5 | Active Harvest Strategy

Tiger Flathead

Management Authority:

Australia (domestic)

Adoption Year:

2009

Management Objectives:

Biological

- To maintain stocks at (on average), or return to, a target biomass point B_{TARG} or equivalent proxy (e.g. F_{TARG} or $CPUE_{TARG}$) equal to the stock size that aims to maximise net economic returns for the fishery as a whole
- To maintain stocks above the limit biomass level, or an appropriate proxy, at least 90% of the time
- A reduced level of fishing if a stock is below B_{TARG} but above B_{LIM} (or an appropriate proxy)
- To implement rebuilding strategies, no-targeting and incidental bycatch TACs if a stock moves below B_{LIM} (or an appropriate proxy)
- To ensure the sustainability of fisheries resources, including consideration of the individual fishery circumstances and individual species or stock characteristics, when developing a management approach

Socio-economic

- To maintain stocks at (on average), or return to, a target biomass point B_{TARG} equal to the stock size that aims to maximise net economic returns for the fishery as a whole
- To maximise the profitability of the fishing industry and the net economic returns to the Australian community
- To minimise costs to the fishing industry, including consideration of the impacts on the industry of large or small changes in TACs and the appropriateness of multi-year TACs

Ecosystem

- To be consistent with the principles of ecologically sustainable development, including the conservation of biological diversity, and the adoption of a precautionary risk approach

Reference Points:

- **Limit Reference Point:** $20\%B_0$
- **Trigger Reference Point:** $35\%B_0$
- **Target Reference Point:** $120\%B_{MSY}$ and $48\%B_0$

*B0 = stock size that would exist in the absence of fishing

*120%BMSY is a proxy for BMEY, the biomass that will produce maximum economic yield

Harvest Strategy:

This fully specified, MSE-tested harvest strategy framework applies to the Southern and Eastern scalefish and shark fishery, with each stock applying one of four different HCRs included in the harvest strategy.

Specifications:

- **Type:** Empirical
- **Management cycle:** 3 years
- **Data inputs:** CPUE, indices of abundance, size and age data
- **Management output:** Quota
- **Harvest control rule:** If B is below limit, no targeted fishing and a rebuilding strategy will be developed; if below trigger, TAC declines linearly toward the target to allow stock to rebuild to target level; if above target, fish at F that produces target biomass (i.e., F_{48}); if between trigger and target, also fish at $F_{48}$to account for uncertainty in status

Outcome:

According to the most recent 2019 assessment, the stock is considered sustainable at 34% of unfished spawning stock biomass, above Bmsy but below the TRP. The current level of fishing pressure under the HCR is unlikely to deplete the stock or impair recruitment.

Link to relevant policy document or update:

- Harvest Strategy Framework: for the Southern and Eastern Scalefish and Shark fishery (https://www.afma.gov.au/sites/default/files/sessf_harvest_strategy_amended_2021_final.pdf): See page 12 for a description of the Tier 1 harvest strategy that the stock falls under

- The effects of implementing a 'dynamic B_0' harvest control rule in Australia's Southern and Eastern Scalefish and Shark Fishery (https://www.sciencedirect.com/science/article/pii/S0165783622000832)
- Tiger Flathead: (https://www.afma.gov.au/fisheries-management/species/tiger-flathead) Overview of the fishery provided by the Australian government