

UTILISING MĀTAURAKA MĀORI KNOWLEDGE AND WESTERN SCIENTIFIC MAPPING TECHNOLOGY TO TRACK VEGETATION CHANGES IN THE KOUKOURARATA (PORT LEVY) BASIN FROM C1620 TO 2019.

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Abstract: Mātauraka Māori held by the Kāti Huikai hapū oral records state their migrating waka (vessel), Makawhiu, arrived in Koukourarata from the Kaikōura and Wellington regions at approximately the same time as the Mayflower touched ground at Plymouth Rock around 1620. The environment into which the Makawhiu arrived was a fully vegetated harbour basin replete with birdlife in the trees and fish in the sea. A perfect place for settlement.

Koukourarata is a long bay on the northern side of Horomaka (Banks Peninsula) in Canterbury, New Zealand.¹ When European traders and whalers arrived in the 1820s, the vegetation remained largely unchanged until after the establishment of larger European settlements in and around Koukourarata in the 1850s. The fledgling New Zealand Government supported the introduction of a logging industry which oversaw large scale deforestation of Koukourarata, and across all of Horomaka. This, followed by a government policy of increasing pastoral farming, saw the almost complete conversion of the Koukourarata basin from its original vegetative state and a reduction of Horomaka's native vegetation cover to less than 2% of its original extent (Harding, 2003).

Kāti Huikai have maintained their Mātauraka Māori relating to place names which inherently recorded types of vegetation in the nomenclature. Furthermore, the retention of these names has provided the means for a more detailed vegetation map. Giving insight into a thriving community's past; culturally, environmentally, and ecologically. This would not have been possible without Mātauraka Māori knowledge.

¹ It is also known as Port Levy.

The utilisation of GIS (geographic information system) in conjunction with Mātauraka Māori knowledge and available literature has allowed for the digital mapping of the vegetation cover from around 1830, and the Kāti Huikai place names. Additionally, existing GIS data of present-day vegetation of Horomaka has been used as a comparison to the 1830s vegetation cover.

Keywords: Horomaka, Koukourarata, Mātauraka Māori, Port Levy, traditional place names, vegetation.

Introduction

Koukourarata has been the tūrakawaewae of Kāti Huikai hapū since before Europeans arrived in Aotearoa (New Zealand).² Kāti Huikai have maintained their Mātauraka Māori knowledge relating to place names which inherently recorded types of vegetation, important mahika kai spots, and physical features in the landscape.³

Horomaka was originally largely covered in forests, shrublands and coastal tussock, and was the ideal habitat to sustain many bird species which were used as food and sometimes kept as pets (Beattie, 2013). The vegetation cover of Koukourarata and Horomaka has significantly changed from before the Port Levy Deed of Purchase of 1849, to the present day (Beumont, Carter & Wilson, 2014), leading to a reduction in the diversity and abundance of birdlife. Vegetation data available for Koukourarata is fairly limited, as most survey and black maps (a number of New Zealand survey maps produced in the 1800s were called ‘black’ or ‘red’ maps) available from the 1800s contain little or no vegetation information. Additionally, most early photographs are dated around 1900 by which time most of the forest had already been felled or burned.

Environment Canterbury has been working collaboratively with Te Rūnanga o Ngāi Tahu, archives NZ and Land Information NZ (LINZ) since the early 2000s to digitise and make available old red and black maps which were created from 1848, as originals can be fragile (Canterbury Maps, n.d.).

² Tūrakawaewae: home or standing place, in Kāi Tahu dialect.

³ Mahika kai: places and practises where food is produced or procured.

This project investigated and analysed the vegetation changes between the 1830s and present-day, and to discuss the differences found between them. Additionally, the Kāti Huikai place names were investigated and digitally mapped. Some of these names give clues to the different vegetation types and placement around Koukourarata. The use of ArcGIS for this project has allowed for the production of three digital maps of the area which are useful visualisation tools for the vegetation data and the place names which mostly exist as a list of names and oral histories.

Methods

Koukourarata is a long sheltered harbour positioned on the northern side of Horomaka. The marked study area, shown in Figure 1 below, is approximately the catchment area of the harbour. Data was acquired through available GIS data, archive records, literature, and oral histories.

The main data layers for this project were the present day vegetation land-cover layer (Iris-lcdb-v40-land-cover-database-version-40-SHP) retrieved from Lincoln University's data archive, the 1830s vegetation layer (Estimated Vegetation 1830), the study area (Koukourarata Area), and the place names feature class layer (Place Names). Firstly, the Koukourarata study area was drawn as a polygon feature class using a base-map to trace the catchment area. Secondly, the present day vegetation layer was downloaded and clipped to the study area before using the 'name_2012' field to individually symbolise the vegetation types. Thirdly, the place names were drawn and marked on a current topographic map before being created into a feature layer in ArcGIS using points, lines, and polygons to mark their positions.

