

Coral Sea Fishery

Hand Collection Sector: Lobster and Trochus

Overview of the fishery

The Coral Sea Fishery is comprised of several sub-fisheries:

- the hand collection sub-fishery, which includes the following sectors:
 - aquarium
 - lobster and trochus
 - sea cucumber (beche-de-mer)
- the line sector sub-fishery, which includes auto-longlining, demersal longlining and other line fishing
- the otter trawl sub-fishery
- the finfish trap sub-fishery

In recent years 40-160t per year was taken across all Coral Sea sub-fisheries (40t in 1988/89; 150t in 2001/02). The GVP of the combined Coral Sea Fishery was \$1,201,200 in 2002/03, \$850,000 in 2003/04, \$1,100,000 in 2004/05.

Seven of the 18 CSF permits are for the hand collection sectors. These include two Aquarium, three lobster and trochus and two sea cucumber fishing concessions. Collection is by hand only for the lobster and trochus, and sea cucumber sectors, while scoop nets, cast nets, seine nets and handheld rod are permitted within the aquarium sector.

The overall status of the fishery is uncertain and most stocks are not assessed. With exception of the sea cucumber sector, all sectors are considered underdeveloped. An Australian Institute of Marine Science (AIMS) long-term survey showed no evidence of localized depletions resulting from the Aquarium sector take (McLoughlin 2006).

The lobster and trochus sector targets lobster species *Panulirus ornatus* (this is the main species in Torres Strait; Coral Sea is potentially a sink population (Pitcher *et al.*, 2005)) and *Panulirus versicolor* (self-recruiting, resident within the Coral Sea), with possibly *P. pennisiulatus* as a minor species. The main trochus species in the CSF is probably not *Trochus niloticus*, but may be a related species, *Tectus pyramis*, which is smaller and has a lower value than *T. niloticus* (Wells and Bryce, 1988). This requires further clarification.

Catches between 2000 and 2004 ranged from less than 200 kg per year to more than 2000kg per year. Catch of lobsters in the CSF has been less than 2000 kg per year since 2005. Availability of lobster and trochus is sporadic and consequently fishing tend to be sporadic.

Review of the current management of the fishery

Participation is by limited entry. As at October 2007 there were 18 permits held by 8 permit holders across the demersal line, otter trawl, finfish trap, sea cucumber, aquarium collection, lobster & trochus collection sectors. There has been no additional access granted since 1997. Prior to 2000, permits were non-transferable; but all permits were made transferable in 2002 subject to performance criteria.

Triggers of 30 t for lobster (tails) and 30 t for trochus currently apply. In addition, there are minimum tail size lengths for lobster and a set permitted size range (minimum and maximum size) for trochus. There was no catch of trochus in 2005, as the species currently have low commercial value.

The maximum and minimum size trochus limits set are appropriate for *Trochus niloticus*, but there is a need to consider whether this size range is appropriate for *Tectus pyramis*. Trochus are susceptible to local depletion, because separate reefs are self-recruiting, but appear to rapidly recover (Ryan, 1999). Trochus have a restricted habitat niche whereby they boom under the right conditions (Nash, 1993). Their cryptic behaviour affords some protection from fishing.

There are "move on" provisions that provide precautionary limits and mitigate against localized depletion. A maximum of 3 t of lobster tail and 5 t of trochus may be taken from one reef (per permit), and subsequent collection beyond this limit may not continue within a 15 nautical mile anchorage

Spatial closures apply for lobster and trochus at Lihou Reef and Coringa-Herald National Nature Reserves.

While raw logbook data is provided, the 5-boat ruling and constraints of confidentiality prohibit presentation of detailed data for the three Hand Collection sectors. No observer data had previously been collected for any of the three Hand Collection sectors.

Proxies against the Harvest Strategy Policy Reference Points

There are no biomass estimates and hence no direct B_{TARG} and B_{LIM} reference points. However, the conservative trigger points, together with the spatial closures, move-on provisions and size limits should mitigate against overexploitation while enabling controlled expansion of the fishery and hence the potential for yield to be optimized. When triggers are reached, the aim is to improve monitoring and invoke analyses with a view to establishing total allowable catches (TACs).

General description of the harvest strategy

Fishery Issues; justification for approach

The small size of the sub-fishery, its low GVP and the effectiveness of existing management arrangements negate the need for a more complicated harvest strategy. Indeed, the confidentiality constraints render it difficult to undertake detailed analyses of fishery data. The fishery is effectively a "Tier 5" fishery on the Southern and Eastern Scalefish and Shark Fishery (SESSF) Tier scales – that is, one with minimal information.

