NOISES ISLANDS BIODIVERSITY MANAGEMENT PLAN

Cover photo: Otata Island (Rod Neureuter)

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ACKNOWLEDGEMENTS

Coming together is a beginning

Keeping together is progress

Working together is success[1]

Figure 1: Foraging seabirds on the Hauraki Gulf (Karen Baird)

The Noises Islands have longstanding connections with naturalists and researchers. Since the 1880s ornithologists and botanists and many others visited the islands, collected specimens and recorded their finds in journals and research articles. These visits were and still are encouraged by the islands' owners.

These visits and records both enrich the knowledge of those visiting and those who own the islands. They also contribute to wider knowledge of the Hauraki Gulf and how best to manage it sustainably and equitably for the future. For visitors and researchers alike, smaller Gulf Islands such as the Noises also provide opportunities to experiment and check ideas and strategies. This approach has recently concentrated on integrated marine and terrestrial management at the Noises.

The future health of the Gulf and its islands will increasingly depend on collaborative partnerships such as those between the Neureuter family and the many people who have carried out research there and supported the protection of the Noises Group.

[1] http://www.brainyquote.com/quotes/quotes/h/henryford121997.html

The development of this Biodiversity Plan has drawn extensively on this research and for this we are most grateful. We thank you all for your support.

We would particularly like to thank Karen Baird (Forest and Bird), Chris Gaskin (Northern NZ Seabird Trust), Stephanie Borelle (Auckland University of Technology), Ewen Cameron and Tom Trnski (Auckland Museum), Jeff Cook, Tim Lovegrove and Melinda Rixon (Auckland Council), Don McFarlane (Auckland Zoo), Matt Rayner (Auckland Museum and University of Auckland), James Russell (University of Auckland) and Dave Towns (Department of Conservation) for their peer review of the draft Biodiversity Management Plan.

EXECUTIVE SUMMARY

The Noises Islands and their surrounding waters are unique in many ways. This Biodiversity Management Plan (BMP) has come about through a commitment by the Neureuter family to integrate the management and protection of terrestrial and marine ecosystems on and around the islands. A partnership with the many and varied parties who have a range of interests in the islands is seen as the most effective way of achieving this. These parties include but are not limited to the, Auckland Zoo, Department of Conservation, Auckland Council, Maritime NZ, animal pest and weed control contractors, scientists, researchers, educational and recreational users.

"For decades past and future the islands provide opportunities for scientists to hone their art of restoration and conservation for the betterment of all islands around the world (Russell J, pers. comm.)".

The BMP has been generously funded by the Auckland Zoo and prepared by Jo Ritchie of Treescape Environmental in partnership with Rod, Sue and Zoe Neureuter ('the family'). Its purpose is to provide direction and support for the ongoing management of The Noises Group of islands, which are located in the heart of The Hauraki Gulf. In addition, we hope it will provide guidance on the most appropriate future translocation of species as part of ecosystem restoration or to provide source populations of organisms that may disperse elsewhere or might be used for translocations to other sites. Above all we hope that it will emphasize the special nature of the Noises and why the islands and their surrounding marine ecosystems should be managed as one.

Our long term vision and desire is to protect, conserve and enhance the islands' unique character, natural beauty and high ecological value. In addition we wish to initiate protective measures for the surrounding marine environment.

The islands have never been completely cleared and they are only slightly modified. The larger islands of Motuhoropapa and Otata appear to have always had some form of forest cover; however Otata's environment was altered by fire in the 1930's - likely around 1931. They have been rodent free since 2002 and provide invaluable examples to guide restoration of the inner Hauraki Gulf in terms of terrestrial flora and fauna. Their potential for seabirds, extensive surrounding reef systems and variety of benthic areas provide very accessible opportunities to study the interconnectedness of land and sea.

Excluding Rangitoto Island which is a unique example of natural regeneration following volcanic eruption, the Noises contain the best indigenous cover of all of the inner Gulf islands. With their total

indigenous cover, special flora and fauna values, low weed problems and current lack of introduced mammals, the Noises have outstanding conservation values (Cameron 1998).

Terrestrially, the Noises are very much influenced by the waters that surround them. However the diversity and abundance of marine life around the Noises that Rod, Sue and Zoe remember from their childhood has largely gone and is clearly impacting on the islands themselves. It seems logical to the family that the same levels of recognition, assistance, and support which the islands' terrestrial ecosystems have benefitted from, should now be applied to the surrounding waters and their marine treasures.

What helps to define this biodiversity management plan is the islands' private ownership and the will to try something different - the desire for an integrated marine and terrestrial approach. It is the Neureuter family's greatest wish that it may pave the way to changing management in the Gulf and demonstrate just what can be achieved by working together with partners and building a relationship of trust.
The Noises could be viewed as something of a canary down the coalmine in the sense that marine depletion being observed on and around the islands is indicative of that elsewhere in the Gulf. What sets them apart is their location on the outer bounds of the inner Gulf. The mix of clear outer Gulf waters and the more turbid inner Gulf waters combine to create a mix of marine environments.

Our family has been actively involved in the Sea Change[2] process. This has given us confidence in our observations and opened doors to new possibilities and connections. We are actively seeking guidance from Iwi in establishing practical management principals and sustainable means of protection for the marine environment around the islands. This may encompass a core no take zone surrounded by other areas of varying protection led by Tangata Whenua initiatives. We hope to be able to combine the best science and customary knowledge with our own knowledge to protect and enhance the waters surrounding the islands.

It is crucial that we consult with Hauraki Gulf stakeholders to gain acceptance and support for these ideas and are currently working with Massey University and others on underwater and intertidal mapping projects. This will help to provide further information in determining appropriate areas for protection. A marine protected area serves to remind us of what should be there and will show us what to aspire to increasing marine life abundance and contributing to a healthier Gulf overall.

Goals for the future include maintaining the islands' rat free status and continuing to eliminate weed pests. We would embrace a translocation process that makes it easier and less costly to move our precious and endangered species around the Hauraki Gulf. The Noises has both contributed and received species and we very much hope to be future donors and recipients of appropriate species. If we can standardise a management approach that can be adopted by all the Hauraki Gulf's treasure islands, it would help to spread the load and reduce the risk of irreversible biodiversity loss.

The goal for the marine environment is to restore the communities to a similar diversity and abundance that existed prior to human impact. This will include Ecklonia forests supporting a diversity of fishes and invertebrates; benthic communities of soft bottoms would again flourish with scallops,

[2] Sea Change – Tai Timu Tai Pari is an initiative designed to secure a healthy, productive and sustainable future for the Hauraki Gulf. It is a partnership led by mana whenua and central and local government is working on creating Sea Change – Tai Timu Tai Pari, a marine spatial plan designed to safeguard this treasure.

sponges, horse mussels and dog cockles; intertidal reefs would once again contain a diversity of algae and shellfishes and rock crabs would noisily scuttle across the rocks, as we remember from our past."

The islands themselves would be alive with the cries of seabirds and the rocks once again painted white from their presence. The Noises could in time become recognised as an ecologically significant seabird breeding site within the Auckland region. This would provide another contribution to the international status of the Hauraki Gulf as a significant seabird site.

Our family is deeply committed to the long term protection of the Noises. We believe our best hopes for achieving this will be in the ongoing education of our family's children. This will enable them to step into the roles of kaitiaki – guardians – and responsibility of these islands which are very dear to all of us.

Sharing of knowledge has played a significant role in guiding our terrestrial management decisions and will continue to do so into the future. Although we have only quite recently embarked on the gathering of marine knowledge, this need has been brought about by our own long term observations and concerns. We are working with marine scientists to build our knowledge and understanding in this area.

The BMP includes specialist comments and recommendations. These encompass the many and varied issues the Noises are facing. In recognition of this help the Noises Trust would like to express its sincere thanks to organisations and staff (including the Department of Conservation (DOC), Auckland Council, Auckland Zoo, University of Auckland, Auckland University of Technology (AUT), Auckland Museum, Northern New Zealand Seabirds Trust, Forest and Bird Protection Society and many others) for their past and ongoing advice and support. They have all contributed to maintaining and enhancing the biodiversity values of this relatively unmodified island group.

Rod, Sue and Zoe Neureuter.

1. INTRODUCTION

1.1 Purpose

All islands in the Hauraki Gulf are taonga or treasures and have their own unique ecological and cultural values, however the Noises Islands are unique and particularly significant. They have been privately owned by the Neureuter family since 1933. As predator free islands, they have the potential to become rich and diverse habitats for a wide range of native plants and animals.

