

PADDLE CRAB: ALLOWING FOR RETURN TO SEA – FINAL ADVICE

Executive Summary

- 1 You are asked to make decisions relating to the return of paddle crabs to the sea following capture.
- 2 The Fisheries Act 1996 (the Act) requires all commercial catch of Quota Management System (QMS) stocks of legal size be landed and reported. Exceptions to this rule exist for stocks listed on the Act's Sixth Schedule.
- 3 MFish is aware that some commercial fishers targeting paddle crab are sorting catches for high value crabs and returning low value crabs to the sea ("high-grading"). Paddle crab stocks are not included on the Sixth Schedule. Hence, returning paddle crab to the sea is not provided for, except in PAD 3, 4, 5 and 6 where a minimum legal size (MLS) applies and all paddle crab less than 75 mm carapace width must be returned to the sea.
- 4 An Initial Position Paper (IPP), released 29 June 2007, proposed three options in respect to the return of paddle crab to sea:
 - Option 1:** Status quo with focused compliance effort to deter high-grading.
 - Option 2:** Amend the Sixth Schedule of the Act to allow paddle crab to be returned to the sea if likely to survive; *and*
 - Either* (a) retain the MLS applying in PAD 3, 4, 5, and 6,
 - Or* (b) remove the MLS applying in PAD 3, 4, 5, and 6.
 - Option 3:** Amend the Sixth Schedule of the Act to allow paddle crab caught with potting gear¹ to be returned to the sea if likely to survive; *and*
 - Either* (a) retain the MLS applying in PAD 3, 4, 5, and 6,
 - Or* (b) remove the MLS applying in PAD 3, 4, 5, and 6.
- 5 Allowing fishers to return paddle crab to the sea enables quota holders to maximise the value of paddle crab annual catch entitlement (ACE). Allowing fishers to return paddle crab is only appropriate if the activity does not undermine management objectives for paddle crab fisheries, which are to ensure sustainable utilisation, achieve the maximum value and credible fisheries management.
- 6 Research information is limited on the survivability of crabs discarded after capture in fishing gear and views provided in submissions to the IPP varied. Available information suggests the survivability of crabs caught in pots may be good but survival rates for crabs caught in trawl nets, set nets or dredges may be significantly lower.

¹ "Potting gear" for the purposes of this paper refers to the use of the following: rock lobster pots (RLP); crab pots (CRP); cod pots (CP); octopus pots (OCP); AND scampi pots (SCP).

- 7 Option 2 adds paddle crab that is likely to survive to the Sixth Schedule without regard to fishing method. Option 3 takes account of the uncertainty of information regarding crab survivability after capture and limits Sixth Schedule inclusion to crabs caught with potting gear and likely to survive. Option 3 continues to require fishers to land crabs caught by other methods and to balance the catch with ACE.
- 8 MFish recommends Option 3. At this point, the evidence of survivability of pot-caught crabs is sufficient to warrant the addition of crabs caught using this method to the Sixth Schedule. This addition is consistent with management objectives, as it increases the value of paddle crab ACE with little to no increased sustainability risk or impact on other fishery users. MFish would reassess crab caught by other methods for addition to the Sixth Schedule in the future if compelling evidence is presented to support a high likelihood of survival.
- 9 With respect to the MLS in PAD 3, 4, 5 and 6, which already provides for the return of some paddle crab to sea, MFish recommends retaining the MLS at this time. MFish's stated preferred option in the IPP was to remove the MLS. However, submissions to the IPP contained varied views on the need for, and purpose of, the MLS. MFish considers that while addition to the Sixth Schedule is the best tool to enable maximum value to be achieved in the fishery, the contribution the MLS makes to sustainable fisheries management is unknown. MFish considers more discussion is needed to clarify the fisheries objectives associated with the MLS and believes this is best achieved as part of a Fisheries Plan. MFish notes development of a Fisheries Plan incorporating PAD 3 and 5 is already underway.