Finally, the 1830s vegetation was created into a feature layer using polygons and the split tool was used to separate some of the polygons before the 'Dominant_Vegetation_Type' was used to symbolise the different vegetation types. This layer was based on available literature and oral histories.

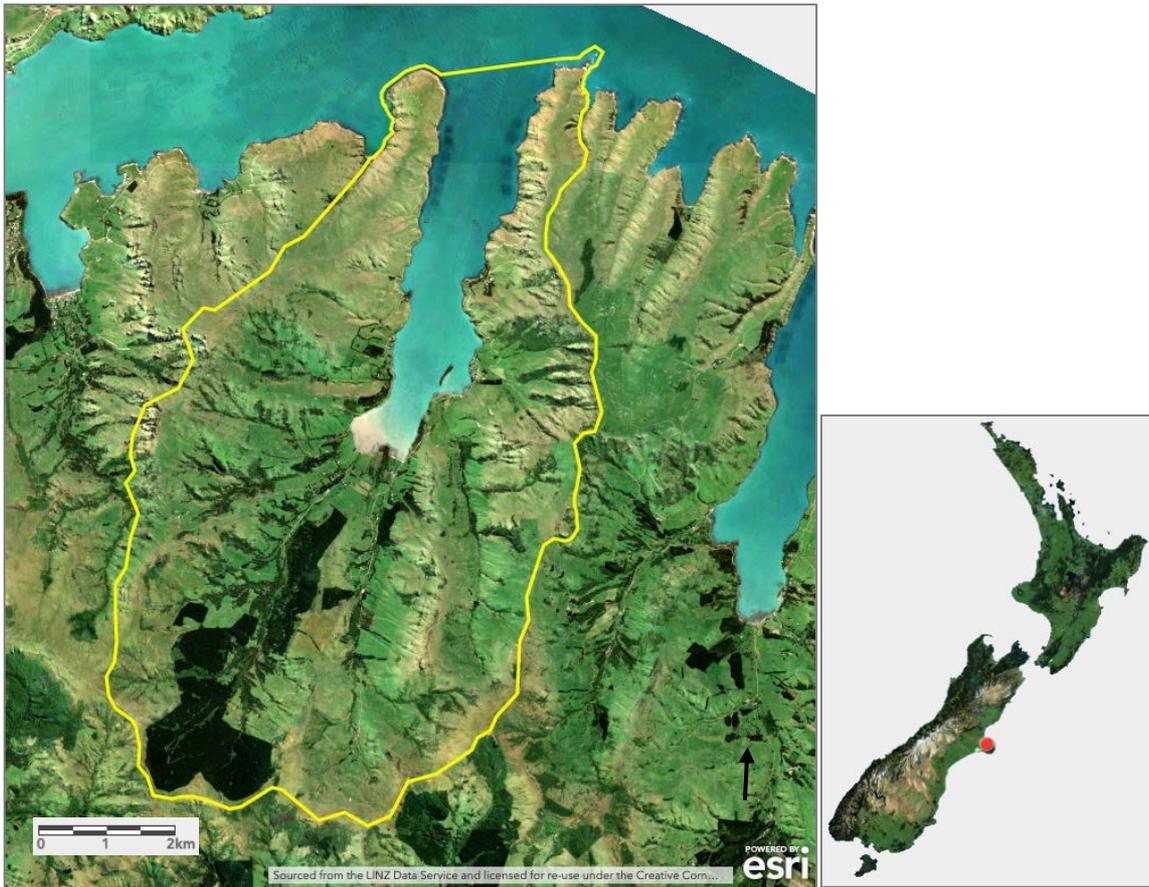


Figure 1: Shows the Koukourarata (Port Levy) study area outlined in yellow (above).

Figure 2: Shows where Koukourarata is located within New Zealand (right).

Results

Three maps of the Koukourarata area were produced: Vegetation cover present-day; 1830s vegetation cover; Koukourarata place names. The present-day vegetation map shows the majority of the area being high producing grassland, large areas of exotic plantation forest and small remnants of native forest and mānuka and/or kānuka spread throughout the area as shown in Figure 3 below.

