Fisheries New Zealand
Tini a Tangaroa

Commercial Landing Exception: Pāua

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Pāua (PAU) – all quota management areas

Haliotis iris (blackfoot Pāua) and *Haliotis australis* (yellowfoot Pāua), abalone

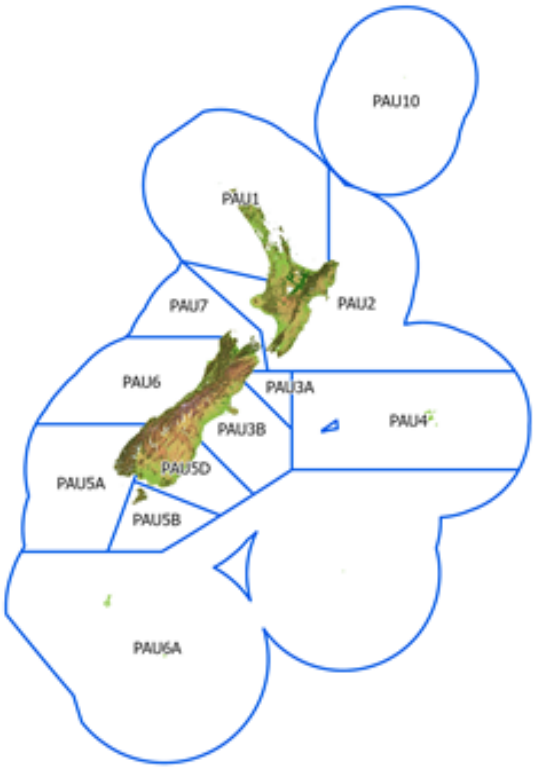

Figure 1. Quota Management Areas (QMAs) for Pāua (PAU).

1 Purpose

1. Fisheries New Zealand (**FNZ**) is assessing a request for a commercial landing exception that would allow commercial fishers to return live legal-sized pāua (blackfoot and yellowfoot) to the sea.
2. FNZ welcomes feedback and submissions on this review, including survivability of legal-sized pāua in different conditions and specific handling practices that support the safe return of pāua.
3. FNZ invites you to make a submission on the proposal set out in this discussion document. Consultation closes at 5pm on 12 February 2025. Please see the FNZ consultation webpage (https://www.mpi.govt.nz/consultations/) for related information 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.

2 Summary

4. Section 72 of the Fisheries Act 1996 (the **Act**) requires commercial fishers to not return or abandon Quota Management System (**QMS**) species to sea or waters from which they are taken unless there is an exception.
5. Currently, commercial fishers are required to return blackfoot and yellowfoot pāua below the Minimum Legal Size (**MLS**) of 125 and 80 mm, respectively, but must land all legal-sized pāua and balance the weight landed with Annual Catch Entitlement (**ACE**) or pay deemed values.

6. In New Zealand, pāua are exclusively taken by hand gathering, which is a highly selective harvest method. To reduce damage to pāua, fishers use custom made blunt tools to remove pāua from reefs. In addition, voluntary use of specific industry developed handling and mitigation practices to reduce likelihood of damage to pāua, is thought to be high.

7. To help maintain a healthy spawning stock biomass the industry has introduced voluntary Minimum Harvest Sizes (**MHSs**), that are above the MLS, in the major pāua Quota Management Areas (**QMAs**). The MHSs are set out under Fisheries Plans approved under section 11A of the Act. The voluntary use of a MHS results in larger individuals being commercially harvested, meaning fewer pāua are needed to catch available ACE and more pāua remain in the ocean to contribute to spawning and for use by recreational and customary fishers.

8. As commercial fishers are currently required to retain and land all pāua that is above the MLS but below the MHS, the benefits of the voluntary MHS are not fully realised. Therefore, FNZ has received a request to assess a commercial landing exception to allow commercial fishers to return legal-size pāua.

9. Best available information indicates that post-release survival of commercially harvested pāua is high, which is further supported by the use of voluntary best handling practices. Based on this, FNZ considers that legal-size pāua have a high likelihood of post release survival when caught by hand gathering.

10. Consequently, FNZ proposes that an exception is provided under section 72A(2)(a) of the Act, to allow commercial fishers to return live legal-size pāua taken by hand gathering.

11. FNZ does not consider that a review of current sustainability measures (i.e., catch limits and deemed value rates) is required as a result of the proposed exception as it is unlikely to significantly change catches or mortality of pāua stocks.