The Issue

- 10 The key fisheries management objectives for paddle crab fisheries are: i) to ensure sustainable utilisation; ii) to achieve the maximum value; and iii) credible management of the fishery. MFish believes you need to make a decision to ensure these management objectives are met.
- 11 MFish is aware some commercial fishers targeting paddle crab are high-grading. When high-grading, fishers seek to maximise the value of paddle crab ACE by landing high-value crabs (in this case, large, meatier crabs) and returning smaller crabs of a lesser or nil value to the sea.
- 12 The current management framework for paddle crab does not provide for high-grading. Commercial fishers are required to land all legal² paddle crab caught and either balance the landed quantity with ACE or pay the deemed value.
- 13 Some paddle crab fishers consider the requirement to land all crab is unnecessarily constraining utilisation. They also believe that returning unwanted crabs enhances the fishery, as the crabs survive, continue to increase in size, and breed.

² "Legal paddle crabs" include all paddle crabs able to be taken. It is not legal to take berried paddle crabs in PAD 2, 3, 4, 5, 6, 7 and 8, or paddle crabs less than 75mm carapace width in PAD 3, 4, 5 and 6.

- 14 Allowing paddle crab to be returned to the sea would enable commercial fishers to maximise economic returns from their ACE. Surviving returned paddle crabs would be available to be harvested again by commercial fishers after further growth, or would be available to recreational and customary fishers. However uncertainties exist regarding the survival rates of returned paddle crab taken by different methods; therefore the impacts on sustainability of paddle crab fisheries are uncertain and decisions about whether to allow crabs to be returned to the sea must be taken carefully.
- 15 Return to the sea of some paddle crab is provided for in PAD 3, 4, 5 and 6 where a MLS applies and fishers must return all paddle crabs less than 75mm whether dead or alive. The returned crabs are not reported on Catch Effort and Landing Returns (CELRs) or Catch Landing Returns (CLRs) so the quantities of returns are unknown. MFish considers it appropriate to review the MLS when reconsidering the management framework governing the return to sea of paddle crabs.
- 16 MLSs are used chiefly to ensure future recruitment to fishstocks by allowing a proportion of individuals within the stock to reach sexual maturity and breed before being harvested. MFish has no information on the contribution of the MLS in PAD 3, 4, 5, and 6 to ensuring future recruitment or to paddle crab management objectives.

Summary of Options

Initial Proposals

- 17 The IPP proposed the following options:
 - a) Option 1 – Status quo with focused compliance effort
 - b) Option 2 - Add all paddle crab stocks to the Sixth Schedule of the Act, allowing return to the sea if likely to survive after release; AND
 - Either
 - a) retain the minimum legal size limit that applies to paddle crab in PAD 3, 4, 5 and 6
 - Or
 - b) remove the minimum legal size that applies to paddle crab in PAD 3, 4, 5 and 6.

Option 2 amends the Sixth Schedule to enable commercial fishers to legally return paddle crabs to sea if the crabs are likely to survive after release. Option 2 also considers whether or not to retain existing MLSs.
 - c) Option 3 - Add all paddle crab stocks to the Sixth Schedule of the Act, allowing return to the sea if taken using potting gear and likely to survive after release; AND
 - Either
 - a) retain the minimum legal size limit that applies to paddle crab in PAD 3, 4, 5 and 6
 - Or
 - b) remove the minimum legal size that applies to paddle crab in PAD 3, 4, 5 and 6.

Option 3 amends the Sixth Schedule to enable fishers to legally return crabs to sea if the crabs were taken using potting gear and are likely to survive after release. Option 3 also considers whether or not to retain existing MLSs.

Final Proposal

- 18 MFish recommends that you agree to:
- a) amend the Sixth Schedule of the Fisheries Act 1996 to enable fishers to legally return paddle crabs to sea if the crabs were taken using potting gear and are likely to survive after release; and
 - b) retain the minimum legal size applying to paddle crab in PAD 3, 4, 5 and 6 (i.e. Option 3(a) above).

Submissions Received

19 Submissions regarding this proposal were received from:

- New Zealand Recreational Fishing Council (NZRFC)
- RJ and JE Butts Limited and Motupipi Fishing Company Limited (Butts)
- New Zealand Fishing Industry Guild Incorporated (NZFIG)
- Te Ohu Kaimoana Trustee Limited (Te Ohu)
- New Zealand Seafood Industry Council Limited (SeaFIC)
- OCMS International Investments Limited (OCMS)
- The Reliance Fishing Company Limited (Reliance)

Ministry of Fisheries Discussion

20 Consultation on the IPP was undertaken to enable an assessment of the initial position. Seven submissions were received.