Excluding Rangitoto Island which is a unique case, the Noises contain some of the best indigenous vegetation cover of all the inner Gulf islands. "With their total indigenous vegetation cover, special flora and fauna values, low weed problems and lack of exotic mammals, the Noises have outstanding conservation values. The islands have the potential to be one of the best sources of flora and fauna for future ecological restoration projects occurring in the inner Gulf. It is important that new species do not become established. There is a challenge here for public agencies to set in place a process to protect one of the gems of the Hauraki Gulf from new pests establishing on the Noises" (Cameron 1998).

The development of a biodiversity management plan (BMP) for the Noises Islands will provide a road map to build on the considerable conservation work already undertaken on the islands. It will also formalise support from a range of agencies including the Department of Conservation, Auckland Council, Auckland Zoo, Auckland Museum, Auckland University of Technology, the University of Auckland and many others. The BMP will have a timeframe of 10 years and progress will be reviewed as more work is undertaken and new information is gathered e.g. from scientific studies. These partners will provide:

- the technical support and evidence required to validate observations of the apparent decline in the health of both terrestrial and particularly marine environment on and around the islands and;

- set in place long term management to protect the islands into the future. The BMP will also provide a sound basis for funding applications and act as a template for how a private/ public partnership can achieve proactive, and integrated and sustainable management of the marine and terrestrial environment.

Recreational and commercial fishing pressure has significantly reduced marine biodiversity around the islands. The dense forests of Paddle-weed kelp (*Ecklonia radiata)* and their communities of shellfish, fish and crustaceans have been greatly reduced from the vast network of shallow reefs and rock stacks around the islands as a result of the indiscriminate nature of scallop dredging and gill netting, spear fishing, commercial and recreational fishing. Overfishing of keystone species such as crayfish and large snapper has contributed to so-called kina barrens bare of kelp forest and the subsequent loss of the diverse communities of fishes and invertebrates that they support.

Recovery of these marine ecosystems is possible but it requires innovative solutions, long term protection and a commitment by all users of the Hauraki Gulf marine environment to work together.

The Noises could provide a valuable benchmark of marine and terrestrial restoration, and their accessible location could mean that the islands play a valuable role in conservation advocacy to the many users of the Gulf.

Figure 2: White fronted terns nesting on Ike Island (Rod Neureuter)

Seabirds provide a very compelling argument for integrated marine and terrestrial management around the Noises Islands. The wider Hauraki Gulf region is a globally significant seabird biodiversity hotspot. The Noises provide breeding grounds for a number of seabird species. Maria/Ruapuke is one of only six confirmed breeding sites of the white-faced storm petrel within the greater Hauraki Gulf region (Gaskin & Rayner 2013).

Seabirds are crucial components of marine ecosystem function and are useful indicators of change in the marine environment. There is an increasing demand for relevant indicators for the marine environment, seabird populations are useful canaries in the coalmine for the long term assessment of marine ecosystems across broad spatial scales (Gaskin & Rayner 2013).

Effective conservation and restoration of seabird islands depends on a solid understanding of the distinctive ecology of island plant and animal communities and ecosystems, the influences of regional climate and biome patterns, past natural history, and past and present human relationships to island ecosystems (Anderson & Mulder 2011).

This BMP promotes an integrated management approach recognising the interrelationship between the marine and terrestrial environments in and around the Noises. To support a seabird–driven ecology, like that which probably existed on the islands in the past, the land and the sea needs to be considered as one.

Finally, although the islands are small, their predator free status and spatial separation from one another provides opportunities for them to become refuges for seabirds as well as many smaller ecosystem components such as invertebrates, amphibians and reptiles. The potential for species such as these on the Noises is significant.

Mulder and Keall 2001 describe offshore islands as vitally important refuges for NZ species which were once widespread on the mainland but are now confined largely or totally to offshore islands. These include half of all frog (*Leiopelma*) species, both tuatara (*Sphenodon*) species, over half of the currently identified lizard species and 48% of insect species designated as protected.

1.2 Location and description

Les Noisettes - "The Hazelnuts" (Figure 3) were originally named by the French Explorer, Durmont D'Urville in early 1827 who came across a scattering of rocky islets just to the east of Rakino (approximately 1.2km to the west). In more recent times D'Urville's Les Noisettes has become corrupted to "The Noises" and the name has stuck.

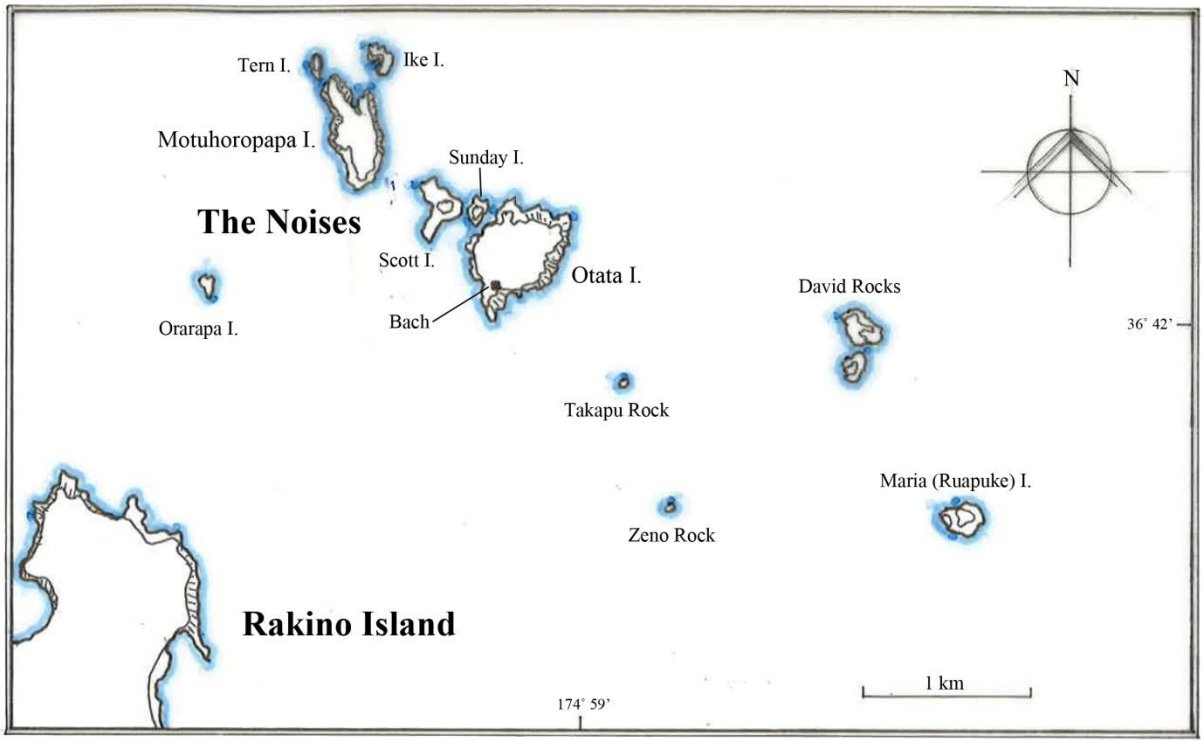

Figure 3: The Noises Islands (Brydyn Melles)

The chain or archipelago of islands and rock stacks are all composed of 130 million-year-old Jurassic greywacke rocks of marine origin, which in the Auckland region run northwards from the Hunua Ranges through Waiheke and the inner Gulf islands to Kawau, Tawharanui and Cape Rodney (Cranwell 1981, Ballance 1993).

Figure 4: View from the northern coast of Otata looking over Scott and Sunday, Orarapa (to the left), Motuhoropapa (background) and Ike to the far right with Tiritiri Matangi in the far distance.

There are 4 main islands in the archipelago:

- Otata - 15ha
- Motuhoropapa - 8.1ha
- Maria/Ruapuke - 1.1ha
- David Rocks - 0.3ha

The remainder of the group is made up of the smaller islands of Orarapa (Haystack), Tern, Ike, Scott and Sunday, the 3 rocky outcrops named Takapu, Zeno and the Ahaaha's as well as a number of other surrounding rocks and reefs.

The Noises lie in the outer bounds of the inner Hauraki Gulf and are characterised by indented rocky coastlines, with the two larger islands dominated by coastal pohutukawa forest. Appendix 1 contains a detailed summary of the key characteristics of the Noises. This is a work in progress - as more and more researchers visit the island - information is constantly being updated.

