In the Environment Court of New Zealand
at Auckland

I mua i te Kōti Taiao o Aotearoa
I te rohe o Tāmaki Makaurau

ENV-2019-AKL-000117 / ENV-2019-AKL-000127

*under:* the Resource Management Act 1991

*in the matter of:* an appeal pursuant to clause 14(1) of the First Schedule to the Resource Management Act 1991

*between:* **Bay of Islands Maritime Park Incorporated**
*Appellant*

**Royal Forest and Bird Protection Society of New Zealand Incorporated**
*Appellant*

*and:* **Northland Regional Council**
*Respondent*

# Statement of Evidence of Simon West

Dated: ~~21 May~~22 June 2021

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**STATEMENT OF EVIDENCE OF SIMON WEST**

**INTRODUCTION**

1 My full name is Simon Andrew West.

2 I am an Associate with Babbage Consultants Limited, employed as a senior marine ecologist of Bioresearches (a Babbage company), specialising in benthic ecology of intertidal to continental shelf environments. I have a Bachelor of Science with Majors in both Biology and Earth Science from the University of Waikato, and a Master of Science with Honours in Zoology from the University of Auckland (1991). I have been employed by Bioresearches since April 1991. During that time, I have undertaken ecological assessments in a wide range of habitats throughout New Zealand (Whangarei to Tiwai near Bluff) in a variety of habitat types (continental shelf and coastal subtidal and intertidal areas to north island rivers lowland forests). For the past 29 years, my principal area of responsibility regarding field assessments has been the marine ecology aspects of various development proposals and ongoing monitoring of effects, including appearing as an expert witness for Council, Environmental Protection Authority and Environment Court Hearings, and Environmental Protection Authority and Environment Court mediation.

3 I am familiar with the matters to which these proceedings relate.

4 I have read the Environment Court's Code of Conduct for Expert Witnesses, and I agree to comply with it. My qualifications as an expert are set out above. I confirm that the issues addressed in this brief of evidence are within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

**SCOPE OF EVIDENCE**

5 My evidence addresses issues of marine ecology.

6 I have read the briefs of evidence of:

6.1 **Dr Stirnemann, Dr Shears**, **Dr Morrison** and **Dr Froude** for Bay of Islands Maritime Park Inc;

6.2 **Mr Kerr** for Te Uri o Hikihiki Hapu; and

6.3 **Dr Ross** for the Northland Regional Council.

7 I comment on matters raised in the above evidence to the extent that it is within my area of expertise. My area of expertise is benthic ecology and thus I have limited my comments largely to the

seabed and fish ecology. I have not included comments on the values of the area based on seabirds or marine mammals or natural features, other than to point out potential short comings evidence presented.

8 In preparing my evidence I have relied on additional documents and reports as referenced in footnotes. In addition I have referred to the documents and reports:

8.1 Freeman, D., Schnabel, K. E., Marshall, B., Gordon, D. P., Wing, S., Tracey, D. M., & Hitchmough, R. (2014). *Conservation status of New Zealand marine invertebrates, 2013*. Wellington, New Zealand: Department of Conservation.

8.2 Department of Conservation, NZCPS 2010 guidance note Policy 11: Indigenous biological diversity (biodiversity) May 2019

8.3 NRC SEA maps and assessments

(a) easternboiandcapebrettcoastsignificantecologicalmarineareaassessmentsheet.pdf (nrc.govt.nz)

(b) easternboibiogeinicsoftbottomcomplexsignificantecologicalmarineareaassessmentsheet.pdf (nrc.govt.nz)

(c) blackrocksandtepahiislandssignificantecologicalmarineareaassessmentsheet.pdf (nrc.govt.nz)

(d) pickmerechannnelshellfishsignificantecologicalmarineareaassessmentsheet.pdf (nrc.govt.nz)

(e) blandbaycoastsignificantecologicalmarineareaassessmentsheet.pdf (nrc.govt.nz)

(f) mimiwhangatasignificantecologicalmarineareaassessmentsheet.pdf (nrc.govt.nz)

9 My evidence will deal with the following:

9.1 The ecological values of the Cape Brett to Mimiwhangata areas encompassed by the relief that has been sought in these proceedings;

9.2 The effects of commercial fishing on those ecological values;

9.3 The proposed controls, looked at from an ecological perspective.

10 I do not comment on the impacts of non-commercial fishing in this evidence.

**ECOLOGICAL VALUES OF THE CAPE BRETT TO MIMIWHANGATA AREA**

11 Northland Regional Council have identified significant ecological marine areas (SEAs). This was done based on a methodology outlined in Kerr, V. (2016) Methodology report mapping of significant ecological areas in Northland[1] and largely relied on a desktop assessment of existing information. For the east coast of Northland this relied on the habitat maps produced for DOC[2]. These maps based on multibeam sonar data, showed the location of areas of reef and fine sediments differentiated by depths. Some biogenic habitats were identified. Almost no information is provided as to what biota was present in each habitat was provided in these wider DOC habitats. The NRC SEA assessment sheets use strong statements on values but these appear to be based broad scale review style reports, or subjective qualitative assessments.

12 All of Northland's exposed coastal reefs appear to have been scored as high ecological significance by default. With the exception of a few locations there does not appear to be any site specific scientific information to substantiate, ground truth the values. However SEA designation was limited to 100m depth. This was done to limit the mapping area and because not as much information is available for these deeper reef habitats.

13 As to the validity of the assessment it was stated that "Marine ecosystems are very complex and in many cases poorly studied. This process relied on a desktop literature review and input from a group of experts and specialist staff from Northland Regional Council. Information sources varied from published works to personal experience of the experts. As such, the results reflect best current knowledge of the habitats, the ecology and the judgement of the assembled experts. There is a significant element of subjective judgement involved in this process."

14 In reviewing the data available I note there have been very few scientific systematic studies of much of the area proposed for protection, and that that data that is available is in the form of a snapshot in time providing no idea of the stability of the area. The exception to this is Mimiwhangata Marine Park and selected areas or habitats in the Bay of Islands.

[1] Kerr, V. (2016) Methodology report mapping of significant ecological areas in Northland.

[2] Kerr, V. (2009) Marine habitat map of Northland: Mangawhai to Ahipara vers. 1. Northland Conservancy, Department of Conservation, Whangarei p. 33

15 Much of the values assessments appears to have involved extrapolation and assumptions based a few data points. The lack of ground-truthing of the desk-top assessments by focused field research and the imagery of sediment overlain reefs calls into doubt the certainty of the assessments.

16 In paragraphs 34 to 38 Dr Stirnemann uses the north eastern New Zealand important bird area (IBA)[3] to justify the importance of the Bay of Islands, Cape Brett, Mimiwhangata areas to seabirds. This IBA cover the coastal area from Three Kings Island in the north to East Cape and does not provide any specific information to the Bay of Islands to Mimiwhangata areas, and is therefore very miss leading to apply this wider area to the relatively small area of interest in this case. For example the IBA lists New Zealand fairy terns, yes they are extremely rare and threatened, but they are only found near Mangawhai Estuary and in the Kaipara Harbour they do not occur in the Bay of Islands or at Mimiwhangata.

17 There are threatened species of seabirds found in the areas proposed for protection however these species are pelagic in nature and range well beyond the areas under appeal and well beyond the extent of the IBA. Other species may regularly be seen feeding within the areas but range widely with in the IBA.

~~17~~18 The following subsections refer to the proposed marine protection areas as shown by hashed areas in Appendix 1~~Appendix 1~~. The solid colour areas in Appendix 1~~Appendix 1~~ indicate exiting marine protection areas.

**Bay of Islands, ~~Te Ha o Tangaroa~~ Te Hā o Tangaroa – Maunganui - Oke Bay Rahui Tapu (Area A)~~Area A (Maunganui Bay / Oke Bay)~~**

~~18~~19 NRC have classified the Eastern Bay of Islands area including the area covered by Area A as an significant ecological marina area, which I agree with. The area contains both natural shoreline reefs, artificial reefs and soft bottom habitats. Habitats range from mixed species shallow algal forests to deeper diverse filter-feeding encrusting communities. Adjacent to the reefs are wider areas of soft bottom habitats which provide habitat for infaunal biota and feeding areas for larger predators such as lobster. The coastal waters of Maunganui Bay to Oke Bay have been reported[4] to contain a very diverse range of some 93 fish species, including the highest percentage of subtropical species on the mainland. The area has some exposed shoreline while other areas are protected.

[3] Forest & Bird (2014). New Zealand Seabirds: Sites at Sea, Seaward Extensions, Pelagic Areas. The Royal Forest & Bird Protection Society of New Zealand.

[4] Brook, F. J. (2002). Biogeography of near-shore reef fishes in northern New Zealand. *Journal of the Royal Society of New Zealand*, *32*(2), 243-274.

~~19~~20 The seabed of Area A contains ecosystems and habitats not uncommon along the mainland coast of eastern of Northland, including some of the offshore islands. As such the individual ecosystems and habitats are represented elsewhere in the region.

~~20~~21 While other areas of the Northland coastal region contain similar features and ecological diversity the presence of all the features in one relatively small location is relatively unique in the region.

~~21~~22 The evidence of values is largely based on subjective descriptive studies, habitat mapping studies and older fish count studies. It appears that very little if any quantitative data is available on species composition and abundance in all habitat types. The exception is coverage of algae in particular kelp (*Ecklonia radiata*), which has been surveyed[5][6], however only in a subjectively quantitative way.

~~22~~23 The deeper reef areas are likely to contain black coral species which are absolutely protected under the Wildlife Act. Black corals are classified by DOC, as naturally rare and at risk, and are found on the nearby Cape Brett. Thus they do meet the criteria for protection under NZCPS policy 11a, and are required to be protected through avoidance of adverse effects.

~~23~~24 The presence of the subtropical species both fish and invertebrates are rare in New Zealand and restricted in there distribution. The majority of these subtropical species while they can survive they do not breed in New Zealand. DOC[7] suggests some populations are self sustaining but does not say specifically the species breed in New Zealand. Since these subtropical species are self introduced they are classified as "indigenous". However it can be argued that these species are not at risk of imminent permanent loss as their population is only maintained in New Zealand by natural migration from a tropical location. Therefore while they are rare I would not expect them to be protected under the NCPS policy 11.

