Fisheries New Zealand
Tini a Tangaroa

Enabling the removal of sea urchins for the management or prevention of urchin barrens

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1 Purpose

1. Urchin barrens are a significant concern across New Zealand, where they proliferate due to high densities of sea urchins. These barren areas emerge when urchins consume virtually all vegetation on rocky reefs, leading to a loss of habitat and biodiversity. The widespread occurrence of barrens at such a scale is generally attributed to the removal of sea urchin predators through fishing activities, noting a wide range of factors also likely play a part. Consequently, the marine ecosystem experiences reduced biodiversity and productivity, posing challenges for the overall health and resilience of coastal environments. Addressing urchin barrens, and their causes, is crucial for restoring and maintaining the ecological balance of these marine habitats.

2. Fisheries New Zealand is adopting an integrated management approach to address the proliferation of these barren areas, recognising the urgent need for comprehensive action. This approach encompasses a suite of management initiatives aimed at restoring kelp forests and mitigating the adverse effects of urchin barrens. Introducing a new special permit purpose that focuses on restoration and prevention efforts to combat urchin barrens is one of many tools in Fisheries New Zealand's broader management efforts. There will be further opportunity to input into the various other initiatives as they are progressed.

3. Fisheries New Zealand proposes to seek approval from the Minister for Oceans and Fisheries (**the Minister**) to establish a new purpose for issuing special permits under s 97(1)(c) of the Fisheries Act 1996 (**the Act**).

4. The proposed purpose is:

   "*To allow persons or organisations to harvest, cull, or translocate sea urchins for the purpose of habitat restoration and/or prevention of urchin barrens*."

5. This paper refers to the New Zealand sea urchin (*Evechinus chloroticus;* hereafter referred to as kina) and the long-spined sea urchin (*Centrostephanus rodgersii;* hereafter referred to as *Centrostephanus*). Where the term 'sea urchin' is used, it refers to both kina and *Centrostephanus* collectively.

6. Fisheries New Zealand has developed this discussion document for the purpose of consultation as required under the Act. The views outlined in this paper are preliminary and are provided as a basis for consultation with stakeholders.

2 Background

2.1 Special permits

7. Special permits are a regulatory tool under section 97 of the Act that can authorise the take of fish, aquatic life, or seaweed when that activity does not fall under customary, commercial, or recreational fishing frameworks.

8. Section 97(1)(a) and (b) of the Act authorises the Director-General of the Ministry for Primary Industries (MPI) to issue a special permit for the purposes of:

   - education;
   - investigative research;
   - management or eradication of unwanted aquatic life[1];
   - the carrying out of trials and experiments with fishing vessels or fishing gear; or
   - sport or recreation in the case of any disabled person.

[1] The Fisheries Act 1996 defines 'unwanted aquatic life' as any species listed in Schedule 3 of the Freshwater Fisheries Regulations 1983 or any species of fish, aquatic life, or seaweed that is determined by a Chief Technical officer under the Biosecurity Act 1993 to be an unwanted organism. These species can be found in the Official New Zealand Pest Register.

9. When an application for a special permit does not fit into one of the purposes specified under sections 97(1)(a) and (b), the Minister may approve a new purpose under section 97(1)(c) of the Act. In this case, the proposed purpose of habitat restoration and/or prevention of urchin barrens, is not captured under one of the currently prescribed special permit purposes.

10. Before approving any new purpose, the Minister must consult with such persons they consider are representative or those classes of persons having an interest in the granting of a new special permit purpose, including Māori, environmental, commercial, and recreational interests. Following consultation, the Minister may elect to approve or decline a proposed purpose.

2.2 Sea urchins

11. Kina are commonly encountered in rocky reefs across north-eastern New Zealand, while *Centrostephanus* are more common on offshore reefs in Northland. Both play significant roles in marine ecosystems.

2.2.1 Kina

12. The New Zealand sea urchin (*Evechinus chloroticus*) is commonly known as kina (Figure 1). They are a shared species in that they are highly valued by Māori, recreational fishers, and the commercial fishing industry. Kina are also a key species in coastal marine ecosystems. The kina fishery has been managed under the Quota Management System (**QMS**) since 2003.

