

Hauraki Gulf Fisheries Plan

Submission

3 March 2023



This submission has been made by Chris Gaskin (Project Coordinator)

on behalf of the

Northern New Zealand Seabird Charitable Trust

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The Seabird Trust

We have built extensive knowledge on seabird species, diversity, populations and distribution and key threats to their survival. We have published extensively in reports, peer-reviewed papers and popular articles, which provide important resources on the world of seabirds here in northern Aotearoa New Zealand, for example:

- State of Our Seabirds 2021: Seabird ecology, research, and conservation for the wider Hauraki Gulf / Tīkapa Moana / Te Moananui-ā-Toi region (2021)
- Threats to Seabirds of Northern Aotearoa New Zealand (2019)
- Restoring resilience: A guide to seabird restoration (2023)
- Bilingual poster sets on the Threats to Seabirds (2021)
- Seabirds of the Hauraki Gulf: Natural History, Research and Conservation (2013, 2017)

The Seabird Trust's work programme is governed largely by the nature of the projects we have underway - some are for one year or less, others are over multiple years. The projects cover research, conservation, and education.

Relevant projects and activities:

- Species specific projects – lead and supporting roles: New Zealand storm petrel, Rako / Buller's shearwater, pakahā / fluttering shearwater, tākapu / Australasian gannet, kororā / little penguin, tara / white-fronted tern and tarāpunga / red-billed gull surveys.
- Seabird restoration projects: working with community groups in the Auckland, Northland and Coromandel regions.

The Trust's profile is appended below.

Our submission addresses the following:

Section 3

3.3 Hauraki Gulf Fisheries Plan - Desired Outcomes

Section 6

Management Objectives 1.2-1.4

Section 7

Management Action 1.2.1

Management Actions 1.3.1, 1.3.2

Management Action 1.4.1

Management Action 2.2.6

Impossible to ignore? Titi Wainui / fairy prions and shearwaters, feeding in association with trevally and kahawai, Mokohinau Islands. Photo: Edin Whitehead.



Section 3 3.3 Hauraki Gulf Fisheries Plan - Desired Outcomes

NNZST Response 1: Overall, we don't think the level of ambition in the draft Fisheries Plan is sufficient to protect and enhance biodiversity. In combination with the proposed MPAs which are just 17% of the Gulf this doesn't even meet the Convention on Biodiversity's (CBD) requirement for 30% of marine area by 2030 and in an area which is highly diverse and already designated a Marine Park. We suggest that the Management Objective is amended to take account of New Zealand's commitments to the CBD. This desired outcome should include a reference to biodiversity.

Suggest "Healthy, functioning ecosystems that support sustainable fisheries *and other biodiversity.*"

NNZST Response 2: The importance of the Hauraki Gulf region is recognised internationally, for example:

Important Bird & Biodiversity Areas (IBA)

Important Bird & Biodiversity Areas (IBA) are sites that are recognised as internationally important for bird conservation and known to support key bird species and other biodiversity. The function of the IBA Programme is to identify and help focus and facilitate conservation action for a network of sites that are significant for the long-term viability of naturally occurring bird populations, for which a site-based approach is appropriate. The IBA Programme is global in scale using standard, internationally recognised criteria for selection. The programme's site-based approach presents a mosaic of locally identifiable sites that meet global criteria. Taken as a whole, the network provides a comprehensive overview of the region's and Aotearoa New Zealand's seabirds. Taken individually, or in regional sets, government agencies with environmental responsibilities, tangata whenua, non-governmental organisations, business, community groups and individuals can work together to ensure conservation values are retained. The marine IBA identified encompasses the whole of the wider Hauraki Gulf. There are also twelve IBA sites identified for islands or island groups. For a detailed overview on the IBA programme for NZ seabirds, see - www.forestandbird.org.nz/important-bird-areas

Most islands in the wider Hauraki Gulf region can be regarded as 'seabird islands', where seabirds have a major influence on terrestrial and nearshore ecosystems.

Proposed World Heritage Site - Moutere Whakarua

The Nature Reserve islands, including Poor Knights, Taranga / Hen and Marotere / Chickens, Mokohinau, Te Hauturu-o-Toi / Little Barrier, Repanga / Cuvier, Mercury (excluding Ahuahu / Great Mercury) and the Ruamāhua / Aldermen Islands have been included in a proposed World Heritage Site called Moutere Whakarua, and have been on the UNESCO Tentative List since 2007. See - <https://whc.unesco.org/en/tentativelists/5126/>

Section 6 Management Objective 1: Achieving healthy, functioning aquatic ecosystems that support sustainable fisheries:

- 1.2 Protect marine habitats, that have been identified as having ecological importance, from any adverse effects of fishing.**
- 1.3 Mitigate the impacts of fishing on the marine food chain.**
- 1.4 Reduce fishing-related deaths of non-fish and protected species, working towards zero deaths by 2050.**

NNZST Response 1: As above, with respect to CBD commitments, Management Objective 1 needs to be amended to: “Achieving healthy, functioning aquatic ecosystems that support sustainable fisheries *and other biodiversity.*”



Multi-species work-up at North-West Reef, Te Hauturu-o-Toi / Little Barrier Island in the background. Photo: Edin Whitehead.

