. Journal *Vol 62,, January 2007.*

F.1 Introduction

At the request of the MOTU KAIKOURA TRUST six members of the Auckland Botanical Society spent four days on the Motu Kaikoura (16th – 19th December 2006) surveying the island's vascular flora. The team included: Tricia Aspin, Ewen Cameron (Leader), Geoff Davidson, Mei Nee Lee, Jeffrey McCauley, Maureen Young and entomologist, Aidan O'Donnell.

The botanical survey was scheduled to coincide with seasonal flowering and fruiting and to follow a major deer cull (see below). Motu Kaikoura has had a lengthy history of browsing by deer, cattle, pigs, goats and sheep. While a few deer are still present on the island, other ungulate species have been eradicated. Cats, rats and mice are present throughout the island. When all pest animals are removed during the next two years, the native flora is expected to flourish.

Consequently, present plant species and their abundances reflect decades of browsing by domestic and feral animals, to the point where some species may be absent and others restricted to sites inaccessible to deer and pigs. Both avian and botanical surveys were undertaken to establish baselines for comparing data collected during future surveys at different stages of natural restoration of native flora and fauna.

F.2 Prior Studies on Motu Kaikoura's Vascular Flora

Few botanical surveys have been undertaken on Motu Kaikoura. During Kirk's survey on Great Barrier Island (1867-1868), six herbarium specimens were collected from Motu Kaikoura, and subsequently Cooper (1962) collected kowhai, and Cameron (1995) extended the record to 76 species (78% native). With increased interest in conservation, botanical surveys carried out since 2003 have recorded 248 species (*See*: Motu Kaikoura website, December 2006). The present survey, given the time available, included as many different habitats as possible to record vascular species and their location and abundance. The present survey extended the number of species to 381.

Possible sites include:

i. Best broadleaf forest, but totally browsed (2719060, 6554936);

ii. Kauri-associated forest, with thick under storey (2721012, 6555350)

iii. Deeply eroded pans (2719048, 6555742)

iv. Grassland, adjacent to Top House

v. Kanuka forest for which there are abundant sites; and

vi. Thick scrub, just on the north side of the airstrip.

F.3.11 Vascular Flora

The survey identified 381 vascular species and subspecies (69% native) *(See*: Table I and Appendix 3). Some 130 species (47% native) are additional to those previously recorded; the largest percentage increase being in the monocotyledons. Thirty-six species previously recorded were not seen during the present survey, possibly because some species: a) now are extinct locally; b) inappropriate time of the year (orchids); and
c) different areas visited, and d) previous records might be incorrect.

Eight previous records are excluded, because on present evidence they appear to be in error for a closely related species. More fieldwork will discover additional species, but the present total is estimated to be close to 90% of the flora species existing on the island. Threatened native species and weed species are discussed below.

FIG: 25: Mountain daisy (*Celmisia major*) (centre) perched on the wall of an andesitic volcanic outcrop adjacent to the Parihãkoakoa Track, midway along the western portion of Motu Kaikoura's central divide. The daisy is growing near the northern limit of its geographic range, which is the northern end of Aotea. December 2006. (A. Bellvé).

FIG. 26: Comb fern (*Schizaea bifida*) growing at the periphery of a soil-depleted pan area near the Parihãkoakoa Track December 2006. (A. Bellvé).

F.4 Threatened and Uncommon Native Vascular Species

Motu Kaikoura has 13 nationally (*cf*. de Lange *et a*l; 2004) and 20 regionally (Stanley *et al.* 2005) uncommon and threatened native vascular species; of which 19 were recorded during the present survey.

These include:

F.4.1 Nationally threatened

i. Nationally Data Deficient and Regionally Extinct:

1. *Viittadinia australis* – collected by Kirk (1867-67) on Kohatu Titore; growing at its northern geographical limit (Cameron 2005), but not recorded since then

ii. Nationally Chronically Threatened:

1. Serious decline: *Corunastylis pumila* *Daucus glochidiatus*, *Dianella latissima*, *Pimelea tomentosa*
2. Gradual decline: *Celmisia major* var. *major*

iii. At Risk:

1. Sparse: *Blechnum norfolkianum, Doodia mollis, Scandia rosifolia, Sticherus flabellatus, Tmesipteris sigmatifolia*
2. Range restricted: *Hebe pubescens* subsp*. rehuarium, Kunzea sinclairi*

F.4.2 Regionally Threatened

i. Regionally Endangered:

1. *Elymus solandri, Epilobium nerteroides, Galium propinquum, Juncus pauciflorus, Loxsoma cunninghamii, Nestegis apetala, Ranunculus acaulis, Rytidosperma clavatum*,

ii. Regionally Chronically Threatened:

1. Serious decline: *Senecio biserratus*
2. Gradual decline: *Elymus multiflorus, Myoporum laetum,*
3. *Pouteria costata, Trisetum arduanum*

iii Regionally At Risk:

1. Sparse: *Danhatchia australis, Einadia triandra, Hymenophyllum cupressiforme, Ophioglossum coriaceum, Pelargonium inodorum, Psilotum nudum, Pteris comans*
2. Range Restricted: *Loxsoma cunninghamii*
3. Data Deficient: *Galium propinquum, Rytidosperma clavatum.*

Significantly, two (*Kunzea sinclairii, Hebe pubescens* subspecies *rehuarum*) of the three plants endemic to Aotea now are confirmed for Motu Kaikoura. It is possible that the third species, *Olearia allomii*, is present on Motu Kaikoura. The threatened native carrot, *Daucus glochidiatus*, prefers the dry open habitat that is common on Motu Kaikoura and it is likely that this cryptic species will be found elsewhere on the island.

It is recognized that Motu Kaikoura may provide a transient or permanent habitat for select critically endangered or threatened species that previously may not have inhabited the island. Such 'unnatural' introductions must not jeopardize the survival of indigenous and/or restored native flora and fauna. All 'transient native species' are to be removable in entirety from the island if more suitable sites become available on the mainland or on other islands.

F.5 Identified Exotic Weed Species

Many exotic weed species have been found to infest Motu Kaikoura, primarily from plantings in the vicinity of known European settlements, and therefore are likely to have been introduced deliberately or inadvertently into gardens. However, those disseminated by wind borne weeds clearly have come from further afield, such as Pampas (*Cortaderia selloana, C. jabata*), moth plant (*Araujia sericifera*), stinkweed (*Dittrichia graveolens* (L.) and ragwort (*Senecio jacobaea*).