The existing management arrangements were modified to be more precautionary and decision rules were assigned to triggers. Spatial closures and move-on provisions were important given the relatively sessile nature of the species and, in the case of trochus, highly localised recruitment. The need for more information and improved monitoring was acknowledged as a priority.

Harvest Strategy Overview

The proposed harvest strategy is a simple system, incorporating catch triggers for each species, size limits, move-on provisions and spatial closures, as follows:

- 30 t trigger for lobster tails (total as opposed to per permit)
- 30 t trigger for trochus (total as opposed to per permit)
- Minimum tail size lengths for lobster
- Minimum and maximum size range for trochus
- Move-on provision of a total limit of 5 t trochus and 3 t lobster tails per reef per year.

Decision Rules (see subsequent section for annotated version with additional explanation and rationale)

Lobster:

- Reaching the 30 t catch trigger in one year should result in
 - an assessment with consideration of adjacent fisheries
 - increased monitoring (i.e. size information)

within the next 12 months, for purposes of setting a TAC or revised trigger

- if the assessment is not completed within 12 months, there are to be no further increases in catch (i.e. annual catch must not exceed 30t).

Trochus

- Reaching the 30 t catch trigger in one year should result in
 - an assessment with consideration of adjacent fisheries
 - increased monitoring (i.e. size information)

within the next 12 months, for purposes of setting a TAC or revised trigger

- if no assessment is undertaken within 12 months, a TAC will be set at 20 t until the assessment is completed.

Consistency with Harvest Strategy Policy

The harvest strategy provides for conservative limits within which fishing operations can continue without significant new information or management requirements. Trigger points allow for the fishery to expand in a controlled manner.

The harvest strategy also seeks to improve the monitoring and data analysis for the fishery so that assessments may ultimately consider size composition, the trigger values may be revisited in light of more information, and ultimately TACs may be set.

As the lobster fishery takes part of a larger stock, the Harvest Strategy Policy defers to AFMA and DAFF to make a decision. However, the harvest strategy may be advocated as a precautionary approach to help optimize local yield and overall sustainability.

Annotated description of Triggers and Decision Rules (providing extra explanation and rationale), and additional Harvest Strategy details

The proposed harvest strategy is a simple extension of and modification to the current management arrangements, aiming to improve monitoring and invoke analyses with a view to establishing total allowable catches (TACs).

- Current management arrangements (with modifications):
 - 30 t trigger for lobster tails (total as opposed to per permit)
 - 30 t trigger for trochus (total as opposed to per permit)
 - Minimum tail size lengths for lobster
 - Permitted size range (minimum and maximum size) for trochus
 - Change the move-on provision to a total (as opposed to per permit) limit of 5 t trochus and 3 t lobster tails per reef per year.

Lobster

- In assessing a harvest strategy for lobster, it was noted that the fishery takes part of a larger stock. The 30 t trigger (a value approximately an order of magnitude higher than historic catch levels) can be defended both in this context, and given that it is imposed together with move-on provisions and spatial closures.
- Seek to improve the record of catch by species and thus revisit the total trigger (develop species identification guides for industry)
- Reaching the 30 t catch trigger in one year should result in
 - an assessment (e.g. analysis of CPUE trends, spatial patterns) with consideration of adjacent fisheries
 - increased monitoring (i.e. size information)

within the next 12 months, for purposes of setting a TAC or revised trigger (noting that these can be adjusted up or down).

- if the assessment is not completed within 12 months, there are to be no further increases in catch(i.e. annual catch must not exceed 30t).
- Further changes could be based on a SESSF Tier 4 approach, adjusted for size composition

Trochus

- Because trochus are known to be prone to depletion, reaching the 30 t trigger should invoke a more conservative decision rule than that for lobster:
 - if no assessment is undertaken within 12 months, a TAC will be set at 20 t until the assessment is completed.

- Otherwise, the proposed harvest strategy for trochus is identical to the proposed lobster harvest strategy.
- Record by species – small project/desktop study to obtain appropriate minimum/maximum lengths

Process for review

Minimum fishing days were in place to obtain data, but were costly and subsequently removed from July 2007. There is a need to re-assess information needs and implement new data and analysis arrangements (e.g. observers, or “one-off” surveys every 5-8 years).

There is a need to consider whether the maximum and minimum size range is appropriate for *Tectus pyramis*.

The effectiveness of the trigger points and proposed TACs should be re-evaluated as the quality of catch data improves.

The nature of the assessment invoked when triggers are reached should be more explicitly considered.

Mechanisms via which the fishery can move towards Tier 4 approaches should be investigated as part of the review process.