Assessment of the proposed Bream Bay sand mine's impact on scallops

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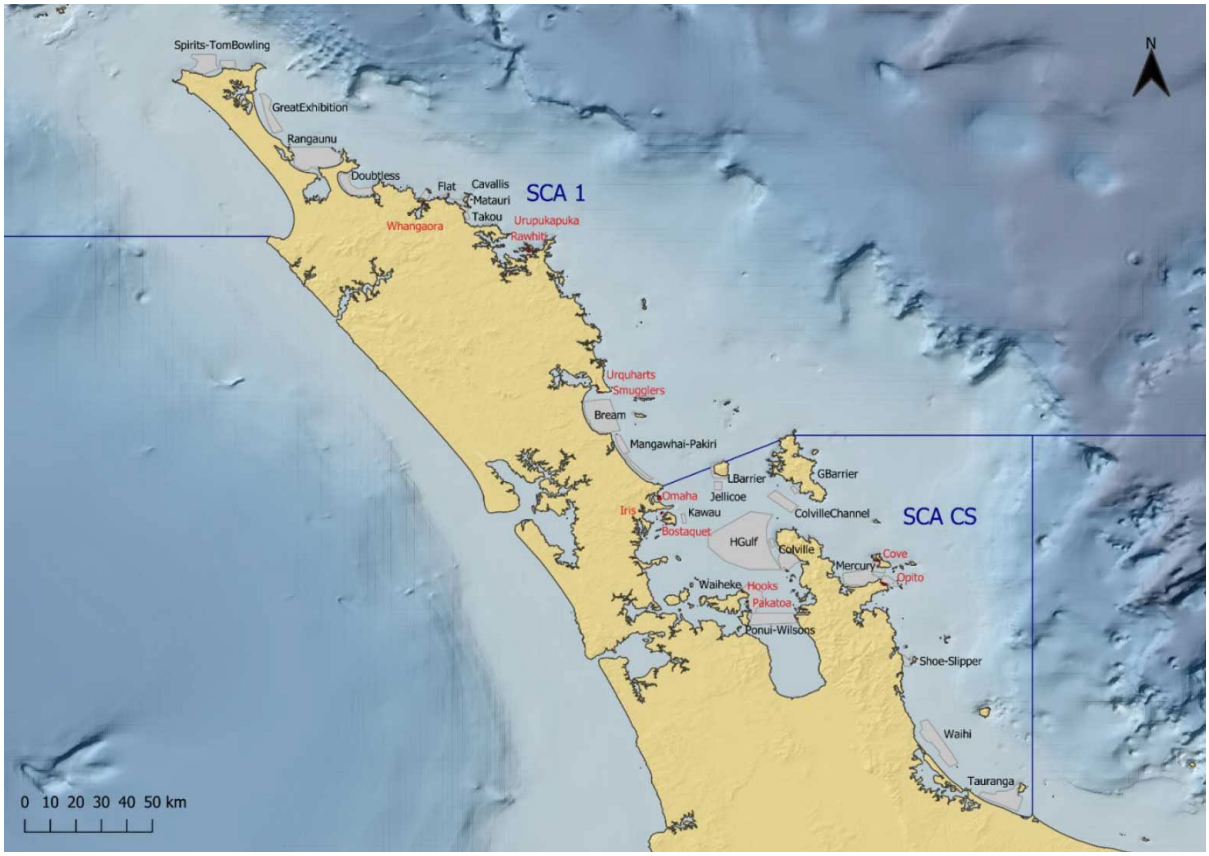
"Scallops are a national treasure. They are a taonga species, a key component of the marine ecosystem and highly valued as kaimoana by customary, recreational and commercial fishers." NIWA 2022 https://niwa.co.nz/news/going-easy-scallops

Every commercial scallop / *Pecten novaezelandiae* fishery in Aotearoa / New Zealand is closed. Habitat degradation is thought to be the main barrier preventing scallop recovery. https://www.mpi.govt.nz/dmsdocument/64971-AEBR-342-Habitat-factors-affecting-scallop-spat-survival-and-growth-in-Golden-Bay-and-Tasman-Bay

The tipa bed in Bream Bay is the second largest by area in Northland, covering 82.3 km^2, which accounts for 21.86% of the Quota Management Area SCA 1 (376.5 km^2). https://www.mpi.govt.nz/dmsdocument/64290/direct



Taking of scallops has been prohibited in Bream Bay since the 27th of October 2022. The penalty for taking scallops is listed in the closure notice.