~~24~~25 Ecological evidence presented by Dr Stirnemann, Dr Shears, Dr Morrison and Dr Froude for Bay of Islands Maritime Park Inc; Mr Kerr for Te Uri o Hikihiki Hapu; and Dr Ross for the Northland Regional Council all suggest that the marine ecosystems are under pressure in the Bay of Islands and that some protection is needed to prevent their loss. I would suggest that this is the general state for any marine area near a populated location in New Zealand. Whether

[5] Froude, V. A. (2016). Kelp cover and urchin barrens in the Bay of Islands: a 2016 baseline. A report prepared for Bay of Islands Maritime Park. 72p.

[6] Froude, V. A. (2021) Statement Of Supplementary Evidence Of Victoria Ann Froude (Marine Ecology) Topic 14 – Marine Protected Areas. 19 April 2021

[7] Kerr V. (2005) Near Shore Marine Classification System, Northland Conservancy, Department of Conservation.

the pressures on ecosystems are from land based discharges such as sediments, from marine based activities such as fishing, or from natural changes in relation to climate change such as sea temperature rises, the results are similar in that ecosystem population composition and abundance changes will occur. To prevent further changes, contributing factors will need to be defined, and meaningful controls imposed on all contributing factors.

~~25~~26 Part of the area, Maunganui Bay, has been protected under a rahui since late 2010, while the remainder of Area A has not been commercially fished by trawling, or seine netting since at least the 1980's nor dredged nor bottom longlined in recent times, as shown by commercial fishing location records presented in Mr Clark's evidence.

**Bay of Islands, ~~Te Ha o Tangaroa~~ Te Hā o Tangaroa – Ipipiri moana mara tipu rohe (Area B) ~~Area B~~**

~~26~~27 The ecological values of Area B stem from the presence of a number of differing biogenic habitats. The set of geographic factors, wave exposure protecting Islands, clear water, shallow water, coarser soft sediments, currents, proximity to deeper water habitats, remoteness from riverine inputs, all contribute to providing suitable habitat for the presence of:

~~26.1~~27.1 Subtidal sea grass beds

The presence of subtidal sea grass (*Zostera muelleri~~capricorni~~*) is unusual in New Zealand, with beds only know to occur in a handful of locations nationally. The beds provide ecologically important habitat for fish and shellfish species. The conservation status of this species is At Risk – declining[8].

~~26.2~~27.2 Rhodolith beds

Two beds of rhodoliths are found in the proposed Area B. The numbers of biota found within each bed were more than double that found in adjacent habitats. Both beds had a high diversity of macroalgae and invertebrates, but differed in composition from each other. The beds can provide ecologically important habitat for fish and shellfish species, however no such associations were found in these beds. Given rhodoliths are benthic algae, they are sensitive to changes in water quality and clarity and disturbance by bottom contact activity, such as dredging, trawling and anchoring.

[8] de Lange, P.J., Rolfe, J.R., Barkla, J.W., Courtney, S.P., Champion, P.D., Perrie, L.R., Beadel, S.M., Ford, K.A., Breitwieser, I., Schönberger, I., Hindmarsh-Walls, R., Heenan, P.B., Ladley, K. (2017). Conservation status of New Zealand indigenous vascular plants, 2017. New Zealand Threat Classification Series 22. 82 pp.

~~26.3~~27.3 Shellfish beds

Area B is known to have scallop and horse mussel beds. Horse mussel beds provide habitat for other biota and are important nursery habitat for juvenile fish.

28 The locations of habitats were presented in maps produced by the Department of Conservation in 2009[9]. The habitats for Maunganui - Oke Bay Rahui Tapu (Area A) and Ipipiri moana mara tipu rohe (Area B) are presented in Appendix 2~~Appendix 2~~.

~~27~~29 I agree in most part with Dr Morrison's paragraph 27.

~~28~~30 However a Ministry for the Environment review of key Biogenic habitats[10] stated "Rhodolith beds are poorly known in New Zealand with little known about distribution and size of the beds. They are expected to be more widespread than reflected in the currently known distribution data. They are known to occur in areas where increasing sedimentation exists, and where dredging and bottom fishing also occur, but it is unclear how vulnerable they are to these disturbances." Therefore the Rhodolith beds may not fall in the policy 11a(iii) category as the evidence they are threatened is unproven.

**Bay of Islands, ~~Te Ha o Tangaroa~~ Te Hā o Tangaroa – Rakaumangmanga moana mara tipu rohe (Area C) ~~Area C~~**

~~29~~31 With the revision of the area of relief sort on 8 June 2021 the diversity of habitats in Area C was reduced, as the area now only covers ~~covers~~ habitats in the outer Bay of Islands and on the open coast south of Cape Brett. The area still includes shallow rocky reefs covered by macroalgae, deep reefs dominated by filter feeding biota, soft sediment habitats with both coarse and fine sediments. The variety of habitats supports a range of ecosystems~~a diverse range of habitats containing a wide range of ecosystem~~ and associated species~~s~~.

~~29.1~~ Mapping in the ~~inner and~~ outer Bay of Islands has described SEA's based~~:~~

~~29.2~~31.1 on the location of rocky reef structures out to 100m depth, with an associated 1 km wide buffer zone of soft bottom habitat.

[9] Kerr, V. (2009) Marine habitat map of Northland: Mangawhai to Ahipara vers. 1. Northland Conservancy, Department of Conservation, Whangarei p. 33

[10] Anderson, T,J, Morrison, M, MacDiarmid, A, Clark, M, D'Archino, R, Nelson, W, Tracey, D, Gordon, D, Read, G, Kettles, H, Morrisey, D, Wood, A, Anderson, O, Smith, A,M, Page, M, Paul-Burke, K, Schnabel, K, Wadhwa, S. (2019) Review of New Zealand's Key Biogenic Habitats. Prepared for the Ministry for the Environment.

~~29.3 Rhodolith beds located between Motuarohia and Moturua Islands and between Kahuwhera and Tangitu points.~~

~~29.4 Subtidal sea grass beds in the shallow bays of islands in the Te Rawhiti Inlet.~~

~~29.5 Several estuarine inlets and shellfish beds.~~

32 Mapping of the seabed south of Cape Brett has described the presence of significant ecological area based on the location extensive reef systems extending from shore to deep water out to more than 13 km off shore, with an associated 1 km wide buffer zone of soft bottom habitat.

~~30~~33 Producing reliable maps of the physical seabed, and particularly the assemblages of fauna and flora associated with them is not a simple task, the seabed beyond diving depths being perhaps the least accessible on the planet. Thus the information available to describe the habitats and species present varies greatly with depth. Shallow water habitats less than about 40m depth are well described and in some small locations (Mimiwhangata Marine Park) have data collected over time allowing an understanding of changes over time. In deeper water (>40m) habitats the only information available is from rare often targeted remote sensing (photographic, grab, trawl, sled) scientific studies. These studies are often designed for specific investigations which may or may not align with providing wide scale detailed mapping of habitats. The Oceans 20/20 study used photographic transects with the aim of describing and mapping wider scale habitats in the Exclusive Economic Zone, thus the level of detail in the proposed marine protection areas is very low, and restricted to larger surface dwelling biota. It is not ideal information for assessing the diversity and abundance of biota within the deeper water habitats of the proposed marine protection areas C, but it is the only information I am aware of. Due to the paucity of sample numbers collected the data have been subjected to a lot of supposition and extrapolation to provide what is reported as a description of the habitats of the area.

~~31 The Rhodolith beds and area of Seagrass mentioned in 30.2 and 30.3are located within Area B and thus have been assessed previously in my evidence.~~

~~32~~34 Based on the information available there is a great diversity in the algal communities that dominate the shallow reef areas. This ranges from semi sheltered shores with mixed red algal and *Carpophyllum* sp. shallow mixed weed zones giving way to the dominant *Ecklonia radiata* forests, to the exposed shores where wave energy is high and the more exposed algal communities, represented in the shallows by *Carpophyllum maschalocarpum* and *Lessonia variegata*, with *Ecklonia radiata* forest below and extending down to 30m. The

individual algae habitats are not regionally rare. Below 30m the "deep reef" communities are dominated by a diverse filter-feeding encrusting invertebrate community. Sponges play a key role in these communities. These basal communities provide protection and food sources for a complex community of marine species and trophic food webs culminating in the top order predators.

~~33~~35 Parts of the ~~The~~ deep reef habitat ~~is~~ are likely to contain species such as black coral protected under the wildlife act and classed as natural rare and at risk, thus they require protection under NZCPS police 11a(i).

~~34~~36 A recent review of reef fish in north eastern New Zealand[11], showed the reef fish diversity of Cape Brett tops the list of Northland coastal sites, with 93 species recorded. The area around Urupukapuka Island had 63 species; still a very diverse community. Both areas showed high numbers of subtropical species and are very diverse compared to other regions of New Zealand.

~~35~~37 The soft sediment habitats including and beyond the reef edge 1 km buffer of the SEA zone, appear to be of apparently "featureless" mud, sand and or shell hash[12], where the biodiversity tends to be located mainly within the substrate (infauna). However the published deeper habitat data is based on video surveys which do not assess infauna. These areas are not known to contain taxa or ecosystems that are rare or threatened, but some of the area may be used as migration pathways for lobster.

~~36. Several of the estuarine SEA's Kerikeri Inlet shellfish bed, Te Haumi Estuary and Waitangi Estuary are included within Area C. All three areas contain infaunal shellfish beds, the two estuary areas also contain areas mangroves and salt marshes. Neither area contains taxa or ecosystems to a high enough ecological value to be protected under the NZCPS policy 11.~~

**Mimiwhangata, Te Mana o Tangaroa – Mimiwhangata Rāhui Tapu ~~area~~ (Area A) and buffer areas**

~~37~~38 The Area A and buffer areas is considerably larger that the current Mimiwhangata Marine Park as shown in Appendix 1~~Appendix 1~~. The area mapped and described by Kerr and Grace in 2005[13] largely covers the extent of the proposed Area A and buffers with a minor exception in the south.

[11] Brook, F. J. (2002). Biogeography of near-shore reef fishes in northern New Zealand. *Journal of the Royal Society of New Zealand*, *32*(2), 243-274.

[12] Hewitt J, Chiaroni L, Hailes S. (2010). Bay of Islands OS20/20 survey report. Chapter 11: Soft-sediment habitats and communities.

[13] Kerr, V., Grace, R. (2005) Intertidal and subtidal habitats of Mimiwhangata Marine Park and adjacent shelf. DOC Research & Development Series 201. Department of Conservation, Wellington. 55 p.