Figure 1: The New Zealand sea urchin (*Evechinus chloroticus*, kina)

13. Kina are herbivorous and are found throughout New Zealand and the sub-Antarctic Islands. They are found on coastal rocky reefs from the shallow subtidal to depths of at least 60 metres.[2]

14. Movement is minimal and kina cannot swim but are able to move across hard surfaces using appendages called 'tube feet' that have suckers at the tip. Kina have an annual reproductive cycle which culminates in multiple spawning events across mid and late summer.[3] Size at maturity appears to vary between locations and may be as small as 30 mm test diameter (TD) and as large as 75 mm TD.[4] The rate of settlement is likely to vary between years and appears to differ among locations and habitats. Larval abnormalities have also been correlated with increasing suspended sediment concentration in laboratory experiments.[5] This signals a link between environmental factors associated with terrestrial runoff and kina abundance.

15. Feeding experiments have indicated that kina possess a selective mode of feeding, being able to distinguish between algal species but with a preference for the kelp *Ecklonia radiata*[6] and to a lesser extent *Sargassum sinclarii*, *Landsburgia quercifolia* and *Carpophylum maschalocarpum*. Kina can also feed on encrusting organisms, such as sponges, when algal food is scarce.

[2] Miller & Abraham (2011)
[3] Walker (1982)
[4] Miller & Abraham (2011)
[5] Shima & Phillips (2006)
[6] Cole et al. (2000)

2.2.2 Centrostephanus

16. The long-spined sea urchin (*Centrostephanus rodgersii) (*Figure 2*)*, like kina, are found in various coastal areas around northeastern New Zealand. With an annual reproductive cycle, sexual maturity is reached at 40-60 mm TD. However, spawning in smaller individuals (30-50 mm TD) can occur but are not reliably fertile.[7]

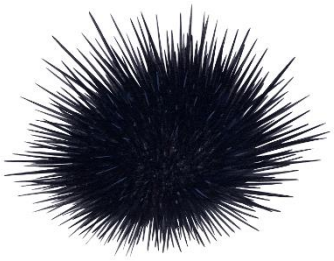

Figure 2: The long-spined sea urchin (*Centrostephanus rodgersii*)

17. *Centrostephanus* primarily feed on algae, including kelp and macroalgae. However, they exhibit a different grazing pattern to kina, showing a preference for understorey grazing which inhibits new recruitment of algal species.[8]

2.3 Urchin barrens

18. Urchin barrens refer to areas of rocky reef where sea urchins have become abundant and have consumed most or all of the macroalgae (seaweed) that would otherwise be present. In these areas, sea urchins graze on kelp and other macroalgae, preventing their growth and causing a shift to barren rocky habitats. Urchin barrens are characterised by the absence or depletion of kelp forests and the proliferation of sea urchins, resulting in reduced biodiversity and ecological imbalance.

19. There is currently no broadly accepted formal definition of what constitutes an urchin barren. Consequently, Fisheries New Zealand has developed a definition for the purposes of identifying those areas that are of concern. Urchin barren areas vary depending on ecological factors, but they typically exhibit low biodiversity and reduced primary production compared to healthy ecosystems. With this in mind, urchin barrens have been defined as:

> *"sea urchin dominated areas of rocky reef that would normally support healthy kelp forest but have little or no kelp due to overgrazing by sea urchins."*[9]

20. There is a known link between the formation of urchin barrens and the local abundance of predator species, in that, where the abundance of sea urchin predators such as snapper and rock lobster is low, sea urchin populations can proliferate, which can intensify the formation of urchin barren areas.[10]

2.4 Previous kina removals

21. A number of small-scale kina removal trials have been authorised under special permits for the purpose of investigative research. Across these trials, researchers have tested the effects of kina harvesting, culling, and/or translocation. Removing kina from high density areas, and monitoring the results, has provided an improved understanding of:

    a) The density of sea urchins associated with urchin barren areas,

[7] Byrne & Andrew (2020)
[8] Doheny et al. (2023)
[9] Doheny et al. (2023)
[10] Doheny et al. (2023)

b) The resourcing and effort required to clear urchin barren areas under differing circumstances,

c) The density to which urchins need to be reduced in order to provide for recovery of reef areas,

d) Insights into kelp recovery and the return of reef biodiversity over time,

e) Timelines around recolonisation of urchins after a removal.

