Department of Conservation
Te Papa Atawhai

File Ref DOC-7132261

Date: November 2024

To: Sue Reed-Thomas (NNI Director Operations) and Kirstie Knowles (Director Biodiversity Systems and Aquatic)

CC: Evan Davies (Marine Reserve Ranger, Northland); Matiu Mataira (Kaiarahi Matua, NNI); Carole Tilman (Community Ranger, NNI); Monique Ladds (Technical Advisor Marine, MET)

From: Joel Lauterbach (Operations Manager, Whangarei) and Sarah Meadows (Manager, Marine Ecosystems Team - MET)

Subject: Decision on scaling up the Urchin removal programme at the Poor Knights marine reserve

Purpose

1. To seek a decision on scaling up the Urchin removal programme at the Poor Knights marine reserve, in partnership with Te Whanau o Rangiwhakaahu.

Background

2. The Poor Knights Islands marine reserve was established under the Marine Reserves (Poor Knights Islands) Order 1981. This was made under the Marine Reserves Act 1971, which provides the core statutory responsibilities and powers relevant to the Department's management of the reserve.

3. The reserve is an internationally renowned diving and snorkelling destination due to its unique ecosystems and incredible biodiversity. It is most renowned for its vertical reef walls and caves that are covered with an amazing diversity of flora and fauna including sponges, bryozoans, ascidians, anemones and encrusting algae.

4. The Marine Reserve Monitoring and Reporting Programme, delivered at the Poor Knights marine reserves by the University of Auckland Institute of Marine Science Department, has identified the long spine black sea urchin (*Centrostephanus rodgersii)* as a major threat to the reserve (see https://doccm.doc.govt.nz/cwxv4/wcc/faces/wccdoc?dDocName=DOC-7132261)

5. *C. rodgersii* numbers have increased elevenfold since 1999 due to having few natural predators in the reserve[1] and its reproductive rate increasing due to climate induced sea temperature rises. *C. rogersii* barrens are a concern to Fisheries New Zealand, due to their potential for widespread ecological damage and impacts on fisheries.

[1] Urchins are largely nocturnal and their only known predators in New Zealand are large rock lobsters *(Jasus edwardsii)* and packhorse crayfish (*Sagmariasus verreauxi*). Harvesting has greatly reduced these species populations in northeastern New Zealand.

6. *C. rodgersii* is classed as “kina” for the purpose of the Fisheries (Amateur Fishing) Regulations 2013 and occurs throughout the South Pacific. It is found naturally in northeastern New Zealand, usually in low numbers.

7. Australia has seen significant urchin range expansion from the Great Barrier Reef, which has devastated kelp forests and collapsed the lobster industry in Tasmania and the rate of increase in New Zealand is currently higher/faster than that in Tasmania.

Trial removals at the Poor Knights Marine Reserve

8. To address the risk *C. rodgersii* poses, the Department, in partnership with Te Whanau o Rangiwhakaahu and the University of Auckland conducted a trial removal programme at three sites within Poor Knight marine reserve.

9. Removal areas covered ~30-40 m of coast, extended to ~18 m depth, and had a total area of ~540-1000m^2. Initial ecological surveys and removal of urchins were undertaken in April 2023. Sea urchins were removed using a combination of harvest and culling. A total of 4,140 *C. rodgersii* were removed in the initial removal, with a further 1,230 removed at the 6-month and 12-month follow-up.

Figure 1. a) manual crushing of urchins using metal pipe; b) collection of urchins into baskets. Photo credits: Arie Spyksma

10. After one year, the kelp (*Ecklonia radiata*) canopy cover increased dramatically and dominated the wall at two sites, but there was only a small increase at the third site, which had lower light levels. The response of the rock wall communities within the removal areas varied among the three sites after one year. However, all sites showed a general trend of increasing turfing algae and bryozoans, with a decline in bare rock and encrusting algae.

11. The results from these trials clearly confirm the impact of *C. rodgersii* on rock wall communities and show that the urchin must be kept at a density less than 0.3 per m^2 in order for the wall communities to recover.

