



Review of sustainability measures for green-lipped mussel (GLM 9) for the 2023/24 October-April fishing year transition period and for 2024/25

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Stock being reviewed

Green-lipped mussel (GLM 9) – Waikato, West Coast of Auckland and Northland



Green-lipped mussel – *Perna canaliculus*, kuku, kutai

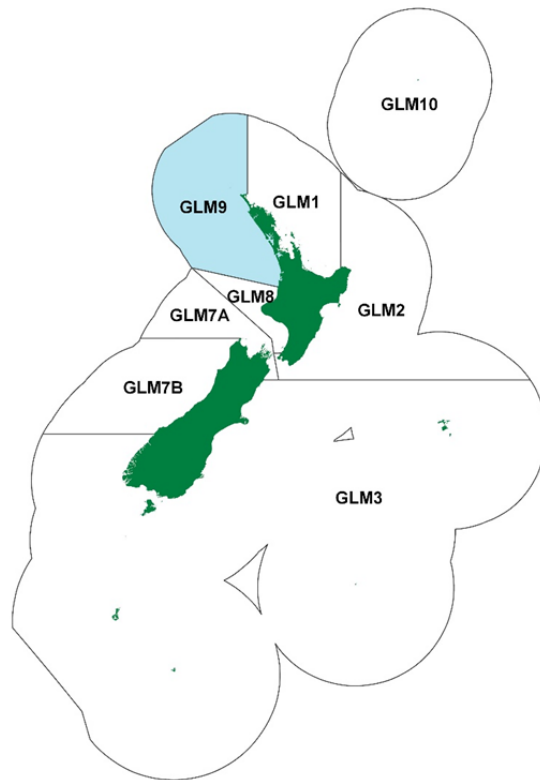


Figure 1: Quota Management Areas (QMAs) for green-lipped mussels, with GLM 9 highlighted.

1 Why are we proposing to set a transitional TAC, allowances, and TACC for GLM 9?

1. In 2022 the *Fisheries Act 1996 (the Act)* was amended through the Fisheries Amendment Bill to change the fishing year for green-lipped mussels in Quota Management Area GLM 9 (Figure 1) from an October fishing year to an April fishing year.¹
2. To support parliament's decision to change the fishing year, Fisheries New Zealand (FNZ) is now proposing options to set the Total Allowable Catch (TAC) of GLM 9 under section 14 of the Act², for the six-month transitional period between 1 October 2023 and 31 March 2024. As part of this proposal, FNZ is seeking feedback on appropriate settings for the allowances and Total Allowable Commercial Catch (TACC) within the TAC for this transitional period.
3. Following this six-month transition period, FNZ proposes that the GLM 9 TAC and settings within reverted to the current full year settings from the 1 April 2024 fishing year. This approach is consistent with the Cabinet decisions made alongside the changing of the fishing year.³

2 Summary of proposed options

4. FNZ is proposing two options for the settings for GLM 9 for the six-month transitional period, as outlined in Table 1 below.

¹ [Fisheries Amendment Bill 117-3 \(2022\), Government Bill – New Zealand Legislation.](#)

² Section 14 of the Act outlines alternative TAC settings for stocks specified in Schedule 3. For stocks such as GLM 9 which are listed in Schedule 3, the Minister may set a TAC otherwise than in accordance with section 13 if he or she considers that the purpose of the Act would be better achieved by doing so.

³ [Approval to Release a Supplementary Order Paper to the Fisheries Amendment Bill 2022 – Cabinet paper \(mpi.govt.nz\).](#)

Table 1: Proposed management options (in tonnes) for GLM 9 from 1 October 2023 to 31 March 2024.

Option	TAC	TACC	Allowances		
			Customary Māori	Recreational	All other mortality caused by fishing
Current annual settings (12 months)	233	135	59	39	0
Option 1 (6 months)	140.5	67.5	44	29	0
Option 2 (6 months)	122	49	44	29	0

5. These options propose settings for GLM 9 that would apply only for the six-month period from 1 October 2023 to 31 March 2024. The proposed settings are lower than the current annual settings, noting that the transitional period is only half as long as the full year to which those settings apply.
6. Option 1 proposes to set the TAC at 140.5 tonnes for the transitional period, while Option 2 proposes setting the TAC lower at 122 tonnes.
7. Under both options, the customary Māori and recreational allowances are proposed to be set at 75% of the annual allowance settings. These settings take into account available information that suggests most recreational harvest of mussels occurs during the warmer summer months and customary fishing data which, while likely incomplete, indicates approximately 75% of all customary permits for green lipped mussels in GLM 9 are issued during the six-month period from October to March.
8. The allowance for other sources of mortality caused by fishing is proposed to be retained at zero for both options, in line with the annual setting. There is no new information to suggest that the transitional arrangement will lead to other mortality caused by fishing within GLM 9.
9. Option 1 proposes to simply set the TACC of GLM 9 at exactly half (67.5 tonnes) of the full-year TACC setting (135 tonnes), while Option 2 proposes to set the TACC lower, at 49 tonnes. A TACC of 49 tonnes would better reflect the level of commercial harvest that typically occurs for GLM 9 in the six months between October and March (based on average harvest levels during this period since 2004).
10. At the conclusion of the six-month transitional period (from 1 April 2024), FNZ is proposing that the TAC, allowances, and TACC return to the current annual GLM 9 settings (Table 1).
11. FNZ welcomes feedback and submissions on the options proposed, or any alternatives.

3 About the stock

3.1 Fishery characteristics

12. Green-lipped mussels are an important customary and recreational species gathered by hand from shore or while diving. There is no targeted commercial harvest of adult green-lipped mussels in GLM 9, but New Zealand's mussel farming industry is heavily reliant on wild-caught juvenile green-lipped mussels (mussel spat) from floating or beach-cast seaweed, which is harvested exclusively from seaweed washed ashore on Te Oneroa a Tōhe/Ninety Mile Beach.
13. The commercial harvest of mussel spat is controlled under the *Fisheries Act 1996*, with a spat ratio in place to calculate the volume of spat harvested from collected seaweed and the TACC constraining the overall level of take. It is estimated that wild caught mussel spat from Te Oneroa a Tōhe/Ninety Mile Beach accounts for at least 65% of the aquaculture industry's spat requirements, however the overall proportion used in the aquaculture industry varies from year to year. Spat is also sourced from spat catching installations around New Zealand and spat farming operations.

3.2 Biology

14. Green-lipped mussels are filter-feeding molluscs and broadcast spawners. Most spawning occurs in late spring to early autumn. Sexual maturity is reached in the first year of development, with most individuals sexually mature by 40 mm shell length. Females can usually produce 100 million eggs per season and fertilisation is largely dependent on the proximity of adults.
15. After a three-to-five-week larval stage, primary settlement of mussels usually takes place on surrounding algae/seaweed. Secondary settlement is where the spat detaches from the substrate that it has attached to and swims or drifts to new areas for attachment. This may occur multiple times before settling on adult mussel beds, and the ability to do this is lost once spat reaches about 6 mm in shell length.
16. Mussel spat settles on seaweed around the Northland coast, then washes ashore attached to that seaweed, largely during spring and summer storm events. The majority of mussel spat that washes ashore on Te Oneroa a Tōhe/Ninety Mile Beach has been shown through genetic testing and hydrodynamic modelling to originate from wild stock mussel beds in the local area around Tiriparepa/Scott Point and Ahipara.⁴
17. Spat are unlikely to survive once washed ashore.⁵ Harvesting at this time is not considered a sustainability concern to the green-lipped mussel stock as it is unlikely that the mussel spat will return to the sea and settle into adult mussel beds.