22. The largest removal trials conducted in New Zealand to date have been undertaken by University of Auckland researchers, who recently removed an estimated[11] 65 tonnes of kina (~403,000 individual kina) from just 7.1 hectares of shallow subtidal reef at sites at Hauturu-o-Toi / Little Barrier Island, Leigh, and Ōtata Island (Noises)[12]. This group has also conducted similar, but smaller scale removals of kina in the Marlborough Sounds.

23. Monitoring of the trial sites has shown rapid increases in algal regrowth and have also shown remaining kina are in better condition due to increased food availability. However, while large-scale removals of kina can lead to rapid algal recovery, without the presence of large predators such as snapper and crayfish to maintain kina at low densities, kina barrens were observed to re-establish.

24. Establishing a dedicated special permit purpose that will support the large-scale removal of urchins for the purpose of management and/or prevention of urchin barrens is considered a key part of setting the foundation for future restoration efforts.

25. However, while large-scale removals have the potential to be a significant component of ecosystem restoration efforts going forward, it is considered that they should be part of a comprehensive, long-term approach that addresses the range of factors contributing to the formation of urchin barrens, including measures to maintain ecological balance.

3 Proposed new special permit purpose

26. In most circumstances outside commercial kina harvest under the QMS, a special permit is required for any urchin removal activities of scale. This special permit purpose proposes to facilitate large scale removal of sea urchins. A special permit under this purpose would enable persons or organisations involved in the activity to:

- take and possess sea urchins in excess of current daily limits; without the need for a commercial fishing permit or annual catch entitlement, and/or
- take and translocate sea urchins back to the sea in a new area.

27. Currently sea urchin removals for the purposes of restoration and/or urchin barren prevention cannot occur at a meaningful scale using the existing recreational daily limit, which allows people to take up to 50 kina and *Centrostephanus* per person per day as part of a combined daily bag limit.

28. Large scale removals could occur using commercial harvest under the total allowable commercial catch (**TACC**) set under the QMS. Commercial fishers have indicated that they may be willing to support removal initiatives, but they do not consider it appropriate to use their annual catch entitlement (**ACE**) to harvest sea urchins from barrens, as the condition of the roe is poor and largely unmarketable.

29. Previous sea urchin removal trials that have taken place have done so under a special permit issued for the purpose of ‘investigative research’. This purpose enables research to better understand an issue and is not appropriate for ongoing management initiatives that require urchin removal activities for the purpose of restoration and/or prevention of urchin barrens.

[11] Miller & Shears (unpublished data)
[12] Miller & Shears (2022)

30. Therefore, in order to provide a mechanism to support management and kelp forest restoration, Fisheries New Zealand proposes that the Minister approves a new special permit purpose under section 97(1)(c) of the Act, so that persons or organisations can apply for a special permit:

> **"To allow persons or organisations to harvest, cull, or translocate sea urchins for the purpose of habitat restoration and/or prevention of urchin barrens."**

31. Given the significance of kina to tangata whenua and their importance within healthy reef ecosystems, the proposed new special permit purpose would only enable sea urchin removal activities within identified urchin barren areas of concern, or areas at risk of becoming urchin barrens if intervention did not occur. This permit would also provide a mechanism for tangata whenua and community to lead and/or participate in the active management and prevention of kina barrens.

32. The identification of these areas would initially rely on evidence provided by the applicant, which would then be reviewed by Fisheries New Zealand during when considering whether to approve the application.

33. Should the proposed new special permit purpose be approved by the Minister, special permit applicants will be required to adhere to an agreed sea urchin removal plan. This is discussed further in section 5 of this document.

4 Treaty of Waitangi obligations as set in legislation

34. Section 5(b) of the Act requires that the Act be interpreted, and that people making decisions under the Act will act, in a manner that is consistent with the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 (**the Settlement Act**). The Settlement Act provides that non-commercial customary fishing rights continue to be subject to the Principles of the Treaty of Waitangi and give rise to Treaty obligations on the Crown.

