

Application of new draft harvest strategy and rationale for setting the 2024/25 TACCs

BACKGROUND:

New Harvest Strategy

The Victorian Rock Lobster Fishery is in the final stages of declaring a new harvest strategy (currently under review by the VFA executive). This new Harvest Strategy, still in draft form, implements a stricter rebuilding plan in response to the reduction in productivity in the fishery. In setting the 2023/24 TACCs, the VFA considered the decision rules and outcome of the existing Harvest Strategy with draft harvest strategy. Recognising the need to respond to the concerns regarding pressures on habitat and reduced recruitment, the decision rules in the new strategy were employed.

Following the same principles, and employing a precautionary approach, the 2024/25 TACC recommendation has again been based on the decision rules in the new Draft Harvest Strategy.

The draft harvest strategy is included as Appendix 1 and summarised below.

- The harvest strategy is based on standardised CPUE, which is rounded to two decimal places.
- The TACC is set using a CPUE-TACC table in conjunction with a harvest control rule. The harvest control rule (HCR) regulates the rate at which the TACC can increase and decrease in response to CPUE changes.
- The HCR also implements the shift to more conservative exploitation rates over time and draws on the secondary PRI indicator to prevent TACC increases when undersize abundance is low. Comparatively, the existing harvest strategy relies on TACCs that were predetermined and calculated using agreed rates of exploitation.
- The performance of the fishery is evaluated against the stock performance indicators and associated limit reference points specified in the fishery's harvest strategy. The indicators and limit reference points are egg production, standardised CPUE and pre-recruit abundance. The annual TACC is determined using a set of decision rules.

1. **Egg production** - the model estimated egg production must be above the limit reference point of 20% of virgin levels, with a 90% probability.

2. **Standardised CPUE** – in assessing the Limit Reference Point (LRP) for egg production, a CPUE-TACC relationship is utilised. LRP CPUE proxy are:

- a. 0.30 kg per pot-lift in the Western Zone, and
- b. 0.20 kg per pot-lift in the Eastern Zone.

Standardised CPUE is further utilised as the determinant of progression through the rebuilding steps.

3. **Pre-recruit index** – to be eligible for a TACC increase, the PRI for that stock assessment period must be above the PRI threshold level for that zone. The PRI thresholds are:

- a. 1.67 undersize per pot-lift in the Western Zone, and
- b. 0.25 undersize per pot-lift in the Eastern Zone.

HARVEST CONTROL RULES:

Step 1: Ensure Egg Production Limit Reference Point is met

Step 2: Determine the TACC level according to the following conditions:

1. The fishery will move to the next CPUE band (and possibly a higher TACC) if:
 - i. the standardised CPUE is in a band higher than in the previous season;

AND

 - ii. the PRI (rounded to two decimal places) is at or above the threshold level of 1.63 undersize per pot lift for the Western Zone or 0.26 undersize per pot lift for the Eastern Zone.

** One-jump rule: the TACC can only be progress through one step per year.*

The TACC will be set at the level that corresponds to the standardised CPUE.

DIRECT APPLICATION OF DECISION RULES

Eastern Zone Fishery

Decision Rule	2022/23 Stock Indicator Level	Outcome
Part 1: Egg Production		
Is the model estimated egg production above the limit reference point of 20% of unfished levels?	The 2022/23 egg production level is likely to be above the 20% level based on the CPUE proxy and weight of evidence argument.	Decision rule has been met. Go to Part 2
Part 2: TACC Determination		
a. Is standardised CPUE in a higher band than the previous season?	CPUE increased from 0.48kg/pot-lift in 2021/22 to 0.49kg/pot-lift in 2022/23. This corresponds to the same 0.45-<0.50 band	The CPUE band has remained unchanged
a. Is the 2022/23 PRI at or above the threshold level of 0.25 undersize/pot-lift?	The combined PRI was 0.09 in 2022/23. This is a significant reduction that is well below the threshold level.	The combined PRI is below the threshold level.
RESULT		The Eastern Zone remains in the same CPUE band (0.45-<0.50) with a TACC of 21t.

Western Zone Fishery

Decision Rule	2022/23 Stock Indicator Level	Outcome
Part 1: Egg Production		
Is the model estimated egg production above the limit reference point of 20% of unfished levels?	The 2022/23 egg production level is estimated at 23.0% of unfished levels.	Decision rule has been met. Go to Part 2
Part 2: TACC Determination		
b. Is standardised CPUE in a higher band than the previous season?	CPUE increased from 0.74kg/pot-lift in 2021/22 to 0.79kg/pot-lift in 2022/23. This corresponds to a shift from the 0.70-<0.75 band to the 0.75-<0.80.	The CPUE band has increased
b. Is the 2022/23 PRI at or above the threshold level of 1.67 undersize/pot-lift?	The combined PRI was 1.83 in 2022/23. This was a slight reduction from the previous two years but remains above the threshold level.	The combined PRI is above the threshold level.
RESULT		The Western Zone moves to a higher CPUE band (0.75-<0.80). The end of Step 1 is reached, and Step 2 will be used henceforth. This gives a TACC of 242t.

ADDITIONAL CONSIDERATIONS IN SETTING THE 2024/25 TACC'S

Southern Rock Lobster Limited (SRL) is currently pursuing Marine Stewardship Council (MSC) certification for Tasmania, South Australia and Victoria. The revised draft harvest strategy has been designed to meet World's Best Practice Fisheries Management. The strategies employed are in line with the core principles of MSC certification including having defined rebuild targets and timeframes. Recommendation on setting the 2024/25 TACC's will align with the new harvest strategy and support the commercial industry's application for MSC certification.