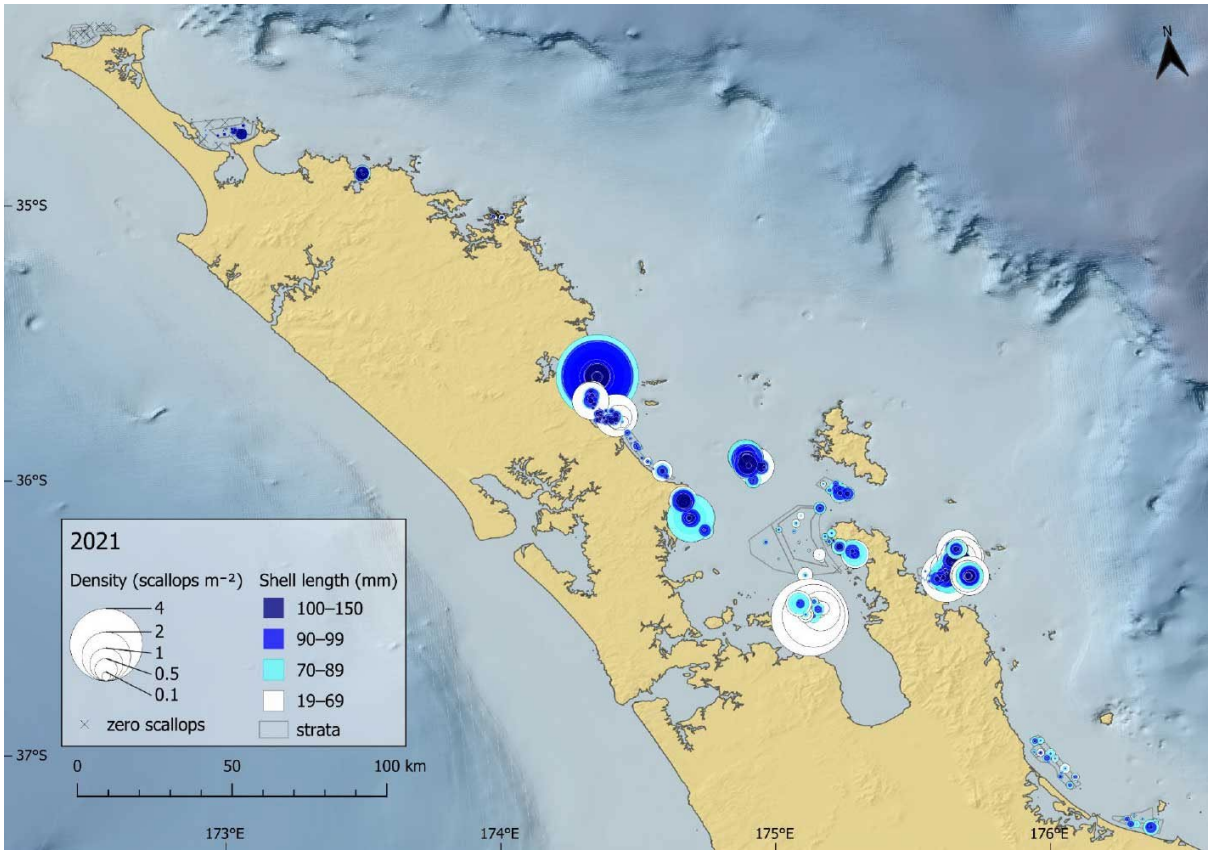
Under section 228 of the Fisheries Act 1996, every person commits an offence and is liable to a fine not exceeding $100,000 (as set out in section 252(5) of that Act) who contravenes, or fails to comply with, any sustainability measure implemented by notice in the New Zealand Gazette under section 11(4)(b)(i).

https://www.mpi.govt.nz/dmsdocument/55522-Fisheries-SCA-1-Closure-Notice-2022

Fisheries New Zealand surveyed scallop beds in quota area SCA 1 and SCA CS in 2021.

The scallop population at Bream Bay was one of four identified as most likely to recover. *"More juvenile scallops were found in Bream Bay, Waiheke, Hauraki Gulf, and Mercury where population recovery could occur if the scallops are able to survive and keep growing."*

https://www.mpi.govt.nz/dmsdocument/64290/direct



Scallop density in the 2021 survey

Bottom trawl and Danish seine restrictions

Most scallop beds are open to bottom trawling and/or Danish seining fishing methods. Contact with fishing gear can damage or kill benthic organisms, create a disturbance, and change the nature of the physical habitat.
https://www.mpi.govt.nz/dmsdocument/51682-Chapter-11-Benthic-seabed-impacts

Approximately 50% of the Bream Bay scallop bed is protected from the direct impacts of bottom trawling and Danish seining fishing methods.