The Issue

21 Submissions generally agreed with MFish's statement of the issue. NZFIG, OCMS, Reliance and Te Ohu stated that high-grading allows fishers to maximise the financial returns from their catches. OCMS stated that the market preference for paddle crab in PAD 5 is for crabs larger than 90mm carapace width. SeaFIC stated that, although markets vary, paddle crabs are generally required to exceed 110mm carapace width and that the proportion of catch taken using potting gear that is below this requirement is 80-90 percent. NZFIG reported this proportion as 50-60 percent.

Adding Paddle Crab to the Sixth Schedule

- 22 Most submissions considered only pot-caught paddle crab should be added to the Sixth Schedule (Option 3). Butts noted that the only fishing method that routinely returns live crab to the sea is potting and that methods used to remove crabs from nets usually result in a “huge mortality rate”. Te Ohu, Reliance and NZFIG stated that paddle crab caught by the potting method has a reasonable chance of survival and that paddle crab caught by other methods can suffer damage. NZRFC noted that there is little information on the condition of paddle crab caught by other methods and therefore it cannot support the total inclusion of all methods to the Sixth Schedule.
- 23 One submission, from SeaFIC, supported paddle crab being placed on the Sixth Schedule for all methods (Option 2), but in a way that enables a distinction to be made between live and dead paddle crab when reporting the Sixth Schedule returns. SeaFIC estimated the survival rate of crabs caught by trawling to be greater than 75 percent but noted it is not possible to return paddle crab in a live state when taken with set nets.
- 24 MFish notes the differing views regarding survivability of crabs taken by methods other than potting. MFish considers further research is needed before considering adding paddle crab caught by non-potting methods to the Sixth Schedule of the Act.

Retaining or Removing the MLS

- 25 Five submissions commented on the proposal to remove the MLS applying in PAD 3, 4, 5 and 6. Butts and Te Ohu supported removing the MLS in PAD 3, 4, 5 and 6. OCMS and Reliance opposed the removal of the MLS considering the MLS necessary to the sustainability of the fishery for generations to come.
- 26 MFish has no information on the contribution the MLS in PAD 3, 4, 5, and 6 makes to sustainability or to other paddle crab fisheries management objectives. As views amongst submitters varied regarding the need for, and purpose of, the MLS, MFish considers further discussion is required before removing the MLS and believes this is best achieved as part of a Fisheries Plan. MFish notes development of a Fisheries Plan incorporating PAD 3 and 5 is already underway.
- 27 NZFIG recommended introducing an MLS of 90mm in PAD 1. The IPP did not include or consult on an option to introduce an MLS for PAD 1. Available information to support the setting of an appropriate MLS for sustainability purposes is limited; consequently MFish considers further discussion is necessary before considering introduction of an MLS for PAD 1.

Rationale for Management Options

- 28 When the management framework is consistent with management objectives for a fishery, the logical response to illegal activity is to focus compliance effort to deter the activity (Option 1).
- 29 However, analysis suggests high-grading may not have a negative impact on management objectives for paddle crab fisheries (i.e. sustainable utilisation,

achieve maximum value, credible fisheries management). Commercial fishers targeting paddle crab high-grade to achieve maximum value from their ACE. Although information on the survival rate of paddle crab returned to the sea is absent³, fishers targeting paddle crab mostly use potting gear. Pot-caught crabs suffer little damage as a result of the activity of fishing and survival rates after return to the sea in potting fisheries targeting other crustacean species (e.g. rock lobster) are high. If most paddle crab survive on return to the sea, the sustainability of paddle crab fisheries, and availability of paddle crab to other sectors, is not likely to be significantly affected by returns to the sea. With respect to credible fisheries management, MFish Fisheries Surveillance Officers report a lack of understanding among fishers targeting paddle crab for the current ban on returning pot-caught paddle crab to the sea. Fishers consider that returning unwanted crabs enhances the fishery, as the crabs survive and continue to breed. Fishers also consider the forced landing of unwanted and unmarketable crabs to be wasteful.