1.3 Ownership

The Noises are privately owned. Land Registration dates back to 1868. JJ Craig (a merchant) owned the Noises from 1907 and built a small house/bach on Otata Island. Captain McKenzie purchased the islands in 1930 and sold the islands to Captain Frederick Stanley Wainhouse in 1933.

After Captain Wainhouse died on Otata in 1957, the ownership was briefly held by his wife Margaret Neureuter who passed the islands on to her nephew, Brian Neureuter. In 1995, the Noises Trust was formed and the islands were gifted to the trust. The Trust was created to help ensure the long-term protection of the island group. Brian's son Rod Neureuter is the Trustee and beneficiary, however the extended family also regularly uses the islands.

1.4 History of management

The rocky and exposed nature of the islands makes the mooring of boats challenging in any other than calm, settled conditions. The Wainhouse's spent up to 9 months of the year on Otata after WW2. They also lived there full time for a few years up to Captain Wainhouse's death. Nowadays the Neureuter family stay for extended periods using the bach on Otata.

A basic hut also exists on Motuhoropapa. Built by the NZ Wildlife Service in the late 1970s for a long term study of Norway rats, it has been restored in 2014 by the University of Auckland as a base for research. A maritime safety light installed in the mid 1950s is located on the summit of Maria/Ruapuke.

Clearance of the summit vegetation on Maria/Ruapuke Island to ensure visibility of the light possibly contributed to the establishment of mile a minute *(Dipogon lignosus)* and other invasive weeds. Maria/Ruapuke was also used by the military for target practice during World War II.

Figure 5: Unloading materials for Motuhoropapa Hut during 1970's (Neureuter family collection)

The larger islands appear to have always had some form of forest cover; however a major part of Otata's forest was burned around 1931.

Many native plants characteristic of the more outer islands of the Hauraki Gulf are present on the Noises. These species are usually absent from the inner Gulf islands (Cameron 1998).

Otata used to have rabbits (Cunningham & Moors 1985) and stoats (Moors 1985). However the rabbits died out between 1944-45, some three years before the first stoats were encountered. There is no information on how either species got to the island and stoats have not been seen again since the 1950s (Cameron 1998).

Norway rats occurred on the group and arrived on Otata around 1956-57, and Motuhoropapa in 1962 (Moors 1985). In 1976 the island group became a study site for the Wildlife Service to gather information on the ecology of Norway rats on small islands and to test eradication methods. Six eradication attempts (Figure 6) were made before the islands were declared rodent free in 2002. A number of these earlier eradication attempts were actually successful but it is thought that rats reinvaded from nearby Rakino Island. Rats were successfully eradicated from Rakino in 2002 and subsequently no signs of rats have been seen on any of the Noises Islands since then.

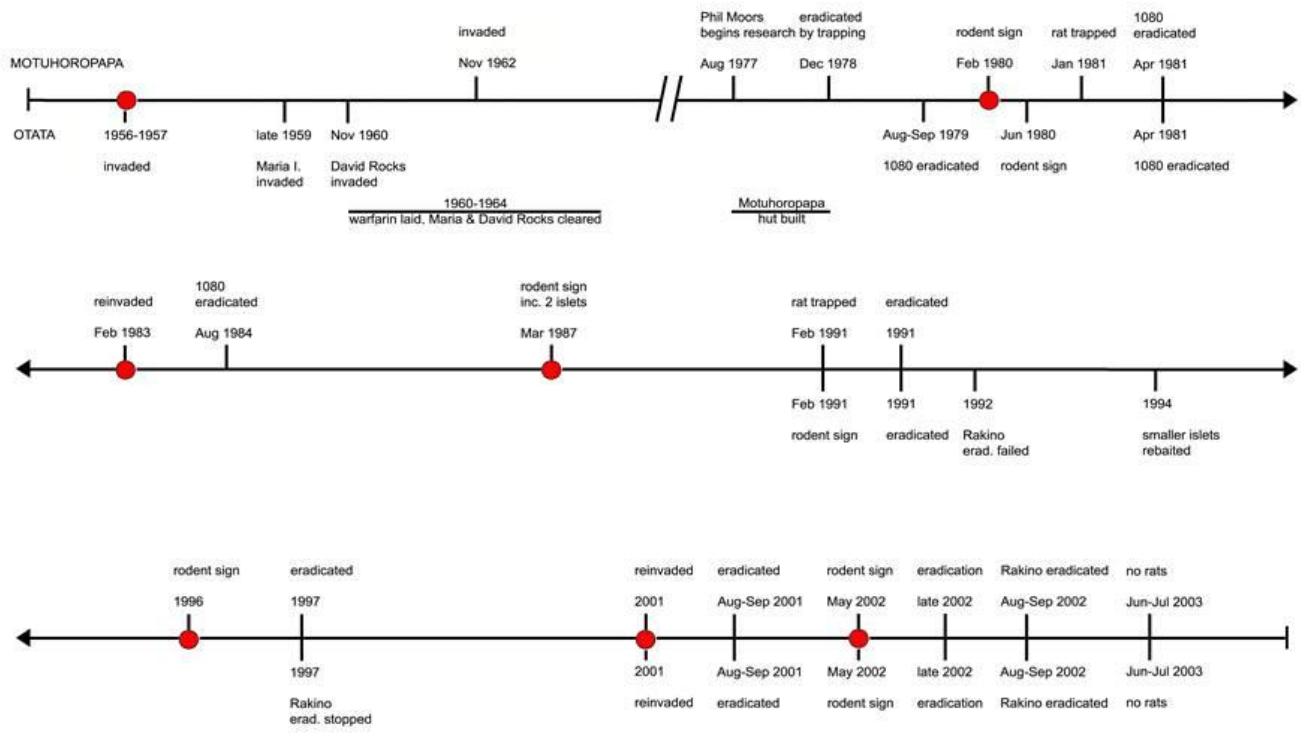

Figure 6: Rat eradication attempts at the Noises -Russell J, 2007[3]

Work by the Neureuter family in recent years has been largely concentrated around plant pest control and specifically invasive species. These include rhamnus *(Rhamnus alternus)* which has principally been spread through birds moving seed from nearby islands such as Rakino, Phoenix palm *(Phoenix canariensis*), boxthorn *(Lycium ferocissimum),* and two well known species with wind dispersed seed - moth plant (*Arajuia hortorum)* and pampas *(Cortaderia* spp.*).*

[3] https://scholar.google.co.nz/citations?view_op=view_citation&hl=en&user=YeT-V18AAAAJ&cstart=20&pagesize=80&citation_for_view=YeT-V18AAAAJ:5nxA0vEk-isC

Mile a minute *(Dipogon lignosus)* an aggressive evergreen climber, which is the dominant ground cover on Maria/Ruapuke Island has also been targeted for removal. These particular species have been priorities because they can rapidly establish and dominate native plants.

The Neureuter family are also very active in the area of marine advocacy. Most recently as part of the Seachange Marine Spatial Planning Initiative, where they have promoted the need for better understanding of the impacts of recreational and commercial activities on marine life, and the need to take proactive steps to address the declines before they become irreversible.

The Noises Islands have also had a long association (dating back to at least the late 1880s) with the scientific community who recognised the island's unique characteristics. There has been considerable work on the botany, ornithology, herpetofauna, animal pests and the marine environment. Many of these visits were by the Auckland University Field Club, who published records of a number of visits in the Field club journal 'Tane'.

The Auckland Botanical Society has also undertaken a number of botanical surveys which have been recently updated by Ewen Cameron. As mentioned above the former Wildlife Service used the islands as a base to study Norway rats and subsequently trialed eradication methods on Motuhoropapa.

The Noises became one of the first island groups where island eradication of rodents was ultimately successful. This was first attempted successfully in 1960 on Maria/Ruapuke Island after a visit in 1959 found hundreds of white-faced storm petrels killed by Norway rats. This is internationally recognised as one of the first successful island rat eradications (Towns & Broome 2003).

Innovative research and experimentation has been a hallmark of work on the Noises. The islands have been an important research site for studies of rat ecology and eradication methodologies, (Moors 1985), rat invasion dynamics and pest surveillance, (Russell *et al* 2005.; Russell *et al* 2008).