~~38~~39 Through a combination of sampling techniques the area was mapped to show Area A and buffers includes a variety of habitat types, including sandy and gravel beaches, rocky shores, shallow mixed weed, kina barrens, tangle weed forest, kelp forest, shallow and deep patch reef, soft sediment (sand, gravel and cobbles) and deep reef.

~~39~~40 The shallower habitats (<33m) have no rare or threaten taxa or ecosystems, to trigger the implementation of NZCPS policy 11 a or b, with the exception of the seagrass habitat eastern end of Mimiwhangata Bay, which would trigger the policy 11a(iii), 11a(v), 11b(ii) and 11b(iii). Based on comments from Mr Kerr and examination of historical aerial ~~riel~~ photographs this bed has only established in the last 15 years and has expanded particularly in the last few years. The presence of this bed may be reflective of the lack of significant storm events particularly in the last few year.

~~40~~41 The deeper reef areas (> 33m) showed an area of high relief (>3m vertical height) reef surrounded by a much larger area of low relief and patch reefs. The most developed gorgonian fields, sponges and corals were observed on higher reef areas removed from the scouring influence of moving gravel. In these deeper reef areas a variety of sponges were reported as present, along with black corals (*Apanipathes* sp), firebrick starfish (*Asterodiscus truncatus*), saffron yellow starfish (*Knightaster bakeri*), yellow and black starfish (*Ophidaster kermadecensis*) beaded gorgonians (*Primnoides* sp), circular saw shells (*Astracea heliotropum*) and branching ivory corals (*Oculina virgosa*) (a true stony coral).

~~41~~42 Mr Kerr has reported a total of 71 species of fish have been recorded in monitoring studies from the Mimiwhangata Marine Park area to date. This includes the Spotted black grouper which is found in the deep reef habitats.

~~42~~43 The abundance and diversity of invertebrates on the deep reefs at Mimiwhangata was very high, particularly in the zone around 45m depth, with abundance tapering off at 65m depth.

~~43~~44 The presence of black and ivory corals are both described by DOC as naturally uncommon and at risk, thus will trigger the implementation of the NZCPS policy 11a(i). The spotted black grouper is listed in the IUCN Red list as "Near Threatened" and thus does not trigger the Policy 11a(ii).

~~44~~45 The spotted black grouper, black coral, stony coral, and gorgonian coral are all absolutely protected under the Wildlife Act.

**Mimiwhangata, Te Mana o Tangaroa – Te Au o Morunga Protection Area (Area CB)**

4546 Area CB covers a very large area with very little direct information known of what taxa and habitats occupy the sea bed. The Northland Region Council (NRC) have conducted high level mapping and defined the location of rocky reef structures, with an associated 1 km wide buffer zone of soft bottom habitat declaring these as SEA. However this only appears to extend as far as the 100m contour line. The Department of Conservation issued broad scale habitat maps out to 12 nautical miles, in 2009 these showed the presence of reef structures out to about 150m depth south of Cape Brett and offshore from Mimiwhangata (refer Appendix 3Appendix 3). They were based on the NIWA Ocean 20/20 multibeam sonar data and as such only show the presence of harder seabed structure, with no detail on the topography or species composition. The Ocean 20/20 study also included deep towed imaging system (DTIS) photographs from 6 transects. While the detailed analysed data from these transects are not publicly available the images have been shared. All 6 transects show a mixture of mostly soft bottom interspersed with low relief patch reefs. Thus the area marked a deep reef is not all reef, but is made up of sparse patch reefs overlain with fine sediments and separated by wide areas of soft sediment.

4647 Little is known of the taxonomic composition and abundance, habitats and habitat conditions in the area. In the south the Mimiwhangata studies have mapped some of the deep reef areas and determined taxonomic composition, as discussed in paragraphs 414041 - 454445. The 6 transects of DTIS resulted in a total of 1493 images, 83% of these (1236 images) showed fine muddy sand sediments similar to that shown in Figure 1Figure 1 A. Only 17% (257 images) showed small areas of reef some with fine sediment coverings with a mixture taxa including sponges, bryozoans, corals, starfish, and the occasional gastropod, examples of typical reef area are shown in Figure 1Figure 1 B-E. The proportions of sand/mud to rocky reef for each transect are shown in Appendix 1 of Dr Stirnemann's evidence. Note transect 61 was not included in this discussion as it was located approximately 1 kilometre north west of the Te Au o Morunga area and 3.5 kilometres from Cape Brett.

48 The deep reef images did not show the same density of biota as seen in the shallower reef habitats (Figure 1Figure 1Figure 1 F) north of Cape Brett.

49 The short report in Appendix 1 of Dr Stirnemann's evidence, states these 6 transects represent the most detailed study of the deep reef areas in the outer Bay of Islands Mimiwhangata coast. While it is the most detailed study, 6 transects to describe 346 km² is hardly comprehensive, and none of the transects targeted soft bottom habitats. Thus the habitat assessment contains lots of extrapolation

based on very few data points meaning the reliability and confidence of the habitat assessments is poor and in my opinion is not suitable to make management decisions.

~~47~~50 The list of species presented includes several species including black coral and pink black coral, protected by the Wildlife Act, and classed as natural rare and at risk, thus they meet the criteria in NZCPS policy 11a(i).

~~48~~51 The evidence from the proponents with the exception of Drs Ross and Stirnemann, do not specifically assess the values of this deep reef area. The lack of robust detailed information prevents the application of Policy 11 fully over the area, however approximately 83% of the images captured by the transect survey showed the area defined as reef by DOC was in fact soft sediment.

~~49.~~

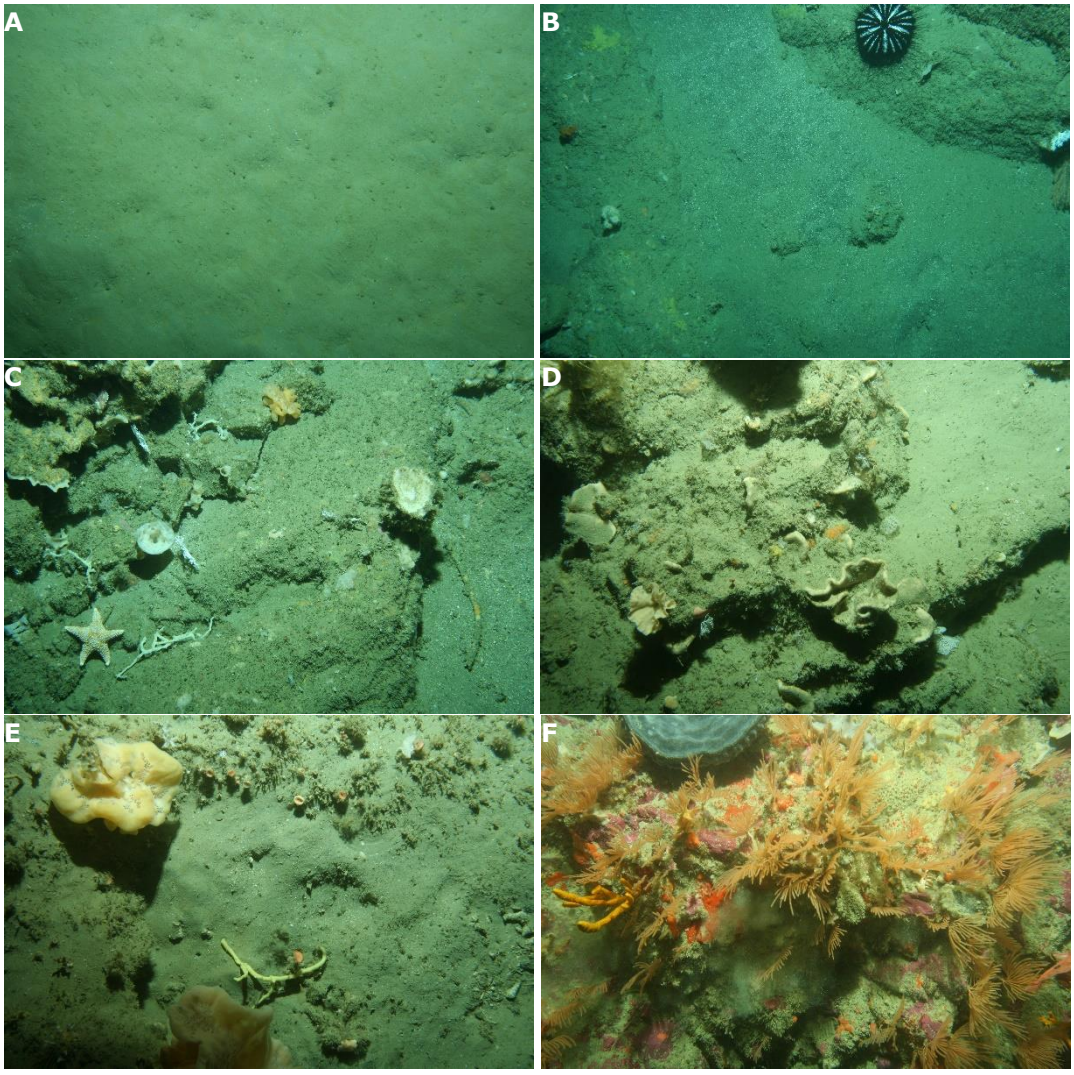


*Figure 1 DTIS images from Oceans 20/20 transects in the deep reef (100 - 200m) areas south of Cape Brett. A=Station 29/007 typical soft*

*sediment bottom 107m, B=Station 32/18 urchin 147m, C=Station 32/14 starfish and sponges 147m, D=Station 19/16 sponges 121m, E=Station 41/08 glass sponges and cup coral 116m, F=Station 244/68. (All from Project Map » NIWA Ocean Survey 20/20) These images were selected to show the variety biota in the deep reef habitat*

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**Natural character**

~~53~~52 While Natural character is largely a subjective landscape planning assessment, it includes some ecological component. Dr Froude in paragraph 35 states in part the assessment compares ecological and physical process with a reference condition supposedly pre human influence. Given ecological science has very little current information on many parts of the proposed protection areas it is unlike comparing this with even less information from past as far back as 1840 as suggested in paragraph 48 is unrealistic.

**IMPACTS OF FISHING ON IDENTIFIED ECOLOGICAL VALUES**

~~54~~53 Fishing is one of a number of factors effecting the marine ecosystems biodiversity, composition and abundance. The combined effects of commercial, recreational and cultural fishing reduces the numbers of targeted fish species through extraction from the population. It has been shown the fishing reduces the sizes and numbers of individuals in a population. It is argued that this can lead to trophic cascade effects impacting on ecosystem biodiversity. Additionally the method of fishing can physically directly affect the marine biodiversity through damage to seabed and bycatch.