3.3 Management background

18. Harvesting of spat and seaweed has been occurring at Te Oneroa a Tōhe /Ninety Mile Beach since the 1970s. Green-lipped mussels were introduced to the Quota Management System (QMS) in 2004, and this included green-lipped mussel spat.⁶
19. A key reason for managing the spat fishery within the QMS was to create a framework to improve efficiency of harvesting in the context of growing demand for the mussel spat. Prior to the QMS, mussel spat harvest was managed using aquaculture permits. In the early 2000s the various permit applications totalled 600 tonnes per year (approximately five times what was actually taken). The QMS provided a mechanism to encourage efficient harvest by reducing intensive harvesting by allocating catch across participants.
20. Mussel spat that has washed ashore at Te Oneroa a Tōhe/Ninety Mile Beach has already been disrupted from settling and growing in its natural habitat, so is unlikely to survive and be recruited into the adult mussel population. This makes the management of mussel spat different from most other species. To reflect this difference, GLM 9 is listed in Schedule 3 of the *Fisheries Act 1996*, allowing an alternative approach to setting a TAC under section 14 of the Act.
21. While the management approach must be consistent with the purpose of the Act, there is no requirement to set the TAC to move the stock towards or above a level that can produce the maximum sustainable yield.⁷
22. A ratio reporting system is used to record how much catch is spat and how much is seaweed. The last review of GLM 9 was conducted in 2018⁸ and established a more realistic spat-to-seaweed ratio of 25:75. Prior that review, the spat-to-seaweed ratio was 50:50. In addition, the TACC was reduced from 180 tonnes to 135 tonnes to address concerns that the change in spat ratio would increase harvesting pressure. Whilst the decrease to the TACC was modest, it still provided for utilisation to meet mussel spat demands from mussel aquaculture.

⁴ <https://www.moanaproject.org/he-hono-results>.

⁵ Alfaro & Jeffs (2002)

⁶ For more information about the QMS go to <https://www.mpi.govt.nz/law-and-policy/legal-overviews/fisheries/quota-management-system/>.

⁷ Maximum sustainable yield is the largest long-term average catch or yield that can be taken from a stock under prevailing ecological and environmental conditions. It is the maximum use that a renewable resource can sustain without impairing its renewability through natural growth and reproduction.

⁸ <https://www.mpi.govt.nz/dmsdocument/30846-2018-October-sustainability-round-decision-letter-signed>.

23. A Working Group involving iwi representatives, mussel spat collectors, marine farmers, Aquaculture New Zealand, Te Ohu Kaimoana⁹, and FNZ was formed to develop a GLM 9 management plan. In 2019, the Working Group developed a Code of Practice for mussel spat collectors. The working group also recommended to move GLM 9 from the fishing year starting on 1 October to the fishing year starting on 1 April to spread fishing effort when mussel spat becomes available, avoiding the incentive for intensive fishing practices around the conclusion of the October fishing year, where peak spat falls can occur. This recommendation was aimed at improving economic and environmental performance and responding to iwi and community concerns around intensive harvesting practices on the beach.
24. Harvesting practice issues raised have been mitigated by introducing voluntary management and a Loader Driving Code of Practice that is reviewed regularly.
25. The Te Oneroa a Tōhe Spat Beach Collecting Review 2021 and Loader Driving Code of Practice includes, but not limited to;
 - No loaders are allowed on the beach from 15 December to 31 March every year.
 - Areas where only hand gathering and no mechanical collection is to occur.
 - Actively avoiding areas of toheroa and tuatua beds, and wildlife areas.
 - Restrictions on numbers of harvesting vehicles/loaders, speed limits and maintenance standards for vehicles used in harvesting.
26. In response to the recommendation from the working group, FNZ progressed a change process and in 2022 Parliament amended the *Fisheries Act 1996* to change the GLM 9 fishing year from October to April.
27. This review of the GLM 9 stock is a technical requirement to implement the change to the GLM 9 fishing year.¹⁰

4 Status of the stock

28. Management of GLM 9 is not guided by the default management target set out in the Harvest Strategy Standard (40% B₀). The TAC, TACC, and allowances were set under section 14 and added to Schedule 3 of the *Fisheries Act 1996*. This section of the Act is for species that require an alternative reason for setting the TAC.
29. It is not known whether green-lipped mussel stocks are at, above, or below a level that can produce MSY as no estimates of reference points or current biomass are available at a management area level. There are no stock assessments or biomass estimates for green-lipped mussels.¹¹
30. As mentioned above in section 3.2 of this paper, the mussel spat collected in the GLM 9 fishery is washed ashore and is not expected to contribute to the wild mussel stock. It is therefore not managed to MSY.
31. Assessing this stock can be difficult due to many factors including finding and assessing benthic and rocky substrates where the mussels settle, locating potentially numerous mussel beds within the quota management area at different depths, limitations on using invasive tools for measurement (such as dredging), and the unpredictability of spawning and settlement.

⁹ Te Ohu Kaimoana (the Māori Fisheries Trust) is the representative organisation that Works to protect Iwi and Māori customary and commercial interestd in Fisheries and the marine environment. For more information about Te Ohu Kaimoana go to [https://teohu.maori.nz/who-we-are/#:~:text=Te%20Ohu%20Kaimoana%20\(the%20M%C4%81ori,fisheries%20and%20the%20marine%20environment.](https://teohu.maori.nz/who-we-are/#:~:text=Te%20Ohu%20Kaimoana%20(the%20M%C4%81ori,fisheries%20and%20the%20marine%20environment.)

¹⁰ <https://www.mpi.govt.nz/dmsdocument/30846-2018-October-sustainability-round-decision-letter-signed.>

¹¹ Fisheries New Zealand (2023) – [May 2023 Fisheries Assessment Plenary.](#)

5 Catch information and current settings within the TAC

5.1 Commercial

32. Commercial fishing in GLM 9 is conducted by mechanical loaders or hand gathering of mussel spat on Te Oneroa a Tōhe/Ninety Mile Beach. The fishing year has run from 1 October to 30 September with a voluntary (loader) harvesting closure period from 15 December to 31 March every year.¹² Hand gathering is still allowed during this time.
33. From the 2004-2005 to 2013-2014 fishing years (except for the 2009-2010 fishing year), the harvesting of mussel spat was well below the TACC. In the 2014-2015 fishing year and the following two fishing years, there was consistent harvesting above the TACC at an average of 206 tonnes.
34. Since the decrease of the TACC and the spat-to-seaweed ratio change in 2018 (see management background), a decrease in the catch rates was observed until the 2021-2022 fishing year. In the 2021-2022 fishing year, harvest exceeded the TACC by 43 tonnes (Figure 2).
35. FNZ understands that timing limitations faced by the aquaculture industry contributed to this excess harvest. Though spat fall and availability vary, spat fall often coincides with the transition in fishing years. In 2021-2022, spat fall occurred during the change in fishing year from September 2021 into October 2021, and again in August to September 2022. When this occurs, there is a 'race' for harvesters to catch their Annual Catch Entitlement (**ACE**) before the fishing year ends, making it more difficult for harvesters to balance their catch with ACE.