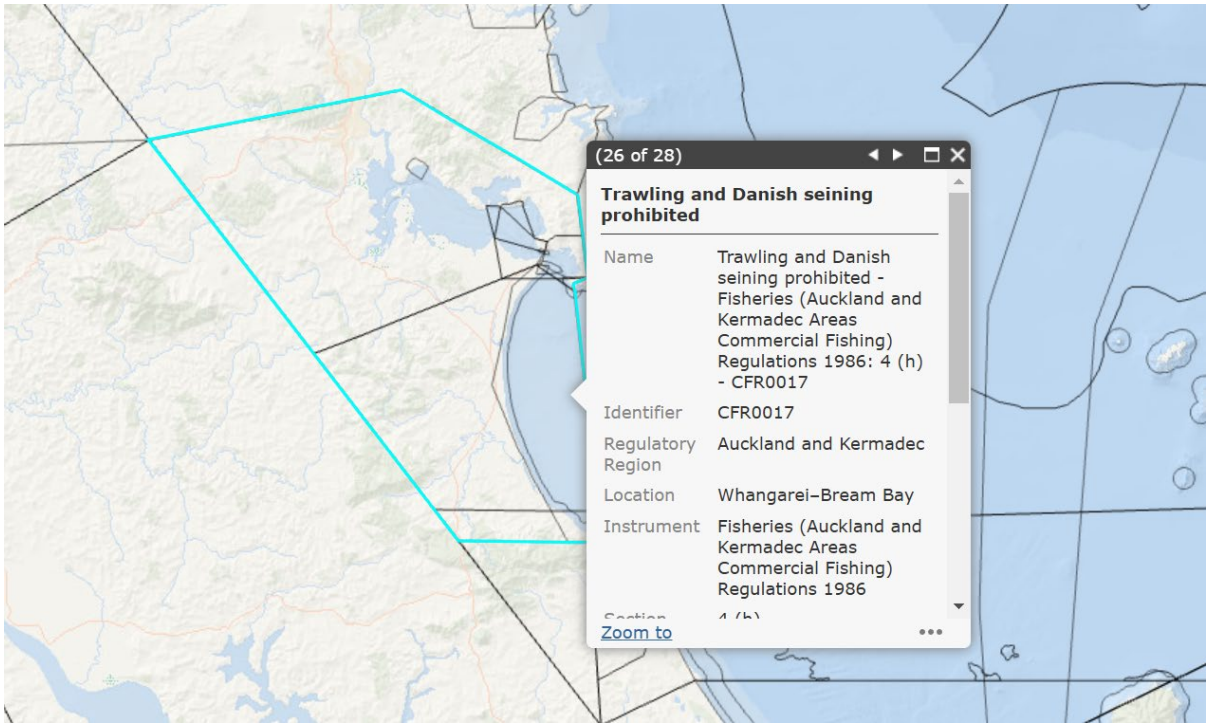
Fisheries (Auckland and Kermadec Areas Commercial Fishing) Regulations 1986 as at 06 October 2023. Section 4(h)

4. No commercial fisher shall use for taking fish a trawl net or a Danish seine net within the following waters:

(h) Whangarei–Bream Bay: the waters of the sea lying inside a straight line drawn from the southernmost extremity of Busby Head (at 35°51.719'S and 174°31.873'E) to the shore on the southern end of Bream Bay (at 36°02.721'S and 174°33.341'E)

https://legislation.govt.nz/regulation/public/1986/0216/latest/DLM105619.html

The area is publicly viewable on a map



https://maps.mpi.govt.nz/templates/MPIViewer/?appid=96f54e1918554ebbaf17f965f0d961e1

Section Rule 4(h) was amended in 2020 to correct the coordinates; however, this was the only modification. The rule was already in effect in 1986 when these regulations were initially introduced. The rule does not prevent scallop dredging. The box dredge fishing method has been implicated a primary stressor. https://www.waikatoregion.govt.nz/assets/WRC/TR202304.pdf Fisheries New Zealand has been consulting with the industry on alternative harvesting methods since 2013 https://www.mpi.govt.nz/dmsdocument/3481/direct

Impacts

There is limited research specifically on the impacts of sand mining in marine environments. The following summary is based on studies examining similar impacts on shellfish and their habitats in other contexts.

Direct impacts of sand mining on scallop beds.

1) Scallops removed from the seafloor during mining are killed or injured, making them unavailable to the fishery.

2) Scallop habitat, including tubeworm fields, shell hash, and settlement substrates such as fine branching red algae, is removed.

Indirect impacts of sand mining on scallop beds.

1) Sediment plumes generated by sand mining settle on the seafloor, clogging scallop gills and hindering their ability to breathe and feed. This affects both juvenile and legal-sized scallops.