Data from the Noises Islands in conjunction with other islands, have also been valuable for studies of grey faced petrel (Russell 2013); the impact of rats on island ecosystem processes (Towns *et al* (2009), Fukami 2006), island biogeography, (Simberloff & Levin (1985), weed surveillance and weed management strategy (Timmins & Braithwaite (2002), flax snail biology, (Brook & McArdle (1999) and invertebrate taxonomy and distribution, (Wise (1983). Most recently Friesen and Baird conducted a survey of Maria/Ruapuke Island in 2016 to assess the importance of the Noises Group and the adjacent marine areas for seabirds. The results of this survey are discussed in more detail in section 5.1.2.

The Noises are also the site of one of the earliest translocations to offshore islands in New Zealand with the transfer in 1934 A.W.B. Powell of 100 large land snails *(Placostylus hongii)* currently listed as at risk - Range Restricted from Archway Island in the Poor Knights to Motuhoropapa. This species is still present despite heavy predation when rats were present. More recently, in 2015, an initial release of 1250 wetapunga *(Deinacrida heteracantha)* was undertaken on Motuhoropapa followed by an additional 106 to Otata in June 2016. This translocation in partnership with Auckland Zoo will continue over the next 6 years until 2021 as part of an existing captive-breeding for release and advocacy programme.

2. VISION, GOALS, OBJECTIVES

2.1 Vision

Islands of rich natural abundance teaming with diverse native plant, insect and reptile communities surrounded by clouds of seabirds and waters alive with fish and productive reef systems.

The vision of the Noises Trust reflects the desire to advocate actively for integrated marine and terrestrial management by maintaining a pest free haven for seabirds supported by a rich and diverse terrestrial environment. The islands also provide opportunities to expand populations of endangered insect and reptile communities.

2.2 Goals

Goals for the Noises recognise the key threats to achieving the vision (animal and plant pests, marine biodiversity loss) and set sustainable restoration benchmarks:

- Maintain the animal pest free status of the islands;
- Achieve a zero density management programme for weed pest plants;
- Restore the marine environment surrounding the islands to its former diversity and abundance;
- Facilitate the redevelopment of an invertebrate/reptile/seabird system typical of other islands of the sizes represented in the archipelago;
- Provide a safe haven for an array of rare species of invertebrates (and lizards) which would have reasonably been expected to occur on the Noises*;
- Maintain and enhance the status of the Noises as some of the best representative examples of Hauraki Gulf native flora associations;
- Continue to use the islands for research and education purposes.

** The final decision on individual species to be translocated will be undertaken in consultation with DOC invertebrate and reptile specialists.*

2.3 Objectives

The objectives reflect the implementation of the goals and are broken into 5 key work areas. They rely on the ongoing support from a partnership between the Neureuter family, the Auckland Council, the Department of Conservation, the University of Auckland, Auckland Zoo, Auckland Museum and other educational and funding bodies.

Island biodiversity:

- Produce an island biodiversity management plan (completed March 2017);
- Implement biodiversity plan from March 2017;
- Undertake a comprehensive native flora and fauna survey in 2016/17 to update historical records and inform future management priorities;
- Support the translocation of appropriate native species to the islands that compliment resident native flora and fauna;
- Consider translocation of species from the islands that can be demonstrated to have no adverse effect to those populations;

- Investigate opportunities for different native species management regimes for different islands, e.g. For Maria/Ruapuke(Allow natural recovery of forest birds, seabirds and lizards either resident or naturally colonising) whereas for Motuhoropapa and Otata (Facilitate the redevelopment of an invertebrate/reptile/seabird system typical of other islands of the sizes represented in the archipelago);
- Support ongoing research;
- Establish the Noises as a conservation 'hotspot' for indigenous invertebrates, reptiles and seabirds;
- Develop an environmental care code for access onto Maria/Ruapuke Island.

Marine biodiversity:

- Undertake a sub tidal mapping programme to document bathymetry and habitats;
- Review existing geological and biological collections and summarise in a report;
- Undertake standardized visual surveys of intertidal and sub tidal communities to document current status and to detect future changes;
- Advocate for the cessation of scallop dredging and gill netting around the islands;
- Investigate protection options to restore marine biodiversity around the islands.

Animal pests and threats:

- Maintain the animal pest free status of the islands;
- Install and maintain permanent biosecurity prevention and detection measures on each island;
- Undertake biosecurity surveillance checks for unwanted organisms e.g. 2 rodent checks and 1 stoat, invasive ant and rainbow skink check of the islands each year;
- Support the Treasure Islands programme through the installation of signage, visitor and boat biosecurity, and no dog policies.

Plant pests and threats:

- Work in partnership with the Auckland Council and the Department of Conservation to address the issue of the spread of invasive plant pests from nearby Rakino, Waiheke and Motutapu Islands;
- Develop and implement a cost effective and sustainable programme to control mile a minute and key invasive weed species on Maria/Ruapuke Island;
- Investigate options with Maritime New Zealand to raise the navigation light at Maria/Ruapuke Island;
- Continue the programmed removal of key invasive plant pests, including *rhamnus*, pampas, phoenix palm, moth plant and boxthorn.

Partnerships and funding:

- Continue to develop and expand working relationships with key stakeholders including iwi, the Auckland Council, Auckland Zoo, the Department of Conservation, Maritime New Zealand, universities and research organisations;
- Build a mutually beneficial working relationship with manawhenua;
- Identify biodiversity management areas (e.g. individual species translocations, weed programmes) that could be developed for targeted funding;
- Investigate opportunities for partnership funding/in kind contributions towards the above programmes.

3. GUIDING PRINCIPLES

The following guiding principles support the vision, goals and objectives, but are also designed to test management actions, to ensure that programmes undertaken in and around the islands are designed and implemented in a manner that is in keeping with enhancing and restoring the natural environment.

3.1 A long term commitment

The development of this BMP has been brought about because the Neureuter family have a long term commitment to the ownership of the Noises Islands and wish to manage and protect them in a manner that allows the natural environment to recover and sustain itself so that future generations can experience and enjoy it first-hand. Furthermore the family want the Noises Islands to be managed in such a way that they contribute to the health of the natural environment of the wider Hauraki Gulf. These objectives require integrated management, evidence based decision making, long term planning horizons, and collaborations with other users of the Hauraki Gulf including the many Trusts which work on other islands.

3.2 Low impact management

Although it is known that animal and plant pests arrive largely as a result of human activity, the presence and activities of people on islands such as the Noises can be easily managed for minimal impact. The Neureuter family restrict their activities to basic temporary accommodation on Otata and there are narrow access tracks on Motuhoropapa, Otata and Maria/Ruapuke. The same principles apply to the research hut on Motuhoropapa.

The family is in agreement that management of the islands in the future will continue to be low impact in terms of accomodation and visitation. In terms of the latter, people are always welcome to visit, but they must ensure they adhere to the low impact principles - stay on tracks, no overnight visits, fires or domestic pets ashore.

Low impact management also needs to apply to research activities and to Maritime New Zealand with the management of the navigation light on Maria/Ruapuke Island. The islands are small and extremely vulnerable to change as has been well demonstrated by the invasion of mile a minute vine on Maria/Ruapuke, which has significantly altered native flora associations. A number of the islands and rock stacks have seabird burrows and nests. Access amongst these for research, weed control or other management purposes can be extremely destructive both to burrows, nests and nesting petrels.

3.3 Integrated marine and terrestrial management

The BMP promotes an integrated management approach in recognition of the interrelationship between the marine and terrestrial environments of the Noises.

3.4 Mammal pest free

Small islands close to the mainland are extremely vulnerable to animal pest invasions. Chains of small islands such as the Noises, which are close together (i.e. within easy rat swimming distance), are particularly susceptible. Following the successful Norway rat eradication, the Noises became recognised as one of the groups of small islands that tested techniques and provided the impetus for larger and more complex campaigns (Towns & Broome 2003).

The signs of ecosystem recovery on the islands following the removal of rats is evident in the dense seedling understorey on Motuhoropapa and Otata, flourishing seabird colonies, and abundant common gecko *(Woodworthia maculata)* and pupuharakeke/flax snail *(Placostylus hongii)* populations. Maintaining the animal pest free status of the Noises is essential given that many of the resident native species are ground dwelling and ground nesting e.g. burrowing seabirds or smaller species such as common gecko and land snail.