VFA RECOMMENDATION

Eastern Zone

The Eastern Zone continues to present concerning results. The PRI presented positive growth between 2018/19 and 2021/22. In the most recent stock assessment the PRI level returned to a near record low of 0.09 undersize per pot-lift. The Eastern Zone reacted to productivity concerns last year in setting a very conservative TACC under an aggressive rebuilding strategy. The RLRAG noted the importance of continuing with this rebuilding plan so as to not undermine the efforts of the last 12 months. This is considered the precautionary approach while the new harvest strategy is finalised and remains consistent with last year's TACC setting.

The VFA endorses the RLRAG recommendation to continue with the rebuilding plan under the revised harvest strategy and set the TACC to 21t for the 2024/25 season.

Western Zone

The Western Zone continues to show improvements in CPUE, increasing to 0.79 kg per pot-lift from 0.74 in the previous season. In setting the 2023/24 TACC, the decision was made to apply to new draft harvest strategy control rules. This decision recognised the low productivity in the fishery, with the PRI sitting just above the current strategy's threshold. Application of the revised harvest strategy places less reliance on recruitment and greater reliance on increases in available biomass, thereby accounting for lower fishery productivity. The RLRAG unanimously endorses continuing with the application of the draft harvest strategy in setting the 2024/25 TACC.

The VFA endorses the RLRAG recommendation to set the TACC to 242t for the 2024/25 season to align with the rebuilding plan under the revised harvest strategy.

APPENDIX 1 – DRAFT revised commercial control rule

Operational Objectives

The harvest strategy aims to achieve three main operational objectives, all of which link to the overarching objectives for the management of the fishery. These operational objectives are:

1. Establish a clear target that guides rebuilding of the rock lobster population by setting appropriately conservative TACCs on an annual basis.
2. To ensure the agreed Target Reference Point (TRP) of 28% and 28.8% pre-fishing available biomass for the Western Zone and Eastern Zone, respectively, is reached by 2043.
3. As the stock rebuilds shift to a more conservative exploitation rate that will minimise the likelihood of future decreases to the current level.

Commercial Harvest Control Rule (HCR)

The TACC is set using a CPUE-TACC table in conjunction with a harvest control rule. The harvest control rule (HCR) regulates the rate at which the TACC can increase and decrease in response to CPUE changes. The HCR also implements the shift to more conservative exploitation rates over time and draws on the secondary PRI indicator to prevent TACC increases when undersize abundance is low.

The commercial HCR is based on CPUE-TACC look up tables.

The resulting tables are shown below. TACCs are initially set according to the column “Step 1” and as rebuilding occurs the more conservative exploitation rates in Step 2 onwards are gradually adopted.

Note that from step 7 onwards the maximum TACC for the Eastern Zone exceeds the maximum 32t indicated in Table 2. This is a benefit of the more precautionary approach adopted by industry and will at the earliest occur in 8 years, by which time progress against the rebuilding target will have been re-evaluated multiple times and through the required update of the harvest strategy.

The formal harvest control rule can be divided into parts:

Harvest Control Rule Part 1: Ensuring Egg Production LRP is met

Model estimated egg production must be above the limit reference point of 20% of the virgin level with a 90% probability. This decision rule must be satisfied before the CPUE-based harvest strategy can be used to set the TACC.

If this decision rule is not met, the TACC will be determined using the rock lobster fishery model to ensure that the TACC returns the egg production to above the limit reference point within two years with a 90% probability.

Harvest Control Rule Part 2: TACC Determination

When Decision Rule #1 has been met, the TACC is set using the standardised CPUE-TACC Table 3 and 4 (for the Western and Eastern Zones, respectively). Note that the HCR initially (at the time of its adoption) commences in Step 1.

1. The fishery will move to the next CPUE band (and possibly a higher TACC unless the cap has been reached) if:
 - i) the standardised CPUE is in a band higher than in the previous season;

AND

- ii) the PRI (rounded to two decimal places) is at or above the threshold level of 1.63 undersize per pot lift for the Western Zone or 0.26 undersize per pot lift for the Eastern Zone.

Note that the CPUE band can only increase a single level per year. If the new CPUE band has reached the final value for that step (as indicated by the arrow) then the next step will be used for setting this TACC and the TACC in all subsequent years.

2. The TACC will remain at the same level and the same band when:
 - i) the standardised CPUE remains in the current band;

OR

- ii) the standardised CPUE has increased to a higher band but the PRI is below the trigger point.

3. The TACC will be **decreased** when:

the standardised CPUE has decreased into any lower band. In this circumstance the TACC will be set at the level that corresponds to the standardised CPUE band in the current step.

4. The harvest control rule will be reviewed when:

- i) The catch rate band decreases for two consecutive years; or
 - ii) The PRI is below threshold for two consecutive years.

Both of these conditions provide an early warning sign that the recruitment assumptions underpinning the harvest control rule may no longer be valid (as happened with the reduction in recruitment and productivity experience in the late 2000s). Consequently, a review of the harvest control rule to investigate this further will be required.

CPUE- TACC look-up Tables

Western Zone

Table 1: *The TACC (t) corresponding to each CPUE band for the Western Zone. The steps indicate a progression towards a more precautionary HCR with lower exploitation rates which will be adopted as the stock rebuilds. Red indicates when the fishery is closed, orange where the exploitation rate is increasing, green a constant exploitation rate and blue a capped TAC. If the HCR indicates a shift to a cell containing an arrow, the step will be increased and the TACC from the new step used.*

