



Protecting breeding stock levels of the blue swimmer crab resource in the South West

Summary

Aims:

Broadly declining catches of the blue swimmer crab fisheries in the South West of the State, as well as the closure of the Cockburn Sound Crab Fishery, has brought the resilience of crab breeding stocks into question and highlighted the need for a review of the current management arrangements to improve the level of protection of the breeding stock and ensure sustainability of the South West blue swimmer crab resource.

The Discussion Paper identifies that existing management arrangements do not currently address the protection of the breeding stock across the entire resource as the existing arrangements have been developed piecemeal, over time at specific locations in response to particular fishery events.

In particular, the arrangements are not achieving appropriate levels of protection for mated, pre-spawn female crabs, which become highly vulnerable to capture in late autumn, winter and spring.

The paper examines and compares options for new, broader-scale, resource level management arrangements to provide co-ordinated protection for the female breeding stock across the South West.

The options set out in this Discussion Paper encompass commercial and recreational fishing within the waters of the West Coast Estuarine Fishery including: (the Swan-Canning and Peel-Harvey Estuaries), the Cockburn Sound Crab Fishery, the Warnbro Sound Crab Fishery, the Mandurah to Bunbury Developing Crab Fishery (Comet Bay and Mandurah to Bunbury) and the recreational-only fisheries of the Leschenault Estuary and Geographe Bay.

Biology of blue swimmer crabs in the South West:

- Blue swimmer crabs residing in the South West are near the southern extremity of their natural environmental range, meaning favourable environmental conditions are critical to recruitment.
- Crab stocks in the South West have a maximum lifespan of around three (3) years. The short lifespan means that the abundance of crabs is strongly dependent on annual recruitment. Successful recruitment requires that females have every opportunity to spawn and create a robust and plentiful crab population.
- Crabs are opportunistic inhabitants of estuaries, moving into these water bodies as salinities increase in the late spring and summer months before migrating out again into marine coastal waters as the estuary salinity decreases following autumn/winter rainfall.

- Females store the sperm from their late summer/early autumn mating, using it to fertilise their eggs when they spawn and become ‘berried’ (holding their eggs externally on their abdomen) in spring/summer. Females then release their eggs with the resulting larvae developing in coastal waters, before developing into juvenile crabs which settle in shallow protected coastal habitats or migrate into estuaries with similarly favourable environments.
- Berried females enjoy a brief period of legal protection however, mated, but not yet externally berried females above minimum legal size in the autumn/winter/spring period, which are just as important for the egg production of the stock, do not have the same protection.
- This highlights the vulnerability of the pre-spawn female breeding stock and illustrates the importance of changing current management arrangements in both the commercial and recreational sectors to provide adequate protection.

Management Options:

To increase protection of the breeding stock, management arrangements need to limit the ability of fishers to catch adult crabs, in particular, retaining females before they are given the chance to spawn.

The five management options summarised below have been identified as potential measures to achieve this outcome. Please refer to Part 6.0 of Fisheries Management Paper No.288 for detailed information and evaluation on these options.

1) Male-only fishery

This would prohibit the take of female crabs by commercial and recreational fishers in order to build and protect female breeding stock. This practice would continue to result in catching, handling and discard of female crabs and associated negative impacts on their survival. A male-only fishery also runs the risk of “sperm limitation” if the proportion of male crabs becomes highly reduced. As a result, females may not be mated due to the reduced male numbers which would limit the production of eggs.

2) Increase in the Minimum Legal Size (MLS)

An increase in the MLS could be applied to both sexes, or possibly applied only to females. While an increase in the MLS would lead to an increase in breeding stock levels, crabs would still be subject to the undesirable effects of handling and discard as the size of the crab is determined after capture. An increased MLS would impact on the economic viability of commercial fishers by limiting the availability of legal-sized crabs. While for recreational fishers the quality of the fishing experience would be reduced as fewer crabs caught would be retained.

3) Limiting the ability to catch crabs for all or part of the period when female crabs are more vulnerable to capture

Different methods would be required in the two sectors to implement this option. Within the commercial sector, this approach would require reductions in trap numbers in at least some autumn months and winter. Reductions to the number of traps used at particular times of the year decreases the catch of a fishing day and impacts on the economic viability of commercial fishers during these times. For the recreational sector reducing bag and boat limits (for boat based-fishers) during autumn and winter when females are more catchable would limit the catch of female crabs. However, this would be inconsistent with keeping recreational fishing rules simple, would require a high level of

compliance supervision and would be likely to detract from the experience of recreational crab fishers during these months.