**Trophic cascade effects**

~~55~~54 Kelp is seen as good and "more natural" while abundant kina are bad. For example; Dr Booth refers to a "plague" of sea urchins; Dr

Shears states that *kina barrens have reverted to a more natural kelp dominated state*. It is my opinion that neither habitat should be considered good or bad, but both are potential stable[14] either ends of a continuum. Where the abundance of kelp is at an equilibrium with factors such as water clarity, nutrient availability, grazing pressure, wave activity, water temperature. These factors may vary over time as the result of global changes such as climate change, or through regional changes such as land use, and or changes in predators effecting grazer pressure. Catastrophic events such as disease, extreme storms can also interrupt this equilibrium, usually reducing the abundance of kelp. Ocean acidification as a result of atmospheric changes in $CO_2$ will eventually reach a tipping point and impact on calcareous life forms of which many of the grazers are (urchins and gastropods).

~~56~~55 Replacement of a kelp bed with kina barrens is a dramatic event, so is often viewed as a collapse, a catastrophe or a crisis: this leads to a polarised theory of the cause (e.g.~~,~~ the simplistic cascade hypothesis) that ignores complicating factors.

~~57~~56 All the submissions take the snapper/lobster cascade hypothesis, as dogma; the submitters appear to assume that sea urchin barrens are evidence that lobsters or / and snapper were overfished. Because they believe in this simplistic hypothesis instead of considering other factors relevant to kina barrens, they impose strong value judgements. However;

~~57.1~~56.1 nearly all the New Zealand evidence for the cascade comes from north eastern New Zealand; elsewhere barrens are not very common

~~57.2~~56.2 the evidence from the Leigh marine reserve is not as convincing as is suggested:

(a) it took 13 years from the creation of the reserve to the decline of barrens[15], despite rapid lobster increases

(b) diseases affected the abundances of both kina and kelp[16]

[14] Filbee-Dexter, K., & Scheibling, R. E. (2014). Sea urchin barrens as alternative stable states of collapsed kelp ecosystems. *Marine ecology progress series*, *495*, 1-25.

[15] Babcock, R.C. 2013. Leigh Marine Laboratory contributions to marine conservation. New Zealand Journal of Marine and Freshwater Research 47(3): 360-373.

[16] Shears, N.T. & P.M. Ross. 2009. Blooms of benthic dinoflagellates of the genus Ostreopsis; an increasing and ecologically important phenomenon on temperate reefs in New Zealand and worldwide. Harmful Algae 8(6): 916–925

(c) there is no presentation of the correlations between lobsters, kina and kelp over the several decades of the reserve

~~57.3~~56.3 there is some evidence from other marine reserves

(a) but a study of 15 fished and 17 protected sites published in 2008 found equivocal results[17]

(b) and other studies do not produce results predicted from the hypothesis[18]

~~57.4~~56.4 proponents of the hypothesis argue that it is "context-dependent", but the alternative null hypothesis, that barrens are unrelated to predator abundance, is equally credible.

~~58~~57 Review of the overseas literature suggests that barrens are more complicated than a simple hypothesis suggests after appropriate study, and that barrens may develop and then disappear again.

58 There is no direct evidence that kina barrens formed as a result of predator depletion, and the cascade hypothesis it just an attempt to explain ~~them~~the presence of kina barrens. Potentially the best evidence available comes from marine reserves, where (sometimes) predators increased and then kina barrens decreased. But this evidence is not compelling and is contradicted by other evidence. The cascade hypothesis that underlies the arguments in the evidence is likely to be too simplistic. Barrens are probably more complex than the hypothesis describes and may be unrelated to predator abundance.

~~59~~ Dr Froude's studies in 2016 and 2021 of percentage cover of macroalgae, kina barrens and other cover types, did not appear to assess the potential for observer variation and bias in percentage cover assessment between cover types. These studies did not directly count the abundance of kina but rather estimated the abundance from subjective percentage cover estimates. In her supplementary evidence Froude suggested that the numbers of fish

Shears, N.T. & P.M. Ross. 2010. Toxic cascades: multiple anthropogenic stressors have complex and unanticipated interactive effects on temperate reefs. Ecology Letters 13(9): 1149–1159.

Cole, R.G. & Babcock, R.C. 1996. Mass mortality of a dominant kelp (Laminariales) at Goat Island, north-eastern New Zealand. Marine and Freshwater Research 47: 907–911.

[17] Salomon, A.K., N.T. Shears, T.J. Langlois & R.C. Babcock. 2008. Cascading effects of fishing can alter carbon flow through a temperate coastal ecosystem. Ecological Applications 18: 1874–1887.

[18] Shears, N.T., R.C. Babcock & A.K. Salomon. 2008. Context-dependent effects of fishing: variation in trophic cascades across environmental gradients. Ecological Applications, 18(8): 1860–1873.

had increased between 2016 and 2021 in the Maunganui Bay Rahui area while numbers of kina had decreased, however neither fish numbers nor kina numbers were directly measured in 2016 and 2021.

~~60~~59 Because they ascribe to the simplistic cascade hypothesis, the appellants suggest that predator abundance should be increased. In no brief of evidence is there any discussion of actual trends in lobster or snapper abundance; all briefs have assumed that both species are overfished.

~~61~~60 There are other contributing factors such as disease, climate change, interannual variations in recruitment and mortality, which modify this ecosystem relationship, either by increasing the creation of "kina barrens" or preventing their creation[19]. Studies in other areas have suggested that increases in sea surface temperature can benefit the expansion of sea-urchin/kina barrens, and decline of macroalgae beds[20]. Thus I suggest that fishing is not solely responsible for the creation of "kina barrens" but may be a factor that can be modified by other factors.

**Consideration of different fishing methods**

~~62~~61 In addition to having an influence on the fish size and abundance the method of the act of fishing can potentially have habitat destructive effects, or result in bycatch of non targeted species, some times including protected species.

*Bottom trawling and Danish seining*

~~63~~62 With current fishing restrictions no trawling or ~~danish~~Danish seining is allowed within the Bay of Islands as shown in Figure 2~~Figure 2~~~~Figure 2~~ and in the Mimiwhangata Marine Park within the Mimiwhangata Rāhui Tapu area (Area A), thus only the deeper areas of ~~Te Ha o Tangaroa~~ Te Hā o Tangaroa - Area C and Te Mana o Tangaroa – Te Au o Morunga (Area ~~B~~C) and Te Mana o Tangaroa – Mimiwhangata Rāhui Tapu area (Area A) and buffer areas are able to be trawled.

[19] Schiel DR (2013) The other 93%: trophic cascades, stressors and managing coastlines in non-marine protected areas, New Zealand Journal of Marine and Freshwater Research, 47:3, 374-391,

[20] Hernández, J. C., Clemente, S., Girard, D., Pérez-Ruzafa, Á., & Brito, A. (2010). Effect of temperature on settlement and postsettlement survival in a barrens-forming sea urchin. *Marine Ecology Progress Series*, *413*, 69-80.

Ling, S. D., Scheibling, R. E., Rassweiler, A., Johnson, C. R., Shears, N., Connell, S. D., ... & Johnson, L. E. (2015). Global regime shift dynamics of catastrophic sea urchin overgrazing. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *370*(1659), 20130269.

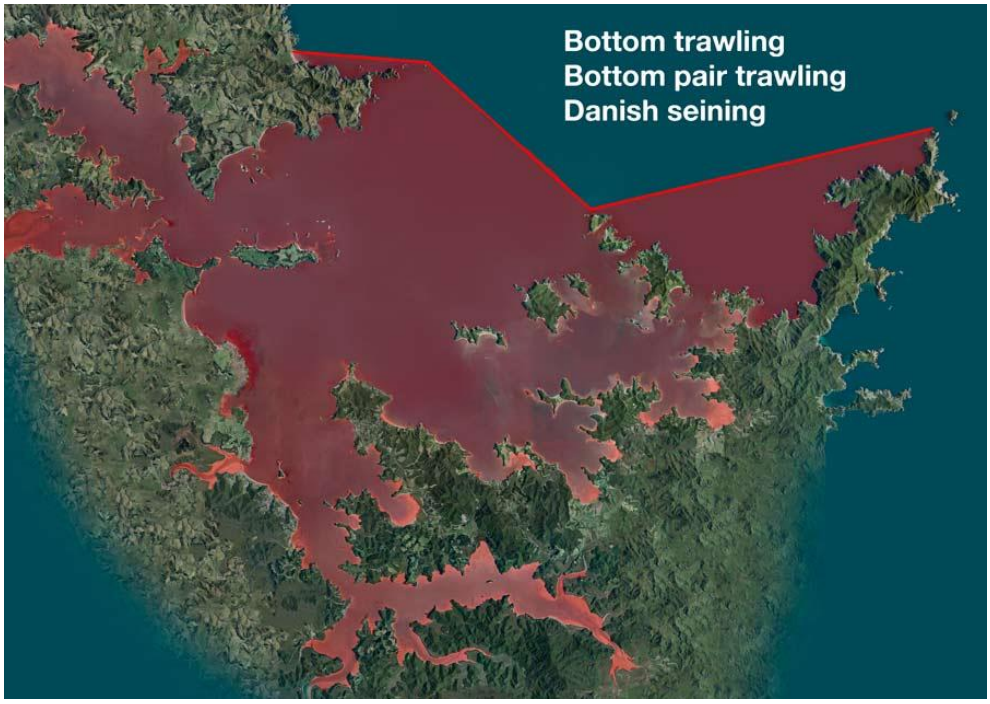



*Figure 2 Area prohibited for Commercial Bottom trawling and Danish seining fishing since 2004.*

~~64~~63 The process of bottom trawling is described in Mr Clark's evidence, there is significant contact with the seabed, effects include scraping and ploughing of the substrate, sediment resuspension, destruction of benthos. Indirect effects include post-fishing mortality and long-term trawl-induced changes to the benthos. Some seabed habitats are more susceptible to damage than others, reef biota tends to be more exposed as it grows above the substrate, damage to reef areas is generally seen as longer lasting as biota present these habitats tend to be slower growing. While biota on soft bottom habitats generally live within the sediments, thus unless the bottom contact is extreme have the potential to survive. Bottom trawling has the potential to change the structure of benthic communities, with trawled areas being dominated by small-bodied, opportunistic species at the expense of species that are large, long-lived and potentially fragile.