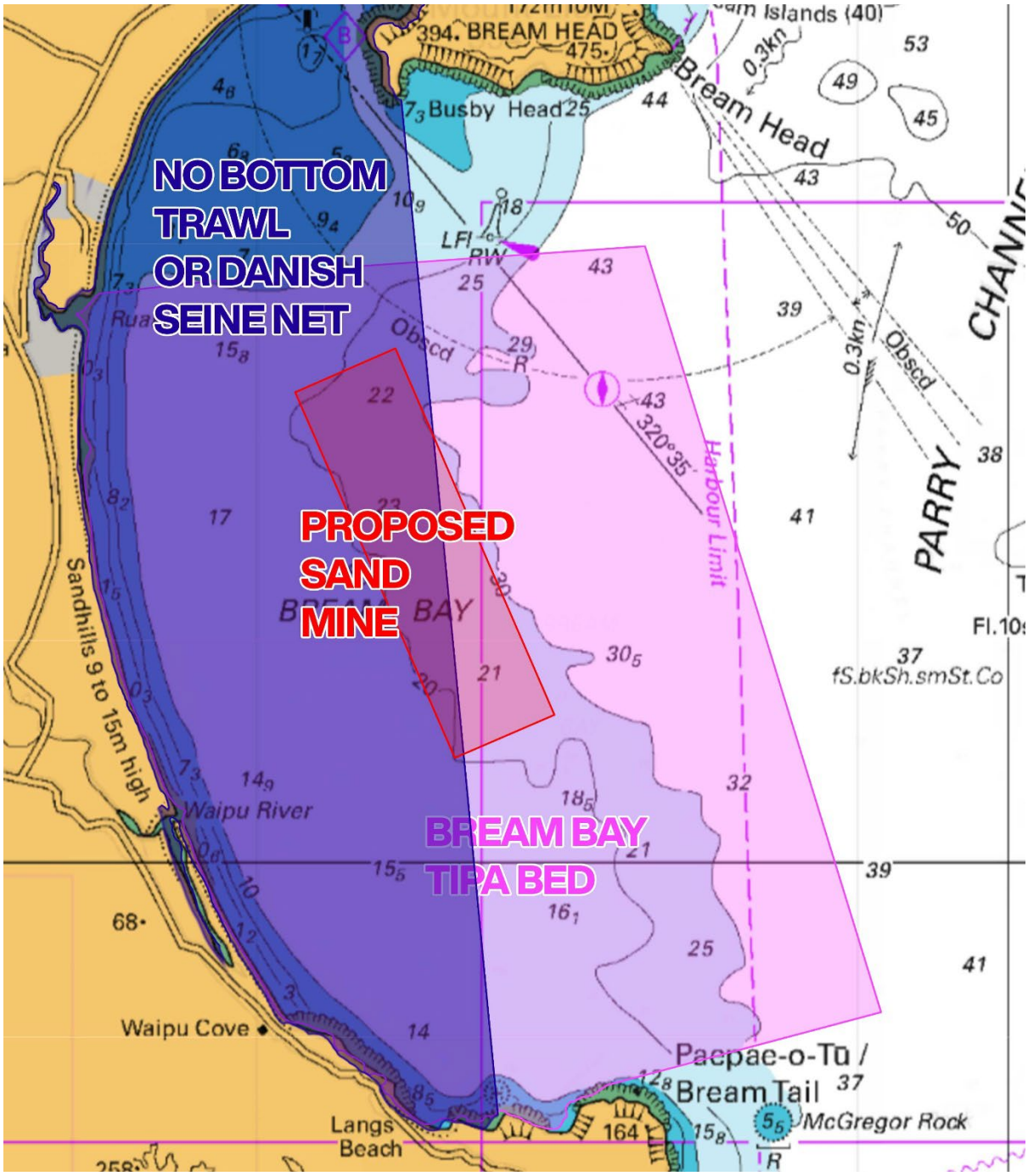
2) The alteration of seafloor bathymetry creates large trenches, leaving the area unstable and preventing the reestablishment of biogenic habitats that support scallops.

3) The reduction in substrate grain size caused by years of sediment plume settling from the mining activity is detrimental, as commercial scallop species generally prefer coarser sediments, such as fine sand to gravel substrates.

4) The loss of the Bream Bay scallop bed would lead to habitat fragmentation, disrupting the connectivity between scallop populations and affecting the resilience of SCA 1.

The refused decision following the hearing of an application for resource consent to extract sand from the coastal marine area off-shore at Pakiri https://www.aucklandcouncil.govt.nz/ResourceConsentHearingDocuments/cst60343373-dis60371583-decision.pdf cites Marine Ecologist Dr Kala Sivaguru (page 81) *"that large bivalve species are likely to take longer to recover than small species"* she goes on to disagree with the applicants that *"all macrofauna inhabiting the application area will recover within five years"*. The panel found that adverse effects on the macrofauna were significant.

Findings



Both scallops and scallop habitat in the area which has been closed to bottom trawling and Danish seining since at least 1986, have had the opportunity to recover since the closure of the scallop fishery in October 2022. Most of the proposed sand mining area overlaps with this passive recovery zone. The proposed sand mine could have serious impacts on the viability of the fragile fishery.