Efforts are being made to eradicate these species before they disseminate further across Motu Kaikoura or to neighbouring islands.

***Presently identified weeds include*:**

Arum lily (*Zantedeschia aethiopica*)
Cape honey flower (*Melianthus major*)
Chinese privet (*Ligustrum sinense*)
Cotoneaster (*Cotoneaster glaucophyllus*)
Elephant ear (*Alocasia brisbanensis*)
Gorse (*Ulex europaeus*)
Hakea (*Hakea sericea*)
Hydrangea (*Hydrangea macrophylla*)
Madeira vine (*Anredera cordifolia*)
Mexican devil (*Ageratina adenophora*)
Monkey apple (*Syzygium smithii*)
Moth plant (*Araujia sericifera*)
Pampas grass (*Cortaderia selloana; C. jabata)*
Pines (*P. radiata; P. pinaster*)
Ragwort (*Senecio jacobaea*)
Stinkweed (Stinkwort) (*Dittrichia graveolens* (L.) Greuter

F.6 Weed Species by Location

The MOTU KAIKOURA TRUST is actively managing noxious weed species found at known sites. All plants are being removed physically and destroyed on site. When necessary, the seeds or seedpods are being bagged before destruction; e.g. moth plant. Noxious weeds identified during the recent botanical survey, and their locations, include:

Lodge: Arum lily (*Zantedeschia aethiopica*); Elephant ear *(Alocasia brisbanensis*).

Top House: Cape honey flower (*Melianthus major*), Cotoneaster (*Cotoneaster glaucophyllus*); Hydrangea (*Hydrangea macrophylla*); Madeira vine (*Anredera cordifolia*); Monkey apple (*Syzygium smithii,*

Bradshaw Cove: Chinese privet (*Ligustrum sinense*); Moth plant (*Araujia sericifera*); Pampas grass (*Cortaderia selloana*)

Airfield and Farm Track: Gorse (*Ulex europaeus*); Hakea (*Hakea sericea*); Pampas grass (*Cortaderia selloana*)

Crawford Bay: Madeira vine (*Anredera cordifolia*)

Dam: Mexican devil (*Ageratina adenophora*); Moth plant (*Araujia sericifera*)

Mount Overlook: Pampas grass (*Cortaderia selloana*)

G. Coastal Seaweed

Inter-tidal seaweed species on Motu Kaikoura were examined on 11th to 14th June 2007, in the context of a broader survey of seaweeds in the Auckland region being undertaken

by Michael Wilcox. Generally, the island has a rocky shore around its perimeter, other than the short sandy beach at Bradshaw Cove (FIG. 24). The shore profile of the andesitic agglomerate rock is steep and indeed vertical in many areas (FIG. 7). There is a distinct wave-cut platform in places, and some boulder beaches. Typically, the water is very clear and the shore ranges in exposure from moderately sheltered, south facing across Governors Pass (Man of War Passage) and southeast across Port FitzRoy to nearby Aotea (Great Barrier Island) to moderately exposed (facing west or north out to sea).
Three stations were examined: Te Kokoru Waihohono, outer southern coast near the shag colony, and Bradshaw Cove on the northern coast.

Red Algae

Two common red algae occur on shaded rocks on the upper shore. These are Capreolia implexa which forms dense tangles, dark wine-red in colour, and the soft, pinkish-brown Bostrychia gracilis in damp, shaded crevices and rocks. The latter prefer the dark and damp recesses of cave entrances and rock banks shaded by overhanging trees, and shaded high tide rocks along the more exposed shore.

FIG. 27 Brown algae, *Cystophora torulosa*, growing in the low inter-tidal at Bradshaw Cove (also: Te Kokoru Waihohonu), Motu Kaikoura. (Mike Wilcox, Auckland Botanical Society).

FIG. 28 Large brown algae, *Carpophyllum flexuosum*, growing in the sub-littoral fringe and deeper water at Te Kokoru Waihohonu. (Mike Wilcox, Auckland Botanical Society)

Brown Algae

Bachelotia antillarum is a short, furry, filamentous algae occurring in upper inter-tidal rock pools. The most abundant brown algae, *Hormosira banksii,* were present in the shaded sheltered Te Kokoru Waihohonu. The dwarf form of *Scytothamnus australis* was found occasionally on middle inter-tidal rocks. In the shaded, sheltered cove of Te Kokoru Waihohonu *Hormosira* is abundant, in a fairly robust form, while the small-bladdered form is common on the more exposed coasts, often in pools. *Ralfsia verrucosa* commonly forms a crust on smooth boulders.

The lower inter-tidal zone is dominated spectacularly by *Xiphophora chondrophylla*, and above it *Cystophora torulosa* (FIG. 26). Below, in the sublittoral fringe, and in deeper water the large brown algae are *Carpophyllum plumosum*, *C. maschalocarpum*, *C. flexuosum*, *Sargassum sinclairii*, *Cystophora retroflexa*, and *Ecklonia radiata*. *Carpophyllum flexuosum* is particularly noticeable in Waihohonu Cove (FIG. 27), while *C. plumosum* seems commonest in the more exposed situations. *Ecklonia radiata* also grows sub-tidally on the jetty piles. The saccate algae *Colpomenia sinuosa* and *C. peregrina* are present on the island, the former on low tidal rocks at Bradshaw Cove, and the latter epiphytic on *Cystophora torulosa* at Te Kokoru Waihohonu. *Dictyota dichotoma* is small foliose brown alga (greenish iridescent under water) that grows commonly at Bradshaw Cove at the

very lowest tide level. It mingles with various turf-forming red algae. Gummy weed (*Splachnidium rugosum*) was encountered very rarely at Bradshaw Cove on lower inter-tidal rocks.

FIG. 29 Green spongiose algae, *Microdictyon umbilicatum,* with its remarkable leafy thalli consisting of aninterwoven network of branched filaments. The seaweed grows in exposed positions at low tide in Bradshaws Cove. (Mike Wilcox, Auckland Botanical Society).