NNZST Response 2:

Here we highlight the importance of the wider Hauraki Gulf region for seabirds, as follows:

- Twenty-seven seabird species breed within the Northern New Zealand region.
- Five species are endemic to the region, they breed nowhere else in the world – New Zealand storm petrel, rako / Buller’s shearwater, tākoketai / black petrel, tītī / Pycroft’s petrel, and tara-iti / New Zealand fairy tern.
- This regional species endemism equals that of entire countries, those second to Aotearoa New Zealand.

- The region also includes significant populations of other species – ōi / grey-faced petrel, tītī / Cook’s petrel, pakahā / fluttering shearwater, tākapu / Australasian gannet, toanui / flesh-footed shearwater, northern little shearwater and takahikare-moana / white-faced storm petrel.
- At the New Zealand scale, seabird diversity of the wider Hauraki Gulf region, ranks highly compared to similar sites of international seabird importance in terms of species diversity and endemism (e.g., Kermadec Islands, Chatham Islands, Snares Islands).
- Despite the proximity of these seabird colonies to New Zealand’s largest city, many species in the region remain poorly studied. The New Zealand storm petrel was thought extinct until 2003. Its sole breeding site on Te Hauturu-o-Toi / Little Barrier Island was only discovered in 2013.

Extract from: From primary production to seabirds in the marine ecosystem of the Hauraki Gulf (Jefferies & Rotman 2021). In Gaskin, C.P. (ed) 2021. **The State of Our Seabirds 2021: Seabird ecology, research, and conservation for the wider Hauraki Gulf region.**

<https://gulfjournal.org.nz/wp-content/uploads/2021/10/SOOS-screen.pdf>

TAKE HOME MESSAGES

- The Te Moananui-ā-Toi / Tikapa Moana / Hauraki Gulf is a highly productive marine ecosystem, with much of the productivity channelled through small creatures swimming in the surface waters, krill and small/medium fish, such as anchovies and mackerels.
- Aggregations of krill and schools of fish are important feeding locations for the phenomenal variety of seabirds living in the Hauraki Gulf.
- Recent dramatic increases in the commercial harvesting of small/medium surface-dwelling fish in the Hauraki Gulf has the potential to impact the feeding of seabirds.
- Information is lacking for the effective management of harvesting of fish populations and the potential effects of harvests on seabird feeding success.
- The future security of seabird populations in the Hauraki Gulf will rely on better understanding and management of their feeding environment.

Most seabirds have some flexibility in their ability to search for and use a variety of prey. However, their energy demanding lifestyle requires a continuous supply of readily accessible energy-rich food. Consequently, seabird populations are particularly vulnerable to depletion of their prey species, from either natural fluctuations in fish populations or from human influences, such as commercial fisheries. There have been declines in the populations of several seabird species within the Hauraki Gulf. While it is not clear how much of the decline is due to changes in the capacity of the marine ecosystem to provision seabirds, it is highly likely given the large extent of human impacts on the marine ecosystem of the Hauraki Gulf. For example, the extensive removal of many marine mammals from the Hauraki Gulf through hunting would have reduced the competition for surface-dwelling prey for seabirds in the past two hundred years. In contrast, the more recent dramatic expansion of commercial fisheries for small/medium pelagic fish species would have greatly reduced the availability of these

food resources for seabirds. The scale of the harvesting has continued to increase in recent years to the extent that currently nearly 60% of the total commercial fish landings in the Hauraki Gulf are pelagic species, such as blue mackerel, jack mackerel and pilchards. For example, when the Hauraki Gulf Marine Park was established in 2000 the pilchard fishery landed 1 tonne a year, and this has grown to around 125 tonnes a year over the most recent period of 2016-2019.

Despite the potential negative impact of commercial fisheries on seabirds' food resources there is scant knowledge of the relationship for the Hauraki Gulf. Some preliminary studies indicate marked changes in the diets of seabirds and marine mammals in the Gulf over historical times, but the direct link to changes in food resources is difficult to establish. The possible impacts of the removal of food resources for seabirds and other marine mega-fauna are not given any consideration in setting commercial catch limits for these species currently. Even more concerning, is that for most of these fish species they are currently "managed" without any knowledge of the fundamental information typically used to sustainably manage fish populations, e.g., population size, growth rates, reproductive rates etc. This greatly elevates the risk of overfishing of these fish species.

The significance of seabirds in the Hauraki Gulf is widely recognised, both for their conservation significance and as key components of marine and terrestrial ecosystems. Numerous studies and reports have emphasised the need for greater protection and enhancement of seabird populations in the Gulf. However, these aspirations cannot be achieved without a more detailed understanding of the ecological connections of seabirds with their marine environment.