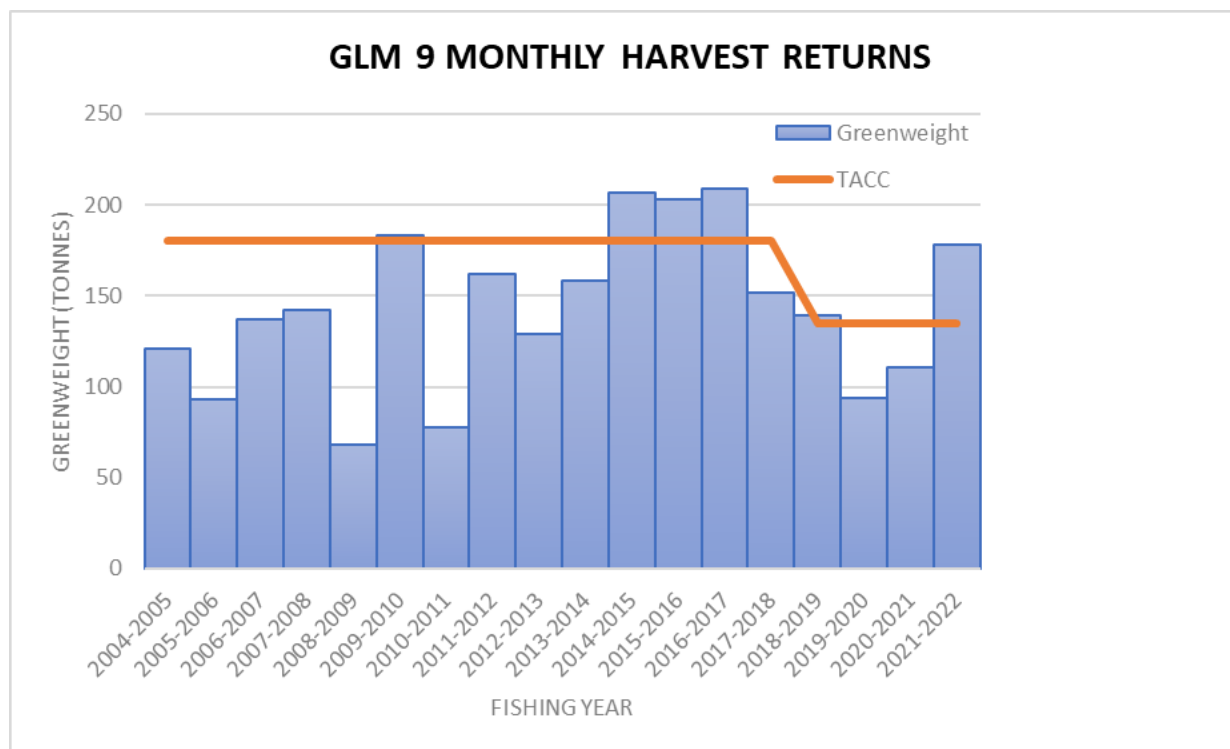


Figure 2: Monthly Harvest Returns and TACC settings for green-lipped mussel (GLM 9) from the 2004-2005 fishing year to the 2021-2022 fishing year.

¹² This voluntary mechanical loader closure is to ensure the safety of the other users of Te Oneroa a Tōhe/Ninety Mile Beach, during the time when most visitors are expected.

5.2 Customary Māori

36. Customary fishers target adult mussels and are not known to gather mussel spat. The current allowance for Māori customary fishing is 59 tonnes.
37. FNZ's records show that the harvest of adult green-lipped mussels occurs through customary authorisations. Since 2013 there have been over 500 permits issued. Total catches are uncertain because authorisations use different units of measurement (bags, bins, buckets, individual mussel counts) and because many of the authorisations issued are under regulation 50 of the *Fisheries (Amateur Fishing) Regulations 2013*, where catches are not required to be reported.
38. However, from the 512 permits issued since 2013, 73% were issued for the October to March period, which coincides with the transitional six-month term.
39. A 44-tonne customary Māori allowance is proposed to be set for the transitional period, which is 75% of the current annual allowance. This represents the likely level of customary harvest that may occur for the transitional six-month period from 1 October 2023 to 31 March 2024.
40. FNZ welcomes input from tangata whenua to inform advice on the appropriate setting for this allowance.

5.3 Recreational

41. The best available information to estimate the recreational harvest of adult green-lipped mussels in GLM 9 is provided by the National Panel Survey of Marine Recreational Fishers (**NPS**) 2017-2018¹³. This survey estimated that nearly 17,000 green lipped mussels were recreationally harvested in GLM 9 during the 2017-2018 year.
42. FNZ notes there is uncertainty in this estimate and that recreational catches are likely to vary from year to year.
43. The current recreational bag limit for green-lipped mussels in GLM 9 is 50 per person per day, with no minimum legal size. In the western side of the Auckland/Coromandel area, the bag limit is 25 mussels per person per day (refer to Figure 4 for a map of this area).
44. The NPS did not have an estimated weight for the 2017-2018 recreational GLM 9 harvest, but advised that it would likely be below the 39-tonne allowance currently set.
45. For the transitional six-month period from 1 October 2023 to 31 March 2024, it is proposed that a 29-tonne recreational allowance is set (75% of the annual allowance). Although there is no seasonal available information on recreational harvest of green-lipped mussels, it is well known that there is more public activity along the coastlines during the summer months, which suggests that most recreational take occurs during this period.

5.4 Other sources of mortality caused by fishing

46. The other sources of mortality caused by fishing allowance for GLM 9 is currently set at zero. FNZ does not have any available information that would provide evidence of mortality caused by fishing and/or unreported mortality from illegal activities.
47. When mussel spat washes ashore on Te Oneroa a Tōhe/Ninety Mile Beach, it is unlikely that it would survive to return back to the sea and recruit back into the adult mussel population. The harvesting practices therefore do not provide additional mortality to the mussel spat during their operations. Any further mortality of mussel spat left on the beach would be considered a natural occurrence, whether it was harvested or left on the beach.

¹³ Wynne-Jones (2019)

6 Treaty of Waitangi obligations

48. Section 5 of the *Fisheries Act 1996* requires that the Act be interpreted and people making decisions under the Act to do so 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.
49. Section 10 of the Settlement Act requires the Minister to develop policies and programmes to give effect to the use and management practices of tangata whenua. Consistent with this section, the Ministry has worked with iwi to develop engagement processes that enable iwi to work together to reach a consensus where possible and to inform the Ministry on how tāngata whenua wish to exercise kaitiakitanga in respect of fish stocks in which they share rights and interests and how those rights and interests may be affected by sustainability measures proposed by the Ministry.

6.1 Input and participation of tangata whenua

50. Section 12(1)(b) of the *Fisheries Act 1996* requires that before undertaking any sustainability process the Minister shall provide for the input and participation of tangata whenua who have a non-commercial interest in the stock or an interest in the effects of fishing on the aquatic environment in the area concerned. In considering the views of tangata whenua, the Minister is required to have particular regard to kaitiakitanga¹⁴.
51. Input and participation of tangata whenua into the sustainability decision-making process is provided mainly through Iwi Fisheries Forums, which have been established for that purpose. Each Iwi Fisheries Forum can develop an Iwi Fisheries Forum Plan that describes how the iwi in the Forum exercise kaitiakitanga over the fisheries of importance to them, and their objectives for the management of their interest in fisheries. Iwi Fisheries Forums may also be used as entities to consult iwi with an interest in fisheries.¹⁵
52. The GLM 9 quota management area falls within the rohe moana of Ngā Hāpū o Te Uru o Tainui Iwi Fisheries Forum, the Mid North Iwi Fisheries Forum and Te Hiku o Te Ika Fisheries Forum.
53. The Te Hiku o Te Ika Iwi Fisheries Forum was held in May and were informed of the GLM 9 review and will be considering their feedback.
54. FNZ plans to engage further with Iwi Fisheries Forums during consultation.

6.2 Kaitiakitanga

55. Information provided by forums, and iwi views on the management of fisheries resources and fish stocks, as set out in Iwi Fisheries Plans, are ways that tangata whenua can exercise kaitiakitanga in respect of fish stocks.
56. Ngā Hāpū o Te Uru o Tainui Iwi Fisheries Forum and Te Hiku o Te Ika Fisheries Forum both have Iwi Fisheries Plans that include green-lipped mussels/kutai as taonga species.
57. Te Hiku o Te Ika Fisheries Forum rohe moana extends across three different Fisheries management areas, FMA 1, 9 and 10 and are directly impacted by the GLM 9 harvesting practises of mussel spat on Te Oneroa a Tōhe/Ninety Mile Beach.
58. Te Oneroa a Tōhe/Ninety Mile Beach is included in their rohe moana specifically and is of particular cultural and historical significance for the collective iwi of this region. Kutai are considered a taonga species as well as the tuatua and the toheroa beds located at this beach.

¹⁴ The *Fisheries Act 1996* defines Kaitiakitanga to mean “the exercise of guardianship; and, in relation to any fisheries resources, includes the ethic of stewardship based on the nature of the resources, as exercised by the appropriate tangata whenua in accordance with tikanga Māori”, where tikanga Māori refers to Māori customary values and practices.