~~65~~64 Mr Clark describes ~~danish~~Danish seining is similar to trawling but does not involve the use of doors to keep the net open and the net will be set to target a particular school of fish. Since the vessel does not drag the net as with bottom trawling, the bottom impact is lighter than for bottom trawling.

~~66~~65 Mr Clark describes variability in the design of trawl nets for different target species, this may lead to variability in the effects of disturbance from the fishing gear from relatively minor and short-lived in some habitats and in others, severe and long-lasting, especially in habitats formed by living organisms. Recovery rates

after trawling depend on recruitment of new individuals, growth of surviving biota, and active immigration from adjacent habitat.

~~67~~66 Mr Clark states bottom trawling and ~~danish~~Danish seining predominantly takes place on sand or mud bottoms where the risk of the gear becoming hooked on a reef or rocks is minimised. The map presented in Appendix 4~~Appendix 4~~~~Figure 3~~ shows the current fishing efforts by bottom trawling are largely outside those areas know to contain reef structures. The values described of the soft bottom habitats described above are not ecologically significant and thus the fishery has taken control and does not fish the areas most ecologically sensitive and the proposed protection areas will not provide any greater protection from bottom trawling than is current happening.

67 Dr Grange in Appendix 1 of Dr Stirnemann's evidence suggests there is evidence of disturbance by trawling. In my opinion the evidence is not conclusive. The locations of trawling activity presented in Mr Clarks evidence shows that no trawling occurred in the locations covered by the 7 DTIS transects discussed by Dr Grange.

68 The combined bycatch capture data, obtained from Dragonfly data science[21] (Appendix 6~~Appendix 6~~) from 2003 to 2018 shows very few capture events occurred in the Bay of Islands to Mimiwhangata area. Trawling for snapper was responsible for one recorded capture event of a common diving petrel between 2002 and 2018 within the proposed Te Mana o Tangaroa marine protection Area C. All the recorded captured birds were released alive.

[21] https://psc.dragonfly.co.nz/

*Purse seining*

69 Mr Clark describes purse seining running a curtain of net around the school, draw up the bottom rope to create a purse which contains the school and progressively reduce the size of the purse, compressing the fish into a smaller area beside the vessel. The method is used to target schools of fish swimming at or near the surface.

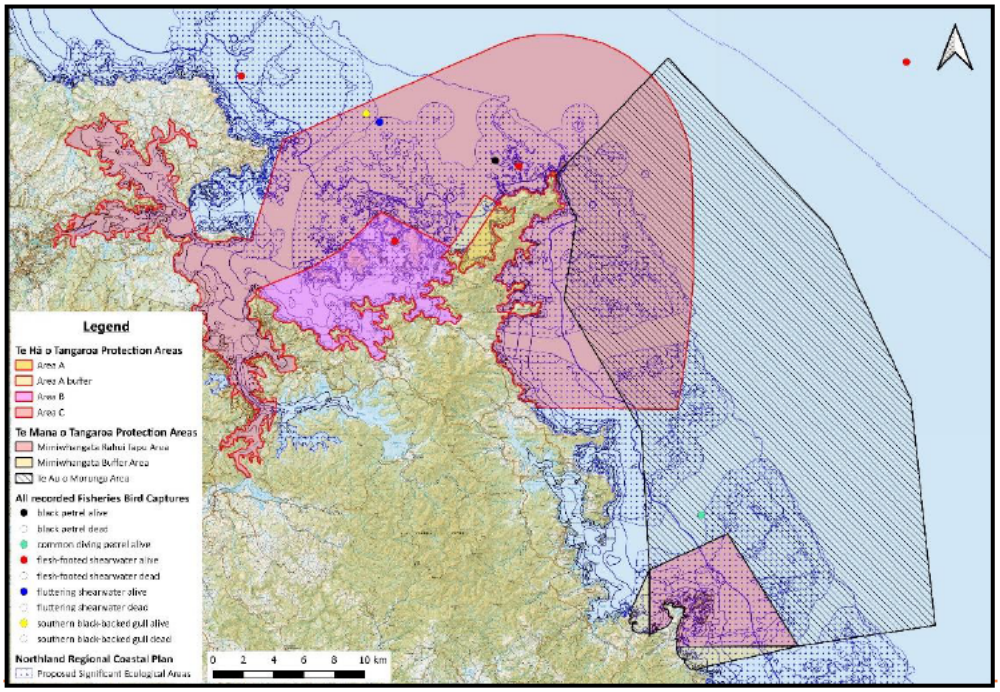
70 Unlike bottom trawling and Dd~~d~~anish seining purse seining has no contact with the seabed so does not directly cause damage to the seabed ecosystem. Mr Cark has stated captures of seabirds, marine mammals or chondrichthyans (sharks and rays) do occur with this method however they are minimal and can readily be released alive by leaving them in the net until the required species are removed. Based on the data provided by Mr Clark purse seining occurs east of Cape Brett mostly in 50 to 100m depth but with some further offshore in deeper water, as shown in Appendix 5~~Appendix 5~~~~Figure 4~~.

~~[22] I have used shapefiles and coordinates provided by the appellants and Te Uri o Hikihiki at an earlier stage of these proceedings. I have noticed that there is a discrepancy between this map and the maps in evidence of other parties (other maps appear to show the Te Au o Morunga area abutting the shoreline). I am happy to reproduce the maps if the data that I have used is out of date or contains inaccuracies.~~

71 As stated above ~~by Mr Clark~~ seabird captures has been ~~are~~ minimal in the Bay of Islands to Mimiwhangata area in the period 2003 to 2018.~~.~~ Purse seining for Blue mackerel was responsible for one recorded capture event of what was described as "giant petrels" by an observer, between 2002 and 2018 within the proposed marine protection Areas C, (Appendix 6~~Appendix 6~~). ~~Purse seining along with longlining were responsible for only six recorded capture events between 2002 and 2018 within the proposed marine protection areas (Figure 5), all birds were released alive.~~ All the recorded captured birds were released alive.

72 Within close (20 kilometres, and within the CMA) proximity to the proposed marine protection areas three addition bird species/groups (Fluttering shearwater, shearwaters, southern black backed gull) were recorded as being capture and released alive. The captures occurred during both bottom longline and trawl fishing. Purse sein fishing beyond 10 kilometres further offshore from the proposed marine protection areas (and still within the CMA), resulted in five capture events of spine-tailed devil rays, which were released alive.

~~71~~73 The closest capture events to the proposed marine protection areas resulting in death were for a flesh-footed shearwater 15 kilometres to the south and a black petrel 25 kilometres to the north east.




~~*Figure 5 Fisheries related bird capture events 2002 – 2018, showing NRC SEA outline and proposed marine protection areas.*~~

*Drift netting*

~~72~~74 Drift netting is entirely prohibited (it is banned throughout the country, under the Driftnet Prohibition Act 1991 and Fisheries (Commercial Fishing) Regulations 2001, reg 58D).

*Longlining*

~~73~~75 The bottom longlining method varies according to the fish being targeted and the nature of the seafloor. The map presented in Appendix 7~~Appendix 7~~ provides an indication of the recorded locations of bottom longline fishing in recent years. Where the seafloor is a reef or hard structure, floats will be attached to the mainline to suspend it above the seafloor and reduce the risk of the line becoming entangled in the reef. Generally, the line consists of anchors at both end of the spine or mainline. Floats are attached to indicate the location of the line.

~~74~~76 While the mainline is only anchored to the seabed at either end there is a potential for the mainline to come in contact with any prone biota potentially damaging them, as described floats are added to avoid this and the line is lifted vertically on retrieval limiting any drag across the seabed. Thus the method of longlining used avoids damage to the seabed.

~~75~~77 The main potential for longlining to have adverse effects is via accidental capture of seabirds, marine mammals and non target species. Mr Clark has stated that all bottom longlining in New Zealand needs to follow seabird mitigation rules. In summary, the rules require;

(a) Use of a streamer line,

(b) Setting lines at night or weight lines,

(c) Controls on when waste can be discharged.

~~76~~78 The combined ~~seabird~~ bycatch capture data, ~~provided by Mr Clark~~obtained from Dragonfly data science[23] ~~()~~ from 2003 to 2018 shows very few capture events occurred in the Bay of Islands to Mimiwhangata area. Bottom longlining for snapper was responsible for three recorded capture events (one black petrel and two flesh-footed shearwaters) between 2002 and 2018 within the proposed Te Hā o Tangaroa marine protection areas B and C (Appendix 6~~Appendix 6~~). All the recorded captured birds were released alive.

~~77~~79 Recent bottom longlining has mostly occurred in the outer main channel into the Bay of Islands, north and east of Motuarohia Island to north of Waewaetorea Island as shown in Appendix 7~~Appendix 7~~~~Mr Clarks map associated with his paragraph 99~~. The seabed type is a mixture of soft bottom and reef in between 30 and 70m depth.

*Scallop dredging*

~~78~~80 Commercial scallop dredging has been prohibited in the inner Bay of Islands as shown in Figure 3~~Figure 3~~~~Figure 6~~, since 2004.