Extract from: Revitalising the Gulf through a seabird lens. *In* Gaskin, C.P. (ed) 2021. **The State of Our Seabirds 2021: Seabird ecology, research, and conservation for the wider Hauraki Gulf region.** <https://gulffjournal.org.nz/wp-content/uploads/2021/10/SOOS-screen.pdf>

Significant bathymetric features within the Hauraki Gulf Marine Park, such as Tatapihi / Groper, Māori, Navire and Simpson Rocks and associated reefs and pinnacles (Mokohinau Islands); NW Reef northwest of Hauturu; and Horn Rock in the Cradock Channel, generate conditions favourable for shoaling fish and at times vast aggregations of seabirds.

Highly visible seabirds, their foraging, and the shoaling and schooling fish they associate with are a major feature of north-eastern North Island waters. Impossible to ignore when you are on the water and surrounded by them. But these regular, dynamic events have not been taken into account for current marine planning.

Taking a wider perspective, some seabird species also feed in more pelagic or open waters following cetaceans, both dolphins and whales, or highly mobile tuna, kahawai and mackerel species. Others feed on krill swarms where no surface fish shoaling is evident, and on zooplankton and larval fish along current and tide lines.

integrate other ecosystem changes. A variety of survey methods for assessing biomasses of birds have been used successfully in the Hauraki Gulf (see Appendix 1) and these should be continued.

Initiate time series measurements of diets and trophic levels (*in Potential Research section*)

Given that diet flexibility is the key factor affecting the sensitivity of the food-web models to perturbations, and that changes to the diets of top predators can indicate alterations in food-web structure (Montevecchi & Myers 1996), we recommend that methods be explored for obtaining information of changes in diets over time for multiple, key species. Previous work has highlighted that there are a number of different ways of tracking changes in diet either directly (see below) or by monitoring changes in TL (Post 2002). For birds, systematic observations of feeding behaviour may be possible (e.g., Kozmian-Ledward et al. 2020). Changes in the TL of the predator can be an effective indicator of changes in diet when the prey items of a group include high and lower TL species (for example, pelagic fish and zooplankton): a decrease in the TL of the predator indicates a shift to consuming more of the low TL prey and vice versa. Stable isotope analysis of feathers from museum and contemporary specimens provided information on long-term change of a number of species of seabirds in the Hauraki Gulf (e.g., Rayner et al. 2021)



Shearwaters and prions feeding over a school of trevally and kahawai, outer Hauraki Gulf. Photo: Edin Whitehead



Trevally and kahawai, feeding on krill (Euphausiids), Mokohinau Islands. Screenshot from underwater videography: NNZST

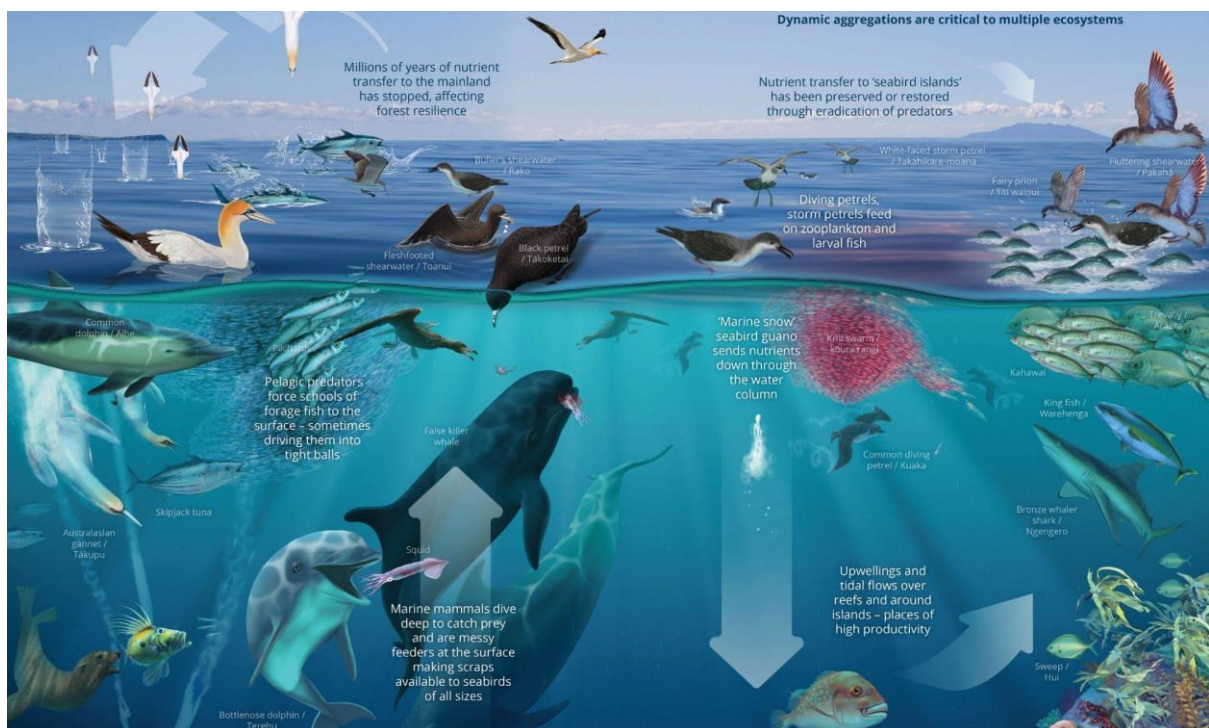
Section 7.1 Achieving healthy, functioning aquatic ecosystems that support sustainable fisheries.