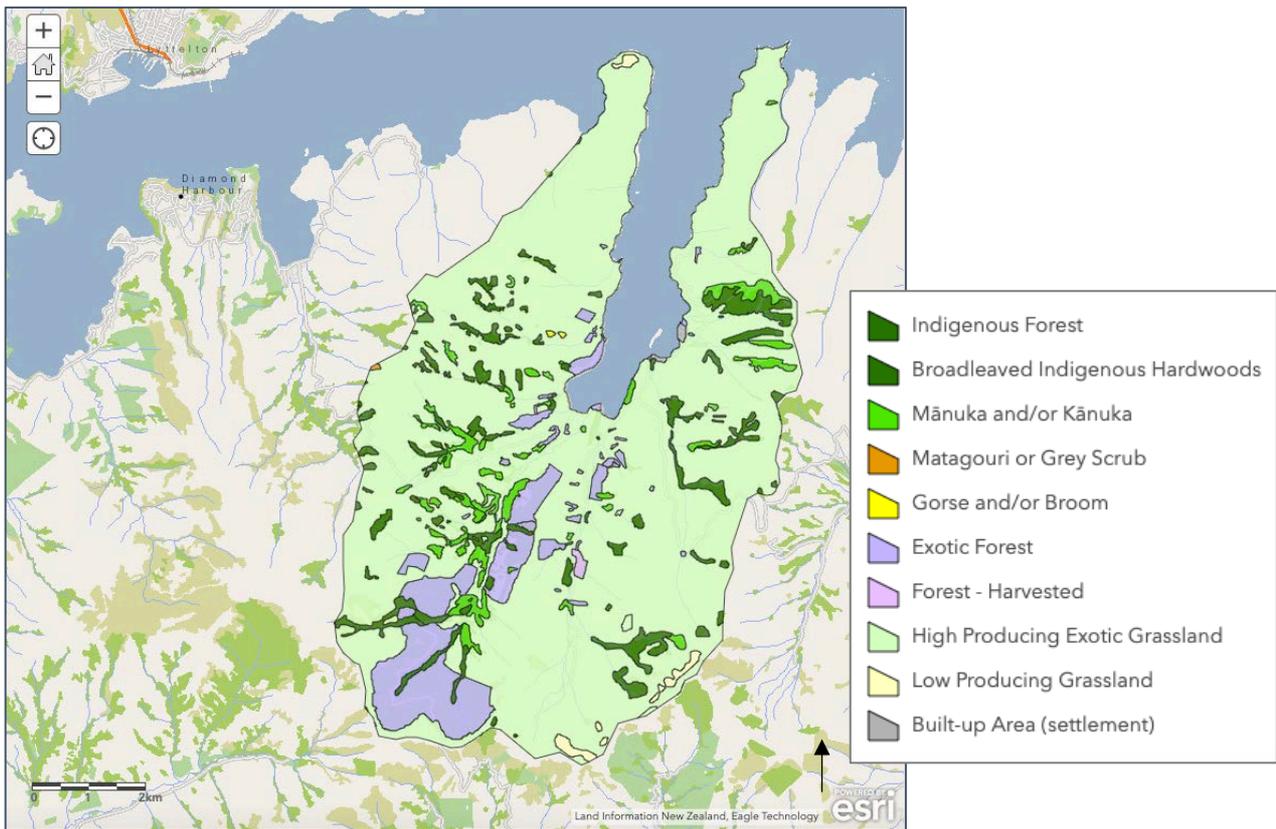


Figure 3: Shows present-day vegetation of Koukourarata⁴.