Green Algae

The upper shore of Te Kokoru Waihohonu had an abundant encrusting form of the green alga, *Microdictyon mutabile.* It grows in mossy looking mounds at the high tide level, commonly on eroded clay banks rather than on rock, and in the shade of over-hanging trees. Its more typical spongiosa extends further down the shore amongst *Corallina*, and towards low tide level. In addition *Microdictyon umbilicatum*, has remarkable leafy thalli made up of an interwoven network of branched filaments (F**IG**. 29). It grows at the low tide level on the more exposed shores at Bradshaw Cove. *Codium convolutum* was seen very sparsely, and was most common in the middle-low tide zones on the shores east of Te Kokoru Waihohonu. The exotic *Codium fragile* subsp*. tomentosoides* was not uncommon in the latter location. The coarse filamentous alga *Pseudorhizoclonium* sp.was found growing on a dead pohutukawa trunk at high tide in a sheltered bay on the eastern shore. The small, delicate thalli of *Gayralia oxysperma* was found on the upper shore, usually

associated with the common red alga *Capreolia implexa*, and the tubular *Ulva procera* was common on the sheltered shores of Te Kokoru Waihohonu.

Blue-Green Algae (Cyanobacteria)

The only species identified in this group was *Lyngbya majuscula*. This is a brown, hair-like seaweed and was common in places in Te Kokoru Waihohonu, either free-living or entangled with *Hormosira banksii*.

Marine Lichen

The remarkable marine lichen, *Lichina intermedia* is present. It is a very prominent feature of the upper inter-tidal rocks at Bradshaw Cove, growing as conspicuous dark stubble.

Control strategy for control of exotic pines

FIG. 30:
Distribution of exotic pines (*P. radiata* and *P. pinaster*) on Motu Kaikoura. The trees are located primarily around the buildings in the southeast of the island (within the red circle). Wilding pines are scattered through other areas, mostly toward the northwest. Seedling pines shall be pulled from all areas. Only mature trees (*P. pinaster*) shall remain to provide pinecones (seeds) for the kaka.

High priority for weeds having the fastest growth and dispersal rates.
Low priority for weeds that will become 'habitat limited' by successful restoration.

In the context of noxious exotic weeds, active eradication programs have been implemented already for those species listed below. Eradication involves complete removal of the plants, including seeds, flowers, leaves, stems and/or roots. Every effort will be made to prevent further seed dispersal and/or plant propagation through bulbs, corms, rhizomes or adventitious roots. When necessary, eradication shall be undertaken by applying chemical sprays.

H.2.2 Control strategy for exotic conifers

H.2.2.1 Introduction

Motu Kaikoura has two species of pine (*P. radiata* and *P. pinaster*) and macrocarpa (*Cupressus macrocarpa*). Control of all species is required to minimise their spread, reduce future costs, and to encourage natural regeneration. These introduced species have abundant seeds that are dispersed up to 10 km by the wind and their seedlings grow vigorously. Long-term control will need to be undertaken as seeds will continue to be blown from Aotea over to Motu Kaikoura. The objectives are to contain exotic conifers to the main area of infestation, with a view to their complete eradication within 100-200 years. These species are not invasive of mature indigenous forest. Yet, they significantly reduce Motu Kaikoura's natural character and are not part of the natural vegetation.

Kakas have few other food sources on Motu Kaikoura, and therefore removing all pines in the near future is likely to have a deleterious effect on the number of visits. The objectives, therefore, are to reduce the spread of conifers, and finally to eradicate them once indigenous food sources are established and plentiful. The methods have been designed to reduce seed spread, minimize damage to indigenous flora and fauna, encourage volunteer involvement, and reduce costs to ensure longevity of the program.

APPENDIX 4

Baseline Bird Survey Report

Mel Galbraith[1], Graham Jones[1], Neil Davies[2] and Tessa Galbraith[3]

February 2007

Prepared for the MOTU KAIKOURA MANAGEMENT PLAN

Contents:

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1. Introduction

Motu Kaikoura is located on the western side of Aotea/Great Barrier Island in the Hauraki Gulf (Figs. 1 & 3). The vegetation diversity of the island is low, reflecting the impact of fallow deer introduced in the 1920 to 1930s. Much of the 564 ha island is covered by a relatively low, but dense, canopy of kanuka, manuka, gorse and *Hakea*, with emergent pines dominating the southeast slopes. Deer, feral cats, rabbits, rats and mice are present on the island.

Fig. 31 Approximate land area covered in qualitative survey (Shaded).

This report presents the results of a preliminary survey of the birds of Motu Kaikoura carried out over four days in December 2006, with observations supplemented by recent reports by Pierce (2006) and Cameron (2007). No earlier avifauna information was found through literature searches. The purpose of surveying bird species on the island, therefore, is to gather both qualitative and quantitative information that:

Establishes an avifauna record

Records species distribution

Records species abundance

Identifies gaps in species present

Confirms the island's status as a sanctuary

Such information will inform management decisions and document changes as the result of management action.

Overall, the bird diversity and abundance was found to be low, reflecting the degraded state of the vegetation following the impacts of human modification and browsing deer. The state of the vegetation also favours insectivorous species as fruit- and nectar-producing plants are scarce. Of the 30 bird species recorded, 21 are land or wetland birds and 9 are sea or shore birds. Eight of the species are introduced.

2. Methodology

The island was surveyed over the period 20–23 December 2006. Two methods were used to record bird information.

Qualitative data was recorded through observation during visits to different areas of the island (Fig. 2). Generally, for convenience and safety, this coverage was restricted to the areas serviced by tracks, but high visibility in many sites facilitated survey of the wider area and identification of vocalisations allowed inclusion of unseen species. The survey encompassed a range of habitat types and situations – ridge, valley, coast, pine dominant, kanuka/manuka dominant, grassland and retired farmland. Observations made at night and during a circumnavigation of the island by boat also contributed to qualitative data.

Observations made by Pierce (2006) and Cameron (2007) during other recent surveys have been incorporated into the species list.

As well as initiating a definitive bird species list for the island, these results can also be used for comparison with historical data from other Hauraki Gulf islands. This comparison offers a perspective of the biodiversity value that Motu Kaikoura might gain through restoration management.

To assess the relative abundance of different bird species, quantitative data was gathered by using the 'slow-walk' transect method (Handford 2002). Three transects were established with repeat counts made over three days. The transects covered three vegetation variations:

Transect 1 – coastal bay, high canopy, exotic/native mix (pines, ferns, puriri).
Transect 2 – ridge, pine dominant, open under story.
Transect 3 – ridge, manuka/kanauka dominant, open under story.

All three transects (*See:* Fig. 3) were approximately 150 m long, and species detected within 20 m of each transect were recorded, rather than the recommended 10 m distance, because of the relatively low vegetation density. Data from this survey were used to generate a Shannon biodiversity index for comparative consideration of species abundance.