NNZST Response: As above, with respect to CBD commitments etc., Management Outcome 7.1 needs to be amended to: “Achieving healthy, functioning aquatic ecosystems that support sustainable fisheries *and other biodiversity.*”

Management Objective 1.2: Protect marine habitats, that have been identified as having ecological importance, from any adverse effects of fishing.

Management Action 1.2.1: Design and implement protection measures and a monitoring regime for habitats of particular significance for fisheries management in the Hauraki Gulf, prioritising according to estimated level of risk.

NNZST Response 1: The Plan’s focus on benthic trawling, while highly important, fails to take account of water column (surface to seafloor) habitats and the many feeding associations active there. Consequently, the indirect effects from the removal of schooling and shoaling fish on the marine ecosystem, protected species and other biodiversity are not taken into account.



Dynamic aggregations are critical to multiple ecosystems. Graphic in The State of Our Seabirds 2021: Seabird ecology, research, and conservation for the wider Hauraki Gulf region.

NNZST Response 2: Seabirds have been shown to be vulnerable to loss of forage fish in the Hauraki Gulf impacting productivity and potentially population trends. This can be exacerbated by the impacts of the Southern Ocean Oscillation (La Nina and El Nino) systems

as well as climate change. To build resilience which is what this plan is supposed to do alongside the Sea Change Plan, then a strong precautionary approach is required in the management objectives.

Management Objective 1.3: Mitigate the impacts of fishing on the marine food chain.

Management Action 1.3.1: Scope and commission research to assess the impacts of forage fish (small pelagic species, such as pilchards) removals on the marine food chain in the Hauraki Gulf and any additional research that is required on more species and life stages.

NNZST Response 1: Given the dependence of seabirds' feeding associations with fish schools the list of relevant fish species needs to be extended to include small and medium pelagic fish species: i.e., trevally, kahawai, blue mackerel, jack mackerel, saury, skipjack tuna, blue maomao, and anchovies. In these situations, seabirds feed predominantly on krill, other zooplankton, and small and larval fish. Larger seabird species such as gannets, shearwaters, penguins, and terns, will target fish as well.

The following reports have helped shape our understanding of the dynamics at play with respect to fish schools and the marine predators (i.e., seabirds, cetaceans) that feed in association with them. However, despite Pinkerton et al (2023) recommending that the variety of survey methods for assessing biomasses of birds used successfully in the Hauraki Gulf should be continued, the robustness of the results were comprised insufficient funding allowing for more frequent sampling trips, in the case of the at sea work.

Fish school dynamics

Gaskin, C.P. (2017). Procellariiformes associating with shoaling fish schools – Northern New Zealand. Report for INT 2016-04 Conservation Services Programme. Department of Conservation, Wellington.

<https://dxcprod.doc.govt.nz/globalassets/documents/conservation/marine-and-coastal/marine-conservation-services/reports/pre-2019-annual-plans/procellariiforms-associating-with-shoaling-fish-schools-final.pdf>

Kozmian-Ledward, L., Jeffs, A., Gaskin, C.P. (2020). Final report summarising analysis of zooplankton samples collected 2019 – 2020. Report for POP2019-02 Conservation Services Programme. Department of Conservation, Wellington [pop-2019-02-fish-shoal-dynamics-north-eastern-new-zealand.pdf \(doc.govt.nz\)](https://dxcprod.doc.govt.nz/globalassets/documents/conservation/marine-and-coastal/marine-conservation-services/reports/pop-2019-02-fish-shoal-dynamics-north-eastern-new-zealand.pdf)

Kozmian-Ledward, L., Lukies, K., Jeffs, A., Gaskin, C.P. (2021). Final report summarising analysis of zooplankton samples collected 2020 – 2021. Report for BCBC2020-08 Conservation Services Programme. Department of Conservation, Wellington <https://dxcprod.doc.govt.nz/globalassets/documents/conservation/marine-and-coastal/marine-conservation-services/reports/202021-annual-plan/bcbc2020-08-fish-shoal-final-report.pdf>