35. Section 10 of the Settlement Act requires the Minister to develop policies and programmes to recognise the use and management practices of tangata whenua. The Minister must also recommend the making of customary fishing regulations under section 186 of the Act to recognise and provide for customary food gathering by Māori and the special relationship between tangata whenua and those places of customary food gathering importance.

36. Through the development of this proposal, Fisheries New Zealand has engaged with tangata whenua in the upper North Island where kina barrens are most prevalent. Hui were held in Whangarei and Kaitaia to discuss a range of kina management options, including the establishment of a special permit purpose. The establishment of a special permit purpose was also discussed at the Mid North (East), Mid North (West) and Te Hiku o Te Ika (Far North) Iwi Fisheries Forums.

37. There was general support for the proposal however there was concern that caution would be needed in the approval of special permits for sea urchin management, to ensure engagement and consultation with local mana whenua, and that removals do not impact areas of cultural significance and/or important areas for customary harvest of sea urchin.

5 Proposed special permit conditions

38. Section 97 (4) of the Act says that, notwithstanding anything in any other section of this Act, the chief executive may authorise the holder of a special permit to take and dispose of fish, aquatic

life, or seaweed subject to such terms and conditions as the chief executive may set out in the permit.

39. Accordingly, special permit conditions for sea urchin removals will be developed to manage any risks that are identified during the special permit assessment process. The Act also allows for such conditions to be amended, added to, or revoked if necessary.

40. In general, special permits are issued for a specified period, and may be revoked if the applicant is not achieving the permit objectives or complying with any conditions. In relation to the proposed new special permit purpose for urchin barrens, the conditions set out below are proposed to be part of any approved special permit.

5.1 Conditions relating to removal activities

41. The objective of the proposed new purpose is to facilitate reef and kelp forest restoration in urchin barren areas. Based on previous research and trials it has been identified that the removal of sea urchins down to densities of less than one urchin per square metre is required to achieve this goal.

42. Therefore, the conditions associated with a special permit for sea urchin removals will require the special permit applicant to formulate a comprehensive removal plan that;

    (a) sets out the area that the permit will apply to and how that area relates to the Fisheries New Zealand definition of an urchin barren;

    (b) outlines how the removal will take place to give effect to the special permit purpose objective;

    (c) outlines the intended means of disposal of the kina (if harvested) including intent for any sale of harvested kina, and;

    (d) demonstrates that the applicant has engaged with appropriate iwi and hapu and is aware of any concerns relating to the special permit being issued.

43. For Fisheries New Zealand to approve a special permit application, the removal plan would provide specific detail as to, for example: the method of removal (culling, harvest, or translocation), the number of removals (number of events, days and sites) to be undertaken, methods of collection, estimated number/amount of urchins to be collected, methods to achieve the desired density of sea urchins, transportation requirements and ongoing monitoring. If the removal is to involve translocation, then donor and receiver sites will need to be specified and agreed in order to manage risks, including biosecurity.

44. Fisheries New Zealand will assess the proposal to ensure it supports the objective of restoration through urchin barren management. This includes evaluating the feasibility, effectiveness, and sustainability of the proposed plan.

5.2 Conditions relating to collections, reporting, and recordkeeping

45. It is proposed that the special permit holder will be required to submit a “pre-trip report” to Fisheries New Zealand to advise when sea urchin removal activities will take place. The nature and timing of the notification requirements will vary based on the scale of the removal permissible by the permit. Information required to be submitted under this report will likely include the special permit holder’s name and special permit number, the intended date(s), time(s) and location(s) of collection, the species to be collected, method(s) to be used and the name(s) of the person(s) responsible for the collection.

46. Reporting, usually on an annual basis, will be required to be submitted to Fisheries New Zealand. Reporting requirements typically include a summary of all work undertaken under an approved special permit and would include an estimate of the quantity of sea urchin removed and how it was used or disposed of, the method of disposal/destination of the urchins and the results of any ongoing monitoring.

47. Sea urchins, specifically kina, taken and returned as part of translocation activities would require reporting and monitoring for translocation sites. Note it is not expected that translocation permits would be issued for *Centrostephanus*.

48. Under the Act, special permit purposes allow for the potential sale of removals, although this aspect of the application will be subject to individual assessment based on specific circumstances and relevant considerations.

