

NSW TOTAL ALLOWABLE FISHING COMMITTEE

EASTERN ROCK LOBSTER FISHERY

DETERMINATION FOR THE 2023/24 FISHING PERIOD

14 June 2023

Executive Summary

Preamble

The New South Wales (NSW) Total Allowable Fishing Committee (TAFC) has statutory responsibilities set out in Part 2A of the *Fisheries Management Act 1994* (the Act) to determine the Total Allowable Commercial Catch (TACC) or Total Allowable Commercial Effort (TACE) by NSW fishers holding the relevant endorsement in some commercial fisheries. Various fishing regulations under the Act also contain provisions requiring the making of fishery determinations.

The TAFC is an independent statutory body established under Schedule 2 of the Act. In making a determination on catch or effort in a commercial fishery, the TAFC must consider the ecological, economic and social issues associated with each fishery and make determinations that 'on balance' pursue the objectives of the Act.

The TAFC is not subject to the control or direction of the Minister as to any determination made. However, the Minister may direct the TAFC on the procedures to be followed and the matters to be taken into account in making a fishing determination. A formal Harvest Strategy for the Eastern Rock Lobster Fishery was approved by the Minister in May 2022 and the TAFC has given due consideration to this strategy in determining the TACC.

This determination is for Eastern Rock Lobster for the period 1 August 2023 to 31 July 2024.

Management recommendations & supporting actions

The TAFC provides the following recommendations to the Minister, DPI Fisheries and the fishing industry towards improving the management of the fishery:

1. DPI makes an estimate of Aboriginal catch based on permits granted and other likely sources of mortality attributable to that sector, and the methodology and data sources are included in the ERL stock assessment.
2. The significance of rock lobster bycatch mortality in fisheries other than ERL should be investigated and estimated at least every five years and included in the calculation of the TAC.
3. DPI sets an initial two-year compliance target for the commercial fishery at 80% given this has never been exceeded and aim for a 90% target within 3-5 years to bring the commercial compliance rate up to that of the recreational sector.

Determination

The Total Allowable Fishing Committee, pursuant to Part 2A of the *Fisheries Management Act 1994*, determines that the commercial catch of Eastern Rock Lobster should be controlled and allocated through the following measure:

- A TACC of **200 tonnes** during the fishing period 1 August 2023 to 31 July 2024.

Introduction

The Eastern Rock Lobster (ERL) Fishery operates across all waters managed by NSW with the exception of those areas closed to fishing. Management of the commercial fishery uses a range of input and output controls, including a total allowable commercial catch (TACC) with individual transferable quotas (ITQs); a maximum (180 mm) and minimum (104 mm) size limit; prohibition on the taking of berried females and fishing gear restrictions (traps). Tags must be fitted to each lobster landed in the commercial fishery, immediately after landing or prior to transferring lobster into a pen, to another boat or consigning to a market.

Although considered a single species fishery, there is a reasonable level of retained by-catch in the fishery, with the top four species being Ocean jacket, Grey Morwong, Snapper and Octopus.

Shareholders in the ERL Fishery are eligible for an endorsement if holding a minimum of 55 shares in the fishery (if a new entrant) and may take the lobster themselves or nominate another licensed commercial fisher to operate their fishing business. Shares were first allocated for this fishery in 2000 and were automatically renewed for a further 10-year period in 2010 and 2020. During February 2023, the maximum shareholding for the fishery was increased from 350 shares to 3,848 lobster shares (40% of fishery shares), consistent with the basis for the maximum shareholding that applies in each of the five multi-species share management fisheries. The total number of shares in the fishery is currently 9,621. In 2022/23, there were 96 lobster fishery shareholders with 68 authorised fishers¹.

The ERL Fishery is considered sustainable. Gross value of production for 2021/22 was estimated at approximately \$11.23 million.

The T AFC met with a number of shareholders in the ERL Fishery in Sydney on 1 June 2023 to discuss fishery biology, catch and associated management issues. Written submissions by shareholders on the stock status for the fishery and other fishery management issues were provided to the Committee by the NSW Department of Primary Industries (DPI). A current stock assessment report on the fishery was also provided to the Committee by the Department².

¹ Osterloh, I (2023) Management Report NSW Lobster Fishery: Report to the TAF Committee for the determination of the total allowable catch for the 2023-2024 fishing period. *NSW Department of Primary Industries*.

² G.W. Liggins, M.E. Miller & G. Ballinger (2023) RESOURCE ASSESSMENT: Eastern Rock Lobster (*Sagmariasus verreauxi*). Prepared for the Total Allowable Fishing (TAF) Committee process for the determination of the Total Allowable Commercial Catch of NSW Lobster for the 2023/24 season. *NSW Department of Primary Industries*.