¹⁵ However, FNZ also engages directly with Iwi (outside of Forums) on matters that affect their fisheries interests in their takiwa and consults with any affected Mandated Iwi Organisations and Iwi Governance Entities where needed.

Any impacts related to the mauri of this area and the impacts on these species through the harvesting practises have been well considered, managed and closely monitored by iwi of the region.

59. The adult mussel beds that have been recognised as the source of the mussel spat that washes up on Te Oneroa a Tōhe/Ninety Mile Beach also sit within the rohe moana of Te Hiku o Te Ika Fisheries Forum.
60. FNZ is seeking input from tangata whenua on how the proposed options for GLM 9 may or may not provide for kaitiakitanga as exercised by tangata whenua, and how tangata whenua consider the proposal may affect their rights and interests in this stock.

6.3 Mātaitai reserves and other customary management tools

61. When setting or varying any TACC under section 21(4) of the Act and allowing for Māori customary non-commercial interests, the Minister must take into account any gazetted mātaitai reserves and fishing method restrictions or prohibitions in the relevant quota management area.
62. There are three customary fisheries management areas within GLM 9. These include one taiāpure and two mātaitai reserves (Table 2).

Table 2: Customary fishing areas within GLM 9.

Customary Area	Management Type
Kawhia Aotea Taiāpure	Taiāpure All types of fishing are permitted within a Taiāpure. The management committee can recommend regulations for commercial, recreational, and customary fishing
Marokopa Mātaitai	Mātaitai Reserve
Aotea Harbour Mātaitai	Commercial fishing is not permitted within mātaitai reserves unless regulations state otherwise.

63. With the commercial activity of harvesting of mussel spat confined to the Te Oneroa a Tōhe/Ninety Mile Beach area, FNZ considers it unlikely that these settings will affect these taiāpure and mātaitai.

7 Environmental principles – section 9 of the Act

64. The environmental principles that must be taken into account when considering the six-month TAC and TACC settings for GLM 9 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.
65. When the mussel spat has washed ashore at Te Oneroa a Tōhe/Ninety Mile Beach it has already been disrupted from settling and growing in its natural habitat and is unlikely to survive and settle into adult mussel beds¹⁶.
66. The current annual settings pose little risk to associated and/or dependent species, biodiversity or any habitats of particular significance. It is unlikely that the six-month settings proposed will have any negative or positive effects in relation to the environmental principles noted above. The settings proposed are to reflect a six-month period that will limit catch to the shortened transition time.
67. Hydrodynamic modelling and genetic testing of the mussel spat and known adult mussel beds in the region have identified the likely origins of the mussel spat washed onto the shores of Te Oneroa a Tōhe/Ninety Mile Beach. FNZ plans to assess information on these mussel beds

¹⁶ Alfaro and Jeffs (2002)

against guidelines for the identification of habitat of particular significance for fisheries management, once those guidelines are finalised (see section 7.3 below).

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

7.1.1 Protected species interactions

68. GLM 9 stretches down the western coastline of the North Island, an area associated with the critically endangered Māui dolphin. The Hector's and Māui Dolphin Threat Management Plan¹⁷ guides management approaches for addressing both non-fishing and fishing-related impacts on Hector's and Māui dolphins.
69. Mussel spat collection occurs in the shallow intertidal area and does not involve using nets or structures that may entrap or entangle dolphins, or other marine mammals, or protected shark species or seabirds.
70. There have been no marine mammal captures or interactions reported in relation to commercial harvesting of green-lipped mussels, (specifically mussel spat) in GLM 9.
71. The most recent Spatially Explicit Fisheries Risk Assessment¹⁸ ranks the black petrel as the most at risk seabird, followed by the Salvin's albatross, Westland petrel, flesh-footed shearwater, southern Buller's albatross, and Gibson's albatross.
72. The management of seabird interactions with New Zealand's commercial fisheries is guided by the National Plan of Action to Reduce the Incidental Captures of Seabirds in New Zealand Fisheries (**NPOA-Seabirds**¹⁹).
73. There have been no seabird captures reported in relation to commercial harvesting of green-lipped mussels, (specifically mussel spat) in GLM 9. As such, FNZ expects that the proposed settings to the TAC, TACC and allowances for GLM 9 will have little, if any, effect on seabirds.

7.1.2 Tuatua and toheroa interactions

74. There have been concerns raised that the practices used for harvesting mussel spat (mechanical loaders) are having adverse effects on the tuatua and toheroa populations located on Te Oneroa a Tōhe/Ninety Mile Beach. In 2019 an assessment of the impacts of the mechanical harvesting processes was conducted.²⁰
75. An experiment was conducted to emulate 'the worst-case scenario' in terms of the potential impacts of mechanical spat harvesting on the survival/health/ecology of tuatua and toheroa.
76. In this experiment there was no detectable impact of the mechanical spat harvesting on tuatua or toheroa when they were standing upright either fully or partially buried in the sand.
77. However, when the tuatua or toheroa were lying on their sides, on top of the beach surface, they were vulnerable to being crushed by loaders, or any other form of vehicle traffic. Toheroa or tuatua could end up in this vulnerable position, when excavated from the sand by wave action/turbulence and then deposited on the beach by the receding tide. Juvenile toheroa and tuatua were also observed to float to the beach surface (where they were vulnerable to crushing) once the surface sand was liquified by the vibration of multiple loader passes.
78. Although some mortalities were observed, it was concluded that the normal spat harvesting operations would not significantly impact the ecology or viability of tuatua or toheroa populations in this area.

¹⁷ <https://www.doc.govt.nz/our-work/protecting-species/protecting-marine-species/our-work-with-maui-dolphin/hectors-and-maui-dolphin-threat-management-plan/>.

¹⁸ <https://www.mpi.govt.nz/dmsdocument/51658-Chapter-3-Spatially-explicit-fisheries-risk-assessment-SEFRA#:~:text=The%20SEFRA%20method%20estimates%20the.and%20mapped%20fishing%20effort%20distributions>

¹⁹ <https://www.mpi.govt.nz/dmsdocument/40652-National-Plan-Of-Action-Seabirds-2020-Report>

²⁰ Ross (2020)

79. This assessment recommended that the loader operators avoid areas where known tuatua and toheroa beds are located. This has been implemented into the Code of Practice and harvesters recognise this and voluntarily abide by this recommendation.

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

80. The main interactions that harvesting practices have on the biological diversity of Te Oneroa a Tōhe/Ninety Mile Beach are on the tuatua and toheroa beds, as mentioned in 7.1.

81. FNZ considers it unlikely that the proposed options would impact overall biodiversity of the aquatic environment given that they would not provide for any increase to fishing effort in GLM 9.

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

82. Habitats of particular significance have not been formally identified for GLM 9 at this time. What is known is discussed in Table 3.

Table 3: Summary of information on potential habitats of particular significance for fisheries management for GLM 9.