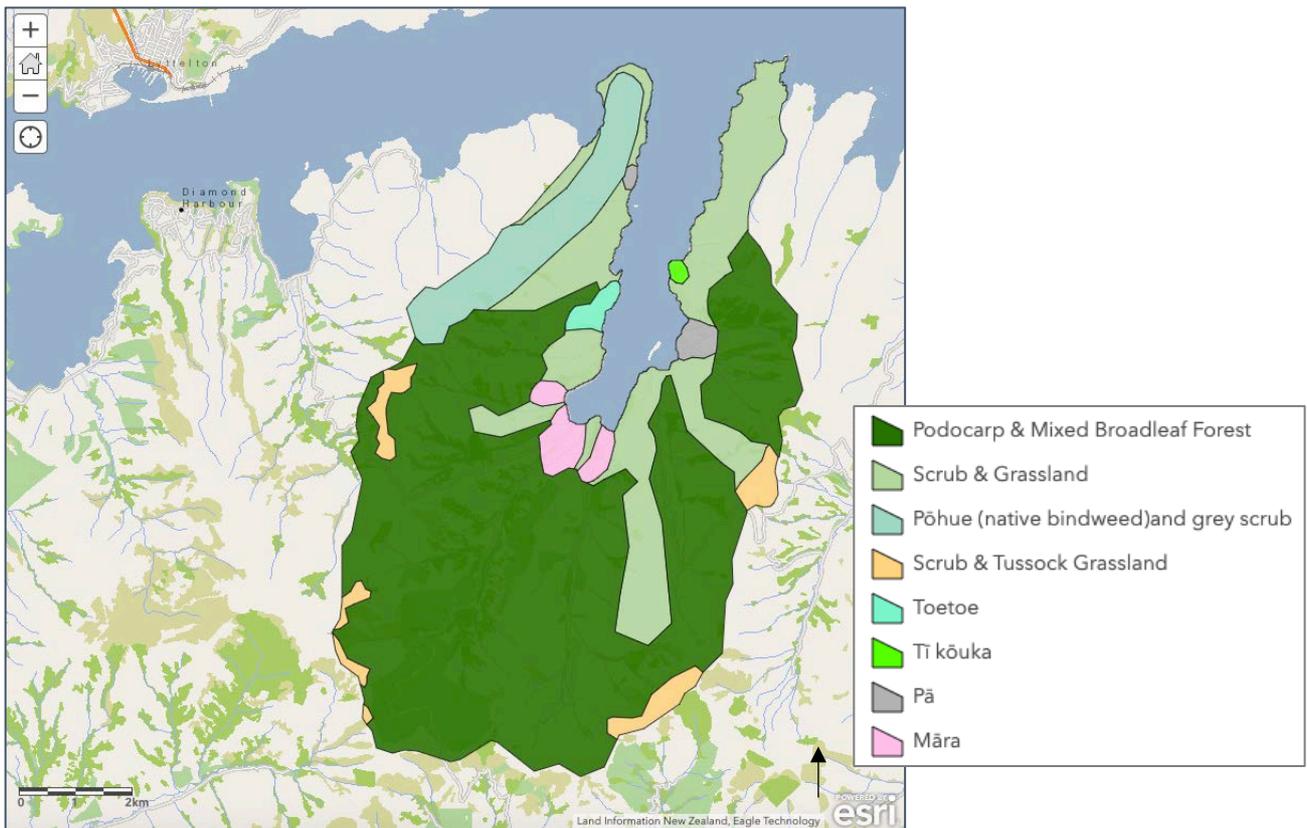
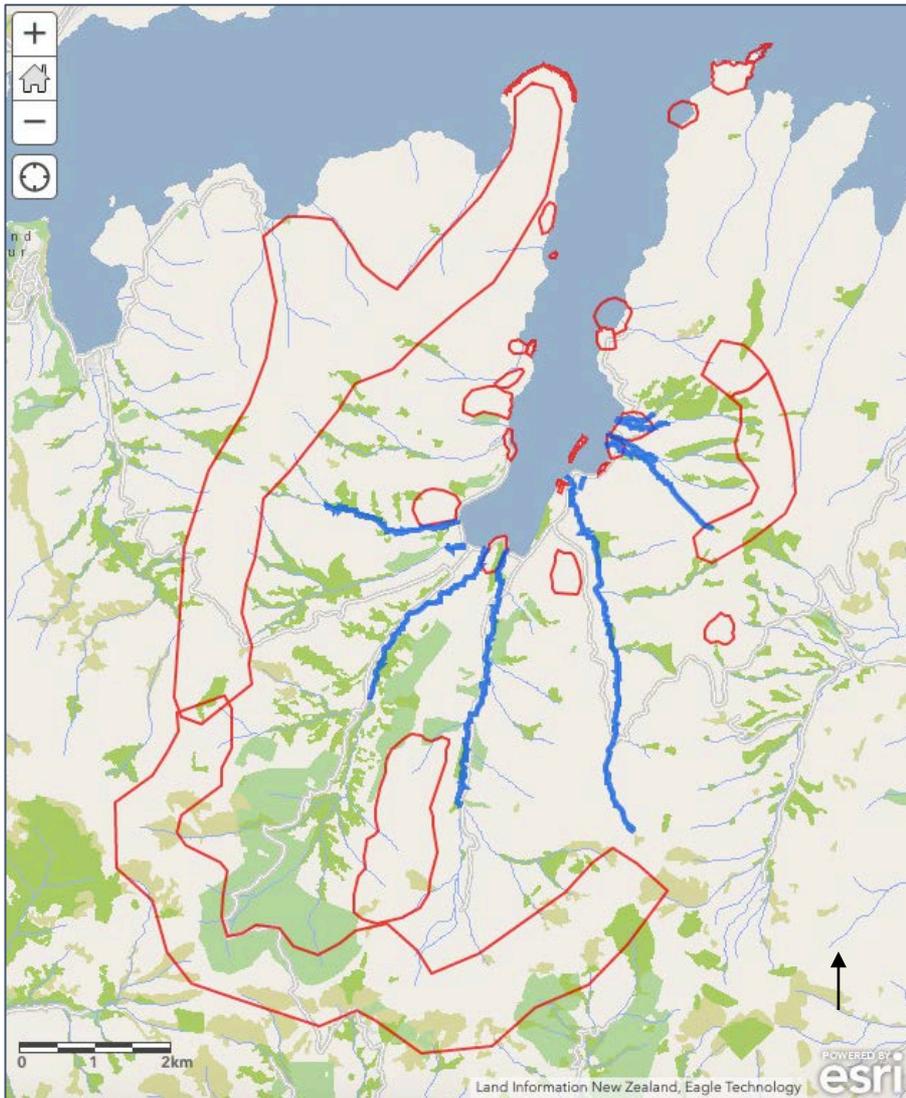