Seabird diet

Gaskin, C.P., Kozmian-Ledward, L., Jeffs, A., Adams, N. (2019). Indirect effects on seabirds in northern North Island: Comparison of availability of food species in fish shoals and how those items are represented in different seabird diets in the region. Report for POP2017-06 Conservation Services Programme. Department of Conservation, Wellington. [pop2017-06-indirect-effects-comparison-study-milestone-7.pdf \(doc.govt.nz\)](#)

Spreitzenbarth, S., Jeffs, A., Kozmian-Ledward, L. 2021. Nutritional Analysis of Seabird Prey Species from the Hauraki Gulf. *In* Kozmian-Ledward, L., Lukies, K., Jeffs, A., Gaskin, C.P. (2021). Final report summarising analysis of zooplankton samples collected 2020 – 2021. Report for BCBC2020-08 Conservation Services Programme. Department of Conservation, Wellington. <https://dxcprod.doc.govt.nz/globalassets/documents/conservation/marine-and-coastal/marine-conservation-services/reports/202021-annual-plan/bcbc2020-08-fish-shoal-final-report.pdf>

Seabird populations

Gaskin, C.P., Frost, P.G.H., Friesen, M.R. (2018). Summary of activities carried out to collect population estimates of priority seabirds in 2017-2018 (Milestone 4). Report prepared for the Conservation Services Programme POP2017-06. Department of Conservation, Wellington. [pop2017-06-indirect-effects-population-study-milestone-8.pdf \(doc.govt.nz\)](#)

NNZST Response 2: The DOC Conservation Services Programme’s Initial Research Proposals for 2023/24 include three projects that are relevant to this management action, provided they receive funding through a system weighted toward supporting direct effects.

NB: All the proposals are currently under review by DOC, MPI/Fisheries, and stakeholders. Once finalised selected proposals will form the DOC CSP Annual Research Plan.

Three projects (see below) would provide key data for realising Management Action 1.3.1, provided sufficient funding is made available.

POP-14 Inshore seabird colony mapping, populations, behaviour

This project was submitted by Fisheries New Zealand.

Guiding Objectives: CSP Objectives D and E; National Plan of Action – Seabirds; CSP Seabirds Medium Term Research Plan

Project Objective: To characterise inshore seabird distributions for key species including gannets, fluttering and Buller’s shearwaters, red-billed gulls, fairy prions, white-fronted terns, flesh-footed shearwater, black petrel, little penguin, and northern diving petrel.

Project Outputs: Provide a technical report that will inform improved estimates of the spatial overlap of these species with commercial and recreational fishing to feed into risk

assessments and ecosystem-based modelling. The report will also consider the gap between the modelled impact of these fisheries and actual seabird population trends which could then be used to assess the indirect impacts of fishing.

INT-4 Impact of fisheries extractions on pelagic foraging seabird populations in the wider Hauraki Gulf area (Term 3 years)

Guiding Objectives: CSP Objective D; National Plan of Action – Seabirds; CSP Seabirds Medium Term Research Plan

Project Objectives:

1. Improve understanding of food-web dynamics and the potential impact of fisheries extractions on foraging behaviour in relation to changing seabird populations in north-east New Zealand.
2. Monitor key seabird populations with preference given to gulls, terns, gannets, fluttering shearwaters, prions, Buller's shearwaters.
3. Assess food availability in shoals, including inter-annual variation.

Project Output: A technical report that describes the potential impact of fisheries extractions on seabird populations in the Hauraki Gulf region that will inform fisheries management.

INT-8 Relationship between surface foraging seabirds in the Hauraki Gulf and fish school workups (Term: 1 year)

Guiding Objectives: CSP Objective D; National Plan of Action – Seabirds; CSP Seabirds Medium Term Research Plan

Project Objective: To consolidate all existing zooplankton, fish and seabird feeding association data from the Hauraki Gulf region into a single large robust dataset and combine with known oceanographic variables to better understand feeding associations.

Project Outputs: A technical report that provides a review of what is currently known about seabird feeding associations with fish schools in the Hauraki Gulf and considers the role that changing oceanography may play in prey species availability.

[Management Action 1.3.2: Review the management settings of important forage species in FMA 1 as needed to ensure impacts of removals don't adversely affect marine food chain in the Hauraki Gulf.](#)

NNZST Response 1: Taking the precautionary approach, all purse seine fishing should be discontinued within the Hauraki Gulf Marine Park.

The following has been extracted from Whitehead et al (2019) **Threats to Seabirds of Northern Aotearoa New Zealand**. NB: References have been removed here. Complete report is available: [threats-to-seabirds-northern-aotearoa.pdf \(aucklandcouncil.govt.nz\)](#)

Beyond by-catch, fisheries may impact seabird populations by reducing available prey species, particularly at crucial periods of the breeding cycle where parents are foraging for both themselves and a dependent chick (or chicks). In addition, the removal of prey species may compound with environmental fluctuations that impact seabird populations, resulting in greater declines than would happen naturally.