3 Problem statement

12. Commercial pāua fisheries in many QMAs have shifted towards supplying pāua to the live sale market rather than comparatively lower value products, such as mince, to increase the value of their catch.

13. To help maintain a healthy spawning stock biomass that contributes to successful recruitment to the fishery, industry has put in place voluntary MHSs, that are above the MLSs, in all major pāua QMAs (Naylor et al, 2006).

14. Although hand gathering is a highly selective method, getting an exact size measurement of pāua while in the water can sometimes be challenging, resulting in pāua that is above the MLS but below the MHS being removed from reefs and brought onboard. As all legal-size pāua are required to be retained and landed, the full benefits of the voluntary MHS cannot be fully realised.

15. As a result, FNZ has received a request to consider a commercial landing exception to allow commercial fishers to return legal-sized pāua.

4 Policy context and legal framework

16. Section 72 of the Act establishes the general obligation on commercial fishers to not return or abandon QMS species to sea or waters from which they are taken unless there is an exception.

17. Currently, commercial fishers are required to report and land all legal-size pāua caught, and balance the weight caught with ACE or pay deemed values.

18. Under section 72A, the Minister may require or permit a QMS species or stocks to be returned or abandoned in the sea and may make instruments for the purposes of section 72(2) or 72(3) of the Act. An instrument made under section 72A(2) may:

    a) permit a stock or species to be returned to or abandoned in the sea or other waters from which it was taken if the Minister is satisfied that the stock or species has an acceptable

likelihood of survival if returned or abandoned in the manner specified by the instrument ('first provision').

19. A more detailed overview of the policy context and legal framework is provided in "Fisheries New Zealand review of commercial landing exceptions: Overview of policy context and legislative requirements in relation to exception reviews".

5 Pāua fishery information

20. Pāua are herbivorous sea snails that can form large aggregations in shallow, subtidal, rocky reef habitats. Three species of Pāua are found around the New Zealand coastline, yellowfoot pāua (*Haliotis australis*), whitefoot pāua (*Haliotis virginea*) and blackfoot pāua (*Haliotis iris*).

21. To assess the proposed exception to allow commercial fishers to return legal-size pāua to the sea, it is important to understand the volume of catches and the method the species is taken by.

5.1 Commercial fisheries

22. Pāua are selectively hand gathered while free diving, except in the Chatham Islands (PAU 4) where the use of underwater breathing apparatus (**UBA**) is permitted.

23. Only blackfoot and yellowfoot pāua are commercially harvested. Catch statistics include both species, however, virtually the entirety of landings are blackfoot pāua.

24. Most commercial pāua catch is taken from Chatham Islands (PAU 4), the Wairarapa coast (PAU 2), Fiordland (PAU 5A), Stewart Island (PAU 5B) and Marlborough (PAU 7) (Table 1).

Table 1: Commercial pāua landings for each stock in the last three complete October fishing years (greenweight, rounded to the nearest tonne).

October Fishing Year	PAU 1	PAU 2	PAU 3A	PAU 3B	PAU 4	PAU 5A	PAU 5B	PAU 5D	PAU 6	PAU 7
2021/22	1	111	23	47	209	115	93	68	1	87
2022/23	<1	129	23	46	203	112	105	63	0	77
2023/24	0	120	22	44	191	94	109	69	<1	61

25. A commercial MLS of 125 mm and 80 mm applies to blackfoot and yellowfoot pāua respectively, with commercial fishers required to return all sub-MLS pāua to the sea. As hand gathering is a highly selective method, the volume of sub-MLS returns is low, with annual returns generally below 100 kg.

26. To help maintain a healthy pāua spawning stock biomass, industry has implemented voluntary MHSs in several sub-areas within most of the major QMAs These MHSs are set out under Fisheries Plans approved under section 11A of the Act[1]. The MHSs are set above the commercial MLS, ranging from 127 to 145 mm shell length depending on area, reflecting the high variability in pāua growth rate across the country.

5.2 Non-commercial interests

Customary non-commercial interests

27. Pāua are an important customary fishery nationwide and are taonga species in the Te Hiku o Te Ika, Mai i Nga Kuri a Wharei ki Tihirau, Ngā Hapū o Te Uru Tainui, Te Tai Hauauru and Te Waka a Māui me Ōna Toka Customary Fisheries Forum Plans.