Given the size and location of the island, and the potential difficulty of gathering a group of ornithologically-capable observers on the island at any one time, the selection of transect sites incorporated the following rationale:

i. Inclusion of a representative range of vegetation types;

ii. Potential for sampling to be completed (repeated access) by an individual observer, if necessary; i.e. relatively close to accommodation to allow access to all three transects and repeated sampling within an acceptable time period.

Results

3.1. Species list

Bird species recorded during the December 2006 survey, supplemented by observations made by Pierce (2006) and Cameron (2007) are listed below [species nomenclature and order follows the Ornithological Society of N.Z. (1990) and Holdaway *et al*. (2001)]:

Table 1. List of identified birds on Motu Kaikoura

	Cook's petrel	*Pterodroma cookie*
○○	Blue penguin	*Eudyptula minor*
	Australasian gannet	*Morus serrator*
••	Pied shag	*Phalacrocorax varius*
	Little shag	*Phalacrocorax melanoleucos*
	White-faced heron	*Ardea novaehollandiae*
	Brown teal	*Anas aucklandica*
	Australasian harrier	*Circus approximans gouldi*
† ○○	Ring-necked pheasant	*Phasianus colchicus*
••	Banded rail	*Rallus philippensis*
	Variable oystercatcher	*Haematopus unicolor*
	Spur-winged plover	*Vanellus miles*
○○	Black-backed gull	*Larus dominicanus*
	New Zealand pigeon	*Hemiphaga novaeseelandiae*
○○	North Island kaka	*Nestor meridionalis*
○○	Shining cuckoo	*Chrysococcyx lucidus*
○○	Morepork	*Ninox novaeseelandiae*
••	Kingfisher	*Todiramphus sanctus*
○○	Welcome swallow	*Hirundo tahitica*
† ○○	Dunnock	*Prunella modularis*
† ••	Blackbird	*Turdus merula*
○○	Grey warbler	*Gerygone igata*
••	North Island fantail	*Rhipidura fuliginosa*
••	Silvereye	*Zosterops lateralis*
○○	Tui	*Prosthemadera novaeseelandiae*
† ○○	Yellow hammer	*Emberiza citronella*
† ••	Chaffinch	*Fringilla coelebs*
† ••	Goldfinch	*Carduelis carduelis*
† ○○	Indian myna	*Acrotheres tristis*
† ○○	Magpie	*Gymnorhina tibicen*

Cook's petrel

A single individual was heard calling at night in flight over the island. While this species is unlikely to nest on Motu Kaikoura at present, there may still be a small population extant around Hirakimata (Mt Hobson) (Ogle 1981) on Great Barrier Island. The hirakimata flight path from their feeding to nesting areas crosses Motu Kaikoura. Although the recorded individual was not seen, it is clear that it was at or below the ridge line where the telephone towers are sited. With a wind generator being planned for this ridge, it raises concern for the potential impact on these petrels.

Banded rail

Banded rail are widespread and common on Great Barrier Island (Armitage 2001) and often observed away from cover although they remain wary (MG pers obs.). A number of individuals were seen frequently around the accommodation on Motu Kaikoura, and sighting of chicks in a neighbouring bay confirmed breeding. This species has a reduced distribution on the mainland, and is significant on Motu Kaikoura for its conspicuousness.

North Island kaka

Great Barrier Island is renowned for its large conspicuous kaka population (Armitage 2001). This is also the case on Motu Kaikoura, with flocks of 6-8 seen from the accommodation. Their distribution on Motu Kaikoura appears to be associated with the presence of pines – often kaka are observed feeding on green pine cones, and there were numerous kaka-damaged cones on the ground.

Kereru

A small number of kereru were observed at sites having suitable fruit resources, e.g. puriri and kohekohe. These locations were invariably small valleys close to the coast.

Kingfisher

Kingfishers are surprisingly common on the island, with ample evidence of breeding. The abundance of this species on Great Barrier Island was reported in earlier surveys (Ogle 1981), perhaps reflecting the absence or reduction of competitors.

Tui

Tui are remarkably scarce on Motu Kaikoura given their abundance on Great Barrier Island and local mainland (pers obs.). This difference can be almost certainly attributed to the lack of food resources on Motu Kaikoura.

Brown teal

Great Barrier Island is the national stronghold for this threatened species. Although the majority of the population is found in the Whangapoua catchment, small numbers inhabit bays and coves in Port FitzRoy, including Motu Kaikoura.

Australian magpie

Three magpies were observed near the summit and airstrip. Although known to be significant predators of native species, it is unlikely that the population will increase since vegetation recovery will reduce their habitat. A resident pair may remain in the vicinity of the airstrip, but this pair is likely to exclude all other magpies as has happened on Tiritiri Matangi Island over most of the restoration period (R. Walter, pers comm.).

Indian myna

Known to have a predatory role, but in relatively low numbers and localised (more open areas, accommodation area and airstrip). Population is likely to reduce with the gradual recovery of vegetation.

3.2. Biodiversity index

The species count of section 3.1 is a measure of species richness. Richness ignores the fact that some species are rare, and others common. Diversity indices combine species richness and the evenness of the distribution of individuals among those species to quantify the "variety" of organisms in an area. Diversity indices can be used to indicate biotic integrity, but measures of biodiversity on their own are rather meaningless. The objective is usually to *compare* sites, hence the need for consistent and repeatable sampling methodology.

The Shannon (or Shannon-Weaver) diversity index (H) takes into account species richness and proportion of each species within the community - the larger the numerical value of the index, the greater the diversity in the sample (Henderson 2003). The average Shannon-Weaver biodiversity index for transect's samples on Motu Kaikoura was calculated at 1.84 (transect data shown in Appendix A). Again, this figure has little meaning by itself, but has value as a measure for comparison over time or between different sites, providing the same sampling methodology is used. This index is explored further in the discussion.

4.1. Species Count

The species count for Motu Kaikoura was lower than expected, especially given the total list for species recorded from Great Barrier Island (see Appendix B). Of interest is a comparison of Motu Kaikoura with historical bird surveys of other gulf islands:

These historical records invariably represent the pre-restoration states of islands smaller than Motu Kaikoura (with the exception of Ponui and Great Barrier Islands) - yet all have higher avian diversity than currently present on Motu Kaikoura. Arguably, a difference that singles out Motu Kaikoura is the presence of browsing deer, and the associated degradation of vegetation.