5.3 Conditions relating to biosecurity

49. All vessels and equipment used for removal activities must be maintained in such a manner that reduces the risk of biofouling and the spread of unwanted aquatic life.

50. The special permit holder must also notify the Ministry for Primary Industries should they observe significant mortality or abnormally high numbers of distressed, diseased, or moribund other aquatic life. Or, if any unwanted or unusual organisms are observed during removal activities.

5.4 Environmental principles

51. The environmental principles of the Act that must be taken into account when considering special permit applications, are as follows:

- Associated or dependent species should be maintained above a level that ensures their long-term viability.
- Biological diversity of the aquatic environment should be maintained; and
- Habitats of particular significance for fisheries management should be protected

5.4.1 Associated or dependent species – section 9(a) of the Act

5.4.1.1 Protected species interactions

52. Harvesting of sea urchins through hand-gathering or freediving is considered to pose little to no risk to seabirds.[13] However, harvesting involves the use of boats or vessels and there is a risk of direct collisions between seabirds and the vessels, leading to injury or mortality.

53. There are no known captures of marine mammals, seabirds, or protected fish species in New Zealand kina fisheries.

5.4.1.2 Fish and invertebrate bycatch

54. Sea urchins are typically harvested by hand-gathering while freediving in north-eastern New Zealand with some historically being taken by targeted dredging in the Marlborough Sounds.[14]

55. The method of hand-gathering is a highly selective one and there is no bycatch of any fish and invertebrate species. The method of dredging is known to have impacts on marine ecosystems, including to marine habitats, seabed structure, and marine life. It may also result in changes to localised sedimentation, affecting benthic organisms, and altering the balance of the ecosystem.

56. Limited information is available on bycatch in kina fisheries where harvesting occurs by dredging, but it is anticipated that dredging methods may result in bycatch of benthic species. It is not anticipated that a special permit for sea urchin dredging would be issued unless there was confidence adverse effects could be mitigated.

[13] Ministry for Primary Industries (2021) Aquatic Environment and Biodiversity Annual Review (AEBAR): A summary of environmental interactions between the seafood sector and the aquatic environment.
[14] Fisheries New Zealand (2023)

5.4.2 Biological diversity of the aquatic environment – section 9(b) of the Act

57. Most kina harvesting is conducted through hand gathering while freediving. The selective nature of this method of harvesting ensures that there is no bycatch or incidental mortality of kina or non-target organisms. In areas where dredging may occur, it is expected that bycatch or incidental mortality of kina or non-target organisms may occur.

58. Harvesting of kina may lead to a reduction in herbivory on a reef resulting in an increase in the abundance of macroalgal and invertebrate species and a corresponding increase in associated biodiversity.

59. The removal of predators (particularly large predators) through fishing, and the occurrence of urchin barrens as a result, will have an impact on associated biodiversity.[15] The full extent of this impact is unknown (including on associated and dependent species), but it is likely that a shift from productive kelp forests to urchin barrens will result in reduced primary production and biodiversity. It is acknowledged that kelp habitats are likely to be important for a range of harvested and non-harvested species, and any reduction in such habitats is therefore likely to be adverse to species that rely on kelp[16].

60. Fisheries New Zealand notes that environmental factors, such as sedimentation and water quality, also affect the distribution and abundance of biological diversity on rocky reefs but are not directly managed by Fisheries New Zealand. Fisheries New Zealand will continue to monitor research in this field and will engage with relevant local authorities in this regard.

5.4.3 Habitats of particular significance for fisheries management – section 9(c) of the Act

61. Habitats of particular significance for fisheries management are not defined in the Act. Fisheries New Zealand recently consulted on draft guidelines for identification of habitats of particular significance for fisheries management and the operational proposals to support its application. In this context, protect means taking measures that would avoid, remedy, or mitigate the adverse effect of a decision that could undermine the function the habitat provides for the fisheries resource and ecosystem. There are no specific habitats of particular significance identified for kina fisheries at this time in the draft guidelines. What is known is outlined in Table 1.