3.5 A haven for invertebrates and reptiles

Since the islands are small, they are unlikely to be suitable for translocations of many forest birds, however they are highly suitable for translocations of rare invertebrates and reptiles. In particular the archipelago offers opportunities to establish geographically separate populations of a range of these species and provide future source populations for translocations to other locations. The Neureuter family is very supportive of 'sharing' species between islands.

Figure 7: Common gecko gathering under an ACO - Otata Island: 2014 (Jo Ritchie)

3.6 A seabird driven ecosystem

The wider Hauraki Gulf region's striking seabird diversity, together with the combination of multiple predator-free breeding sites on islands and (increasingly) on the mainland with productive waters close to colonies makes the WHGR a globally significant seabird biodiversity hotspot (Gaskin & Rayner 2013). The Hauraki Gulf State of the Environment report 2011 identified seabirds as a key ecosystem component of the Hauraki Gulf Marine Park (Hauraki Gulf Forum 2011).

The natural environment of the Noises Islands is heavily influenced by seabirds. This factor, along with their predator-free status and long-term stable private ownership, means that the islands provide an accessible location to study seabird-driven ecosystems (Figure 8).

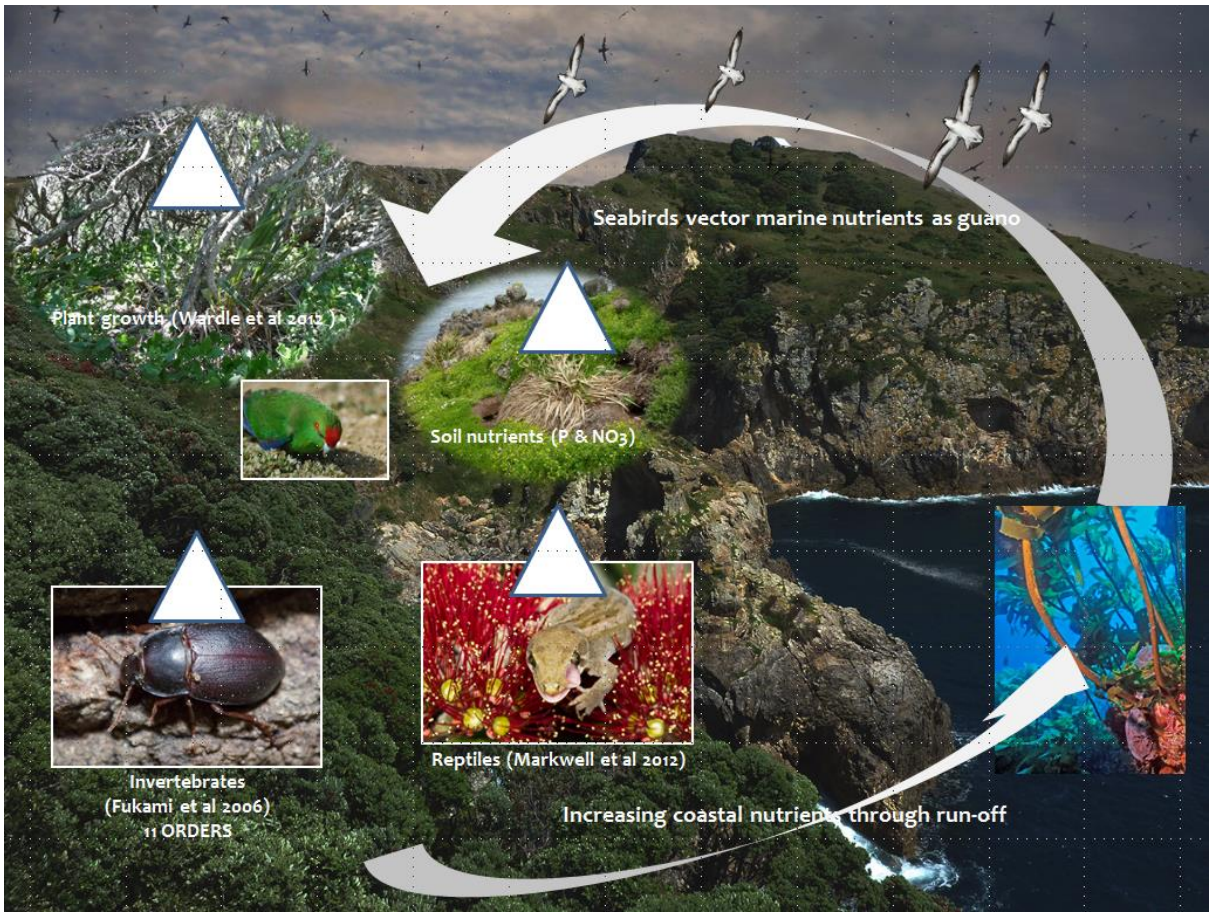

Figure 8: Seabird transfer of marine-derived nutrients to land and resulting impacts on terrestrial ecosystem productivity. (Graphic from Rayner, M.J., Gaskin, C.P. (2013)).

3.7 A collaborative partnership

The Neureuter family recognise that collaborative partnerships are essential to protect and enhance the natural environment of the Noises. Effective biodiversity management is about knowing the environment you are managing, well, and it is necessary to understand all the components that contribute to its decline as well as those which ensure its survival in a healthy state.

Long standing partnerships with agencies such as the Auckland Council, the Department of Conservation, Maritime New Zealand, the University of Auckland and Auckland Zoo, as well as initiatives such as Seachange, provide evidence of the value the family places in these relationships. The marine spatial planning process and the proposed Marine Protected Areas Act have led to additional connections with iwi and other Gulf user groups, such as commercial and recreational fishing interests.

4. MANAGEMENT PROGRAMMES

The previous sections of this plan have summarised the natural environment of the Noises and identified activities and issues threatening that environment. This section outlines a long term management programme. Adaptive management (Rist *et al* .2013) will be an important component of an effective longer term management programme for the Noises, and in effect has been part of informal management of the islands to date. Partnerships and learning by doing are key aspects of adaptive management.

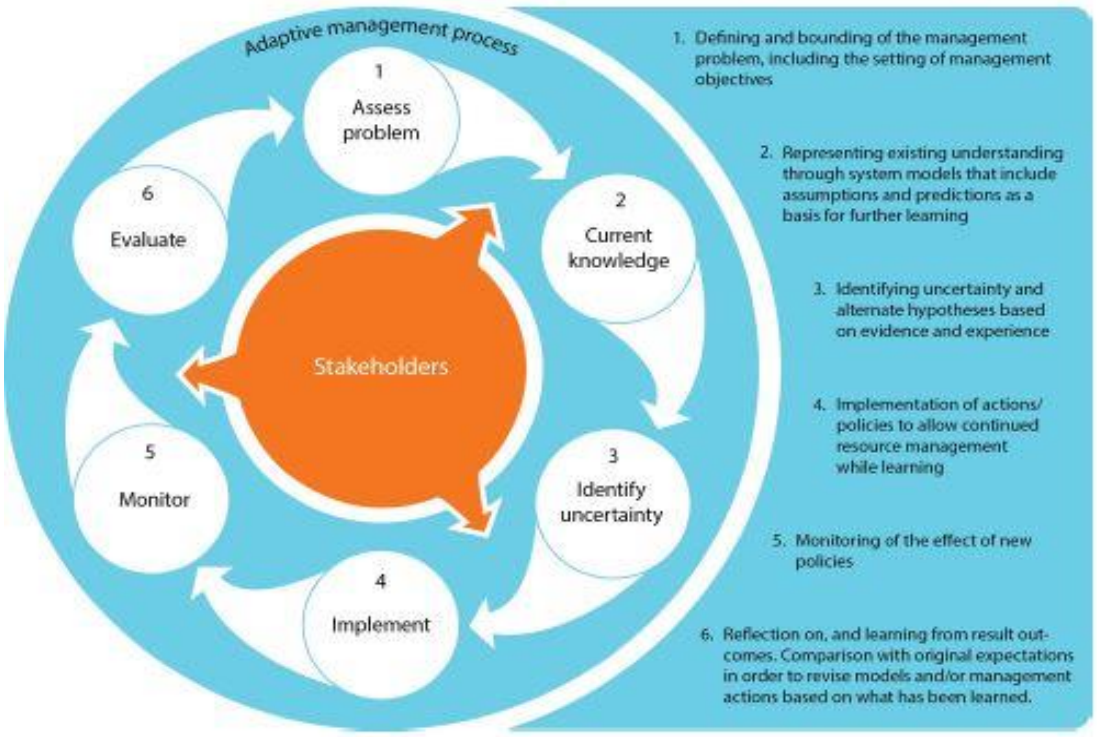

Figure 9: Adaptive management process (Rist et al 2013)

A recurring theme at the Noises is the partnership approach to understanding the environment and its changing nature. This relates to anecdotal changes that the Neureuter family have seen and the study of these changes through working with researchers, scientists and technical specialists. This has included physical studies on the islands and providing advice around potential options and solutions to effect positive change.