28. In the 2021/22 to 2023/24 October fishing years, a total of 30 t of pāua was reported as customary catch, with the majority reported from PAU 2 and 3A.

[1] Fisheries Plans exist for all the major pāua fisheries (PAU 3, PAU 4, PAU 5 and PAU7), except PAU 2, where an annual operating plan is in place as the draft fisheries plan is being consulted on.

Recreational interests

29. Pāua are highly valued by recreational fishers, and there is a large recreational fishery for pāua nationwide. Recreational fishers harvest pāua by hand while free diving, as use of an UBA for recreational take of pāua is prohibited. The recreational MLS for pāua ranges between 85 mm to 135 mm, depending on area.

30. The 2022/23 National Panel Survey of Marine Recreational Fishers estimated a total nationwide recreational catch of 73 t of pāua, with the highest estimated catches taken from the Wairarapa coast (PAU 2) (33 t) and Otago (PAU 5D) (21 t) (Heinemann & Gray, 2024).

6 Providing an exception under the first provision: Do pāua have an acceptable likelihood of survival when returned to or abandoned in the sea?

31. FNZ's working definition of "acceptable likelihood of survival" is that the expected result of a return is that the stock or species is more likely than not to survive when released. However, acceptability may vary across species and be influenced by the purpose of the return and the overarching management strategy for the species.

6.1 Acceptable likelihood of survival

Biological characteristics of pāua influencing post-release survival

32. Pāua lack an effective clotting mechanism in their blood, which, coupled with the lack of features such as valves and other restrictions to blood flow, can make them vulnerable to mortality from blood loss (Loeher & Moore, 2020). In some cases pāua may attempt to reduce blood loss loss by contracting the muscle around the wound, which can restrict movement and impact survival. Additionally, there is a high energy demand to replace lost blood (Gerring et al, 2003).

33. Other factors thought to impact survivability include extended air exposure, temperature stress at the surface, return location (negative impacts from being returned to unsuitable habitat), predation and bacterial infection (Gerring et al, 2003).

Estimating post-release survival

34. There are limited New Zealand studies on the post-release survival of pāua. A study in the Marlborough/Nelson fishery (PAU 7) estimated the incidental post-release mortality of commercially caught pāua below the MLS to be very low (three pāua per 1000 harvested), indicating that pāua have a high post-release survival (99.7%) (Gerring et al, 2003).

35. Although pāua are regarded as having no effective clotting mechanism in their blood, Gerring et al. (2003) found that the long-term mortality rate of pāua with either shallow or deep cuts were both relatively low, indicating they are somewhat able to supress blood loss without it significantly impacting survival. This is aligned with an international study on a similar species (red abalone) that suggested that red abalone with minor to moderate cuts may be more capable of surviving, at least in a captive rearing environment, than has been previously recognised (Loeher & Moore, 2020).

36. A 2015 study found that most blackfoot pāua exposed to air (at 16 °C to mimic conditions on fishing vessels) for 24 hours or less tended to survive (Ragg & Watts, 2015). Juveniles of a similar species (*Haliotis midae*) are thought to be routinely transported while refrigerated in air for periods of 36 hours without significant mortality rates (Sales & Britz, 2001). In both cases, the periods of air exposure well exceed the average commercial sorting time of pāua, which are returned to the reef at least every hour.

37. Based on the best available information, FNZ considers the post-release survival of pāua likely to be high.

6.2 Matters the Minister must have regard to in considering acceptable likelihood of survival under the first provision

Sustainability of the stock or species

38. The Fisheries Assessment Plenary – May 2024 provides the most recent available information on stock assessments and stock status of pāua stocks (Fisheries New Zealand 2024).

39. Two stocks (PAU 1, PAU 6) are nominal and are not assessed as they have very small Total Allowable Commercial Catches (TACCs) with little fishing activity and two stocks (PAU 3B and PAU 4) have an unknown stock status.

40. For the stocks with a known status, five (PAU 2, PAU 3A, PAU 5A, PAU 5B, PAU 5D) are estimated as likely as not, or likely to be, at or above the target biomass and one (PAU 7) is estimated as unlikely to be at or above the target biomass, with recent trends showing that the stock has rebuilt substantially towards the target biomass level since 2017.

41. Given the highly selective harvest method (hand gathering) and estimated high likelihood of post-release survival of pāua, the proposed exception is unlikely to significantly change catches or mortality of pāua stocks.