The land bird species tend to be those that rely on invertebrates as food, and with high productivity to counter the impact of mammalian predators. The lack of ground-nesting species is evident, a likely effect of the presence of cats.

Island	Area (ha)	Year	Species count[1]	Reference
Whale	240	1970	42	Croxall & Millener 1971
Red Mercury	206	1971	36	Fogarty & Douglas 1972
Alderman	20 (av. of 4)	1972	48	Fogarty & Douglas 1973
Shoe/Slipper group	40/210	1973	39	Douglas & Gubb 1974
Cuvier	200	1974-1980	43	Bellingham *et al*. 1981
Moturoa group	9.5 (av. of 3)	1976	36	Farley 1977
Ponui	1795	1978	32	Bellingham 1979
Mokohinau group	38 (av.of 4) + stacks	1979	33	Bellingham 1980 McCallum 1980
Great Barrier	28,500	1980	62	Ogle 1981
Tiritiri Matangi	220	1989	45	Galbraith 1989
Motu Kaikoura	**564**	**2006**	**29**	Current survey; Pierce 2006; Cameron 2007

[1] *Species counts adjusted to exclude all translocated and vagrant species as applicable.*

4.2. Species Gaps

Ongoing surveys are likely to record additional species. Species recorded from Great Barrier Island (Ogle 1981; Armitage 2001), but not recorded on Motu Kaikoura during the survey, can be expected to occur on or around Motu Kaikoura through natural dispersal movements. Other species recorded as vagrants on Aotea/Great Barrier Island (especially seabirds) can also be expected to occur on or around Motu Kaikoura periodically.

4.3. Biodiversity Index

To illustrate the state of Motu Kaikoura avifauna, a Shannon diversity index is presented for the island and two other sites of comparable vegetation state and age. The additional counts for comparison were carried out within two weeks of the Kaikoura counts. These indices are unlikely to stand up to serious scientific scrutiny at this time, but are presented here as indicative of the state of Motu Kaikoura avifauna.

These species include:

	black shag	*Phalacrocorax carbo*
	reef heron	*Egretta sacra*
†	Mallard	*Anas platyrhynchos*
	grey duck	*Anas supercilosa*
†	brown quail	*Coturnix novaezelandiae*
	Pukeko	*Porphyrio porphyrio*
	red-billed gull	*Larus novaehollandiae*

	white-fronted tern	*Sterna striata*
†	Skylark	*Alauda arvensis*
	New Zealand pipit	*Anthus novaeseelandiae*
†	Greenfinch	*Carduelis chloris*

Nomenclature and order follows the Ornithological Society of NZ (1990)
Key: † introduced

Site	*Shannon biodiversity index (sample size)*
Motu Kaikoura	1.84 (10)
Tiritiri Matangi Island	2.18 (12)
Uruamo Headland (North Shore City)	1.83 (3)

To illustrate the state of Motu Kaikoura avifauna, a Shannon diversity index is presented for the island and two other sites of comparable vegetation state and age. The additional counts for comparison were carried out within two weeks of the Kaikoura counts. These indices are unlikely to stand up to serious scientific scrutiny at this time, but are presented here as indicative of the state of Motu Kaikoura avifauna.

5.0. Restoration Comments

The impact of fallow deer (*Dama dama*) on New Zealand vegetation is well documented (Nugent 1990; Smale *et al*. 1995; Husheer and Frampton 2005). The common findings of these papers indicate that the palatable species for fallow deer are the common sub-canopy plants, all of which have small fleshy fruit that are included in the diet of most bush birds (Clout and Hay 1989). Potential canopy species are palatable to fallow deer, promoting the risk of canopy collapse as mature trees die. Husheer and Frampton (2005) conclude that a near-zero density of fallow deer is needed to assure sub-canopy regeneration. With the eradication of the deer, the expected flush of sub-canopy and canopy plants will ultimately result in an increase in both bird diversity and densities.

The eradication of introduced mammalian predators on islands has resulted in significant recovery of bird populations, relatively rapidly in some cases (Graham & Veitch 2002). The planned eradication of rats on Motu Kaikoura will result in the recovery of insectivorous bird populations. But, for other species dependent on plant resources, visiting and living on the island, the recovery of vegetation will be a critical precursor to their recovery. This may also be the case for species with potential for translocation to the island.

The dependence of many New Zealand plants on birds for pollination and the dispersal of seeds is well

recognised (Anderson 2003), with kereru considered to be the sole remaining seed dispersers of many plants (Clout and Hay 1989). The absence of this strong bird/plant relationship on Motu Kaikoura will be a significant limiting factor in its ecological restoration.

Restoration planning will need to take this into account, for example:

Dispersal of seeds by kereru could be promoted by focusing on the enhancement of the areas they already inhabit

Nectar-producing plants (e,g. kowhai) should be planted for tui (and bellbirds)

Special consideration needs to be given to the management of pines. While pines are often perceived to have a negative impact on indigenous vegetation, and subsequently indigenous fauna, this is not always the case. Pine ecosystems can be rich in invertebrates, and observations during the survey indicated that stick insects were abundant on the island in both pine and native vegetation. Birds dependent on invertebrates as food are likely to recover or establish quickly during the restoration process. The bird species that would be the slowest to populate the pine-dominated areas are those that are frugivorous, nectivorous or hole nesters (Clout and Gaze 1984). The role of pines as a food source (cones) for kaka means that their removal needs to be paralleled with the provision of an alternative (indigenous) food, eg. kauri. Clearly this transformation will be a long-term process. In the interim, it is important to recognise that pines do not necessarily exclude native biota, and that an under story of native plants can develop under a pine canopy.

Restoration of land-based bird species is important to restore ecological integrity for Motu Kaikoura. The establishment of such populations on Motu Kaikoura (as a rodent-free island) will be a source population for the establishment of bird species to Great Barrier Island, perhaps through natural dispersal rather than assisted.

Given the dependence many land birds on the vegetation recovery, perhaps a parallel pathway for bird restoration should be followed - one that is independent of the vegetation - the re-establishment of seabird colonies, especially petrels (Taylor, 2000). This can have a number of positive outcomes:

Boosting seabird populations in the Hauraki Gulf in general

Enhancing ecological functioning of Motu Kaikoura through the contribution of nutrients

Opening vegetation under story at present would facilitate easy burrow access

Preparing the ecosystem for the release of species frequently associated with seabirds, e.g. invertebrates, tuatara

There is an opportunity for this pathway to be ‘experimental’ through repeating previous projects aimed at establishing seabird colonies or trialling innovative approaches.