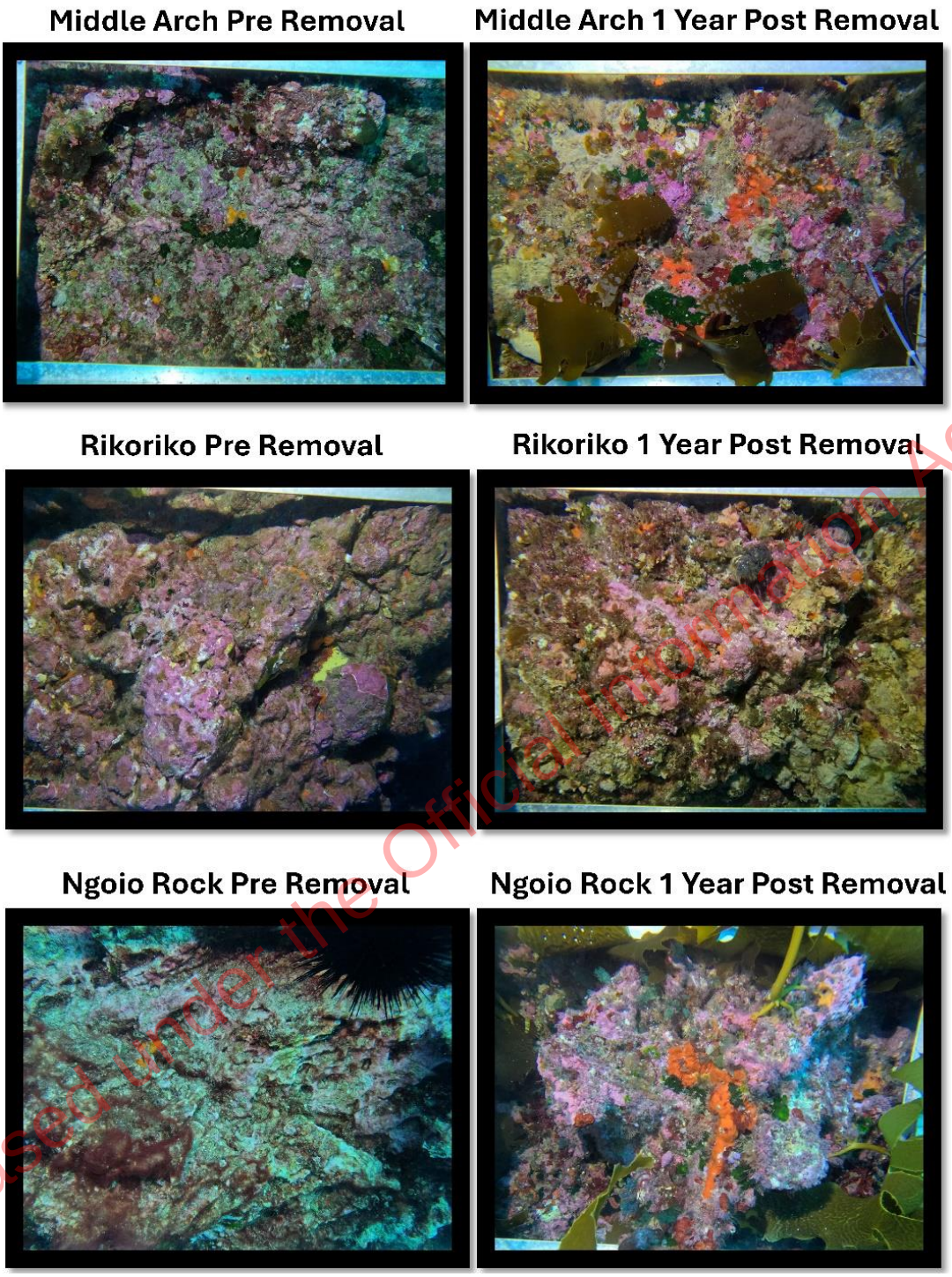


Figure 2. Photo quadrats from the same zones within the Removal areas prior to urchin removal and one year post urchin removal from the three sites at the Poor Knights Islands Marine Reserve