62. Irrespective of whether a habitat of particular significance for kina has yet been identified, Fisheries New Zealand considers that the introduction of a special permit purpose would not increase adverse effects on any significant kina habitats in New Zealand as this permit only enables harvesting from identified areas of concern and each permit requires assessment before approval. It is expected that special permits issued under the proposed purpose would ultimately contribute to improving the coastal marine environment.

Table 1: Summary of information on potential habitats of particular significance for fisheries management.

Habitat of particular significance	Rocky intertidal and subtidal reefs
Attributes of habitat	Sea urchins are found along in rocky intertidal and subtidal reefs dominated by encrusting algae. They inhabit shallow subtidal waters to depths of about 60 metres. Sea urchin populations are not uniformly distributed across all rocky reef habitats. Abundance is primarily determined by depth and wave exposure[17].
Reasons for particular significance	Sea urchin larvae settle on rocky substrate indicating the importance of the presence of suitable settlement surfaces. Rocky intertidal and subtidal reefs are also characterised by the growth of seaweed species and algae. Rocky shores provide stable platforms for seaweeds to anchor themselves to and create forests. These kelp forests provide shelter and nursery grounds for many fish species

[15] MacDiarmid et al. (2013)
[16] Dayton (1985)
[17] Shears & Babcock (2007)

	such as kina, snapper, and crayfish. They also provide food for grazing species such as kina, crabs and snails which serve as prey for large predatory fish species. Rocky shores in areas of wave exposure are important, as species that attach themselves to substrate permanently, such as barnacles and sea squirts, cannot forage for food, and therefore rely on waves to transport food to them. Intertidal and subtidal reefs, as a result of the points mentioned above, are typically defined as ecosystems that are high in biodiversity
Risks/threats	The overfishing of key predator species, such as snapper and crayfish, is considered a key contributor to the formation of urchin barrens. Urchin barrens are characterised by bare rocky substrate, a complete or significant loss in seaweeds, low biodiversity, and high densities of kina and they ultimately threaten healthy kina habitats. Fine sediments introduced from runoff from the land may have adverse effects on sea urchins and their habitat. Layers of fine sediment can reduce light levels for marine plant species which could impact food availability for intertidal and subtidal species[18]. The oceans around the east coast North Island of New Zealand are warming at a rate well in excess of the global average[19], and moderate to strong heatwaves have been recorded in recent years in the Hauraki Gulf[20]. Changes in the environmental conditions associated with marine heatwaves may have impacts on the survival of urchin larvae and food availability for sea urchins. However, the extent to which changes in climate and temperature may be affecting sea urchin habitat suitability is unknown. The increased presence of the *Centrostephanus* may also pose a risk to sea urchin habitat. *Centrostephanus* has been observed to cause barren expansion[21].
Confidence	Body of empirical work exists but it is associated with some uncertainty, or the expert has direct personal research experience.

6 Outcomes of issuing a special permit under this purpose

6.1 Impact

63. Following consultation, the Minister will decide whether to approve or decline the proposed special permit purpose. If the Minister approves the proposed purpose, interested parties would then be able to apply for a special permit through Fisheries New Zealand's standard application process. See *How to apply for a fisheries special permit* at https://www.mpi.govt.nz/fishing-aquaculture/fisheries-management/how-to-apply-fisheries-special-permit/ for more information.

64. The application process includes an assessment of the application by Fisheries New Zealand. This includes consideration of the purpose (section 8) of the Act, in providing for utilisation of fisheries resources while ensuring sustainability, the environmental principles (section 9), and the information principles (section 10) of the Act. As part of the assessment, consultation is undertaken with relevant parties who have an interest in the granting of a special permit, including tangata whenua, commercial and recreational parties, consideration is given to whether the issuing of any special permit will have a significant effect on fisheries resources or any fishing interest in the stocks affected that are provided for or authorised by or under the Act.

6.2 Cost

65. A special permit application submitted for the purposed purpose would incur an hourly charge[22] for time spent processing and assessing the application. This fee may be waived for some applications, upon request.

[18] Nicholls et al. (2003)
[19] Sutton & Bowen (2019)
[20] Moana Project (n.d.)
[21] Kerr (2016)
[22] The current hourly charge of $133.88 for special permit applications is stipulated in Schedule 2 of the Fisheries (Commercial Fishing) Regulations 2001.