42. If introduced, the ability to return any legal-size pāua, and the use of the voluntary MHS, is likely to result in more larger individuals being harvested, which would mean fewer pāua are required to catch available ACE. This could positively impact sustainability of the stocks as more pāua would remain in the sea to contribute to spawning and help support recruitment in general.

Methods by which the stock or species is taken

43. All commercially harvested pāua are harvested by hand-gathering while free diving, except in the Chatham Islands (PAU 4) where the use of an UBA is permitted for hand gathering of pāua.

44. Divers travel out to reefs on vessels and typically collect pāua in depths ranging from a couple of metres down to 15-metres. Divers remove individual pāua from the reef, checking their size and placing them in a catch bag which, once full, is collected by the vessel. Onboard the vessel, pāua are remeasured to ensure they are above the MLS, prior to landing.

Handling practices

45. Commercial pāua divers use specialised blunt tools with round tips and no sharp edges to harvest pāua, commonly called pāua knifes, that are designed to reduce the risk of causing damage to the pāua.

46. Although less common than the use of pāua knives, divers in some areas use modified hooks to harvest pāua. These hooks do not resemble 'traditional sharp hooks', but rather look like golf clubs used to 'hook' under the pāua to remove them from the reef. Gerring et al, (2003) noted that the use of hooks has more risk of injuring the pāua in comparison to pāua knives and estimated a higher incidental mortality rate of 10% of pāua removed with hooks. However, anecdotal information from Licensed Fish Receivers indicates that the use of hooks does not impact the survival of pāua that are kept in live holding tanks for up to two weeks after harvesting.

47. To ensure damage to pāua is minimised the Pāua Industry Council (**PIC**) and the Pāua Management Councils (QMA specific councils that manage commercial pāua fishing) have developed various best practice harvesting and handling guidelines for commercial fishers to reduce injury to pāua. This includes practices such as:

    a) **Using the right tools to harvest pāua** - only use tools that have no sharp edges, with blades longer than the pāua being harvested (to increase leverage while extracting them from the reef) and a solid 'non-slip' handle.

    b) **Using the correct removal technique** – in a quick continual action, slide the tip of the tool under the pāua as far under the foot as possible before applying upwards pressure to lever it off the reef before it gets a chance to clamp down. If the first removal attempt is

unsuccessful, leave it, as it is unlikely to be prised loose after it's clamped down without damaging it. Avoid the head area of the pāua, where the holes meet the front of the shell, as it is very delicate.

c) **Measuring in a way that minimises impact on returned pāua** - where possible, pāua should be measured underwater, and, if undersized, returned immediately to the location it was taken from. However, if pāua have been taken from the water to measure onboard the boat, ensure it is kept damp and in the shade. Pāua dry out and die quickly if not protected from the heat and sun. Heat-damaged pāua will be in a weakened state and susceptible to predators if placed back on the reef.

d) **Returning undersized pāua to ensure survival** –When returned, pāua should be positioned the right way up and as close to their original location as possible, held against a smooth rock surface until they clamp on. Unless pāua are returned to the reef, they are likely to be preyed on by starfish, reef fish and other predators before they have a chance to clamp to a rock surface. Undersize pāua that are brought back to the boat should be returned to the reef as soon as possible.

48. While the industry guidelines and procedures are voluntary, harvesters are expected to comply with the general operating procedures and best practise rules set out in Fisheries Plans and, anecdotally, are thought to be well adhered to by commercial pāua harvesters.

Social, cultural and economic factors

49. Pāua are high-value target species for commercial fishers and kaimoana species for recreational and customary fishers.

50. To help maintain a healthy pāua spawning stock biomass, industry has put in place voluntary MHSs in most major QMAs, which are set above the commercial MLS.

51. The ability to return any legal-size pāua under the MHS means that larger individuals are harvested. Therefore, fewer pāua are required to catch available ACE and more pāua would remain to contribute to spawning and be available for harvest by customary and recreational fishers.

6.3 Preliminary conclusion – FNZ considers pāua have an acceptable likelihood of survival when taken by hand gathering

52. FNZ considers that, based on the best available information, pāua have a high likelihood of post-release survival when caught by hand gathering, which is likely to be further supported by the voluntary use of best practice handling and harvesting guidelines.