- 30 Consequently, this paper presents two options that allow fishers to return paddle crab to the sea. Option 2 would enable paddle crab taken by all methods to be returned to the sea if considered likely to survive. Paddle crab is mostly targeted using potting gear but is also taken as bycatch in inshore trawl, set net, and dredge fisheries. This option allows all fishers, regardless of method used, to legally return crabs likely to survive to the sea, thereby increasing the value of their commercial catches.
- 31 Option 3 would enable only paddle crab caught using potting gear to be returned to sea if likely to survive, thereby increasing the value of commercial paddle crab catches. Option 3 seeks to manage risks associated with uncertainty in information by limiting the ability to return paddle crab to methods considered likely to have a high survival rate after return to sea.
- 32 At present, an MLS of 75mm exists in PAD 3, 4, 5, and 6 and therefore already provides for the return of some paddle crabs (all crabs of a size less than the MLS) to sea. As adding paddle crab to the Sixth Schedule would change the management framework for returning paddle crab to sea, MFish considers it is appropriate to review whether the MLS is still required.

Assessment of Management Options

Option 1 – Status Quo / Focused compliance effort

Impact

- 33 Focused compliance effort to curb illegal high-grading activity in paddle crab fisheries would likely result in increased landings of crab in the short term as target fishers land more crabs in total (big and small) to meet market demand for large crab. However, increased utilisation would be managed to within sustainable levels through the application of catch limits and associated catch balancing tools.

³ Some research has been conducted overseas on survivability of returned decapod crustaceans (which includes crabs). For example, research on the United Kingdom scampi fishery indicates returned decapod crustaceans have mortality rates of between 2 and 25%, depending on species.

Costs

- 34 The cost of focused compliance effort is potentially high given that paddle crab fishing effort is widely distributed and the incentives to offend are significant.
- 35 Curbing high-grading would constrain the ability of New Zealanders to achieve maximum value from paddle crab fisheries. The economic value achieved by commercial paddle crab fishers would be constrained as fishers would not be able to select for higher-value crab. This value loss would be partially offset by increased incentives to find markets for low value crab to avoid wastage. For example, some inshore trawl fishers have found a market for damaged crabs as burley.

Benefits

- 36 Enforcing the requirement for fishers to land and report all legal paddle crab taken would improve the quality of information reported in CELRs and CLRs. This improved information may assist the monitoring and management of paddle crab fisheries. However, this benefit is expected to be marginal given limited compliance resources and the significant incentives to offend.

Option 2 – Addition of paddle crab to Sixth Schedule

Impact

- 37 Adding all paddle crab stocks to the Sixth Schedule and allowing return to the sea regardless of fishing method would enable all fishers catching paddle crab to return to the sea all crab likely to survive. This would result in an increased quantity of paddle crab being returned to sea.

Costs

- 38 Lack of method-specific information about the survival rate of paddle crab after return to the sea means that allowing all fishers, regardless of method, to return crabs may not provide for credible fisheries management. Without information on survival rates of paddle crab after return to sea, “likely to survive” is difficult to assess or enforce, and it is expected fishers would choose to discard crabs regardless of condition if there was an economic incentive to do so.
- 39 Lack of information about the survival rate of paddle crab after return to the sea also makes it difficult to assess the impact of Option 2 on sustainable utilisation. Although most paddle crab (over 90 percent) is taken using potting gear, crabs are also taken in trawl, set net and dredge fisheries. Pot-caught crabs are likely to survive being returned to the sea because the potting method causes little or no damage to the crabs, but crabs taken by other methods can suffer considerable damage and their survival after being returned to the sea is much less certain.
- 40 In 2005-06, nine tonnes (six percent of total reported catch) of paddle crab catch was reported as taken by methods other than potting. This is likely to be

an underestimate of actual catch by other (i.e. non-potting) methods because it does not include undersize paddle crab taken in PAD 3, 4, 5 and 6 or unreported catch. At current exploitation levels the risk to sustainable utilisation may be low, even if mortality rates are high, because catches in most fisheries are well below levels considered sustainable. However, the risk would increase should catches increase to the level of current total allowable commercial catches.