Figure 4: Shows the vegetation cover of Koukourarata around 1830.

⁴ Note that the Indigenous forest and Broadleaved Indigenous hardwoods are the same colour because they are similar vegetation types.

The 1830 vegetation cover map, above in Figure 4, shows podocarp and mixed broadleaf forest was the dominant vegetation type of the area. It also shows large areas of scrub and grassland, pōhue and grey scrub, and three substantial areas of māra (cultivated gardens) at the southern end of the harbour on the flats.



The place names map created using Mātauraka Māori knowledge from the Kāti Huikai hapū shows thirty-nine different locations spread throughout the area, as shown here in Figure 5. The place names and meanings give insight into vegetation types present in specific areas; mahika kai areas, land features and their uses; and significant ancestors.

Figure 5: Shows the place name locations.

Place names in the north of the harbour, see Figure 6 below.

Te Piaka: Fledging birds (seabirds), gathering place of fledglings and eggs. Also known as Adderley Head.

Te Pōhue: The Pōhue. Pōhue, a native bindweed, is a name given to a few species but most commonly *Calystegia tuguriorum* or *Calystegia sepium*.

Kakati tara: Place for gathering black-billed gulls. An original defensive pā site which was used as a lookout. Also known now as Kaitara.

Te ana a Kōkiro: The lair/cave of Kōkiro. Kōkiro / conger eel is a kaitiaki (guardian).

Pukerarauhe: Island of bracken fern. Little island north of Horomaka Island. Also known as Pukerauaruhe.

Te Ana Pepeke: Cave you can jump through. It can be seen from sea level.

Rakiriri: Angry sky. A place of refuge when the seas are rough. A bay at the north-eastern end of Koukourarata harbour.

Te Ruahine: The crone (the wise old woman). Eastern headland of Koukourarata harbour.

Tokowhakahuka: Sea spray rock. Also known as Beacon rock.