53. Given the high likelihood of survival, FNZ considers that providing commercial fishers with the ability to return legal-size pāua would improve the outcomes from using voluntary MHSs that apply in all major pāua QMAs.

54. Based on the above, FNZ proposes that an exception is provided for under the first provision, allowing commercial fishers to return live legal-size pāua.

55. The Minister's decision whether to provide an exception or not must be made considering the purpose and principles of the Act. We assess this in Appendix One.

Conditions to the proposed exception

56. To maximise the likelihood of post-release survival, FNZ proposes that the exception for the permitted return of legal-size pāua be contingent on conditions that aim to reduce stress on pāua, outlined in Table 2.

Table 2: Proposed conditions for the permitted return of live legal-sized pāua.

Condition		Rationale
1	Pāua may be returned if it is returned to the substrate from which it was taken, and the return occurs as soon as practicable after it was taken.	Returning pāua to an unsuitable habitat is likely to have negative impacts on post-release survival. If returned pāua are not allowed to clamp to the substrate, they are likely to be preyed on by starfish, reef fish and other predators. Excessive exposure to air, sunlight and temperature (time out of water) produces physiological stress that reduces post-release survival.
2	Fishers must determine that the pāua is without major external injuries immediately prior to its return to the substrate from which it was taken.	Pāua displaying major abrasions or cuts to the foot, or major damage to the head part of the shell must not be returned. As pāua lack features to restrict blood flow and effective clotting mechanism in their blood, they are vulnerable to major cuts and abrasions, and the high energy demand associated with the process to reduce blood loss and replace may impact post-release survival.

7 Fisheries Management implications

7.3 Reporting

57. FNZ proposes that if fishers are permitted to return live legal-size pāua, those returns should be reported under a specific disposal code. As most pāua returned are expected to survive, fishers would not be required to cover the returns with ACE or pay deemed values.

7.4 Sustainability measures

58. Even though pāua have a high likelihood of post-release survival when commercially caught and returned, there would be a level of incidental mortality associated with this type of return. This type of post-release mortality, along with any other unrecorded mortality of fish associated with fishing activity, including misreporting, predation, and accidental unseen loss, is accounted for in the allowance for other sources of mortality from fishing.

59. An allowance for other sources of mortality from fishing has been set for all stocks except PAU 1, 5A, 6 and 10. Three out of the four stocks that don't have a set allowance have a low TACC (one to two tonnes) and negligible or no commercial catches. One stock without an allowance, Fiordland (PAU 5A), has high commercial catches. Where this allowance has been set, it equates to approximately one to fifteen percent of the Total Allowable Catch (**TAC**) of the stock (Table 3).

Table 3: Other sources of mortality (t), TACC (t) and TAC (t) for all pāua stocks.

Stock	PAU 1	PAU 2	PAU 3A	PAU 3B	PAU 4	PAU 5A	PAU 5B	PAU 5D	PAU 6	PAU 7	PAU 10
TAC	-	192	79	80	334	-	123	134	-	134	-
TACC	2	121	46	46	327	149	107	89	1	94	1
Allowance for other sources of mortality from fishing	-	11	7	10	2	-	3	20	-	10	-

60. The high variability between pāua stocks in the allowance for other sources of mortality caused by fishing likely reflects different levels of recreational and customary take of the stocks, with higher allowances set for stocks that have a high non-commercial take to account for incidental mortality associated with those activities and any illegal take.

61. For stocks that have a set allowance, FNZ considers the current allowance is likely to appropriately account for potential incidental mortality associated with the return of legal-size pāua, as well as other unrecorded mortality associated with fishing. For PAU 5A (Fiordland), where no allowance is set but commercial catches are relatively high, a review of sustainability

measures may be required to appropriately account for incidental mortality associated with fishing activity, including incidental mortality of returned legal-size pāua.

62. FNZ notes that as fishers are currently not allowed to return legal-size pāua, it is not possible to assess with certainty the potential volume of returns or estimate accidental mortality associated with returns. FNZ will monitor the level of returned legal-sized pāua to ensure the TAC and allowances are appropriately set for each stock going forward.

63. Providing for the live return of legal-size pāua is unlikely to change the value of ACE as it will provide fishers with the ability to return pāua of all sizes, enabling further benefits to be realised from the voluntary use of MHSs.