For the bird species with potential for reintroduction to Motu Kaikoura through assisted translocation, there

is a wealth of experiences from other restoration projects. Such species could include bellbird, tomtit, rifleman, stitch bird, whitehead, etc., although anecdotal observations suggest that some of these could establish as vagrants from Little Barrier Island. Potential reintroduction of species should be explored through a future report.

6.0. Summary

The preliminary bird survey, carried out over a 4-day period in December 2006, establishes baseline data on the distribution and abundance of the avifauna of Motu Kaikoura. Both qualitative and quantitative methodologies were included in order that future comparisons can help to define biodiversity trends and inform management decisions in the island's restoration.

A comparison made between the species counts of Motu Kaikoura and other Hauraki Gulf islands in their pre-restoration states indicates a lower than expected avifauna diversity on Motu Kaikoura. The low diversity and abundance of birds is linked to the degraded nature of the vegetation on the island, the result of historical human modification and impacts of introduced mammals, especially seven decades of grazing by fallow deer.

Given the proposed eradication of introduced mammals, the bird diversity and density is expected to increase. A number of points are raised with regard to the management of vegetation to enhance both habitat and food resources for existing bird species and for possible translocations.

7.0. Acknowledgements

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Sub Appendix A.

Great Barrier Island Avifauna (after Ogle (1981); Anderson and Ogden (2003) and Lovegrove in Armitage (2004); vagrants and uncertainties omitted)

Flesh-footed shearwater	*Puffinus carneipes*
Buller's shearwater	*Puffinus bulleri*
Fluttering shearwater	*Puffinus gavial*
Black petrel	*Procellaria parkinsoni*
Cook's petrel	*Pterodroma cookii*
Blue penguin	*Eudyptula minor*
Australasian gannet	*Morus serrator*
Black shag	*Phalacrocorax carbo*
Pied shag	*Phalacrocorax varius*
Little black shag	*Phalacrocorax sulcirostris*
Little shag	*Phalacrocorax melanoleucos*
White-faced heron	*Ardea novaehollandiae*
Reef heron	*Egretta sacra*
Australasian bittern	*Botaurus poiciloptilus*
Black swan	*Cygnus atratus*
Paradise shelduck	*Tadorna variegate*
Mallard	*Anas platyrhynchos*
Grey duck	*Anas superciliosa*
Brown teal	*Anas aucklandica*
Australasian harrier	*Circus approximans*
Brown quail	*Coturnix novaezelandiae*
Pheasant	*Phasianus colchicus*
Banded rail	*Rallus philippensis*
Spotless crake	*Porzana tabuensis*
Pukeko	*Porphyrio porphyrio*
Variable oystercatcher	*Haematopus unicolor*
Pied stilt	*Himantopus himantopus*
New Zealand dotterel	*Charadrius obscurus*
Banded dotterel	*Charadrius bicinctus*
Wrybill plover	*Anarhynchus frontalis*
Bar-tailed godwit	*Limosa lapponica*
Black-backed gull	*Larus dominicanus*
Red-billed gull	*Larus novaehollandiae*

Caspian tern	*Sterna casp*
White fronted tern	*Sterna striata*
New Zealand pigeon	*Hemiphaga novaeseelandiae*
North Island kaka	*Nestor meridionalis*
Red-crowned parakeet	*Cyanoramphus novaezelandiae*
Shining cuckoo	*Chrysococcyx lucidus*
Long-tailed cuckoo	*Eudynamys taitensis*
Morepork	*Ninox novaeseelandiae*
Kingfisher	*Todiramphus sanctus*
Skylark	*Alauda arvensis*
Welcome swallow	*Hirundo tahitica*
New Zealand pipit	*Anthus novaeseelandiae*
Dunnock	*Prunella modularis*
Blackbird	*Turdus merula*
Song thrush	*Turdus philomelos*
North Island fernbird	*Boedleria punctata*
Grey warbler	*Gerygone igata*
North Island fantail	*Rhipidura fuliginosa*
Silvereye	*Zosterops lateralis*
Tui	*Prosthemadera novaeseelandiae*
Yellowhammer	*Emberiza citronella*
Chaffinch	*Fringilla coelebs*
Greenfinch	*Carduelis chloris*
Goldfinch	*Carduelis carduelis*
Redpoll	*Carsuelis flammea*
House sparrow	*Passer domesticus*
Starling	*Sturnus vulgaris*
Indian myna	*Acrotheres tristis*
Australian magpie	*Gymnorhina tibicen*

APPENDIX 5

Motu Kaikoura Archaeological Survey

Volume 2, pp1 - 155 by

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Archaeological Survey Findings

Multiple archaeological sites have been located, recorded and were logged with the former Auckland Regional Council for inclusion in the Cultural Heritage Inventory. Descriptions and photographs of these sites are provided in Appendices 1 and 2, which were prepared for the Auckland Conservancy, Auckland Council and Department of Conservation.

Sites of historical significance are tabulated herewith, along with their reference number and map locations (Table 1). Cataloguing archaeological sites, artefacts and relics, together with their exact location, will benefit their future preservation. The data shall ensure full awareness and consideration by those participating in Motu Kaikoura's natural restoration and development. Selected sites can be integrated with scenic trails

Table 1: Motu Kaikoura's Recorded Historical Sites (2005)

Ref. No	Map Location	Comments
Naval observation post		
S08/398	N:6556283; E:2719173	Naval post situated on prominent headland on western side of Bradshaw Cove, affording it a full view of Port Abercrombie and its World War II minefield.
Naval control building and bunkers		
S08/402	N:6556050; E: 2719400	Barrack building located in Bradshaw Cove and two small bunkers on the cove's eastern slopes
Stone Rows		
S08/405	N: 6554750; E: 2619900	Series of stone rows, 11m – 16m long, located 30m from Vodafone Cell Tower
Stone alignments, NW-SE ridge		
S08/423	N:65566080; E:2718560	Stone alignments in a cleared area on rocky promontory 1,400m west of Kotatutitore (Mitre Peak), with a central revetment and two long terraces on the western side; and a cleared area with stone piles on the eastern side.
S08/424	N:6556090; E: 2718475	Stone alignments 1,500m west of Kotatutitore and 100m further west than S08/423, consisting of stone alignments on a broad saddle, with the main row 40m in length.
Terraces, pits and cleared area, NW-SE ridge		
S08/425	N: 6556170; E: 2718350	Several cleared areas on a rocky promontory (spot height 180m) 1,600m west of Kotatutitore, with three possible pits, and another cleared area (20m x 6m) to the east.
Stone-faced terraces, NW-SE ridge		
S08/426	N: 6556270; E: 2718232	Terrace (6m x 6m) with stone cleared to form a frontal wall, and a second terrace to the south (20 x 2 m).
Terraces, NW-SE ridge		
S08/427	N: 6556367; E: 2718120	Terrace (25mx 3m) just over 100m west of site S08/426, on the southern side of the ridge.
S08/427	N: 6556367; E: 2718120	Terrace (25mx 3m) just over 100m west of site S08/426, on the southern side of the ridge.
Midden		
S08/428	N: 6556496; E: 2718406	Scattered midden (5m x 2m), containing cockle,