Biological considerations

Eastern Rock Lobster (ERL) range from the Queensland to Victoria. They can live for more than 30 years, grow up to 260 mm carapace length (CL), and mature at around 167 mm CL. Minimum legal size of ERL is 104 mm CL and the stock is managed with an upper maximum legal size of 180 mm CL. Small lobsters are found in inshore waters <10m depth. Medium size lobsters occur across the continental shelf in depths up to 200m. Spawning stock and lobsters greater than the maximum legal length (oversize) are concentrated on the north coast of NSW in depths 10-120 metres. Larvae progress through a pelagic phase to a post-larval stage (pueruli) which then settle on nearshore rock reefs throughout NSW.

The stock assessment of ERL is based on a range of data including:

1. fishery dependent catch per unit of effort (CPUE) data collected from fisher logbooks, which are standardised to account for variability in fisher and latitude; logbook data also include sub-legal lobsters caught and released;
2. a fishery independent survey (FIS) conducted every two years on the abundance and size-distribution of spawning, and oversized lobsters in 10-30m depths on the north coast of NSW; the latest survey was conducted this year;
3. an index of recruitment from a fishery independent puerulus survey, conducted annually.

In addition, two models are fit to data:

1. a Beverton-Holt stock recruitment relationship was fit to CPUE an several indices of abundance; and
2. a size-based assessment model fit to length frequencies, commercial CPUE, and the spawning biomass index from the FIS.

Catches have steadily risen since early 2000's, effort declined and CPUE consequently increased. A leading indicator of sub-legal CPUE from the fishery for the 2022/23 season indicates that CPUE is likely to increase next year.

Recent estimates of puerulus settlement indicate long-term increasing trend since 1995/96. The Committee noted last year that major flooding in 2021, and 2022 particularly on the north coast of NSW may have affected the fishery and stock. Puerulus abundance this year 2022/23 in Coffs Harbour and Tuncurry are highest on record. South of Sydney abundances are close to the long-term mean value.

The FIS results this year show increased numbers of sub-legal lobsters are entering the fishery and abundances are increasing substantially. The FIS also shows that the cohort associated with a possible recruitment event around 2012/13 has made its way through the fishery.

A length-based stock assessment model was used to estimate the stock size using an empirically-based length-class transition matrix incorporating growth curves and tagging data. The model was fit to commercial CPUE and "some" length frequencies, including observer and FIS lengths frequency data, and spawning biomass index by

estimating R_0 (equilibrium unfished recruitment), M , and catchability coefficients. Fits to the data were reasonable.

The estimated base case depletion of spawning biomass in 2022/23 was 0.32 spawning B_0 , and corresponding exploitable biomass was 0.525 B_0 , which is above the Target reference point. A bridging analysis was conducted using the 2023 model, which showed the biomass increasing from 0.31 spawning B_0 . The reported biomass last year was reported to be 0.343.

The 2022/23 model estimated MSY to be 214 tonnes (t) and a spawning biomass corresponding to MSY (B_{MSY}) of 0.222 spawning B_0 . The exploitable biomass associated with MSY was calculated to be 0.408 exploitable B_0 , which corresponds to an exploitable biomass target of 0.49. The Committee note that under the current harvest strategy the estimated B_{MSY} of 0.222 spawning B_0 is currently below the Trigger Reference point (0.25 spawning B_0), even though the current estimate of stock status (0.32) is above both.

The bridging analysis conducted using the 2023 model, and the data to 2022, gave a corresponding MSY last year of 207 t, whereas the 2022 assessment report showed MSY to be 222 t. This is mostly due to changes in the calculation of historic unreported commercial catch and recreational catch.

The spatial structure of the fishery is notable, and the depth strata data has been qualitatively informative. Integrating these data, (i.e. CPUE and FIS length data), from the different depth strata of the fishery more formally into the assessment model could provide a more robust stock estimate.

Economic considerations

The ERL fishery is a mature quota managed fishery. While export opportunities exist and have been utilised in the past, the fishery predominantly services the domestic market with most product sold within NSW. The fishery demonstrated market resilience to recent economic impacts from COVID-19, including on the volume of restaurant trade and increased competition on the domestic market from lobsters from other Australian fisheries (e.g., WA rock lobster) that were previously exported.

GVP and Pricing Information

The annual ERL beach price is calculated based on daily price data provided by the Sydney Fish Market (SFM) and is the average estimated value of all ERL sold. The volume of ERL sold through SFM is significant, but variable between years - with 38%, 32%, 32% and 35% of the total TAC harvest being consigned in the 2018/19, 2019/20, 2020/21 and 2021/22 seasons respectively. Commercial ERL fishers report that compared to SFM prices, prices obtained in these other markets may vary, but SFM data still represents a consistent index of price over time. Commercial ERL fishers utilise a range of other outlets for sale, including co-operatives and direct sales.