Fish stock	Green lipped mussels (GLM 9)
Habitat of particular significance	<i>Intertidal and subtidal mussel reef and macroalgal beds, Ahipara, Te Oneroa a Tōhe/Ninety Mile Beach, Tiriparepa/Scott Point, Herekino</i>
Attributes of habitat	<ul style="list-style-type: none"> • Rocky intertidal reefs • Subtidal mussel beds to a depth of 25 m • Subtidal macroalgal beds, sponges, bryozoans and hydroids
Reasons for particular significance	<ul style="list-style-type: none"> • The reefs support the source of mussel spat which ensures the sustainability of an important customary fishery • Evidence suggests the reefs could be important for supporting sustainability of mussel stocks in the wider area • Support adult populations of mussels which are an important source of mussel spat for wild spat harvest for the mussel aquaculture industry around New Zealand • Identified as sites of importance for Customary Fisheries. • Aupouri Māori Trust Board, Te Rūnanga o Te Aupouri and the Aupouri Negotiations Treaty Claims Company submitted proposal for a taiāpure on behalf of Te Aupouri.
Risks/threats	<ul style="list-style-type: none"> • Resuspension of sediment from bottom contact fishing • Physical impact from trawling/dredging • Land-based sources of sedimentation • Parasites and viral disease • Invasive species • Algal Blooms • Chemical pollution from land or marine discharges • Sand extraction • Climate related environmental changes
Evidence	<ul style="list-style-type: none"> • Alfaro et al., 2011 • Auckland University Technology Study • The Moana Project, Kaimoana Connectivity study
Confidence ²¹	<ul style="list-style-type: none"> • High/Medium

²¹(from MacDiamid et al (2012) NZBR 93)

None – 0: Vague hunch or gut-feeling only

Low – 1: No empirical work exists of this interaction specifically, perhaps some general knowledge

Medium – 2: Some empirical work exists but it is associated with high uncertainty or expert has some personal knowledge

High – 3: Body of empirical work exists but it is associated with some uncertainty or the expert has direct personal research experience

Absolutely certain – 4: Extensive empirical work exists with high certainty or the expert has extensive personal research knowledge

83. While the source mussel beds that have been identified are considered to be the main contributors for the mussel spat that washes onto Te Oneroa a Tōhe/ninety Mile Beach, it is unlikely that the proposed settings will affect these areas as there is currently no commercial interest for adult green-lipped mussels from these areas.
84. These mussel bed areas are located at Tiriparepa/Scott Point (North of Te Oneroa a Tōhe/Ninety Mile Beach), Ahipara and Herekino (South of Te Oneroa a Tōhe/Ninety Mile beach).

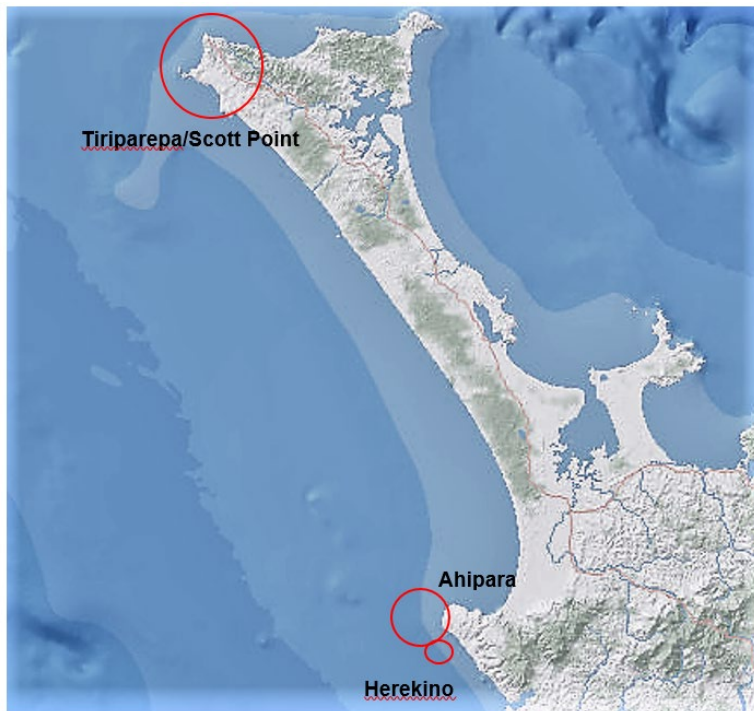


Figure 3: Map of source populations for mussel spat (approximate locations).

85. There are currently no protections in place for these areas other than the current settings within the TAC. The information on these areas will be assessed against the guidelines for identification of habitat of particular significance for fisheries management once the guidelines have been finalised. Risks to these areas will be assessed during development of the register of habitat of particular significance for fisheries management. Consideration of options for avoiding, remedying and mitigating adverse effects will follow that assessment.
86. As mentioned previously, the mussel spat that washes onto Te Oneroa a Tōhe/Ninety Mile Beach is unlikely to survive to join the wild population. There is also no commercial harvesting of adult mussels and other than customary and recreational take of mussels in these areas, it is unlikely that there are sustainability risks to these adult mussel beds from harvesting or gathering.
87. One of the greatest future threats to these mussel beds is likely to be from climate change and warming waters. It is unlikely that mussels exposed to water temperatures that exceed 24°C for a length of time will survive.²²
88. Whilst there is no evidence to support that climate change has affected the recruitment, nor the current ecosystem of these mussel beds, future monitoring should be considered.

²² Ericson et al, (2023)

8 Considerations for setting sustainability measures under section 11 of the Act

89. Section 11 of the Act sets out various matters that the Minister take into account or have regard to when setting or varying sustainability measures (such as the TAC and TACC settings proposed as part of this paper). These include:
- a) any effects of fishing on any stock and the aquatic environment; and
 - b) any existing controls under the Act that apply to the stock or area concerned; and
 - c) the natural variability of the stock concerned; and
 - d) any relevant planning instruments, strategies, or services.²³

8.1 Effects of fishing on any stock and the aquatic environment

90. As the harvesting practices are on the beach area of Te Oneroa a Tōhe/Ninety Mile Beach, some impacts to the tuatua and toheroa beds have been considered and covered in section 7.2 of this paper.
91. The current full year settings are considered sustainable and there is no information to suggest that there are sustainability concerns. The proposed six-month settings are expected to provide for expected catch in line with the harvest practices of the current full year settings. It is unlikely that any new effects of fishing on the aquatic environment will arise through this transitional period or if/when the settings return to current levels at the start of the new April fishing year.

8.2 Existing controls that apply to the stock or area

92. In setting or varying a sustainability measure the Minister must take into account any existing controls under the *Fisheries Act 1996* (including rules and regulations made under the Act (s 2(1A)) that apply to the stock when setting or varying the TAC.
93. The recreational controls for GLM 9 include a bag limit of 50 mussels per person per day. There is a different bag limit set for the Auckland/Coromandel area, and the western parts of Auckland from the Okiritoto River to the sand spit at Port Waikato fall within the GLM 9 area. In this area the bag limit for mussels is 25 per person per day.

²³ Sections 11 (2) and (2A).

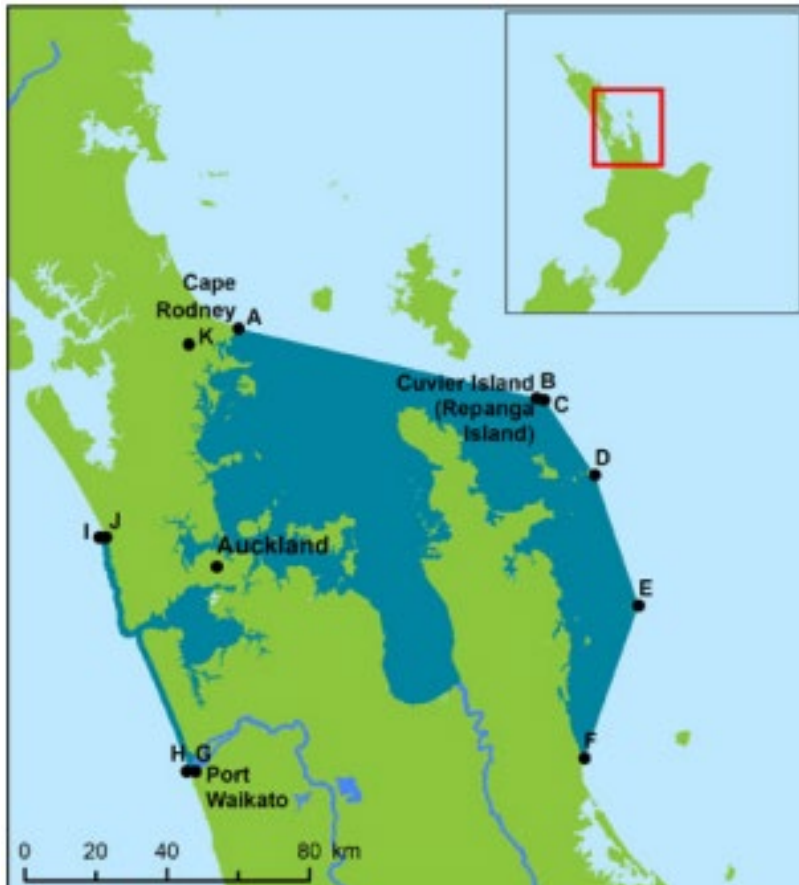


Figure 4: Map of Auckland Coromandel region for recreational shellfish limits.