Benefits

- 41 Placing paddle crab on the Sixth Schedule provides fishers targeting paddle crab with opportunities to maximise returns on ACE. MFish has no research information to estimate the additional total value but submissions indicate the value benefit could be large. For example, over 90 percent of paddle crab is taken using potting gear and submissions suggest between 50 and 90 percent of paddle crab taken in pots is below the size desired by the marketplace.
- 42 Fishers taking paddle crab as bycatch (e.g. in trawl nets, set nets or dredges) would also be able to return crabs likely to survive to the sea without having to balance this catch against ACE, thereby reducing the cost of their catch. Fishers would, however, still be required to land any legal crab unlikely to survive. MFish has no research information to estimate the total additional value of bycatch fishers being able to return crab to the sea if likely to survive.

Retain or remove the MLS in PAD 3, 4, 5, and 6

- 43 Retaining the MLS (Option 2(a)) whilst adding paddle crab to the Sixth Schedule would not change the sustainable utilisation or value effects presented above for Option 2.

Costs

- 44 The effect of removing the MLS (Option 2(b)) whilst adding paddle crab to the Sixth Schedule is uncertain. Requiring fishers in PAD 3, 4, 5 and 6 to land undersize paddle crab that are not likely to survive on return to the sea would impose a cost on these fishers. In 2005-06, the total cost of ACE used to cover bycatch across all paddle crab was approximately \$1,100 (this includes bycatch in fisheries where no MLS currently applies i.e. PAD 1, 2, 7, 8 and 9). However, this loss may be partially offset by the ability to return unwanted, legal size crabs to the sea.

Benefits

- 45 Removing the MLS would mean estimated quantities of crabs returned to the sea are captured on CELRs or CLRs (as per the regulatory requirements that all species returned to the waters from which they were taken in accordance with the Sixth Schedule of the Act be reported). Undersize crabs returned to the sea are not currently recorded on reporting forms. Capturing information on returns to sea may assist future monitoring and management of paddle crab fisheries.

Option 3 – Addition of pot-caught paddle crab only to the Sixth Schedule

Impact

- 46 Adding all paddle crab stocks to the Sixth Schedule and allowing return to the sea if taken using potting gear would enable only fishers targeting paddle crab using potting gear to return all crab likely to survive after release. This would result in an increased quantity of paddle crab being returned to sea (but the quantity returned would be less than under Option 2).

Costs

- 47 Option 3 does not impose additional costs on fishers. Option 3 results in less value benefits to commercial fishers than Option 2. This is because all paddle crab fishers taking paddle crab using methods other than potting would still be required to store and land all crabs taken and balance the catch with ACE or pay the deemed value.

Benefits

- 48 When compared with Option 2, Option 3 reduces the risks to sustainable utilisation by only allowing crabs caught using potting gear to be returned. Paddle crabs caught using potting gear are considered much more likely to survive after release than crabs taken by other methods. This is because the potting method causes little or no damage to the crabs. Consequently, Option 3 also provides for more credible fisheries management than Option 2, as only crabs taken by low-damage methods are able to be returned. The requirement to assess whether a crab is likely to survive is not completely eliminated however, as some pot-caught crabs may suffer damage.
- 49 Like Option 2, Option 3 provides fishers with opportunities to maximise returns on ACE. Under Option 3 these opportunities are limited to fishers taking paddle crab using potting methods. MFish has no information to estimate the total additional value that would be achieved by fishers if Option 3 were implemented. However, as noted above, the value benefit may be large. Over 90 percent of paddle crab is taken using potting gear and submissions suggest between 50 and 90 percent of paddle crab taken in pots is below the size desired by the marketplace.

Retain or remove the MLS in PAD 3, 4, 5, and 6

- 50 Retaining the MLS (Option 3(a)) would not change the sustainable utilisation or value effects presented above for Option 3.

Costs

- 51 Removing the MLS (Option 3(b)) would impose a cost on fishers in PAD 3, 4, 5 and 6 taking paddle crab by methods other than potting by requiring these fishers to land all paddle crab taken. As noted, MFish considers the additional cost of having to land crabs smaller than 75mm carapace width is likely to be small.