The value of this partnership approach has had significant benefits – the eradication of rats, baseline surveys of flora and fauna, and funding and assistance with animal and plant pest programmes.

More recently this has also included increased awareness and support for sustainable management of the marine environment around the islands. It has provided the Neureuter family with increasing confidence to tell their story about the islands to those in positions to influence change.

Examples include initiatives such as Sea Change marine spatial planning, the Hauraki Gulf Forum and the Proposed Marine Protected Area process. It has also included discussions with manawhenua and agencies such as the Auckland Council, Department of Conservation, Ministry of Primary Industries, and various commercial and recreational fishing representatives.

Additionally partnerships with the Auckland Museum, Auckland Zoo, Massey University, University of Auckland and Auckland University of Technology have all provided opportunities for research work in a 'real' natural environment – where people and the environment need to be understood and managed together to effect worthwhile long term change.

4.1 Terrestrial and marine area management

To support a seabird driven ecology as has been predicted for the islands, the land and the sea need to be considered as one. Thus an integrated management approach is favoured which recognises the interrelationships between the marine and terrestrial environments in and around the Noises.

Protecting and restoring the natural values of the islands is the prime focus, along with managing threats such as preventing incursions from animal pests, the ongoing programme of reducing weed pests, preventing new incursions, and reducing pressures on the marine environment from recreational and commercial fishing activities.

Figure 10: A 1958 photo of over 3000 snapper caught by 48 anglers in a 4 hour fishing charter boat trip into the Hauraki Gulf from downtown Auckland. (Source Unknown)

4.1.1 Key features:

1. Excluding Rangitoto Island, the Noises contain the best indigenous cover of all of the inner Gulf Islands. With their total indigenous cover, special flora and fauna values, low weed problems and lack of exotic mammals, the Noises have outstanding conservation values (Cameron 1998).

2. Despite being a chain of small islands and therefore with limited ability to support a wide range of terrestrial birds, the Noises offer opportunities to establish geographically separate populations of a range of rare invertebrates and reptiles and then in future provide source populations for translocations to other locations (Gibson 2015).

3. Although small, Maria/Ruapuke Island provides important seabird breeding habitat in the inner Gulf Islands. It also provides potential source populations for natural colonisation by seabirds of other islands within the Noises Group, and also pest free Motutapu/Rangitoto and Motuihe (Gaskin & Heiss-Dunlop 2011, Friesen & Baird 2016).

4. There are 15 Nationally Threatened and At Risk bird species recorded on the islands or from the sea around the islands (Department of Conservation 2014). The Noises are important breeding sites within the Hauraki Gulf for white-faced storm petrel, grey faced petrel, northern diving petrel, white-fronted tern, pied shag and potentially spotted shag (Cunningham and Moors 1985). Spotted shags are no longer present but could be encouraged to recolonise former breeding sites on Otata and at the David Rocks. Consideration needs to be given as to whether they could be brought back using dummies and playback recordings. Additional research is needed to determine the presence of other breeding seabird species.

5. The waters surrounding the Islands contain a mix of the clear outer Hauraki Gulf and more turbid inner Gulf waters, creating an unusual mix of ecosystems within the Hauraki Gulf (Neureuter *et al* 2016) - they are in effect outer islands located within the inner Hauraki Gulf (Shears pers. comm. 2014).

4.1.2 Recommended priorities and actions:

4.1.2.1 Terrestrial flora and fauna

Native Flora and Fauna

- Update flora and fauna surveys to provide a post rat eradication update for each island. Identify the location of any rare or endangered species and implement a proactive management programme to ensure their continued survival:

    - Installation of playback acoustic attraction system on Otata to help restore species diversity on the largest islands and relieve likely pressure for breeding space at established seabird colonies on Maria/Ruapuke. Playing multiple calls throughout the year synchronised with species breeding times – grey-faced petrel and diving petrel in winter and white-faced storm petrel and fluttering shearwater in spring and summer. This is seen as the top priority to aid restoration of marine and terrestrial nutrient flows;

- Deploy automated sound recorders on Maria/Ruapuke and Otata Islands, and David Rocks to record and analyse the vocalizations of all seabirds active on the island at night from July to November for nocturnal seabirds (including grey-faced petrel, fluttering shearwater, common diving petrel and white-faced storm-petrel which have been recorded breeding on the islands);

- Petrel dog search of Otata Island for burrowing seabirds in August – principally to determine the extent of grey-faced petrel burrowing on the island but also to see if other species are present;

- Limit studies of seabird breeding on Maria/Ruapuke to experienced seabird specialists to reduce the risk of damaging burrows. Undertake this work in December when most species overlap in breeding cycles;

- Establish a selected range of indicator species which represent the diverse natural environment of the Noises so that these can be regularly monitored (every 2 years) to assess change and recovery;

- Develop a plan and implement measures to encourage spotted shags to recolonise their former breeding sites on the northern side of Otata and at the David Rocks.

Figure 11: Spotted shags nesting at Tarahiki Island (south east of the Noises Group) (Tim Lovegrove)

- Limit any maintenance work required on Maria/Ruapuke (e.g. to maritime light or weeding) and all other island sites where seabirds nest to the March – May period when few burrow nesting seabirds are likely to be present;

- Ensure that any work undertaken in or around seabird colonies minimises the use of intrusive methods.

- Other than on Maria/Ruapuke Island, allow natural regeneration alone to be the method of re-establishment of the native flora on the islands;

- For Maria/Ruapuke Island prepare a separate Management/Action plan for mile a minute;

- Assess all proposals for native species fauna reintroductions against the primary principle of minimizing adverse impacts on the unique natural environment of the Noises

- Limit reintroductions to those that:
    - Would have once likely to have been present on the islands;
    - Provide opportunities to increase understanding on how best to increase populations of rare/endangered species.

- Consider proposals to translocate species from the Noises islands as long as these do not compromise populations of those species on the Noises. Obtain advice from relevant species specialists familiar with the islands to assist with informed decision making.

Introduced species

- Maintain the animal pest free status of the islands by:

    - Installing a permanent biosecurity network of rodent motels[4], DoC 200 traps and tracking tunnels around main entry points to each island and the huts at Otata and Motuhoropapa;

    - Consideration will also be given to trialing and using technological advances such as Good nature traps and Nodes that indicate via satellite animal activity or interference;

    - GPS'g and mapping the network to enable easy servicing, monitoring and accurate recording of checks and any catches;

    - Maintain the biosecurity network to a consistently high standard (e.g. DOC 200s can be serviced twice a year with the biosecurity dog checks. Tracking cards can be installed and checked when the family overnights throughout the year);

    - Undertake bi-annual detection dog checks for rodents, mustelids, invasive ants and rainbow skinks;

[4] Care needs to be taken with the design and location of rodent motels as weta and reptiles such as skinks and gecko's could inadvertently be caught.

- Ensuring that all overnight visitors to the islands implement a biosecurity **STOP, CHECK, GO** procedure prior to departure from the mainland to check that all gear and materials are free of introduced species (animals and plants);

- Continuing to support the Treasure Island programme with on island signage and education of visitors (mainly targeted at boaties) when they come ashore;

- Establish a biosecurity response plan in partnership with the Auckland Council and Department of Conservation to provide support and immediate action in the event of an incursion.