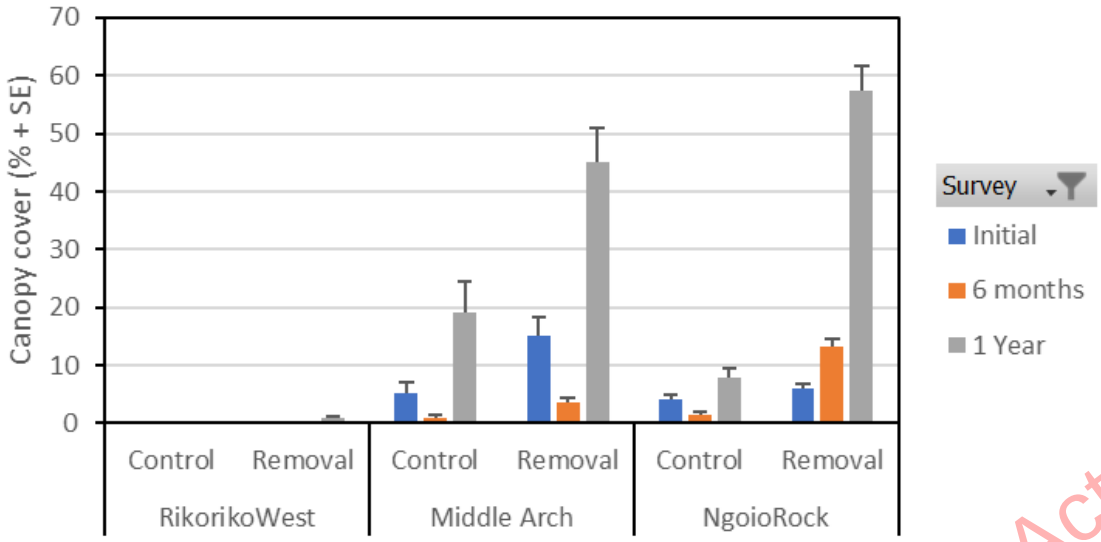


Figure 3. Mean canopy cover (± SE) of *Ecklonia radiata* within the Control and Removal areas prior to urchin removal (Pre removal) and 1 year post removal at A) Middle Arch; B) Ngoio Rock C) Rikoriko Cave

Legal and Regulatory considerations

12. As the urchin is not an invasive species in New Zealand, this expansion is best categorised as a "native pest" or "species irruption" scenario. It is not a biosecurity issue requiring action from the Ministry for Primary Industries or Northland Regional Council under the Biosecurity Act 1993.

13. Under the Fisheries (Amateur Fishing) Regulations 2013, there is a catch limit of 150 urchins per person per day, which binds the Crown as well. We are proposing to cull as many *C. Rogersii* as possible in defined areas selected by the partners. A new special permit will be required from Fisheries New Zealand.

14. The marine reserve is classed as a significant ecological marine area for the purposes of the Northland Regional Plan, with high ecological values. There don't appear to be specific rules in the Northland Regional Plan that would be relevant but we have engaged with Northland Regional Council anyway.

15. There are no specific references to this type of work in the Northland Conservation Management Strategy 2014-2024, nor is there a specific management plan for the marine reserve.

16. DOC is working closely with Fisheries New Zealand on these issues, with regular meetings to share our findings and learnings from the programme.

Management Options

17. The results of the trial were presented to hapu at the Matapouri Marae on Sunday 20 of October. A two-stage approach (short-term and long-term plan) to scaling up management was presented and accepted by all who attended.

18. In the short-term plan (12-24 months), the partners have agreed that 1-2 large sites at the Poor Knights Islands will be selected, and using DOC and University of Auckland divers, all of the urchins will be removed. This will be accompanied by monitoring before and after removals.

19. The partners have agreed that a long-term plan (2-5 years) will also be developed. This plan will be informed by the short-term management and will explore

additional options for management, including training hapu divers through a partnership with Northland Regional Council.

20. For this programme to be successful the urchins need to be kept at a density of less than 0.3 per m^2. Results from Australia show that the area would need to be cleared of urchins every 5-10 years to maintain recovery.

21. Support from mana whenua was confirmed at the wānanga on the 20 October 2024. In addition, a Te Whanau o Rangiwhakaahu representative has informed us that they support this approach and will work alongside us on the planning and implementation.

Recommendation

22. In consultation with the Marine Ecosystem Team, we recommend the Department implements a two-stage approach to managing urchins at the Poor Knights marine reserve – a short-term plan to scale up removals at 1-2 sites and a long-term plan for efficient management into the future.

23. This approach would be led by the Department in partnership with Treaty partners and University of Auckland Institute of Marine Science Department researchers who have been monitoring the urchin and undertook the trial removal.

24. Given the programme is to be undertaken in a marine reserve and led by the Department, this option is considered a part of the Director-General's management functions and powers under sections 9 and 11 of the Marine Reserves Act 1971 and does not require permitting under that legislation.