[23] https://psc.dragonfly.co.nz/

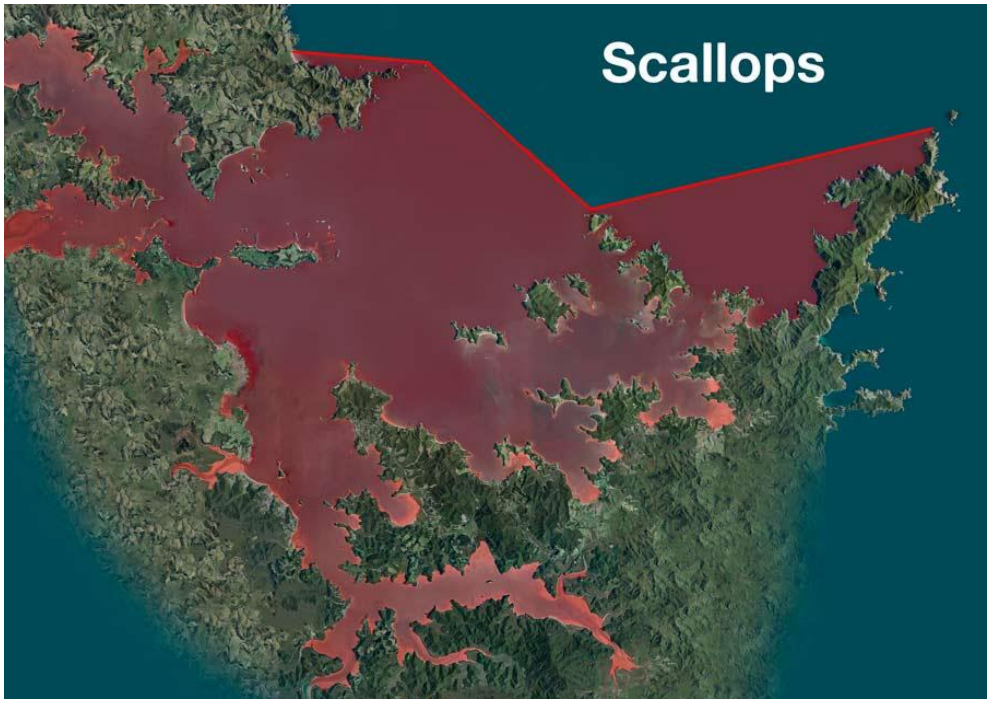



*Figure ~~33~~36 Area prohibited for Commercial scallop fishing since 2004.*

~~79~~81 The use of mobile bottom contact box dredges to harvest scallops has impacts on benthic populations, communities, and their habitats. The effects are not uniform, but depend on at least the specific features of the seafloor, the natural disturbance regime, the species present, the type of gear and the frequency it is used. The effects of scallop dredging on the benthos are well-studied, with studies showing that with increasing fishing intensity there are decreases in the density and diversity of benthic communities and, especially, the density of emergent epifauna that provide structured habitat for other fauna. Dredging has the potential for lethal effects through crushing, impaling or burial of biota on or in the seabed. In addition frequent dredging activity can cause sublethal disturbance to those species that survive the passage of a dredge, the repeated disturbance also has the potential to modify the habitat, and or prevent recruitment of biota, including scallops.

*Lobster potting*

~~80~~82 Mr Clark has described the process of lobster potting. Pots are 'set' in various locations over rocky reef seabed to various depths depending upon the time of the season. Pots are hauled vertically from the seabed to the vessel. Pot sizes range from 1 to 1.5m². Thus very small areas of seabed are directly affected. Damage to biota living on the seabed can be done through dislodging and breakage but the area involved is very small, and less than that produced by the placement and retrieval of a boat anchor. As with anchoring repeated pot setting in the same location could widen the area affected.

~~81~~83 As a method of fishing lobster potting results in very little collateral damage, either in bycatch or damage to the seabed. Thus from a direct ecological effects assessment the requirement for resource consent to operate is unwarranted.

**OTHER CAUSES**

~~82~~84 The other outstanding threat to biodiversity has been sedimentation, which typically enters the marine environment through rivers and streams and thus is most noticeably on the margins of the estuaries, but sediment will migrate and accrete in various parts of the deeper Bay. Biota within the Bay of Island are generally suited to clear water with very little sediment either suspended or settling. I agree with the statement that "sedimentation is probably a far-greater overall threat to the biodiversity of the Bay of Islands than are the physical impacts of fishing", made by J Booth for BOIMP in March 2020.

~~83~~85 Sedimentation in the Bay of Islands has been assessed by NIWA for NRC[24], in summary, the Bay of Islands system is accumulating fine terrigenous sediments more rapidly than when it was in a natural forested state. The Bay traps most of the estimated 430,000 tonnes of sediment discharged per year from the Bay of Islands largest sub-catchments. The change from sandy to muddy sediments, has an adverse ecological effect on benthic habitat. Muds are accumulating most rapidly in sheltered bays and inlets and close to the major catchment outlets of Te Rawhiti; Veronica; Waikare and Kawakawa Inlets. The effects of sedimentation are most likely to occur in the Te Hā o Tangaroa Area B, the other proposed marine protection areas are more removed from the sources, and thus less affected but sediment will settle and migrate to deeper depths over time.

~~84~~86 Climate change has the potential to alter the normal natural environmental conditions either through changes in physical conditions such as water temperature and water chemistry or though changes in currents increases in depth, or through changes in the frequency and intensity of disturbance by storm events. The degree to which any of these will occur is not fully known nor accurately predictable. However;

[24] Swales, A., Gibbs, M., Hewitt, J., Hailes, S., Griffiths, R., Olsen, G., ... & Wadhwa, S. (2012). Sediment sources and accumulation rates in the Bay of Islands and implications for macro-benthic fauna, mangrove and saltmarsh habitats. Report prepared for Northland Regional Council.

~~84.1~~86.1 Increases in water temperature has been shown to have adverse effects on seaweeds[25], corals, urchins[26], fish and crustaceans. Each biota taxa has optimal temperature ranges, this is why we have different biota in the South Island compared with the North Island, the increases in sea temperatures causes stress, when these ranges are exceeded. Thus as sea temperatures slowly rise it is expected that biota composition will change. Trying to maintain the status quo, as in the current benthic biota and fish communities, will be a losing battle, and we will have to adapt our expectations in terms of kelp cover, fish types and numbers, to a new changing normal.

~~84.2~~86.2 Climate change also causes changes in the weather patterns, whether this means more tropical storm events or clammer more benign weather conditions. The changes will have the potential to effect the species distributions and composition. For example the weather conditions have been relatively benign in recent years in north New Zealand this could explain the presence of the seagrass bed in the shallows at Mimiwhangata (evidence Kerr and Shears), as wave activity in serve storms are likely to cause significant damage to seagrass beds in exposed locations. Changes in rainfall can also occur with changes in weather patterns, lower rainfall will likely result in less input of sediments from land to the sea, potentially limiting sedimentation, equally more intense events could increase sedimentation.

~~85~~87 Many of New Zealand marine biota taxa show natural variation in their recruitment of juveniles to communities. This can lead to variations on the abundance and sizes of species over time. Thus a drop in abundance or increase in abundance may be due to natural inter annual variability, hence ecological changes community are generally assessed of longer term data sets, unless the changes are due to specific causal environmental factors, such as contaminant concentrations around a point source, or disturbance from an activity. Either way best practice science requires the use of testing with before, after, impact and control data (BACI) and statistical testing.

[25] Harley, C. D., Anderson, K. M., Demes, K. W., Jorve, J. P., Kordas, R. L., Coyle, T. A., & Graham, M. H. (2012). Effects of climate change on global seaweed communities. Journal of Phycology, 48(5), 1064-1078.

[26] Hernández, J. C., Clemente, S., Girard, D., Pérez-Ruzafa, Á., & Brito, A. (2010). Effect of temperature on settlement and postsettlement survival in a barrens-forming sea urchin. Marine Ecology Progress Series, 413, 69-80.

**PROPOSED CONTROLS**

~~86~~88 I understand that the appellants are seeking that controls are put in the Northland regional plan as follows:

**Within the Te Hā o Tangaroa protection areas:**

| Area | Rules sought |
|---|---|
| Maunganui – Oke Bay Rahui Tapu (Area A)~~Sub-Area A~~ | All fishing prohibited apart from kina gathering and the list of scientific / monitoring activity |
| ~~Sub-Area A (buffer zone)~~ | ~~All fishing prohibited apart from hand fishing with one line / one hook and hand gathering~~ |
| Ipipiri moana mara tipu rohe (Area B)~~Sub-area B~~ | The following methods are prohibited: bottom trawling, bottom pair trawling, Danish seining, purse seining, longlining without mitigation, drift netting, dredging.<br><br>Hand fishing and hand gathering is permitted |
| Rakaumangamanga moana mara tipu rohe (Area C)~~Sub-area C~~ | The following methods are prohibited: bottom trawling, bottom pair trawling, Danish seining, purse seining, longlining without mitigation, drift netting.<br><br>Hand fishing and hand gathering is permitted |
| ~~Sub-area B and C – potential consenting requirements~~ | ~~In the revised relief circulated in December 2020, the appellants indicated that they would be seeking that all "other" fishing activity (e.g. longlining with mitigation devices, lobster potting, set netting) is discretionary and will require a consent.~~<br><br>~~I have read the planning evidence of Mr Reaburn which states at [3.1] that the relief has been updated and that a discretionary activity consenting route is no longer sought by BOIMP/F&B/Ngāti Kuta, and that all methods that were not expressly prohibited would be permitted.~~ |

**Within the Te Mana o Tangaroa protection areas**

| Area | Rules sought |
|---|---|
| Mimiwhangata Rahui Tapu (Area A)~~Sub-Area A~~ | All fishing prohibited apart from kina management and the list of scientific / monitoring activity<br><br>Any activity involving the removal of great white shark, mako shark, thresher shark, blue shark, hammerhead shark or bronze whaler shark is prohibited. |
| Mimiwhangata Rahui Tapu Buffer Area<br><br>~~Sub-Area A Buffer Areas~~ | Future rules for fisheries management will be put in place through hapu management plans.<br><br>In the meantime:<br><br>- Bottom trawling, bottom pair trawling, Danish seining, purse seining, longlining without bird mitigation devices or on-board monitoring and scallop dredging is prohibited.<br><br>- Any other fishing activity including longlining with mitigation devices and on-board monitoring; set netting; lobster potting is a non-complying activity and requires a resource consent |
| Te Au o Morunga Protection Area (Area C)~~Sub-Area B~~ | The activities for scientific / monitoring activity etc are permitted.<br><br>Bottom trawling, bottom pair trawling, Danish seining, purse seining, longlining without bird mitigation devices or on-board monitoring and scallop dredging is prohibited.<br><br>Any other fishing activity including longlining with mitigation devices and on-board monitoring; set netting; lobster potting is a discretionary activity and requires a resource consent |

~~87~~89 The proposed controls on fishing activity in the ~~Te Ha o Tangaroa~~ Te Hā o Tangaroa – Area A, will provide protection for the fish and other edible seafood in the area. The controls are restricted to fish methods only, which will avoid the removal and damage of biota. The ability for boats deploy and retrieve anchors in the area will still present risks to the sensitive habitats on the reef areas. Whether the scale of the area protected is sufficient to remedy or mitigate effects on the ecology of the area is unknown, and likely will only be determined through robust monitoring studies specifically designed to determine the answer. The ability to manage kina numbers is a different approach to management of a marine protected area than adopted in other areas under other legislation. If granted I would suggested that specific guidelines (management plan) for how and the extent to which this is done are formulated, adopted and policed.

8890 The proposed controls on restricting all bottom contact fishing in the ~~Te Ha o Tangaroa~~ Te Hā o Tangaroa – Area B will provide protection for the sensitive biogenic habitats included within this area avoiding adverse effects from fishing. The ability of boats of all sizes to deploy and retrieve anchors within the area still provides some risks to the sensitive biogenic habitats. If controls are not also placed on sedimentation into the inner Bay of Islands then I suspect the fishing controls alone will fail to protect biogenic habitats.