Benefits

- 52 As for Option 2, removing the MLS would mean estimates of the quantities of crabs returned to the sea are captured on reporting forms. Capturing information on returns to the sea may assist future monitoring and management of paddle crab fisheries. Retaining the MLS may assist in the future sustainability of PAD 3, 4, 5 and 6 if effort in the fishery increases, although MFish notes information to support the setting of an MLS for sustainability purposes is limited.

Statutory Considerations

- 53 In forming the options for addressing the problem of illegal high-grading in paddle crab fisheries, the following statutory considerations under the Fisheries Act 1996 have been taken into account.
- a) Section 5(a): You are required to act in a manner consistent with New Zealand's international obligations relating to fishing, including the

Law of the Sea and the Fish Stocks Agreement as well as regional fishery management agreements. MFish considers that the management options proposed are not affected by any issues arising under international obligations relating to fishing.

- b) Section 5(b): You are required to act in a manner consistent with the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992. MFish considers the options are consistent with the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992. None of the options considered negatively impact availability of, or access to, paddle crab for customary purposes, and the impacts of each management option on commercial stakeholders (including Maori commercial stakeholders) are fully explored.
- c) Section 8: None of the management options proposed is contrary to the purpose of the Act, which is to provide for utilisation of fisheries resources whilst ensuring sustainability. Options 2 and 3 potentially improve utilisation, by improving the effectiveness and value of commercial ACE. Surviving returned paddle crab would be able to be harvested again after further growth, and would also be available to recreational and customary fishers.
- d) Section 9(a) and (b): There is no bycatch of any associated or dependent fishery due to the method of harvesting. Interactions between species have been identified and there is no evidence that these interactions are of such magnitude to impact on associated and dependent species, or on biological diversity. It is unlikely any of the management options proposed would materially affect these interactions.
- e) Section 9(c): No habitats of particular significance for fisheries management have been identified. Methods used to target paddle crab are sensitive to the environment, and, as a matter of practice, fishers generally remain in attendance of their pots.
- f) Section 10: Best available information is incorporated into this assessment of management options, and uncertainties in information (for example in survivability rates and stock status) are identified and discussed. The uncertainties in information make it difficult to accurately quantify costs and benefits to sustainable utilisation; these uncertainties are clearly identified and discussed. At this time, MFish considers further information on survivability of damaged paddle crab is needed before Option 2 can be implemented.
- g) Section 11(1)(a): Paddle crab typically occupy areas of high exposure (e.g. ocean beaches) that are subject to fluctuations in the physical environment (e.g. storm events) and therefore the biological diversity

of an area is unlikely to be significantly affected at modest fishing levels. No other information has been considered about any effects of fishing on any stock or on the aquatic environment.

- h) Section 11(1) (b): No existing controls under the Act for paddle crab that are not discussed in this paper will be affected by the management options presented. The current controls that are in place for paddle crab are a TAC and a TACC. An MLS of 75mm exists in PAD3, 4, 5 and 6, and there is a prohibition on the taking of berried crab in all stocks except PAD 1 and PAD 9.
- i) Section 11(1) (c) There is natural variability of paddle crab abundance, mostly due to the impact of changes in environmental conditions on their habitat. The management options proposed are not likely to make paddle crab fisheries more or less vulnerable in terms of natural variability.
- j) Section 11(2)(a) and (b): There are no provisions applicable to the coastal marine area known to exist in any policy statement or plan under the Resource Management Act 1991, or any management strategy or plan under the Conservation Act 1987 that are relevant to the management options proposed.
- k) Section 11(2)(c): MFish notes the options, as they relate to PAD1, are discussed in a manner consistent with s7 and s8 of the Hauraki Gulf Marine Park Act 2000. This Act's objectives are to protect and maintain the natural resources of the Hauraki Gulf.

Other Management Issues

- 54 In PAD 2, 3, 4, 5, 6, 7 and 8 berried crabs must be returned to sea. Returning berried crabs to sea is not required in other paddle crab fisheries. NZFIG stated that protection of berried females could be introduced in conjunction with an MLS restriction or on its own. This paper does not consider options relating to the taking of berried crabs as more information is required to assess the efficacy of the different rules. It may however be appropriate to review this issue at a later date when more information is available.