Concerns have been raised about the potential impact of the purse-seine fishery on marine systems including seabird foraging. Although this was first raised in the 1970s, there are new calls for a full investigation into the broader ecosystem impacts and sustainability of this fishery, particularly from environmental and recreation fishery groups. Purse-seiners target entire fish schools, encircling them with nets and hauling them aboard. Spotter planes are used to target schools that are obvious from the surface as 'work-ups' or 'boil-ups' as they feed on plankton, often in association with seabirds and cetaceans. Purse seine fisheries in Northern New Zealand often target skipjack tuna (*Katsuwonus pelamis*), blue mackerel (*Scomber australasicus*) and arrow squid (*Nototodarus sloanii*), all species that have either been observed feeding in association with seabirds, or as prey for seabirds.

Since the 1990s there has been a substantial increase in pilchard fishing in Northern New Zealand, particularly the Hauraki Gulf. The large-scale removal of schooling fish could reduce food available to seabirds, particularly during their breeding seasons. Anecdotal historical accounts report diminishing fish school size and frequency, particularly of the formerly 'vast' trevally (*Pseudocaranx dentex*) schools from northern waters. Competition for the same prey between seabirds and fisheries is a known issue in other parts of the world, although its extent in our region has not been quantified.

The reliance of some seabird species on subsurface predators (e.g., large fish, cetaceans) to make common prey available – concentrated and on the surface (e.g. euphausiids, small school fish) is another subject under inquiry at present. Large feeding aggregations of fluttering shearwaters, Buller's shearwaters, fairy prions, Australasian gannets, red-billed gulls and white-fronted terns are often observed over fish schools throughout the Hauraki Gulf. Long-finned pilot whales (*Globicephala melas*) and false killer whales (*Pseudorca crassidens*) are often found by locating black petrels and flesh-footed shearwaters, which appear to feed in association with them. Gannets and flesh-footed shearwaters have also often been observed foraging alongside common dolphins (*Delphinus delphis*). As well as these inter-species feeding associations, knowledge of food-web interactions and energy flows through marine ecosystems is crucial for our understanding of how these might change if links in the chain are disturbed, as has occurred with human alterations to the marine system through fishing.

The Hauraki Gulf system has been vastly altered from its pre-human state, and assessing the current condition of the marine environment through multiple avenues is a priority. The large-scale removal of prey fish species will have impacts on predators and prey, but we cannot model these effects without knowledge of the underlying relationships. Profiling the trophic relationships within the Hauraki Gulf system would allow us to determine the extent to which removal of prey species will impact not only seabirds, but

other marine organisms as well. The impacts of other threats – such as environmental change – should also be investigated within this framework.

NNZST Response 2: Set netting (both commercial and recreational) is another practice that should be discontinued in the Hauraki Gulf Marine Park.

The following has been extracted from Whitehead et al (2019) **Threats to Seabirds of Northern Aotearoa New Zealand**. NB: References have been removed here. Complete report is available: [threats-to-seabirds-northern-aotearoa.pdf \(aucklandcouncil.govt.nz\)](https://aucklandcouncil.govt.nz/threats-to-seabirds-northern-aotearoa.pdf)

Set netting is one of the most non-selective fishing methods available because nets entrap a wide range of non-target species which come into contact with them. Set netting is undertaken by both commercial and recreational fishers. In the Hauraki Gulf, commercial set net fishers often target relatively small local areas and are focused in the mid-Gulf and Firth of Thames. Recreational set netting occurs in river mouths and estuarine areas throughout the Gulf. The main species targeted by recreational set netters include flatfish (*Rhombosolea* spp), grey mullet (*Mugil cephalus*), school shark (*Galeorhinus galeus*), rig (*Mustelus lenticulatus*) and snapper (*Pagrus auratus*).

Set nets are a risk to seabirds because they become entangled and drown in the nets while diving for food. Depending on species and how nets are used, this can occur during deployment (setting and hauling) or soaking (whilst the gear is fishing). Set netting can be particularly damaging if nets come adrift and float unconstrained through the water column.

Based on studies on similar species in New Zealand, and internationally, these fisheries in the Northland/Hauraki region pose a threat to seabirds. Young, inexperienced birds may die in net entanglements more frequently than older birds, which ultimately could lead to low recruitment to the breeding population. Spatial and temporal closures of set net fisheries are the best method for reducing by-catch of seabird species, as mitigation techniques are yet to be developed to adequately reduce seabird (and other species) by-catch.

Set nets are known to catch diving seabirds with shearwaters, diving petrels, penguins and shags being the most at-risk species. However, the total impact is unknown as there have been no observers of commercial set-net operations, and recreational information is only recorded when a large incident is observed.