8991 The proposed controls of prohibiting bottom trawling and ~~danish~~Danish seining ~~Te Ha o Tangaroa~~ Te Hā o Tangaroa – Area C will guarantee avoidance of some adverse effects to reef areas, though the extent to which those fishing methods currently actually overlap with significant habitat is minimal. The effect of prohibiting their use over soft sediment habitats may increase fish numbers, however I am not convinced there is sufficient cause for the prohibition over soft sediment habitats which lack the sensitive biota triggering protection under the NZCPS. The prohibition of purse seining will potentially result in increased pelagic fish numbers and avoid bycatch of seabirds, but will have little effect on the benthic communities and associated reef fish. The current reported level of bycatch of seabirds is low with all released alive thus prohibition of net fishing will have little real effect on seabird bycatch.

9092 The proposed controls of no fishing in the Te Mana o Tangaroa – Mimiwhangata Rāhui Tapu area (Area A) will avoid damage to sensitive biogenic habitats inshore close to the Mimiwhangata peninsula and on offshore reefs, noting however that not all fishing methods present a threat to those habitats and the fishing methods such as trawling do not occur in this area.

9193 The proposed controls of no bottom trawling, D~~d~~anish seining or purse seining in the Te Mana o Tangaroa buffer areas will avoid adverse effects to benthic reef habitats. The prohibition of scallop dredging will in theory avoid damage to the soft sediment habitats that may contain biogenic habitats. But I note that commercial scallop dredging is not taking place in this area, due to Fisheries restrictions.

94 The proposed controls prohibiting bottom trawling, ~~danish~~Danish seining or purse seining in Te Mana o Tangaroa – Te Au o Morunga (Area ~~B~~C) will avoid adverse effects to the seabed. The current situation is that there is no bottom trawling or ~~danish~~Danish seining occurring over reef areas so the proposed controls essentially only effect bottom trawling and ~~danish~~Danish seining over soft sediments. As for ~~Te Ha o Tangaroa~~ Te Hā o Tangaroa – Area C the effect of prohibiting the use of bottom trawling and ~~danish~~Danish seining over soft sediment habitats will likely increase fish numbers, however I am not convinced there is sufficient cause for the prohibition over soft sediment habitats which lack the sensitive biota

triggering protection under the NZCPS. The prohibition of purse seining will potentially result in increased pelagic fish numbers and avoid bycatch of seabirds, but will have little effect on the benthic communities and associated reef fish. The current reported level of bycatch of seabirds is low with all released alive thus prohibition of net fishing will have little real effect on seabird bycatch.

~~92~~95 The requirement for a resource consent to conduct bottom longlining with bird mitigation devices and cray potting within the proposed marine protection areas Te Mana o Tangaroa Area C, does not seem warranted, based on a direct ecological effects assessment of the activity of fishing. Neither of these fishing methods involves mobile bottom contact which is the major cause for damage to benthic communities.

**CONCLUSIONS**

~~93~~96 Each of the proposed marine protection areas have taxa or benthic communities that warrant their protection under the NZCPS policy 11.

~~94~~97 However these taxa and communities are not uniform across each area and in some cases areas within the proposed marine protection areas do not warrant their protection under the NZCPS policy 11.

~~95~~98 Bottom contact fishing methods have the potential to damage sensitive seabed communities. However, according to the maps in Mr Clark's and Mr Hore's evidence, this fishing activity does not generally overlap with the reef areas that contain taxa or benthic communities of high value.

~~96~~99 Fishing is not the only threat to the biodiversity and abundance of the marine environment of the Bay of Islands and Mimiwhangata.

~~97~~100 I agree that the following areas have a high ecological value;

- ~~Te Ha o Tangaroa~~ Te Hā o Tangaroa – Area A,
- ~~Te Ha o Tangaroa~~ Te Hā o Tangaroa – Area B,
- Te Mana o Tangaroa – Mimiwhangata Rāhui Tapu area (Area A) and buffer areas.

~~98~~101 In terms of Te Hā o Tangaroa Area C and Te Au o Morunga Area ~~B~~C, the ecological value is less clear. The benthic ecology of the soft sediment habitats in my opinion does not meet the requirements for protection under policy 11 of the NZCPS. Therefore I do not agree to the protection measure being imposed on the entire areas.

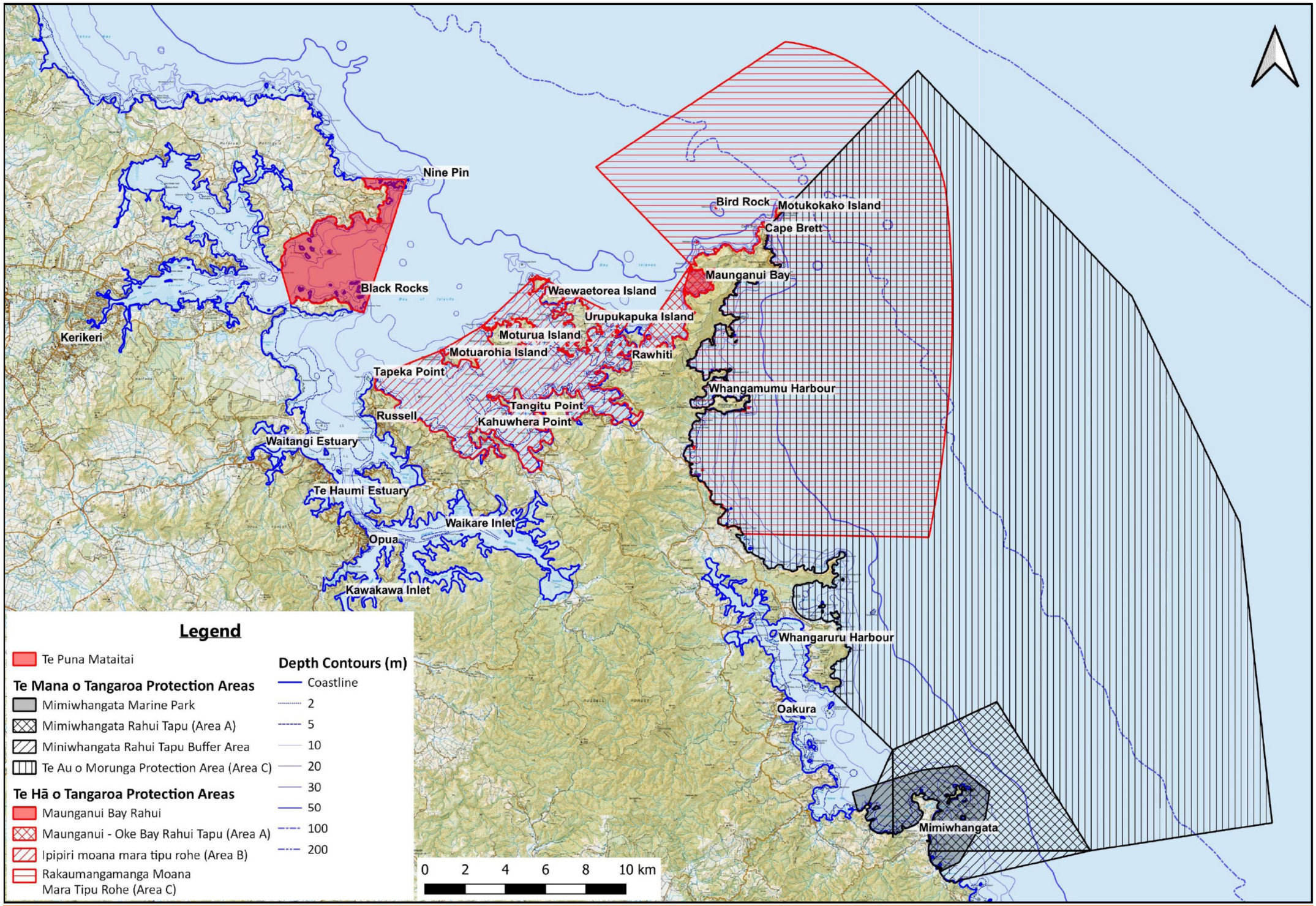
~~99~~102 The fishing method prohibitions which I understand have been proposed for the marine protection areas will not completely avoid adverse environmental effects or degradation in;

- ~~Te Ha o Tangaroa~~ Te Hā o Tangaroa – Area B,
- Te Mana o Tangaroa – Mimiwhangata Rāhui Tapu area (Area A)
- Te Mana o Tangaroa – Mimiwhangata buffer areas.