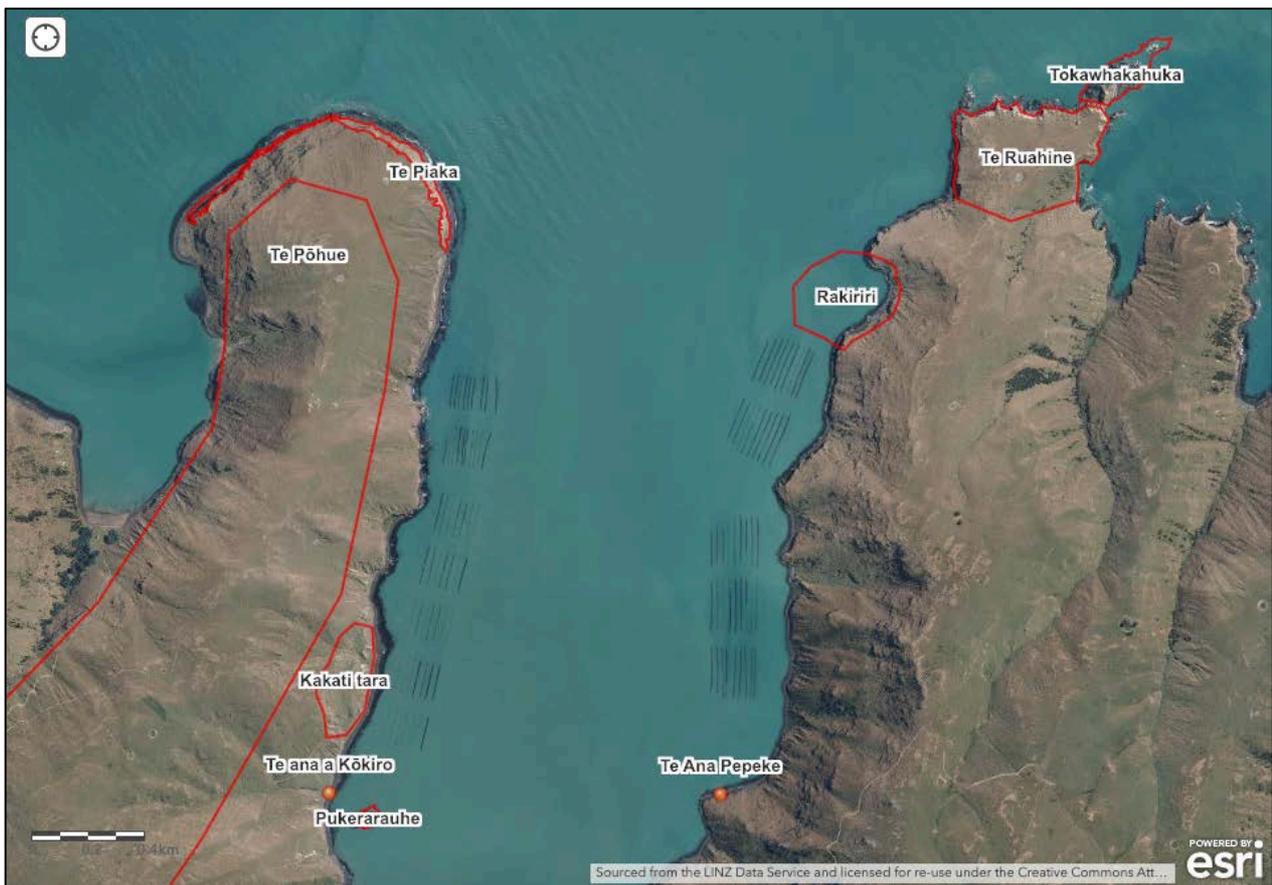


Figure 6: Shows the positions and names of the place names in the northern end of the harbour.

Place names in the middle of the harbour, see Figure 7 below.

Te Pā o Te Rakiwhakaputa: The place of Te Rakiwhakaputa's Pā. Also known as Rangihakaputa.

Tokatātere: The rock where sharks could be procured. Pioke (spiny dogfish) and Makotātere (mako shark). Also known as Flaehrt's point. Positioned to the right of Te Pā o Te Rakiwhakaputa.

Te Hinahina: The land of pale soil. The pale soil being clay.

Ōtoetoe: Place of the toetoe bushes.

Ōkaihope: The place where food can be procured at waist height.

Ōtūtoho: The place of initiation (Urupā). Cemetery.

Te Pari a Hineteata: Cliff beneath the Urupā.

Horomaka: Horomaka Island. Main island in Koukourarata harbour.

Te Umu hāpuku: The groper ovens. Flat area of land that was used to cook groper in ground ovens.

Whakapaumahara: Exhaust all memory. This area has been occupied since time immemorial.

Puaari: Clear view of birding trees. This is the main Pā area. It was positioned where you could clearly see the birding trees up in the forest behind the Pā.

Puketī: Hill of Tī kōuka (cabbage tree). It is the headland at the northern end of the Māori reserve.

Ōkoropeke: Place of Koropeke the ancestor. Also known as Chamberlain's bay or Putiki farm bay.

Kākānui: Plentiful kākā. A place where you could find plenty of kākā (a large orangey-brown forest-dwelling parrot).

Manukūia: Place where you hear the birds/kererū sing. Ku is the kererū⁵ call.

⁵ Kererū – native wood pigeon.