4) Closures in areas where females are aggregated and at times when they are more vulnerable to capture (Patchwork seasonal closures)

This would use closures to both sectors in areas where, and at times when, females are collected together in larger numbers and thereby more vulnerable to capture. In estuarine systems, closures would need to operate in areas remaining sufficiently saline to provide an ongoing habitat for crabs during the autumn, winter and spring months.

One of the positive aspects of closures is that crabs are not caught at all, so closure options avoid undesirable effects of repeated handling and discard of undersize, pre-spawn female and berried crabs. In situations where the closure is a patchwork, only applying to particular time periods and in particular areas, enforcing compliance would be more complicated, requiring more compliance and education resources to implement than a uniform closure.

5) Broad-scale area closures to fishing for all or part of the period when females are more vulnerable to capture (Broad-scale seasonal closure)

The option of reducing the length of the fishing season generally to limit the take of females when they are more vulnerable to capture would require the commercial and recreational fishing seasons to be closed for the same time period covering some of the months of autumn, winter (where not already closed) spring and possibly early summer. This would define a uniform broad-scale, seasonal closure of the whole of the South West.

A broad-scale closure is a cost-effective compliance measure, as fishers not complying with the closure are readily detectable, rules are readily understood and undesirable effects of crab capture and handling are eliminated, as crabs are not caught at all during the closure.

As most recreational crab fisheries are less active over winter and spring with the exception of Geographe Bay, recreational impacts would be relatively minor. The impact on commercial fisheries would vary according to the reliance on catches during the closure months.

Broad-scale seasonal closures would have an impact on the quantity of the annual catch taken in both the commercial and recreational fisheries and would be the most cost effective compliance measure, simplest recreational rule set and least economic impact to the majority of commercial fishers during this time.

In weighing-up the options, the Discussion Paper considers the impacts on the economics of commercial fishers and the recreational fisher experience, compliance costs, the amount of handling and discard of berried and undersize crabs, and whether or not the option increases or decreases the overall level of management and recreational rule complexity for the blue swimmer crab resource.

Broad scale seasonal closures are identified as the most balanced option to achieve the desired objective.

Please refer to the table included in this summary which outlines the breeding stock management options.

How to leave comments:

Your comments should be submitted by 23 November 2018 and addressed to:

The Director Aquatic Resource Management

Attention: Crab Management Officer

Department of Primary Industries and Regional Development

Locked Bag 39

Cloisters Square WA 6850

Or by email to:

crab.review@dpird.wa.gov.au

The peak representative bodies (Recfishwest and WA Fishing Industry Council) will be making submissions to this Discussion Paper. To assist these bodies you may wish to forward a copy of your submission to info@recfishwest.org.au or reception@wafic.org.au

Summary of Breeding Stock Management Options:

Option No.	Nature of option	Compliance cost	Impacts on commercial viability	Outcomes for recreational fisher experience	Handling and Discard	Improves consistency of rules
1	Male only	High	Daily – Yes Annual - Yes	Reduced	Increased	Doesn't improve current seasonal closure inconsistencies. Adds an extra rule and may add further inconsistency, if only applied seasonally at the time of high female catchability.
2	Increase Minimum Legal Size	High (initially)	Daily – Yes Annual – Yes (Note: impact may vary where commercial fisheries already fishing at a higher size limit).	Reduced	Increased	Doesn't improve current seasonal closure inconsistencies. Only consistent if applied for the whole season and to both sexes. Otherwise adds a seasonal or sex inconsistency.
3	Limiting the ability to catch female crabs at times when they are more vulnerable to capture	Commercial: Moderate Rec: High	Daily -Yes (But gear entitlement transfers may assist) Annual - Yes	Reduced	Reduced	Doesn't improve current seasonal closure inconsistencies. Adds a seasonally-varying gear usage (commercial) or bag/boat limit (recreational) inconsistency.
4	Patchwork seasonal closures	Moderate	Daily – No (but areas that are open will likely be lower catch ae areas) Annual - Yes	Reduced in areas that are open as they will likely be lower catch rate areas.	Reduced	Doesn't improve current seasonal closure inconsistencies. Adds a patchwork of temporarily-closed areas.
5	Broad-scale seasonal closures	Low	Daily – No (at times when the season is open) Annual - Yes	Same or Increased (at times when the fishery is open), reduced when fishery is closed.	Reduced	Removes current seasonal closure inconsistencies.