6.3 Benefits

66. Kina is a taonga to tangata whenua, is prized by certain amateur fishers and is valuable to the inshore commercial fishing sector.

67. It is recognised that in and of itself a special permit purpose will not solve the issue of kina barrens. However, the ability to remove urchins from barren areas at scale, under a special permit, may enable further benefits to be derived from these fish stocks for all users, and enhance fisheries ecosystems. These include:

- **Restoration/reforestation of coastal rocky reefs and associated biodiversity:** by reducing the density of urchins in barrens, there is a greater opportunity for the re-establishment of kelp forests and other marine vegetation, which in turn supports a diverse array of marine life.
- **Improved value/condition of sea urchins at removal site:** the removal of excess urchins can improve the health and condition of the remaining sea urchin population in their natural habitat.
- **Improved value/condition of sea urchins moved to receiver sites (where translocation occurs):** translocating sea urchins to areas with healthier ecosystems can enhance their overall quality and value, potentially leading to improved growth rates and harvest value.
- **Enabling community-led local scale fisheries and environmental management:** supporting community-led initiatives for urchin removal not only aids in environmental restoration but also empowers local communities to actively participate in fisheries and environmental management, aligning with the principles of Ahu Moana in Revitalising the Gulf[23] and enhancing local decision-making.
- **Community engagement with and better understanding of coastal ecosystems:** involvement in urchin removal projects fosters community engagement with coastal ecosystems, leading to a deeper understanding of marine ecology and the interconnectedness of species and habitats.
- **Economic utilisation**: By allowing the sale of removals in some cases, harvested kina from barrens are utilised economically, providing value from an otherwise underutilised resource.
- **Community capacity/capability building:** participation in removal efforts builds community capacity and capability in habitat restoration techniques, marine conservation practices, and sustainable resource management.
- **Food security:** The ability to shift sea urchins to areas where they are more accessible (through translocation) improves food security for local communities, offering nutritional benefits associated with the consumption of seafood.
- **Contribution to Fisheries New Zealand's efforts in addressing urchin barrens:** large-scale removal initiatives align with Fisheries New Zealand's ongoing efforts to address urchin barrens as an adverse effect of fishing, contributing to broader conservation and management objectives aimed at restoring and maintaining healthy marine ecosystems.

68. The proposed special permit purpose would therefore enable sea urchin removals to continue as part of long-term management solution, enabling fine-scale, timely and adaptive fisheries management responses.

7 Consultation

69. Section 97 (1)(c) of the Act requires that before approving a special permit purpose the Minister shall consult with such persons or organisations as the Minster considers are representative of those classes of persons having an interest in the stock or the effects of fishing on the aquatic environment in the area concerned, including Māori, environmental, commercial, and recreational interests.

[23] Revitalising the Gulf: Government action on the Sea Change Plan

7.1 Questions for submitters

- Do you support the introduction of the new special permit purpose discussed in this paper? Why?
- If you do not support any of the proposals listed, what alternative(s) should be considered? Why?
- Do you think these proposals adequately provide for social, economic, and cultural wellbeing?
- Do you have any concerns about potential impacts of the proposed options on the aquatic environment?

7.2 How to have to your say

70. Fisheries New Zealand invites you to make a written submission on the proposals set out in this discussion document. Consultation closes at 5pm on 3 May 2024.

71. Please see Fisheries New Zealand's consultation webpage (https://www.mpi.govt.nz/consultations/enabling-the-removal-of-sea-urchins-kina-for-the-management-or-prevention-of-urchin-barrens) for related information, a helpful submissions template, and information on how to submit your feedback. If you cannot access the webpage or require hard copies of documents or any other information, please email FMSubmissions@mpi.govt.nz.

72. Please include the title of the consultation document ("*Enabling the removal of sea urchins for the management or prevention of urchin barrens*"), your name and title and your organisation's name (if applicable on your submission).

73. Fisheries New Zealand will consider all relevant material provided in submissions. Following consultation, Fisheries New Zealand will submit a paper to the Minister summarising submissions and seeking a final decision.