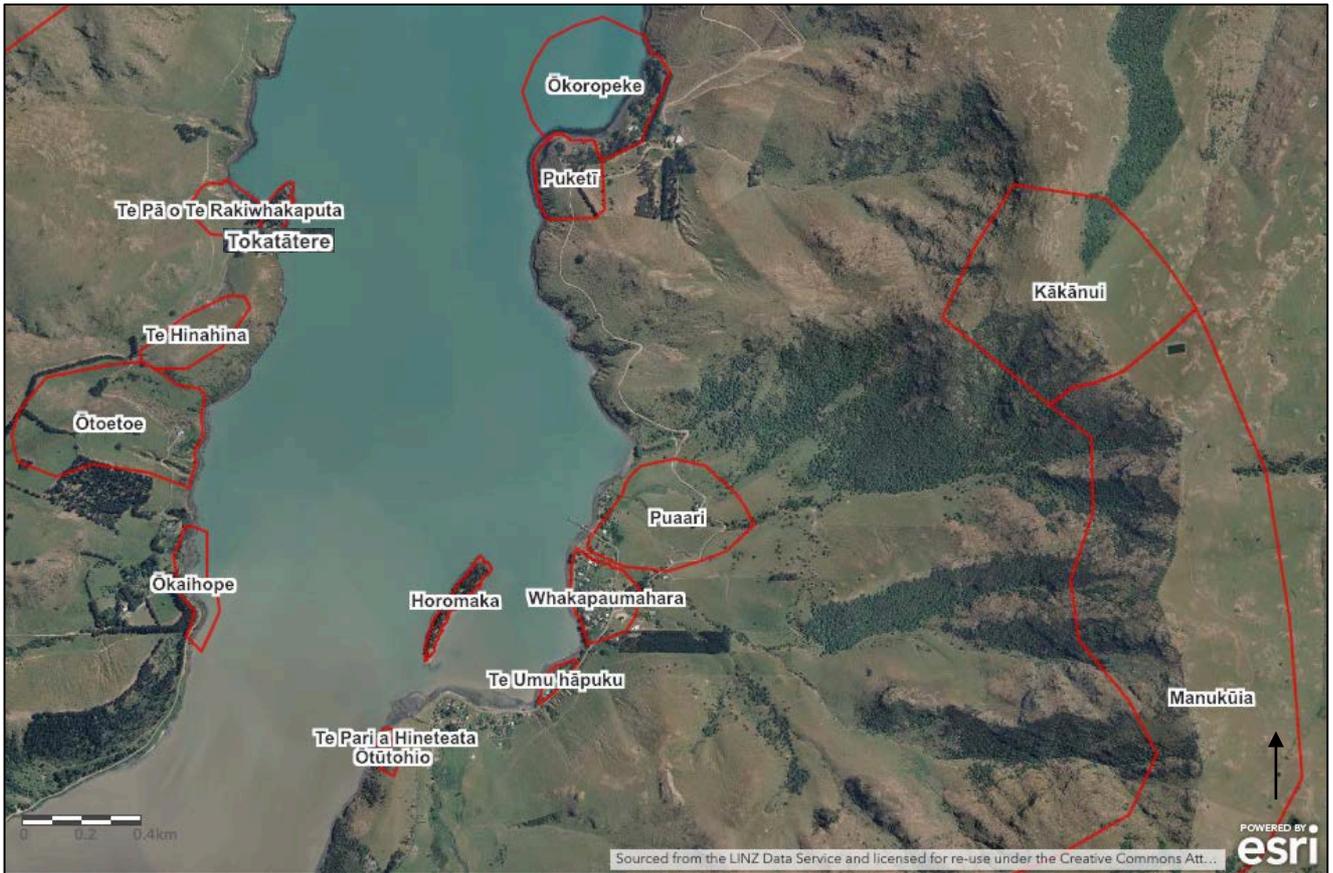


Figure 7: Shows the positions and names of the place names in the middle part of the harbour.



Figure 8: Shows the positions and names of the place names in the southern end of the harbour.

Place names in the south of the harbour, see Figure 8 above.

Te Kōpuru: The place where the digging spade was inserted. A good place to cultivate.

Te Rāpaki o Huikai: The headland at the head of Koukourarata harbour. Also known as Fernlea Point.

Te Whatamaraki: The storage site of maraki. Maraki is dried groper. Small mountain on the corner of the Māori reserve. It was used as a trading point with other hapū.

Stream names at the southern end of the harbour, see Figure 9 below.

Matakirikiri: The place of shingle. A shingle-bedded waterway, it is now very small and only runs in winter.

Ōtūheikawa: Place of Tūheikawa the ancestor. The stream is named after the ancestor Tūheikawa.

Te Kaawa: The forging of the river. Positioned by the first bridge coming from Purau.

Ōwhetoro: The place of a whitebait fishing technique.



Figure 9: Shows the streams at the southern end of the harbour.