8.3 The natural variability of the stock

94. In setting or varying a sustainability measure the Minister must take into account the natural variability of the stock.
95. Whilst the availability of the spat washed ashore at Te Oneroa a Tōhe/Ninety Mile Beach changes from year to year (usually in spring and summer storms), it is possible that hydrodynamic changes in ocean currents, storm events, seaweed accessibility for mussel spat to attach to, or a mixture of all, also contribute to the timing and availability of mussel spat.
96. It is not expected that natural variability will impact on suitable management settings for the transitional period, given the short timeframe for which it will apply. FNZ will continue to monitor the stock for natural variability if/when the management settings revert to the current full year levels for the new April fishing year.

8.4 Relevant statements, plans, strategies, provisions, and documents – section 11(2) of the Act

97. In setting or varying the TAC of this stock, the Minister must have regard to relevant statements, plans, strategies, provisions, and planning documents that apply to the coastal marine area. The following plans and strategies apply to GLM 9.

8.4.1 Regional Plans – section 11(2)(a)

98. Three Regional Councils have Coastlines within the boundaries of the GLM 9 area: Northland, Auckland, and Waikato. Each of these regions have policy statements and plans to manage the coastal and freshwater environments, including terrestrial and coastal linkages, ecosystems, and habitats.

99. The provisions in these various documents are, for the most part, of a general nature and focus mostly on land-based stressors on the marine environment.
100. FNZ has reviewed these documents and the provisions that might be considered relevant can be found in a separate document titled *Regional Plan Provisions and Policy Statements*, accessible at <https://www.mpi.govt.nz/dmsdocument/57115>. FNZ considers that the proposed options in this paper are consistent with the objectives of these relevant regional plans.
101. The FNZ Coastal Planning Team engages with the RMA coastal planning processes (including regional authorities) to support marine management decisions to manage not only the fishing effects on the coastal environment but also land-based impacts on fisheries.

*Te Rautaki o Te Oneroa a Tōhe – Te Oneroa a Tōhe/Ninety Mile Beach Management Plan*²⁴

102. As a result of Treaty of Waitangi settlement legislation in 2012, an eight-member board was established, consisting of iwi and local government members. This board developed Te Rautaki o Te Oneroa a Tōhe (Beach Management Plan). Public input was provided by numerous rounds of public consultation. This plan acknowledges that Iwi will have the responsibility and management of Te Oneroa a Tōhe, for the many uses and betterment for all people.
103. The Beach Management Plan incorporates the Māori history and cultural significance of Te Oneroa a Tōhe/Ninety Mile Beach. It also gives a background on settlement legislation, statutory requirements in the form of public consultation and how this plan came together in partnership with councils and iwi.
104. There are seven objectives of the Beach Management Plan:
 - **Spiritual value** – This objective includes the requirements for traditional place names and stories are valued and understood, that the wāhi tapu, sites of significance and heritage are protected, the culturally significant pathway of Te Ara Wairua is protected and that Te Oneroa a Tōhe is treated as a taonga tuku iho – a treasure to be handed down through generations
 - **Leadership** – Customary practices and associated knowledge is restored, is able to provide sustenance to all people and the Board will advocate for the protection and preservation of Te Oneroa a Tōhe to other groups, this objective also incorporates that the future of Te Oneroa a Tōhe is determined by the further generations of Iwi, hapū and whānau.
 - **Ecology and Biodiversity** – Making sure that the biodiversity and ecology is protected and restored for future generations, that information and research is gathered to help better understand the health of Te Oneroa a Tōhe and that it is managed holistically, that the mahinga kai is healthy and abundant and that a healthy beach will lead to healthy people.
 - **Economic wellbeing** – Commercial activities are guided by the protection of outstanding cultural natural landscapes and features of the mauri of Te Oneroa a Tōhe, that sustainable employment opportunities on Te Oneroa a Tōhe are promoted, that there are alternative and self-sustaining funding opportunities are explored to benefit Te Oneroa a Tōhe and that people can earn a living off the beach where they do not affect the mauri of Te Oneroa a Tōhe.
 - **Recreation** – People are able to safely access and enjoy the beach for recreational activities that respect and preserves the mauri of the beach, that the recreational activities are compatible with the natural landscapes and feature of the beach, and are consistent with Māori values and tikanga of the Beach Management Plan, that Te Oneroa a Tōhe is a clean and pristine taonga, to be accessed safely and all drivers respect the beach.
 - **Collaboration** – Actions are developed and implemented in collaboration with tangata whenua and the community, that people work together with a common purpose for the betterment of Te Oneroa a Tōhe and that the Beach Management Plan is understood by all and championed by locals.
 - **Education** – Customary practices are understood and reflected in the management of Te Oneroa a Tōhe, that everyone understands and respects the special values of Te Oneroa a Tōhe and that the culture and history if Te Oneroa a Tōhe is appropriately represented through art, technology and education.

²⁴ <https://www.teonerora-a-tohe.nz/beach-management-plan>

8.4.2 Harvest Strategy Standard

105. The Harvest Strategy Standard (**HSS**) is a policy statement of best practice in relation to the setting of fishery and stock targets and limits for fish stocks in New Zealand's QMS.²⁵ It is intended to provide guidance on how fisheries law will be applied in practice, by establishing a consistent and transparent framework for decision-making to achieve the objective of providing for utilisation of New Zealand's QMS species while ensuring sustainability.
106. The HSS outlines the Ministry's approach to relevant sections of the Act and forms a core input to the Ministry's advice to the Minister on the management of fisheries. The HSS defines a hard limit as a biomass limit below which fisheries should be considered for closure and a soft limit as a biomass limit below which the requirement for a formal time-constrained rebuilding plan is triggered.
107. The High Court has held that the HSS is a mandatory relevant consideration that the Minister must have regard to when setting a TAC under section 13 of the Act.
108. Management of GLM 9 is not guided by the default of the Harvest Strategy Standard (40% B_0) and there is no alternative target. The TAC, TACC and allowances were set under section 14 and added to schedule 3 of the Act. This section and schedule of the Act is for species that require an alternative reason for setting the TAC.
109. Such reasons for an alternative setting of a TAC under section 14 of the Act relates to green-lipped mussels and includes, that it is not possible, due to biological characteristics of the species, to estimate maximum sustainable yield.
110. In the case of green-lipped mussels in GLM 9, there are no established reference points or available estimates of B_{MSY} (the biomass that enables a fish stock to deliver MSY), and as such there is uncertainty as to where the current biomass sits in relation to the default targets (including the soft or hard limit) set out by the HSS. Reported commercial monthly harvest returns represent the best available information.

8.5 Relevant services or fisheries plans – section 11(2A) of the Act

111. Before setting or varying any sustainability measure (such as the TAC), the Minister must take into account any conservation or fisheries services, and any relevant fisheries plans approved under section 11(2A) of the Act.
112. There are no approved or current fisheries plans that are relevant to this stock.

8.6 Other plans and strategies

113. The following plans and strategies are not mandatory considerations under section 11 of the Act, but they may be considered relevant to this review.

8.6.1 Te Mana o te Taiao (Aotearoa New Zealand Biodiversity Strategy)

114. Te Mana o te Taiao – the Aotearoa New Zealand Biodiversity Strategy sets a strategic direction for the protection, restoration and sustainable use of biodiversity, particularly indigenous biodiversity, in Aotearoa New Zealand²⁶. The Strategy sets a number of objectives across three timeframes. The most relevant to setting sustainability measures for GLM 9 are objectives 10 and 12:

Objective 10: Ecosystems and species are protected, restored, resilient and connected from mountain tops to ocean depths.

Objective 12: Natural resources are managed sustainably.