In the early 1990s there was considerable concern regarding seabird drownings (shags and penguins) in set nets in the Tamaki Estuary and the Panmure Basin. This concern resulted in a number of press articles and the involvement of different interest groups. Research by the then MAF (Ministry of Agriculture and Fisheries) Set net Taskforce into by-catch incidents at the locality acknowledged the problem of seabird entanglements and recommended that parts of the area be closed to set netting. However, the different stakeholders, commercial and recreational fishers, and conservation groups could not reach a consensus.

Fluttering shearwaters feed in association with shoaling fish or in widespread groups at the surface feeding on crustaceans and, at times, resting in large, dense rafts. During the post-breeding period, a considerable proportion of the population remain within local waters. As they feed by diving, commonly in flocks, they can be caught in set nets in large numbers (e.g. 166+ in a single incident at Whangaparaoa Peninsula in May 2009, and more recently at Kawakawa Bay). Shag species all forage and feed in inshore waters including river, harbour and estuarine areas where set netting often occurs, and are therefore at considerable risk from set netting, particularly spotted shags.

Elsewhere in New Zealand, shags are observed caught in set-nets. There are some set net restrictions in place in the Hauraki Gulf. Arkles Bay on the Whangaparaoa Peninsula has a specific ban on set nets, introduced by the local community. There are also some areas where commercial, and in some cases recreational, set nets are prohibited – e.g., 0.5 nm off the Mokohinau Islands, Simpson Rock, Te Hauturu-o-Toi (Little Barrier Island), Rakitu (Arid Island), part of Aotea (Great Barrier Island) and in the Tamaki-Panmure Estuary (Froude & Smith, 2004). The potential impacts to seabirds from set netting, both commercial and recreational, in an area that is of global seabird importance warrants restricting or banning the use of set nets throughout the Hauraki Gulf. Set nets are restricted in other parts of the country to protect Hector's and Maui's dolphins.

Records of seabird entanglement in synthetic material indicate that active and discarded fishing gear can cause entanglement mortalities. Discarded fishing gear is a major contributor to marine plastic pollution worldwide. While not in active use, nets left at sea continue to cause mortalities to a variety of marine life in what is known as 'ghost fishing'. Past practice of discarding broken or leaving hard to retrieve gear at sea can result in long term impacts to populations. This is true of both commercial and recreational fishing operations; however, we have no data for New Zealand and Northland/Hauraki Gulf region.

Management Objective 1.4: Reduce fishing-related deaths of non-fish and protected species, working towards zero by 2050.

Management Action 1.4.1: Implement the NPOA-seabirds framework, continue to support the ongoing refinement, improvement, and uptake of seabird mitigation measures for commercial and recreational fishers.

NNZST Response: Our response here (as above) focuses on purse seine fishery and the practice of set netting. Both should be discontinued within the Hauraki Gulf Marine Park.

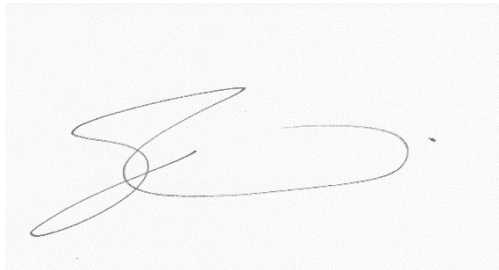
Section 7.2 Working towards fisheries resources being at levels which meet the needs of treaty partners and stakeholders.

Management Objective 2.2: Address localised depletion of fisheries resources within the Hauraki Gulf

Management Action 2.2.6: Review netting restrictions, to protect vulnerable reef species and other non-target species.

NNZST Response: We suggest that other biodiversity (e.g., seabirds) should be included under non-target species.

Ends

A handwritten signature in black ink, appearing to read 'Chris Gaskin', on a light-colored background.

Chris Gaskin

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ADDENDUM

1 Key publications produced by the Northern NZ Seabird Trust

The State of Our Seabirds 2021. Seabird ecology, research and conservation for the wider Hauraki Gulf / Tīkapa Moana / Te Moananui-ā-Toi region.

<https://gulfbjournal.org.nz/wp-content/uploads/2021/10/SOOS-screen.pdf>

This report complements the Hauraki Gulf Forum's three-yearly state of the environment reporting required under the Hauraki Gulf Marine Park Act (2000). The State of Our Gulf 2020 State of the Environment Report painted a bleak picture, with headlines such as 'Crayfish in peril', 'Tarakihi just hanging in there' and 'Proliferation of kina barrens'.

The ailing health of Auckland and Waikato's big blue backyard (the Hauraki Gulf Marine Park) was laid bare. Contributions for this State of Our Seabirds 2021 report were invited from multiple authors to cover topics chosen to provide as comprehensive an overview of the current state of the region's seabirds as possible, highlighting recent research and the efforts to protect them.

The report in four parts:

1. Seabirds and their world.
2. A living laboratory.
3. What the seabirds are telling us.
1. What are we doing? How well are we doing? Looking to the future.