		catseye and whelk shells, located on the western side of an ephemeral stream where two gullies converge at the coast, ~1,500 m west of Kotatutitore.
S08/427	N: 6556429; E: 2718511	Eroding midden (30 x 10m), containing cockle, catseye, whelk and gastropod species and two pieces of obsidian, located on lower reaches of SW-NE spur, ~1,300m west of Kotatutitore.
Terrace, midden and karaka tree		
S08/430	N: 6555256; E: 2718466	Small terrace with a midden 50m south under a karaka tree, ~2,300m west of Kotatutitore.
Pits, terraces and midden		
S08/431	N:6555338; E: 2718781	Eight terraces (80m x 20m) with 4-6 pits on the eastern terraces, located on small knoll 20m below W-E aligned spur.
Pits		
S08/432	N: 6556079; E: 2720946	Three poorly defined pits, the largest of which is 2.5m x 1.5 m., located at the northern end of a slight saddle, 350m south of Mount Overlook.
Pa, stone-walled		
S08/433	N: 6556440; E:2720850	Pa (100m x 30m), which is located on the ridge high point at Mount Overlook, has a U-shaped perimeter up to 2m high, with otherwise precipitous cliffs to the west and east. The pa's southern wall has an entrance gap and there are two inner transverse stone alignments, with a terrace and pit in the middle partition.
Pits and terraces		
S08/434	N: 6556880; E: 2720944	Three terraces with pits on the lower terrace (30m x 10m), located on NW-most point of Mount Overlook.
Find spot		
S08/436	N: 6555360; E: 2720681	Single flake of brownish red obsidian found on NE side of spur of original airstrip.

PA		
S08/437	N: 6556415; E: 2720671	Pa guarded by coastal cliffs and having many large terraces with rock outcrops, and a natural incision in the ridgeline enhanced by a bank and ditch. Located on the northern most prominent headland west of Bradshaw Cove.
Pits and terraces		
S08/438	N: 6556007; E: 2719288	Possible pits and terraces on a knoll at the NW end

		of the first spur from the coast, to the east of the creek at Bradshaw Cove.
Terraces, pit and midden		
S08/439	N: 6556126; E: 2719540	Vague terraces and possible pit with shell fragments found below, and to the west a site located on a NW spur on the eastern side of Bradshaw Cove.
Terraces and pit		
S08/440	N: 6555126; E: 2719540	Several large terraces (8m x 4m; 15m x 10m) clustered on the northern side of the crest of the spur running NE to the coast from S08/432.
Middens		
S08/441	N: 6555136; E: 2720364	Sparse scattered midden (20m x 20m) with cockle, rock oyster and catseye shells, with one flake of obsidian, located between two streams in a sheltered cove to the east of Kotatutitore.
S08/442	N: 6555299; E: 2721123	Midden with whelk, catseye and gastropod species, located at the base of a spur that starts at a prominent knoll 700 m from the airfield.
S08/443	N: 6555363; E: 2721013	Midden, with catseye, whelk and mussel shells, located on the eastern coast, at the base of the spur east of the spur of the original airstrip.
Midden, terraces and pits		
S08/444	N: 6555440; E: 2720880	Midden with mussel, catseye, pipi, cockle, whelk, oyster, scallop shells and obsidian flakes on four terraces to the west of the western stream and another terrace to the east of the eastern stream near the coast. The two streams originate from twin gullies east of the original airstrip.
Terraces and pits		
S08/445	N: 6555440; E: 2719000	Series of terraces running along the crest of a spur, with two parallel terraces further down, and below that four more terraces with a pit. The site is located in a bush-filled valley west of a SW-NE spur that joins at SE end of the island's main central ridge.
House site		
S08/446	N: 6554435; E: 2719945	House site consisting of coastal access track, platform, concrete foundation, jetty piles, winch and dam higher up the stream in the western valley. The original house owned by Mrs. Susan Taylor was burned down and then replaced by Edward and Mary Darnton. The house site is located on the

APPENDIX 6

World War 2 Defences of Great Barrier
Ian Maxwell

In the early 1940's the New Zealand government became increasingly concerned that should war with Japan occur the nation would be threatened. In response military planners looked to reinforce coastal defences.
Located on the northern approaches to the Hauraki Gulf and Auckland, Great Barrier Island was considered a risk. The island had the capacity to host airfields and its harbors, naval anchorages.
In early 1942 shortly after the attack on Pearl Harbor the New Zealand Army dispatched gunners with two 6 inch field howitzers to cover the entrances to Port Fitzroy and the anchorages at Port Abercrombie.

FIG: 32. Two Ordnance BL 6 inch 26cwt howitzers served on Great Barrier from 1942 to 1944.
(Ref: PA1-q-291-029-078; Department of Internal Affairs).

The howitzers arrived at Port Fitzroy but with their gun tractor wrecked in an accident the gunners hauled the howitzers by rope up Aotea Road to gun pits dug into the high point or saddle located between Port Fitzroy and Okiwi. The area came to be known as The Mountain Camp.

Some 3000 shells each weighing 100 pounds were also manhandled up the slope.

The gunners were accompanied by an infantry company. The company was later expanded to a full battalion. The infantry were based at a camp located at Claris Airfield. The camp and huts were positioned in the area today occupied by the medical centre, library and arts centre.
Some soldiers were also housed to protect the howitzers at a camp at Port Fitzroy.

Their huts and tents were located where the Boat Club now stands. Indeed the building now housing the Boat Club once served the camp.