8 Engagement to date

64. In advance of this public consultation, FNZ sent out a summary of the proposed exception for legal size pāua to Iwi Fisheries Forums. FNZ sought input on the ability of commercial fishers to return pāua above MLS to the sea, and welcomed any information on survivability, specific handling practices that support their safe return, and any social, cultural, and economic factors considered relevant. FNZ received no feedback on these factors prior to the publication of this paper.

9 Questions for submitters

65. FNZ welcomes feedback on the assessment of pāua against the exception provision under section 72A(2)(a) of the Act. Please provide detailed information and sources to support your views where possible.

Survivability

- Do you agree with the characterisation of post-release survivability of pāua?
- Do you have additional information on post-release survivability of pāua and the methods, conditions and practices that may improve survivability?
- Do you agree with the proposed exception conditions to improve likelihood of survival?

Impact

- How does the requirement to land all legal-size pāua affect your fishing practices and operation?
- How would the ability to return live legal-size pāua impact you fishing practices and operation?
- What further information do you have that might inform the Minister's decision?

10 References

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Appendix One: Statutory considerations

Purpose of the Act

66. Given the high estimated likelihood of post-release survival, FNZ considers that providing for the return of legal-size pāua is likely beneficial to the health of the stocks. In addition, the proposal will likely support Māori customary and recreational access to pāua by increasing availability of the species to the sectors while providing benefits to commercial fishers by allowing them to maximise the harvest value of pāua.

67. Due to the high likelihood of post-release survival of commercially caught pāua, the proposed exception is unlikely to negatively impact the overall sustainability of the pāua stocks.

International obligations

68. FNZ considers that the proposal is consistent with our international obligations and reflects a precautionary approach to the management of pāua stocks and maintaining a healthy marine ecosystem.

Treaty of Waitangi (Fisheries Claims) Settlement 1992

69. The proposals in this paper do not impose restrictions on non-commercial customary fishing rights, which are authorised by kaitiaki.

70. Māori have commercial interests and own settlement quota in the pāua stocks. FNZ considers the proposal in this paper will support the sustainable management of the stocks and enable further benefits to be gained from their utilisation.

71. FNZ's initial assessment is that the proposed exception to allow commercial fishers to return legal-sized pāua would support the long-term value of the 1992 settlement and Māori interests.

Environmental principles

Associated or dependent species

72. Pāua are eaten by a range of invertebrate and fish predators. However, there are no known predators that exclusively feed on pāua.

73. There is no known incidental catch of seabirds, mammals, or protected fish species from hand gathering of pāua. FNZ does not consider that the proposal will have impacts on protected species interactions.

Biological diversity

74. FNZ considers that the proposed exception is unlikely to negatively impact the biological diversity within the species as the exception is unlikely to result in increased targeting of the species or changes to the total mortality of the stocks caused by commercial fishing.

Habitats of particular significance

75. Five potential habitats of particular significance have been identified for pāua (Table A1).

Table A1: Potential habitats of particular significance for pāua.

	Description
Habitats of particular significance in PAU 3A	Subtidal rocky reef with pāua aggregations at Waipapa, Rakautara, Oaro, and Omihi (Alestra et al, 2021; Gerrity et al, 2020; Schiel et al, 2019; Schiel et al, 2021)
Habitats of particular significance in PAU 7	Subtidal rocky reef with pāua aggregations at Cape Campbell and Omihi (Alestra et al, 2021; Gerrity et al, 2020; Schiel et al, 2019; Schiel et al, 2021)
Attributes of habitats	Algal dominated biogenic habitat with a good abundance and diversity of algae. Subtidal rocky reef with high energy wave exposure and good water movement for outward dispersal of pāua. Dense aggregations of mature pāua with juvenile habitat is directly connected to emergent and adult habitat.
Reasons for particular significance	Pāua aggregations
Risks/potential impacts from fishing	Low

76. The proposal outlined in this paper is not expected to result in an increase in fishing activity or changes to where that fishing activity occurs. Given the highly selective nature of hand gathering impacts on habitat are considered negligible. Therefore, FNZ considers the proposal very unlikely to have an impact on any habitat of particular significance.

Information principles

77. There is limited information available on post-release survival of commercially caught pāua. However, the best available information indicates that post-release survival of pāua is high when hand gathered, which is the only form of harvest. The proposal to provide for a landing exception for legal-size pāua supports a precautionary approach to the management of the stock by enabling fewer pāua to be harvested to catch the available ACE, leaving more pāua in the water to contribute to spawning stock biomass.