Threats to Seabirds of Northern Aotearoa New Zealand (Whitehead et al 2019). Report is available: [threats-to-seabirds-northern-aotearoa.pdf \(aucklandcouncil.govt.nz\)](#)

Seabirds of the Hauraki Gulf: Natural History, Research and Conservation (Gaskin & Rayner 2013, updated 2017) [Untitled \(aucklandcouncil.govt.nz\)](#)

2 The Seabird Trust profile

Te tāhuhu kōrero

Our profile

**Tō mātou whakakitenga, tō mātou
kaupapa me ā mātou mahi**

Our vision, our mission,
and what we do





TE WHAKAKITENGA

OUR VISION

Kia whakarauoratia ngā manu moana o te raki o Aotearoa. Kia nui te ora, ā, kia manaakihia ēnei manu kura e ngā tāngata o Aotearoa.

That seabird populations of Northern Aotearoa New Zealand recover and thrive and are treasured by New Zealanders.



TE KAUPAPA

Kia tū hei whare taunaki whai tikanga i raro i te mātauranga pūtaiao.

Ka rangahaua, ka taunakitia te ora o ngā manu moana huri noa i te raki o Aotearoa me Rangitāhua.

Mā te whakatūnga o ngā kaupapa whakarauora, ka ākina ētahi atu ki te tautoko, ki te whakamarumaruru hoki i ngā manu moana.

Ka whakapuakina ō mātou mōhiotanga, kia tipu ai te māramatanga e pā ana ki te wāhi nui o ngā manu moana i te hauora o te taiao.

OUR MISSION

To be a credible, science-based advocacy organisation.

To research and advocate for seabird populations throughout northern Aotearoa New Zealand and Rangitāhua Kermadec Islands.

Encourage others to also advocate for and protect seabirds through participation in seabird restoration programmes.

To share our knowledge and to build understanding of the vital role of seabirds in ecosystem health.

A large photograph of a white-fronted tern in flight over the ocean. The bird is white with a black cap and a long, thin tail streamer. It is shown in profile, flying towards the right, with its wings fully extended. The background is a deep blue sea with some whitecaps.

TE MAHI / WHAT WE DO

Research

Our seabird experts:

- Initiate research and long-term investigations of seabird population health.
- Facilitate student projects and long-term research.
- Investigate critical threats to inform conservation action.

Education & Engagement

Our seabird experts:

- Support community groups and tangata kaitiaki to establish and maintain seabird restoration programmes.
- Provide education pathways for seabird and ecology students.
- Provide quality tools and resources for children, communities, policy, and decision makers.
- Partner with marine research and education initiatives.

Advocacy

Our seabird experts:

- Use our research results and knowledge to inform our policy advice on issues for seabirds to reduce threats to seabird populations.
- Provide policy advice regarding ecosystem-based management and opportunities for ecosystem recovery to support seabird populations.
- Conduct and support campaigns to build understanding of seabirds.

TE MAHI / WHAT WE DO

Rangahau

Ko te mahi a ō mātou mātanga manu moana:

- he whakatū i ngā kaupapa rangahau me ngā tūhura roa e pā ana ki te ora o ngā manu moana
- he whakahaere i ngā kaupapa mā ngā ākonga me ngā rangahau roa
- he tūhura i ngā āhuatanga matua e whakararuraru ana i ngā manu hei āwhina i ngā mahi whakarauora

Te mātauranga me te mahitahi

Ko te mahi a ō mātou mātanga manu moana:

- he tautoko i ngā rōpū ā-hapori me ngā kaitiaki ki te whakatū, ki te whakapūmau i ngā kaupapa whakarauora mō ngā manu moana
- he whakatakoto i ngā ara mātauranga mā ngā ākonga e whai ana i te mātauranga mō te manu moana me te mātai hauropi
- he whakarato i ngā rawa āwhina me ngā rauemi mā ngā tamariki, mā ngā hapori, mā ngā kaupapa here me ngā mana whakahaere
- he mahitahi ki te hunga e whakahaere ana i ngā kaupapa rangahau me ngā kaupapa mātauranga e pā ana ki te moana

Taunaki

Ko te mahi a ō mātou mātanga manu moana:

- he tāpae kōrero mō ngā kaupapa here e pā ana ki te whakahekenga iho o ngā āhuatanga e whakararuraru ana i ngā manu moana i runga i ngā hua o ā mātou rangahau me ō mātou mōhiotanga
- he tāpae kōrero mō ngā kaupapa here e pā ana ki ngā whakahaere o te taiao me te whakarauoratanga o te taiao hei tautoko i ngā manu moana
- he whakahaere i ngā kaupapa e hāpai ana i te māramatanga ki ngā manu moana



Poor Knights research



Motukokako Ahu Whenua Trust survey



Hauraki Gulf

State of our Seabirds 2021

Seabird ecology, research and conservation for the wider Hauraki Gulf / Tikapa Moana / Te Moananui-ā-Toi region

Rangahau / Research

**Te mātauranga me te mahitahi /
Education & Engagement**

Taunaki / Advocacy