7.3 Submissions are public information

74. Submissions made become public information. People can ask for copies of submissions under the Official Information Act 1982 (the OIA). The OIA specifies that information is to be made available to requesters unless there are sufficient grounds for withholding it. That is explained in sections 6 and 9 of the OIA.

75. Submitters may wish to indicate grounds for withholding specific information contained in their submission. Reasons might include that it's commercially sensitive or its personal information. However, any decision Fisheries New Zealand makes to withhold information can be reviewed by the Ombudsman, who may tell us to release it.

8 Legal basis for managing fisheries in New Zealand

76. The Fisheries Act 1996 provides the legal basis for managing fisheries in New Zealand, including the Minister's responsibilities for approving a special permit purpose. See the separate document *Overview of legislative requirements and other considerations* at https://www.mpi.govt.nz/dmsdocument/60415 for more information.

9 Referenced reports

Byrne, M. & Andrew, N. L. (2020). Chapter 22 - Centrostephanus rodgersii and Centrostephanus tenuispinus. Developments in Aquaculture and Fisheries Science, 43: 379-396. https://doi.org/10.1016/B978-0-12-819570-3.00022-6.

Cole, R. G. & Keuskamp, D. (1998). Indirect effects of protection from exploitation: patterns from populations of Evechinus chloroticus (Echinoidea) in northeastern New Zealand. Marine Ecology Progress Series 173: 215–226.

Dayton, P. K. (1985). Ecology of kelp communities. Annual review of ecology and systematics, 215-245.

Doheny, B.; Davis J.P.; Miller, B. (2023). Fishery-induced trophic cascades and sea urchin barrens in New Zealand: a review and discussion for management. New Zealand Aquatic Environment and Biodiversity Report No. 324. 110 p.

Fisheries New Zealand (2023). Fisheries Assessment Plenary, May 2023: stock assessments and stock status. Compiled by the Fisheries Science Team, Fisheries New Zealand, Wellington, New Zealand. 1904 p.

Kerr, V.C. (2016). Urchin barrens and algal community zonation; a transect-based study, Maunganui Bay and Cape Brett. Prepared by Kerr and Associates for Fish Forever, Bay of Islands Maritime Park Inc.

MacDiarmid, A., Freeman, D. & Kelly, S. (2013). Rock lobster biology and ecology: contributions to understanding through the Leigh Marine Laboratory 1962–2012. New Zealand Journal of Marine and Freshwater Research 47:313-333.

Miller, S. L. & Abraham, E. R. (2011). Characterisation of New Zealand kina fisheries. Accessible at: https://files.dragonfly.co.nz/publications/pdf/Miller_Abraham_2011_FAR2011_7.pdf

Miller, K. I. & Shears, N. T. (2022). The efficiency and effectiveness of different sea urchin removal methods for kelp forest restoration. Restoration Ecology 31: e13754. Available at https://doi.org/10.1111/rec.13754

Moana Project. (n.d.). Recent marine heatwaves. Retrieved May 8, 2023, from https://www.moanaproject.org/recent-marine-heatwaves

Nicholls, P., Hewitt, J., Halliday, J. (2003). Effects of suspended sediment concentrations on suspension and deposit feeding marine macrofauna. *NIWA Client Report HAM2003-077 prepared for Auckland Regional Council (NIWA Project ARC03267*). August. 43 p. ARC Technical Publication No. 211.

Shears, N. T. & Babcock, R. C. (2007). Quantitative description of mainland New Zealand's shallow subtidal reef communities. *Science for Conservation 280*, 126.

Shima J.S. & Phillips, N.E. (2006). Differential effects of suspended sediments on larval survival and settlement of New Zealand urchins Evechinus chloroticus and abalone Haliotis iris. Marine Ecology Progress Series. 314: 149–158.

Sutton, P. J. H. & Bowen, M. (2019). Ocean temperature change around New Zealand over the last 36 years. *New Zealand Journal of Marine and Freshwater Research, 53*(3), 305–326. https://doi.org/10.1080/00288330.2018.1562945

Walker, M.M. (1982). Reproductive periodicity in Evechinus chloroticus in the Hauraki Gulf. New Zealand Journal of Marine and Freshwater Research, 16: 19-25, DOI: 10.1080/00288330.1982.9515944.