- Continue to 'wage the war' on introduced plant species by:

  - Targeting those species known to be present with the potential to be the most environmentally damaging, specifically Phoenix palm, Rhamnus, *Cineraria*, boxthorn, moth plant, pampas, stinking iris with a view to achieving zero density populations. may not be practical for all these species given the presence of most of these species on nearby islands such as Rakino and the ability of some to re-establish by bird and/or wind dispersal;

  - Updating the 2008 plant pest survey (which contains a useful set of aerial photos and GPS points of a number of key weed threats) and use this as a basis both to plan work going forward, and as a database of known locations and most likely places where new weeds could establish or known species to reinvade;

  - Implement an annual surveillance and removal programme aimed at removing any new species which establish that are known to be environmentally damaging before they flower or set seed. Logistically for efficiency this could be combined with the biannual biosecurity surveillance checks;

  - Limit the planting of species around the Otata bach to seasonal short lived plant species necessary for living on the island, such as salad and vegetable species. Ensure these do not set seed or spread;

  - Ensure that any plant rubbish such as fruit and vegetables is free of seed or flowers and is disposed of either by deep burying or removal from the island;

  - Develop in association with seabird, native flora and weed specialists, an Action Plan for the mile a minute on Maria/Ruapuke Island. This would include undertaking small scale trials of techniques to assess their success rates and impact on seabirds and the native vegetation;

  - If an effective programme can be developed to eradicate the mile a minute in a manner that minimises impacts on seabirds and native vegetation, seek funding to undertake an eradication programme;

- Advocate for integrated weed management in the inner Hauraki Gulf Islands and in particular for the funding and implementation of a programme to control to zero densities key weed species from Rakino Island, that are an ongoing source of reinvasion to the Noises. Top priority is to be given to species on the east coast of Rakino and especially those that are wind or bird dispersed such as *Rhamnus*.

4.1.2.2 Maria (Ruapuke) Island

Maria (Ruapuke) Island is unique within the Noises Group. Large numbers of burrowing seabirds are present throughout the year. The resulting environment of low scrubby vegetation and fragile soils honeycombed with burrows makes any work undertaken on the island to protect its conservation values and/or service the maritime light extremely challenging. Additionally Maria represents the greatest weed challenge of any of the Noises group. Therefore, recommendations and actions differ from those applicable to the rest of the Noises group.

Figure 12: Maria Island (Gabriel Daniels)

The six weed species that need to be eradicated on Maria are:

- mile-a-minute (*Dipogon lignosus*),
- boxthorn (*Lycium ferocissiumum*),

- everlasting pea (*Lathyrus latifolius*),
- brush wattle (*Paraserianthes lophantha*),
- tree mallow (*Malva arborea*) and;
- umbrella sedge (*Cyperus eragrostis*).

The first four have been present on the island for over 30 years, tree mallow for over 85 years and umbrella sedge was first observed there in 1994.

The island has a long history with conservation management particularly as it relates to weed pest and seabird management. Weed control work (funded by Auckland City Council) was undertaken by Te Ngahere Trust from 2005 - 2008 to reduce the prevalence of boxthorn and attempt to control mile-a-minute. This work has been hugely beneficial for the present management of boxthorn and increased knowledge in regard to the effectiveness of various control methods for mile-a-minute.

Ongoing boxthorn control work now concentrates on an annual visit to treat regrowth and occasional seedlings. However control of mile-a-minute has been less effective. This species still presents a widespread problem on the island. Effective long-term control of this species required a continuous annual treatment programme in order to maximise and expand on the work done each year.

Everlasting pea and brush wattle are present in low numbers; tree mallow is common on the lower vegetated slopes; and umbrella sedge is very local with clumps on the southern slopes and at the base of the light. To date there has been no coordinated approach to eradicate these six species. A coordinated approach is required because eradicating weeds could provide opportunities for other exotic species to expand. Even the inkweed (*Phytolacca octandra*) should be controlled so that it doesn't fill in open areas.

However this strategy needs to be balanced against the potential for erosion and in cleared areas weeds may grow faster than regenerating native species. Maria is extremely exposed and has friable, fragile soil. Additionally seabird burrows which previously had protection from vegetation cover would potentially become more exposed. Therefore any co-ordinated approach needs to be staged, i.e. initial and gradual control of the most invasive species moving to the less invasive. As shade is established and natural regeneration becomes more evident - then species such as ink weed and mallow could be removed.

Because of the large numbers of nesting seabirds on Maria, there is only a small window of opportunity (between mid-March and the end of April) to carry out weed control work. For the remainder of the year, the island is not readily accessible due to the risk of trampling occupied burrows.

Servicing of the navigation light is also a necessity. The area around Maria is hazardous for boats due to the presence of shallow reefs, shoals and rocks. Servicing of many of the other navigation beacons in the Hauraki Gulf is done by helicopter but this has not been possible on Maria because the summit is so confined and because of the presence of seabird burrows. As a result servicing has been undertaken by boat which requires both an access track up from the drop off point and scrub cutting or spraying of vegetation at the summit to maintain a very low vegetation cover and clear visibility of the light. This damages seabird burrows, has not been confined to the March/April period and a better solution needs to be found.

The following recommendations have been broken down into the three key management areas for Maria Island - seabirds, weeds and the navigation light. These recommendations may need to be

modified over time as more knowledge is gained about seabirds using the island, effective weed control measures and an effective working relationship is developed with Maritime NZ.

Recommendations for scheduled visits will always be subject to weather conditions as access onto the island is very weather dependent.

1. Seabirds

In August 2016, automated sound recorders were installed on Maria island and Otata island as well as the David Rocks. During the months of August to November, these record the vocalizations of all seabird species active on the islands nocturnally. Preliminary survey results from Maria Island indicate the presence of grey faced petrel, fluttering shearwater, common diving petrel and white faced storm petrels. Data collected from the recorders will be analysed further to determine whether acoustic attraction systems could be used to attract additional seabird species to the islands.

Additional seabird census surveys are needed to confirm species assemblages and abundance. It is important that this work is only undertaken by experienced seabird specialists to reduce the risk of damaging burrows. This work should be undertaken in the month of December when most species overlap in breeding cycles.

Additional biosecurity measures, such as bait stations and tracking tunnels should be installed on Maria to ensure that invasive predators do not reinvade. These can be periodically checked by the Neureuter family. Signage to inform visitors to the island of the sensitivity of breeding seabirds to disturbance and their predator free status should be installed on the track up from the primary landing access point so as not to be visible from the sea.

2. Weeds

Weed control work over the past 15 years has primarily concentrated on boxthorn and mile-a-minute - the two most invasive species. While mile-a-minute still presents by far the greatest challenge, there are encouraging indications from initial work that this weed could be managed and potentially eradicated in the long term through an intensive and prolonged control programme. Given the islands' significant status within the Hauraki Gulf and its future potential to provide valuable information on not only seabirds but indigenous plants and its potential as a weed source for adjacent Gulf Islands, the necessity for long term commitment is critical. However although the intensity of work required will decrease over time as species are controlled or eradicated, it is acknowledged that given the weed species present - weed control is likely to be a permanent management action on Maria.

As close as possible to mid-March a small weeding team of fit and capable people would be deployed to carry out control of mile-a-minute vine. Weeding teams could stay on Otata Island overnight courtesy of the Neureuter family. The work will necessitate a range of methods including cutting and pasting, spraying and hand removal of seedlings as well as physical removal of vines from the native canopy . A work plan will be developed that clearly sets out which techniques are to be used where as well as chemical types, mixes and application methods. The work sheet will also include a simple recording system to gather information on extent and success of control work undertaken.

Using techniques similar to that for mile-a-minute, continued removal of boxthorn regrowth, brush wattle, umbrella sedge, everlasting pea, and tree mallow should also be undertaken.

Figure 13: Mile-a-minute in flower -Maria Summit (Gabriel Daniels)

Optimum results would be achieved on Maria by at least three weed visits over the March/April period - each spaced approximately three weeks apart beginning in mid-March (Figure 14). This would allow time for the effect of various treatments to begin to show as well as identify areas missed initially. The latter would be targeted during the second and third visits.

	Visit One	**Visit Two**	**Visit Three**
Timing	Early/mid March	Early April	End April
Maximum number of people & days	9 x 4 days This will be better determined after first trial in 2017	6 x 2 days To be determined	4 x 1 day To be determined
Priority targets	1. Releasing canopy of mile a minute. 2. Foliar Spray of mile a minute. 3. Boxthorn regrowth and seedlings. 4. All other weed species		

Note: Herbicides and control techniques to be used will be specified in the work plan.

Figure 14: Annual weed work timeline - Maria Island

At the end of the final visit each April, and dependent on soil moisture levels, a trial should be carried out transplanting existing seedlings on Ruapuke of Coprosma repens, *Melicytus novae-zelandiae*, possibly tawapou (*Pouteria costata*), and *Muehlenbeckia complexa* into non-vegetated and weed free areas.

The objective of these plantings is to encourage a canopy cover to exclude light and curtail germination and spread of mile-a-minute (see below). This will likely necessitate repeat transplanting

over several years. The high nutrient content of the soil should facilitate fast growth rates in plants tolerant of such conditions.