²⁵ For more information on the HSS go to <https://www.mpi.govt.nz/dmsdocument/728-Harvest-Strategy-Standard-for-New-Zealand-Fisheries>

²⁶ Accessible at: <https://www.doc.govt.nz/nature/biodiversity/aotearoa-new-zealand-biodiversity-strategy/>.

115. FNZ is working with the Department of Conservation and other agencies on implementation of the strategy. As part of that work, we are progressing to a more integrated ecosystem-based approach to managing oceans and fisheries. In that context, this review contains information on biodiversity impacts, ecosystem function and habitat protection associated with adjustments to sustainability measures (see environmental interactions section above).

8.6.2 The New Zealand Government's Aquaculture Strategy²⁷

116. The Government's Aquaculture Strategy sets out a sustainable growth pathway toward a more sustainable, innovative aquaculture industry that forms a bigger part of the primary sector. The Strategy's goal is to reach \$3 billion in annual sales by 2035.
117. The Aquaculture Strategy has four principal outcomes that the New Zealand Government led by FNZ is working towards.

Outcome 1: Sustainable – A primary industry leading in environmentally sustainable practices across the value chain. Objectives in this outcome includes;

- Partnering with industry on a transition plan to reduce emissions and waste along the value chain and;
- To promote and assist implementation of strategic integrated coastal and catchment planning to ensure a healthy aquatic environment.

Outcome 2: Productive – Aquaculture growth supports regional prosperity. Objectives in this outcome includes;

- Maximise the value of all farmed space through a strong research, innovation and commercialisation system.
- Develop world-leading frameworks for open ocean and land-based farming growth.
- Support infrastructure needs to enable growth

Outcome 3: Resilient – Aquaculture is protected from biological harm and supported in adapting to climate change. Objectives in this outcome includes;

- Strengthen biosecurity management
- Support industry to adapt to climate change

Outcome 4: Inclusive – Partnering with Māori and communities on opportunities to realise meaningful jobs, wellbeing, and prosperity. Objectives in this outcome includes;

- Build Māori and community knowledge about aquaculture and their input into growth opportunities.
- Deliver the Crown's aquaculture settlement obligations in a manner that facilitates early investment in new opportunities

118. Under the Aquaculture Strategy, FNZ published a *Report on a method and approach for measuring the environmental effects of aquaculture*.²⁸ Maintaining environmental sustainability is at the heart of the Government's aspiration for aquaculture growth and this report is to intended to establish a baseline of environmental effects and reporting mechanisms to measure improvement over time.

119. Within this report, FNZ recognises the limitation of wild harvesting of mussel spat as a finite resource and that spat should be used as efficiently as possible. It also recognises that hatchery spat production comes with environmental costs also, so more work is to be done in optimising mussel spat survival to make sure there is efficiency of resources, whether that be for wild harvested mussel spat or hatchery mussel spat.

²⁷ <https://www.mpi.govt.nz/dmsdocument/15895-The-Governments-Aquaculture-Strategy-to-2025>

²⁸ [Report on a method and approach for measuring the environmental effects of aquaculture \(mpi.govt.nz\)](https://www.mpi.govt.nz/dmsdocument/15895-The-Governments-Aquaculture-Strategy-to-2025)

120. An overall objective within the Strategy is to ensure efficient and sustainable use of resources including spat and ensuring appropriate settings for the management of the GLM 9 fishery align with this objective.

9 Options and analysis

121. As discussed in section 3.3, the mussel spat fishery is unusual because once the mussel spat (attached to seaweed) has been washed ashore on Te Oneroa a Tōhe/Ninety Mile Beach it has already been effectively removed from the wild population.
122. As discussed above in sections 3.3 and 8.4, the TAC settings for GLM 9 sit under section 14 and Schedule 3 of the Act. This section of the Act provides for the unusual nature of this fishery and the utilisation of a stock that will not be recruited into the wild adult mussel population and therefore requires an alternative approach to setting a TAC.
123. The main concern is the impact of spat harvesting practices on Te Oneroa a Tōhe/Ninety Mile Beach and the effects that this has on the local community, iwi, and the surrounding environment.
124. Parliament's decision in 2022 to change the fishing year from an October fishing year to an April fishing year was in direct support of the Te Oneroa a Tōhe Mussel Spat Management Board. This acted on their concerns regarding intensified harvesting caused by a race to catch their ACE before the October fishing year finished, as the timing of this sometimes coincides with the peak availability of the mussel spat.
125. To implement the change in fishing year, a transitional period of six months from 1 October 2023 to 31 March 2024 was to be introduced and appropriate TAC, TACC, and allowances to be set for that period.
126. In accordance with parliament's decision for the implementation process, following this six-month transitional period, the TAC, TACC, and allowances are proposed to be returned to the previous annual settings (see settings below under 9.1).

9.1 Current settings (full year)

TAC: 233 t	TACC: 135 t	Customary: 59 t	Recreational: 39 t	Other mortality: 0 t
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127. A *status quo* option for the TAC, TACC, and allowances has not been considered as this is a technical setting for a six-month period to transition to the change in fishing year and is temporary.
128. The commercial harvesting of mussel spat in GLM 9 on Te Oneroa a Tōhe/Ninety Mile Beach and the environmental and community affects that this brings, was the reason for setting the TAC under section 14 of the *Fisheries Act 1996*.
129. As this is a transitional setting to be able to implement the change in fishing year, two options have been proposed to set the TAC, TACC and allowances.

9.1.1 Allowances

130. The customary Māori and recreational harvesting of green-lipped mussels within GLM 9 are of adult mussels. Available information from the National Panel Survey and customary permit reporting suggests that it is unlikely that this harvesting will exceed the allowances already set.
131. Using customary permitting information, 73% of customary permits in the GLM 9 region are issued during the months of October through to March. This suggests that the majority of the annual customary harvest coincides with the transitional six-month period.

132. It is proposed that the customary allowance be set at 75% of the full year setting at 44 tonnes for both options. This is proposed as a best estimate of customary harvest during the six months of October through to March.
133. The recreational allowance is proposed to be set at 29 tonnes. This also reflects a 75% of the full fishing year allowance setting. Whilst there is no available information specifically related to seasonal harvesting, it is likely that the majority of recreational harvest happens over the summer months like that of the customary harvest.
134. The allowance for other mortality caused by fishing is proposed to remain set at zero tonnes, until any future review of GLM 9.

9.2 Option 1 (transitional six-month period)

TAC: 140.5 t	TACC: 67.5 t	Customary: 44 t	Recreational: 29 t	Other mortality: 0 t
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135. This option proposes a reduction to the TAC, TACC and allowances for the six-month transitional period and reflects the half year of fishing by decreasing the TACC by 50% whilst still providing economic benefit through the utilisation of the mussel spat harvest.

9.2.1 TAC

136. Under Option 1 the TAC is proposed to be decreased from 233 tonnes to 165.5 tonnes for the six-month transitional period from 1 October 2023 to 31 March 2024.
137. Option 1 is a simple approach which sets allowances that FNZ considers reasonably reflect expected levels of take during the transition period. The TACC would be halved, allowing commercial harvest up to half of the full year setting. This approach does not consider the seasonality of the fishery across the fishing year, and potentially provides for a small amount of additional catch above what would typically be harvested during the months of transition period. This would provide greater flexibility to harvesters if there is unexpected variability in the availability spat.

9.2.2 TACC

138. Under Option 1 the annual TACC would be halved to 67.5 tonnes. The 50 percent decrease is to accommodate the transitional six-month and reflects a half year of fishing.

9.3 Option 2 (transitional six-month period)

TAC: 122 t	TACC: 49 t	Customary: 44 t	Recreational: 29 t	Other mortality: 0 t
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139. Option 2 more closely reflects the actual historical harvest of mussel spat by using the average annual tonnage landed since 2004 and over the six months of October to March.
140. On average, since 2004 approximately 36 percent of the TACC is caught during the months of October through to the end of March. Note that during this six-month period, the voluntary closure to mechanical loader harvesting is in place from 15 December to 31 March at Te Oneroa a Tōhe/Ninety Mile Beach.