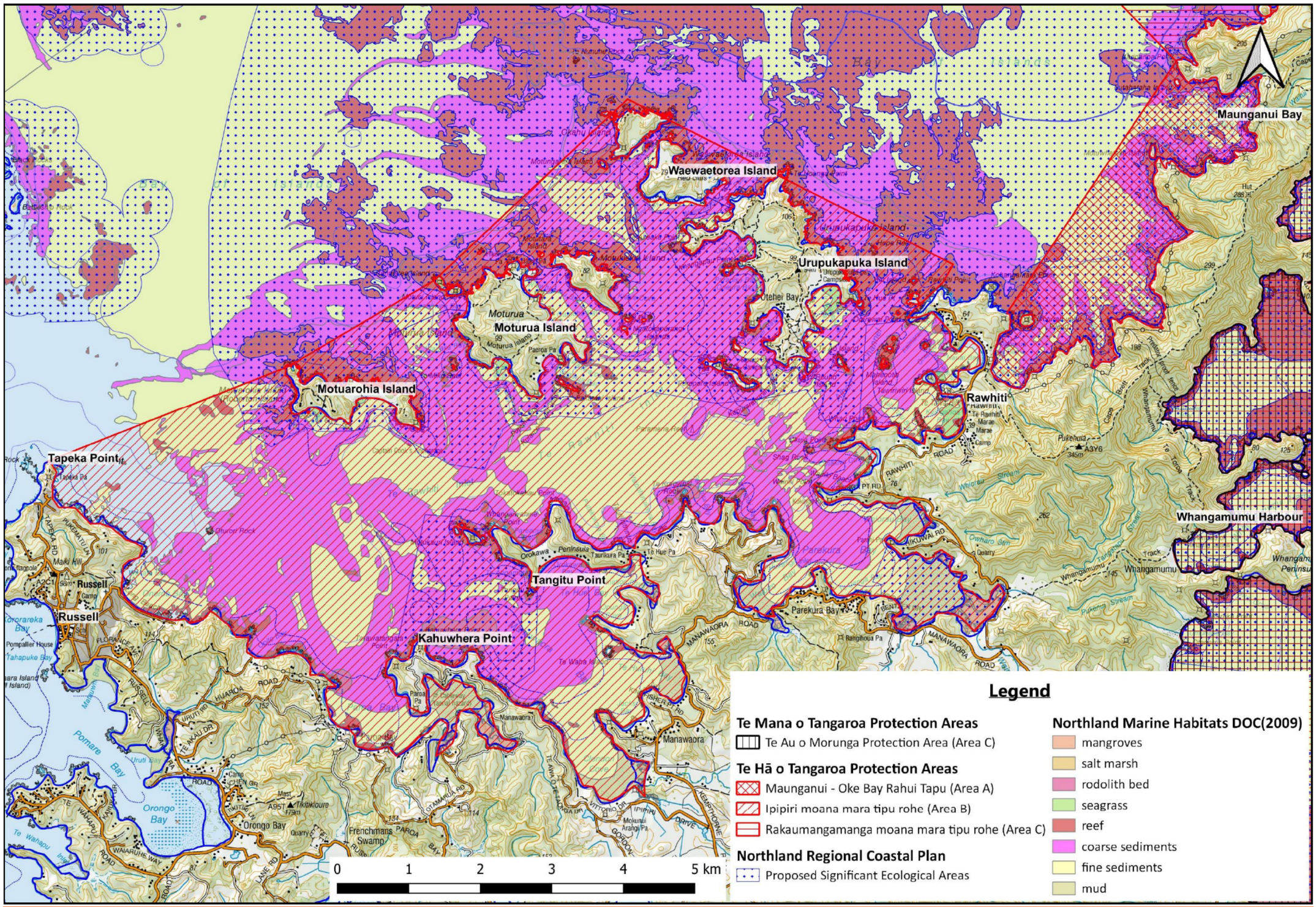
As many of the effects which I understand the controls have been put forward to manage are the result of multiple causes and stressors, which are not controlled by the proposed measures.

Simon Andrew West

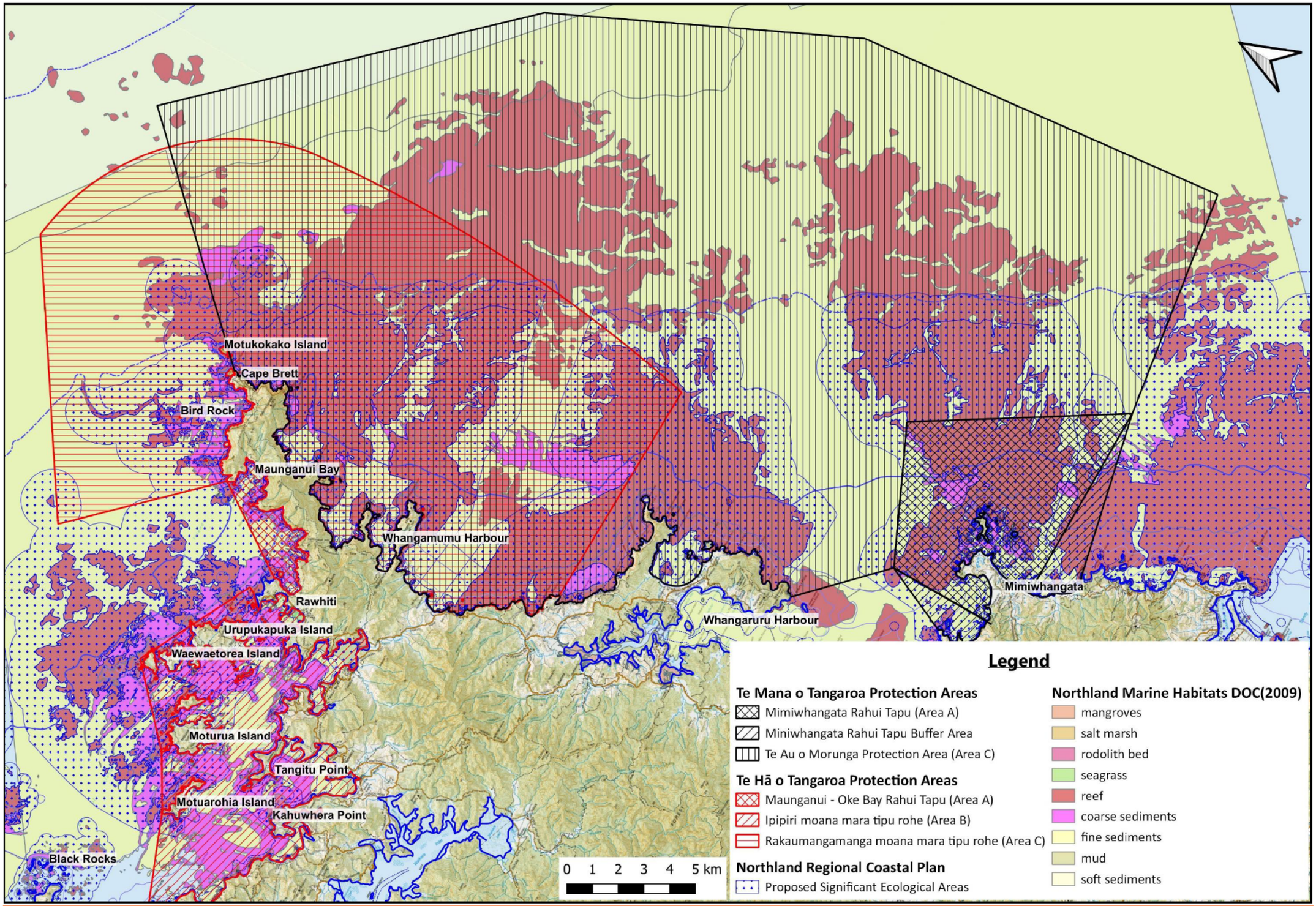
22~~21~~ ~~May~~ June 2020




*Appendix 1 Map showing spatial locations of proposed and existing marine protection areas with geographic reference locations labelled*



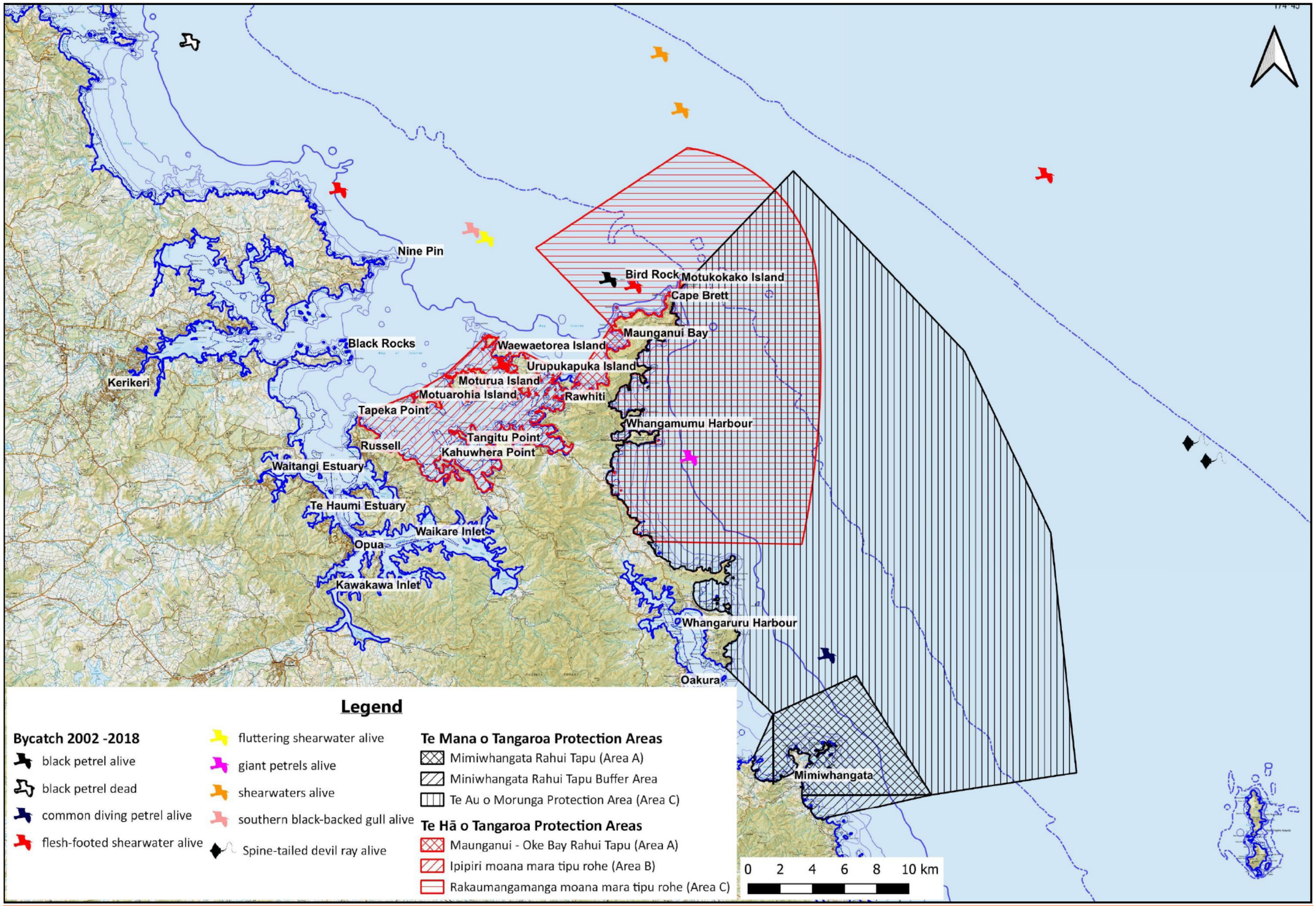

*Appendix 2 Marine habitat Map from DOC 2009 for proposed Te Hā o Tangaroa marine protection areas A and B, , with proposed NRC SEA's outlined.*




*Appendix 3 Marine habitat Map from DOC 2009 for proposed Te Hā o Tangaroa marine protection areas A, B and C, and Te Mana o Tangaroa marine protection areas A and C, with proposed NRC SEA's outlined.*

[redacted]

[redacted]




*Appendix 6 Fisheries related Bycatch capture events 2002 – 2018, showing proposed marine protection areas.*

[redacted]