Observations carried out under areas of existing canopy cover which has been cleared of weeds, suggest weed control work to date, has not impacted on the burrowing/nesting ability of seabirds. Any damage done to burrows while carrying out weed control, does not appear to deter birds from rebuilding the following season. Petrels do not seem to favour any one type of vegetation on the island and the friability of the soil present appears to be more the determining factor. Once mile-a-minute and other weeds are effectively controlled over the entire island it will be necessary to continue on with this work for a minimum of seven years. This is because the seed bank remains viable for at least this period of time.

Therefore, if applying for any future funding, this time frame must be taken into consideration. Clearly there will be an ongoing need for vigilance and monitoring of the island into the foreseeable future.

3. The Navigation Light and Maritime NZ

During the March/April period a simple raised boardwalk should be built over the existing access path. This path extends from the now disused derrick on the south of the island to the existing navigational light. The boardwalk is to protect nesting birds from unscheduled visits and the possible necessity of servicing the light outside the prescribed safe period. With this in mind it should encircle the navigational light for safe year round access.

Figure 15: Navigation light Maria Island (Gabriel Daniels)

Continued discussions with Maritime NZ are needed to ensure that the field personnel who maintain the navigation light are aware of the sensitivity of the islands seabirds to disturbance and the need to wherever possible limit visits for the purpose of servicing the light to the March/April period.

In the past, the area at the top of the island has been regularly sprayed or scrub cut. Emerging native trees/shrubs are cut down to ensure full visibility of the light. This practice has maintained an open summit which has suited and encouraged mile-a-minute which presently smothers the top of the island. Unless this area is shaded by taller vegetation, mile-a-minute will continue to both dominate the summit area and provide an seed bank for the remainder of the island.

Continued discussions with Maritime NZ will focus on the importance of raising the existing light by approximately four to five metres. This work should be carried out during the March/April period, preferably in 2017. The raising of the light is crucial to establishing a shade canopy and slowing down weed growth and spread. It is therefore vitally important this should go ahead as it will allow the regrowth of native vegetation on the summit of Maria Island to approximately four metres. The existing perimeter canopy shows growth to a height of approximately four metres (with the potential exception of tawapou) and is sufficient to form a canopy and overtime reduce the amount of open area available for mile-a-minute to establish.

4.1.2.3 Marine environment

Advocate for marine protection around all or part of the Noises islands. Determine the nature and extent of this by:

- Reviewing literature and museum collections to establish a baseline of knowledge of marine biodiversity and distribution around the islands;

- Undertaking a mapping survey to 100 m off the coast of the islands (exact distance to be refined by marine science advisors) to document bathymetry and sub tidal features, and map major habitat types in order to establish a baseline of information;

- Undertaking biodiversity and habitat surveys using repeatable, quantitative, standardized methods (for example Reef Life Survey) to monitor change over time in habitat distribution, species composition, abundance and size;

- Working with the Auckland Council to build knowledge and maintain vigilance around the establishment of marine pests;

    - Advocate for a recreational and commercial set netting and scallop dredging ban around the islands with a view to some form of marine protection around some or all of the islands. This needs to be of sufficient size and habitat diversity to enable marine life to recover in a sustainable manner over a large enough area;

- Continue to support the Seachange/Marine Spatial Planning programme and advocate for a more integrated and transparent process to identify, implement and manage a series of marine protected areas in the wider Hauraki Gulf that in cooperation with all users of the Gulf;

- Continue to validate the Neureuter family's observations of change, including depletion of previously common species, in the marine environment through further marine research and take every opportunity to advocate for an ecosystem approach rather than species by species management of marine fish and shellfish stocks.

4.2 Cultural heritage management

4.2.1 Key features:

- The Neureuter family regards their 85 year association with the Noises as a privilege and a responsibility. This is reflected in the active role the family continues to play in protecting and restoring the islands;

- Cultural heritage is as important as the management of natural heritage. The family's continued ownership of the islands and their 'light footprint' in terms of what they and researchers need to stay on the islands is reflected in the basic infrastructure present;

- Iwi have also had a long association with the islands and Sue Neureuter's involvement with Seachange has opened the door to expanding existing partnerships into one that includes manawhenua or those iwi who have strong connections to the islands.

4.2.2 Recommended priorities and actions:

- Continue to maintain the existing basic infrastructure on the islands and ensure that it has minimal long term impacts on the environment.

- Develop a partnership with manawhenua to build knowledge of the human history of the islands and the marine environment and guide future management;

- Undertake any practicable measures to protect known heritage features on the islands.

4.3 Visitor and recreational use and management

4.3.1 Key features:

- Although public access to the islands is limited, the Neureuter family has an open door policy to any reasonable requests for visits to the islands. Generally these visits need to be undertaken when a member of the family is present;

- The smaller islands have difficult landings and visits are discouraged as they may disrupt seabird colonies and damage fragile seabird burrows;

- A number of volunteers have already been involved in various management programmes such as weed control and animal pest eradication, research, monitoring and surveys.

4.3.2 Recommended priorities and actions:

- Continue the limited access policy with regard to landing on the islands and take every opportunity to explain why;

- Continue to accept that access to the beach at Otata by boaties will be ongoing and use this as an opportunity to educate them about the islands and how they can help protect them;

- Improve and maintain basic signage at key landing points at Otata and Motuhoropapa such as Treasure Islands: no fires, no camping and no dogs;

- Continue to support volunteer interest in the islands' management programmes.

4.4 Research and education management

4.4.1 Key features:

- The Noises Islands have a long history as an 'outdoor laboratory' dating back to the 1800s when the first visits were made to observe bird and plant communities. More recently, there have been visits by members of research institutions and specialist groups, such as the Auckland Botanical Society to study the islands natural values;

- These visits have all made valuable contributions to expanding the knowledge of the diversity of the Noises natural environment as well as the threats to it;

- A key feature of the management of the Noises has been getting people out to the islands to see firsthand what the issues really are and which method will work in practice. Education on the ground is a powerful tool.

4.4.2 Recommended priorities and actions:

- Continue to encourage the use of the islands as 'outdoor laboratories' but in a manner that:

    - Prioritises research that directly benefits the marine and terrestrial environment of the Noises;
    - Minimises impacts to the environment;
    - Is non intrusive wherever possible.

- All research work involving native species must be undertaken or supervised on site by experienced researchers, and must have the appropriate permits and competencies as required by the Department of Conservation;

- All research and educational visits must abide by the biosecurity **STOP, CHECK, GO** programme;

- Consider any educational opportunities to increase the knowledge and understanding of the value of the Noises natural environment.

4.5 Partnerships

4.5.1 Key features:

- Plan for the future knowing that we have the support of many people with a diverse range of specialist skills, who are willing to share that knowledge often and for little or no cost, so that we can make the best decisions for the islands is fantastic (Neureuter 2016).

- Partnerships with many people define and enrich the management of the Noises Islands. These partnerships lead to more relationships being developed and a web of interconnected people all working together to build knowledge and understanding. It's more like a family of people working together both formally and informally. It is this sharing of responsibility and knowledge with the Neureuter family that will secure the sustainable future of the Noises terrestrial and marine environments.

- The maritime navigation light on Ruapuke Island is part of a network of marine safety beacons around the Hauraki Gulf. Annual servicing and accessibility to the light is essential. However, this needs to be managed in a manner that causes minimal impacts to the natural environment of the island, in particular seabirds and their burrows.

4.5.2 Recommended priorities and actions

- Continue to develop and maintain partnerships to sustainably manage and reduce the threats to the terrestrial and marine environments of the Noises;

- Build relationships with commercial and recreational fishers to improve understanding of their use of the marine environment and how best to achieve mutually agreeable marine protection for the Noises;

- Continue to acknowledge long term partnerships with individuals and agencies such as manawhenua, the Department of Conservation, Auckland Council, Auckland Museum, Universities and Auckland Zoo;

- Investigate opportunities with Maritime New Zealand around raising the navigation light on Maria/Ruapuke and following a minimal impact approach for access to the island for servicing and maintenance.

- A formal written management agreement will be established with Maritime New Zealand to ensure that minimizing damage to the island is a priority and that low impact methods will be consistently implemented by its staff and any contract personnel. Refer section ... for Maria Island specific management recommendations.

Figure 16: Little blue penguin chicks under the cookhouse Otata Island (Jo Ritchie)

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