Timeline and resourcing

25. Key stages in this process, and current timelines are summarised below.

Key task	Date
MET informed of monitoring results showing significant urchin increase	20/06/2022
MET reported findings to Regional Operations	20/08/2022
Treaty partner engagement	28/09/2022
Northland Regional Council (RC) and Fisheries New Zealand (FNZ) engagement	01/11/2022
Operational planning (with iwi and RC)	February 2023
Implementation	May 2023
Monitoring and removals (as per contract with University of Auckland)	May 2023 (before removal) November 2023 July 2024
Results of trial presented to hapu	20 October 2024

26. DOC staff resource requirements are outlined in Attachment 1. Work will be led by Northern North Island Operations, supported by the Biodiversity Systems and Aquatic Unit (Marine Ecosystems Team).

27. The cost of the program is expected to be covered predominantly by ongoing collaborative projects already underway at Auckland University. DOC will continue to contract the University to run the monitoring programme in the marine reserve.

DOC fund the programme and provide resources (boat) and time (technical advice and rangers).

28. The removal and monitoring this financial year will be covered by shared costs from Operations ($11k), Biodiversity Systems and Aquatic ($14k) and University of Auckland (in kind costs – divers and data analysis). Budget for outyears will be dependent on the Biodiversity Planning Approach outcome and is included in the Outcome plan for the Poor Knights Marine Reserve.

Risks

29. There are some reputational and precedent setting risks to DOC and government as to managing a native species inside of a marine reserve. We are working with the Public Affairs group to minimise these.

Opportunities

30. Scaling up removals will help us to achieve Goals 10.2.2-3, 11.3.1-3 and 13.3.1-3 of Te Mana o Te Taiao around managing and protecting native biodiversity. It will also help us to achieve TB4 implementation of adaptation actions from DOC's Climate Change Adaptation Action Plan.

Next Steps

31. We would welcome the opportunity to meet with you to answer any questions you may have and discuss our resourcing.

32. To continue engaging with iwi, MPI and the Regional Council regarding implementation and any other permitting requirements.

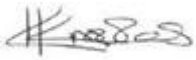
Attachments

1. Management options
2. Resourcing
3. Supplementary information

Decision

Agree/Disagree

Director Northern North Island Operations
Sue Reed-Thomas
3 March 2025



Agree/Disagree

Director Biodiversity System and Aquatic
Kirstie Knowles

If disagree, please indicate an alternative option

Sue comments:

Decision from me has been delayed as I only received response in Feb 25 to the questions I asked in November 24 related to this paper.

As Kirstie notes, I will agree with increased removal and monitoring in FY25 (covered by shared costs from Operations, Bio Systems and Aquatic and in-kind support from University of Auckland.

A clearer short (1-2 years) and longer-term plan is needed to inform further decision re: ongoing resources and alignment with Bio Planning Approach for outyears. I note that management options used overseas include things outside of our control (ie create fisheries and overseas market) that are beyond control of DOC.

In that longer term plan, I will be looking to clearly understand that the conservation impact/gain that we seek to make in terms of securing the health of the overall marine ecosystem within the reserve (ie what is the result we are after). I note that a clear plan of this nature would be key to seeking external investment.

Kirstie: Agree plan for this FY. As noted, we are unable to comfirm budget in outyears at this stage.

Attachment 1: Resourcing

Who	Role	Task	Time
Sue Reed-Thomas (Director NNI)	Decision maker	Sign memo and provide advice/guidance	1-2 hours
Kirstie Knowles (Aquatic Director)	Support decision maker	Understand the task and provide advice/ guidance	1-2 hours
Joel Lauterbach (Operations Manager)	Implementation lead	Liaison with iwi and provide advice/ guidance	5-6 hours
Evan Davies (Marine reserve ranger)	Operational lead	Prepare the short-term operational plan Prepare the long-term operational plan 1 x removal trip	18 hours 40 hours 56 hours
Monique Ladds (Technical advisor)	Technical lead	Support operational plan development Support comms plan development Liaise with regional council and MPI Organise monitoring contract	20 hours 8 hours 4 hours 4 hours
Carole Tilman	Community ranger	Liaison with iwi and provide advice/ guidance	2-3 hours
Matiu Matara (Kaiarahi Matua)	Treaty partner advisor	Liaison with iwi and provide advice/ guidance	2-3 hours
Abigail Monteith	Comms advisor	Prepare comms plan	7-8 hours
Casey Spearin	Support comms advisor	Awareness of the programme and support where needed	3-4 hours