9.3.1 TAC

141. Under Option 2, the TAC is proposed to be decreased from 233 tonnes to 147 tonnes for the six-month transitional period from 1 October 2023 to 31 March 2024.
142. Option 2 would set a lower TAC, and the TACC would be set at a level that more accurately reflects historical levels of commercial take during that period. This option may also constrain commercial utilisation, particularly if there is high spat availability.

9.3.2 TACC

143. Under Option 2, the TACC is proposed to be decreased by 74% to 49 tonnes. This setting reflects the average harvest over the October to March months since 2004.
144. The average harvest over the October to March months taken from 2004 to 2022 also incorporates the voluntary closure of mechanical loader harvesting on Te Oneroa a Tōhe that is in place from 15 December to 31 March every year.

10 Economic considerations

145. The GLM 9 fishery supports many people, including quota holders, commercial fishers, licensed fish receivers, the mussel aquaculture industry and employees related to the fishery. To give a sense of scale and distribution, based on the 2021-22 Fishing Year, 57% of GLM 9 quota was owned by 4 entities, and the remaining 43% of quota was owned by 28 entities. As at the end of the 2021-22 Fishing Year, there were 11 commercial entities holding ACE: 94% held by 4 entities, and the remaining 6% held by 7 entities.
146. It is noted that the GLM 9 mussel spat harvests contributes to upwards of 65% of the spat required for mussel aquaculture in New Zealand. Mussel aquaculture in New Zealand from April 2022 to March 2023 had an export value of approximately \$320 million.
147. With the growth of mussel aquaculture in New Zealand, new areas are being explored for marine farming of mussels. These new areas, such as Opotiki, create new jobs and economic possibilities to support and grow small coastal communities.
148. However, with this invigorated interest in mussel farming, availability of mussel spat is a top priority. Innovative ideas from industry in the form of mussel hatcheries, open ocean aquaculture and further science investigations, have also been providing further evidence that mussel farming will provide continued economic value.
149. It should be noted that the proposed settings for the TAC and TACC are of a proportionate setting for a six-month period and therefore unlikely create any change in annual revenue from GLM 9.
150. The 2023/24 port price for GLM 9 sits at \$5.23 per kg, which has been stable for 10 years. However, the port price information is an index value representing what commercial fishers receive at port, not what the fish is worth at market. Nor does it reflect the income for Licensed Fish Receivers (including, wholesalers and/or processors) and retailers.
151. Option 1 at 67.5 tonnes could allow for a revenue of \$353,000, based on the current port price, to be generated for the six-month transitional period.
152. Option 2 at 49 tonnes could allow for a revenue of \$256,000, based on the current port price, to be generated for the six-month transitional period.
153. It is unlikely that these settings will generate any lasting economic, cultural, or social issues, due to the proposed settings being temporary.

11 Deemed value rates

154. Deemed values are the price paid by fishers for each kilogram of unprocessed fish landed in excess of a fisher's Annual Catch Entitlement (**ACE**) holdings. The purpose of the deemed values regime is to provide incentives for individual fishers to acquire or maintain sufficient ACE to cover catch taken over the course of the year, while allowing flexibility in the timing of balancing, promoting efficiency, and encouraging accurate catch reporting.
155. The [Deemed Value Guidelines](#) set out the operational policy that FNZ uses to inform the development of advice to the Minister on the setting of deemed values.
156. The deemed values rates for GLM 9 are shown in Table 4 below.

Table 4: Current deemed value rates (\$/kg) for GLM 9.

Stock	Interim Rate (\$/kg)	Annual Differential Rates (\$/kg) for excess catch (% of ACE)	
		100-105%	105%+
GLM 9	9.00	10.00	20.00

157. Figure 5 below shows trends in the port price, average annual ACE transfer price, and annual deemed value rate for GLM 9 since 2011/12.

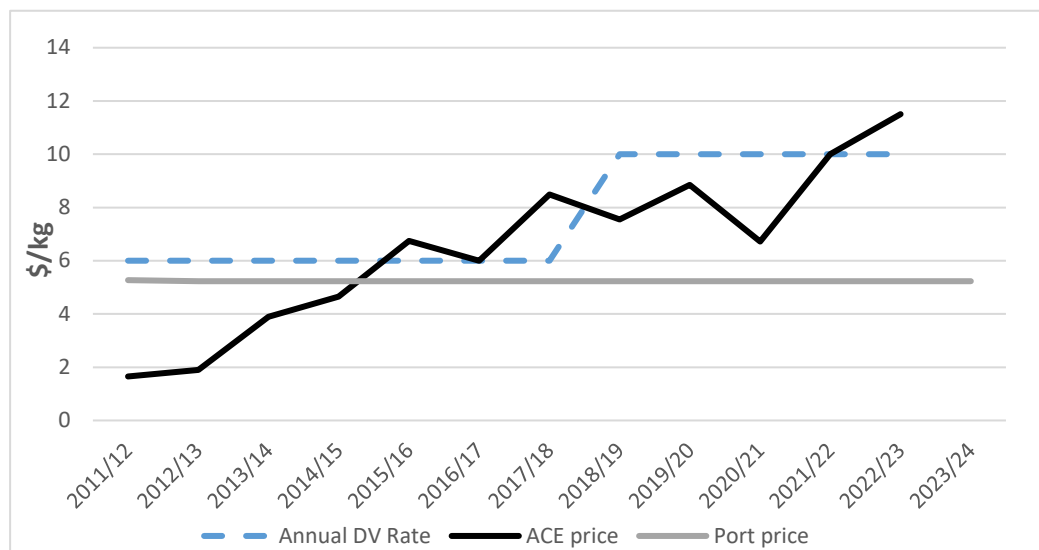


Figure 5: Summary of port price, average annual ACE transfer price, and annual deemed value rate information for GLM 9 since 2011/12. Note that the average ACE transfer price for 2022/23 is based on a smaller sample size given that the fishing year is not yet complete.

158. The current annual deemed value rate of GLM 9 is \$10.00/kg, which is above the most recent port price (\$5.23/kg) and below average ACE price (\$11.50/kg).

159. The deemed values for GLM 9 are set at a high level recognising that commercially GLM 9 is a selective target fishery. The deemed value rates of GLM 9 double when ACE is exceeded by more than 5%, which provides a strong incentive for commercial operators not to harvest in excess of ACE.

160. FNZ is satisfied that the current deemed value rates are consistent with 75(2)(a) of the Act in that they provide sufficient incentive for fisheries to balance their catch with ACE. FNZ is therefore not recommending any changes to the deemed values for GLM 9, however, FNZ welcomes feedback on these settings.

12 Questions for submitters

- Which option do you support for revising the TAC and allowances? Why?
- If you do not support any of the options listed, what alternative(s) should be considered? Why?
- Are the allowances for customary Māori, recreational and other sources of mortality appropriate? Why?
- Do you think these options adequately provide for social, economic, and cultural wellbeing?
- Do you have any concerns about potential impacts of the proposed options on the aquatic environment?

161. We welcome your views on these proposals. Please provide detailed information and sources to support your views where possible.

13 How to get more information and have your say

162. FNZ invites you to make a submission on the proposals set out in this discussion document. Consultation closes at 5pm on 17 July 2023.
163. Please see the FNZ sustainability consultation webpage (<https://www.mpi.govt.nz/consultations/review-of-sustainability-measures-for-fisheries-october-2023-round>) for related information, a helpful submissions template, and information on how to submit your feedback. If you cannot access to the webpage or require hard copies of documents or any other information, please email FMSubmissions@mpi.govt.nz.

14 Legal basis for managing fisheries in New Zealand

164. The *Fisheries Act 1996* provides the legal basis for managing fisheries in New Zealand, including the Minister's responsibilities for setting and varying sustainability measures. See the separate document *Overview of legislative requirements and other considerations* at <https://www.mpi.govt.nz/dmsdocument/57112> for more information.

15 Referenced reports

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