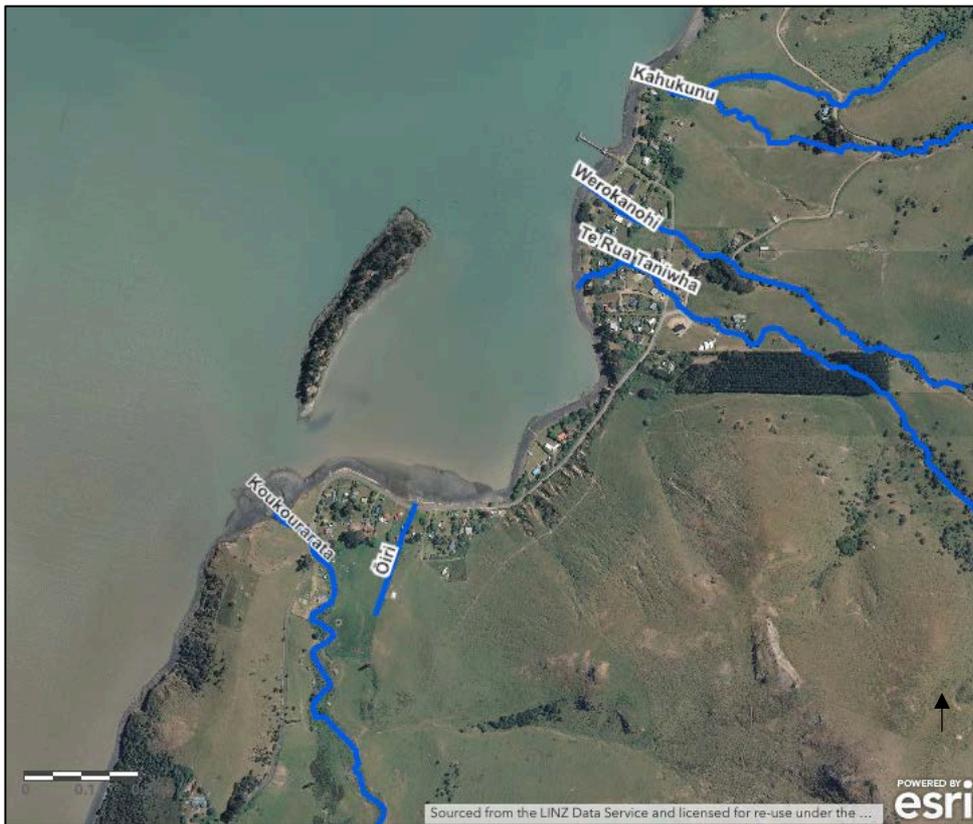


Figure 10: Shows streams on the eastern side of the harbour.

Stream names on the eastern side of the harbour, see Figure 10 above.

Koukourarata: Koukourarata stream. The last running stream that comes out by Horomaka Island.

Ōiri: The place of anointment. A spring fed stream (not tapu but rahui, not sacred but restricted).
Used for marriage consecration.

Te Rua Taniwha: The Taniwha's lair. This Taniwha in this case is an octopus.

Werokanohi: The place where faces were challenged. Gateway to Puaari Pā, the place where challenges were made by newcomers before entering the pā.

Kahukunu: Kahukunu the ancestor. A stream named after the ancestor Kahukunu.

Discussion

The research undertaken for this project has been illuminating, not only of an area of Aotearoa's history but a greater understanding of Koukourarata, both culturally and environmentally. The comparison of the two vegetation layers showed significant differences over time, with a shift from mostly forest to mostly pastoral grassland. The research undertaken to create the 1830s vegetation layer was informative. It was unforeseen to find the range of vegetation types, including pōhue

(Wilson, 2013) and the large areas of māra (gardens) in the southern end of the harbour.

Additionally, investigating the species of birds that originally inhabited Horomaka in plentiful numbers gave insight into the diversity and maturity of the forest and tree species that grew in the area (Wilson, 2009). However, it was not surprising how little native forest, especially old-growth forest, remains at present, as shown in the present-day vegetation layer. Rather, it shows the amount of flora and fauna that had been lost in the area over time.

Although creating the place names layer was time consuming (including multiple checks necessary for accuracy of positioning, area/size, placement, spelling and meanings), it was important to listen, learn, and discuss the information and Mātauraka regarding these places. Many of these names are connected with pre-colonial mahika kai sources and practises, while also identifying current and future mahika kai and environmental opportunities. GIS was a useful tool for this project because it allowed for the data to be collated and digitised into different data layers which give insight into historical vegetation of the area as well as the place names which previously only existed as a list of names and oral histories.

Improvement could be made of mapping this area if an updated present vegetation data layer could be created, as the available layer within the timeframe was from 2012. This layer appeared fairly accurate on inspection but could be improved by going into the field and taking GPS points around the study area, or acquiring the next updated version of the layer when it becomes available. The 1830s vegetation (Figure 4) was produced despite limitations of time, literature and resources available at the time. This map layer was based on Hugh Wilson's research (Wilson, 2013), and available Mātauraka Māori knowledge. Investigating additional information could lead to a more detailed 1830s vegetation map in future. Additionally, the place names layer could be improved by taking GPS points in the field which with the available time and resources were not possible. However, they were positioned using knowledge and guidance from a hapū member who knows the Koukourarata oral histories and in conjunction with archival information given by Hone Taare Tikao to James Cowan.

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