The soldiers were equipped with rifles, machine guns and mortars. Their transport included trucks and a few tracked Bren Carriers. Given the rough country on the island, movement was difficult and thus pack horses were also used.
A Home Guard drawn from local residents was also established. Members trained with the Army until the Guard was disbanded in early 1944.
The howitzers were originally intended as a stop gap measure. Following a reconnaissance by officers of 9th Heavy Artillery Regiment based in Auckland, sites were identified for emplacement of two 6 inch guns and a 4 inch gun covering Port Fitzroy and Port Abercrombie.
The emplacements were never built. Rather the equipment went to higher priority locations in the Pacific Islands.
Four planned Bofor's 40mm anti aircraft guns also never arrived. Aircraft defences were thus limited to a few Lewis light machine guns.
Built in 1937 Claris Airfield was utilized by the Royal New Zealand Air Force.
A flight of three Vincent patrol bombers from No 1 (Auckland) Squadron were based at Claris for a period immediately after Japan entered the war. Aircraft tie down points built for the Vincent's remained in use at the airfield for many years.

FIG: 33. RNZAF Vickers Vincent patrol bomber – a flight of three were based at Claris

Across Great Barrier Island other defences were also established.
Coast watch stations were established at Tree Peak and Point Tryphena. These enabled soldiers to maintain a simple look out and call in by radio any activity they spotted.
A sophisticated radar station was established at Moor Peak, above Nagles Cove, covering the northern approaches to the Hauraki Gulf. The radar could detect aircraft and ships. It was equipped with its own generator and huts for 20 personal.

These stations were part of a wider surveillance network covering northern New Zealand. The information they collected by assessed by commanders based in a underground centre which is today located in the grounds of the Epsom Campus of the University of Auckland.

Controlled minefields were also established in the approaches to Port Fitzroy. The fields consisted of mines moored such that they floated beneath the surface. Each mine was controlled so that it could be could exploded beneath vessels passing above.

The JO2 Controlled Mining Station was established on the southern side of Man o War Passage into Port Fitzroy to control a minefield moored in the Passage. The station included a concrete observation post from which the minefield was controlled together with huts for accommodation.

A second Controlled Mining Station was established at Bradshaw Cove, on Kaikoura Island covering the northern approach to Port Fitzroy

Facilities at Bradshaw Cove included a concrete observation post from which the minefield was controlled, accommodation huts and an underground bunker for an electricity generator.

This generator not only provided power to Bradshaw Cove but, acting as a backup source of power to the Moors Peak radar station via an undersea cable. An underwater telephone cable also connected Bradshaw Cove and Moors Peak.

The two minefields were blown up in 1945 following the completion of World War Two. Many residents of Great Barrier Island were disappointed that they were not advised as they missed out on benefiting from the large number of fish killed by the explosions.

Most of Great Barrier Island's other defence works were run down or disbanded from 1944 as the focus of the Pacific War moved north. However in 1942 Great Barrier Island was considered to be part of New Zealand's front line against Japanese attack.

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APPENDIX 7

Reserves Act 1977

Part 3

Classification and Management of Reserves

Classification and Purpose of Reserves

19. Scenic reserves

(1) It is hereby declared that the appropriate provisions of this Act shall have effect, in relation to reserves classified as scenic reserves —

(a) For the purpose of protecting and preserving in perpetuity for their intrinsic worth and for the benefit, enjoyment, and use of the public, suitable areas possessing such qualities of scenic interest, beauty, or natural features or landscape that their protection and preservation are desirable in the public interest:

(b) For the purpose of providing, in appropriate circumstances, suitable areas which by development and the introduction of flora, whether indigenous or exotic, will become of such scenic interest or beauty that their development, protection, and preservation are desirable in the public interest.

(2) It is hereby further declared that every scenic reserve classified for the purposes specified in subsection (1)(a) of this section shall be so administered and maintained under the appropriate provisions of this Act that —

(a) Except where the Minister otherwise determines, the indigenous flora and fauna, ecological associations, and natural environment and beauty shall as far as possible be preserved, and for this purpose, except where the Minister otherwise determines, exotic flora and fauna shall as far as possible be exterminated:

(b) The public shall have freedom of entry and access to the reserve, subject to the specific powers conferred on administering bodies by sections 55 and 56 of this Act, to any bylaws under this Act applying to the reserve, and to such conditions and restrictions as the administering body considers to be necessary for the protection and well-being of the reserve and for the protection and control of the public using it:

(c) To the extent compatible with the principal or primary purposes of the retention and preservation of the natural or scenic values, open portions of the reserve may be developed for amenities and facilities where these are necessary to enable the public to obtain benefit and enjoyment from the reserve:

(d) Where historic, archaeological, geological, biological, or other scientific features are present in the reserve, those features shall be managed and protected to the extent compatible with the principal or primary purpose of the reserve:

Provided that nothing in this paragraph shall authorise the doing of anything with respect to fauna that would contravene any provision of the Wildlife Act 1953 or any regulations or Proclamation or notification under that Act, or the doing of anything with respect to archaeological features in any reserve that would contravene any provision of the [Historic Places Act 1993]:

(e) To the extent compatible with the principal or primary purpose of the reserve, its value as a soil, water, and forest conservation area shall be maintained.

(3) It is hereby further declared that every scenic reserve classified for the purposes specified in subsection (1)(b) of this section shall be so administered and maintained under the appropriate provisions of this Act that —

(a) Except where the Minister otherwise determines, the flora and fauna, ecological associations, and natural environment and beauty shall as far as possible be preserved:

(b) The public shall have freedom of entry and access to the reserve, subject to the specific powers conferred on administering bodies by sections 55 and 56 of this Act, to any bylaws under this Act applying to the reserve, and to such conditions and restrictions as the administering body considers to be necessary for the protection and well-being of the reserve and for the protection and control of the public using it:

(c) To the extent compatible with the principal or primary purposes of the retention and preservation of the natural or scenic values, open portions of the reserve may be developed for amenities and facilities where these are necessary to enable the public to obtain benefit and enjoyment from the reserve:

(d) Where historic, archaeological, geological, biological, or other scientific features are present in the reserve, those features shall be managed and protected to the extent compatible with the principal or primary purpose of the reserve:

Provided that nothing in this paragraph shall authorise the doing of anything with respect to fauna that would contravene any provision of the Wildlife Act 1953 or any regulations or Proclamation or notification under that Act, or the doing of anything with respect to archaeological features in any reserve that would contravene any provision of the [Historic Places Act 1993]:

(e) To the extent compatible with the principal or primary purpose of the reserve, its value as a soil, water, and forest conservation area shall be maintained.