The beach price for the 2020/21 and 2021/22 fishing periods was \$66.05 and \$62.58 per kilogram, with a nominal estimated gross value of production (GVP) of \$11.85M and \$11.23M respectively. The beach price for the current 2022/23 fishing period (based on average price data to April 2023) is \$65.92/kg. This indicates an estimated nominal estimated GVP of \$9.39M for the reported harvest of 148.6 t as of 4 April 2023, and a total nominal estimated GVP of \$12.64M for the 200 tonne 2021/22 TAC. In the 2022/23 season, there was little price differentiation for the size grades of ERL.

There remains short term uncertainty regarding the future price of ERL. This uncertainty is driven primarily by international trade relationships, competition, and transport logistics (and costs). The current outlook requires caution rather than significant concern given the resilience of the ERL fishing businesses to date. The industry expressed a general preference from a business perspective to retain the quota at the same level as last season due to continuing uncertainties with export markets.

Shareholdings

From the information provided by NSW DPI in the Management Report – NSW Lobster Fishery Total Allowable Catch Determination for 2023/24, the number of shareholders has decreased from 174 in 2000 to 96 in the current fishing year. The number of shareholders has not changed significantly since 2017/18 and neither have the number of authorised or nominated fishers. The information is consistent with a fishery that has stabilised in terms of ownership following the introduction of quota management. Shareholdings remain spread over fisheries regions, but with greater concentrations between Coffs Harbour and Port Stephens and the Central Coast and Illawarra.

Share transfers (or more correctly share leasing) was high in volume in the period between 2000/01 and 2007/08 at average prices between approximately \$1,500 and \$3,000 per share. From 2014/15 the lease price per share has risen except for 2019/20, which coincided with initial economic uncertainty of the COVID-19 pandemic. A caveat in terms of interpreting share price information is that recording information on share price is voluntary and some trades may have been between related business entities. The latter is likely to result in a different lease price than would be reflected on the open market.

In the 2020/21 fishing period, there were six share transfers processed for a total of 187 shares, equating to a total nominal value of \$2,618,000 and a nominal weighted average value of \$14,000 per share (for trades reporting price). In the current incomplete 2022/23 fishing period, there has been four share transfer processed for a total of 138 shares. Overall, there has been a substantial increase in the value of shares over the life of the quota managed fishery. The active investment is indicative of confidence in the stock and the fishery, and an expectation of a positive return on investment at the price paid.

Fishery management considerations

In the early 1990s, the ERL Fishery was considered overfished with the stock at around 10% of initial biomass and a TACC set at around 100 tonnes. Since then, regulatory reforms to the commercial fishery have been made to rebuild the fishery. These have included share management, lobster tags, minimum and maximum size limits and output controls (total allowable commercial catches and individual transferable quotas (ITQs)). In addition, the recreational fishing possession limit was reduced from five to two in 1993. Today these management reforms can be regarded as a success, with the TACC at 200 tonnes and a recreational possession limit of two lobsters. Puerulus settlement has also improved over the past 15 years supporting strong year-classes entering the fishery.

This management section focusses on sources of mortality (other than the reported commercial catch) and compliance matters. Those sources of mortality are non-commercial catch (recreational and Aboriginal), unreported commercial catch, bycatch in other fisheries and illegal catch arising from compliance seizures. Estimates of non-commercial and unreported commercial catch are explicitly included in the ERL Harvest Strategy (HS) when determining the TACC, whereas bycatch from other fisheries and compliance seizures are not. However, the TAFIC does consider them relevant when determining the TACC.

In its 2022/23 determination, the TAFIC expressed concerns about the estimates for recreational and unreported commercial catch, particularly as they were pegged (as a percentage) to the commercial catch, no matter what level it was. As discussed in the 2022/23 TAFIC determination, the justification given for this was regarded as poor, and as such the TAFIC varied from DPI advice in setting the TACC for that year. Since last year, DPI has reconsidered its estimates of recreational catch (now 8.60 t p.a.) and unreported commercial catch (now 11.95 t p.a.) with a revised total figure of 20.55 tonnes per annum. (An explanation of its changes to estimating these amounts is contained in Appendix 3 of Liggins, G.W *et al* 2023). These numbers are likely to be more accurate but remain imprecise, that is, they have wide error bounds. While the TAFIC supports the changes that have been made in deriving the estimates, it is important that DPI further improves the precision of these estimates by gathering additional data from fishing sector surveys. This will be particularly important for the recreational sector, given the recent increase in the possession limit from 2 to 3 lobsters. It is noteworthy that DPI Compliance ran an operation to check the recreational sector is remaining within the new limit, which generally supported this premise.

The HS requires that Aboriginal catch also be formally included in the TAC calculation. Historically this has been assumed to be less than 1,000 lobsters per year (< 1 t). However, a better estimate may be the sum of the number of lobsters able to be taken under *Section 37 Cultural Fishing Permits* (permits) granted to the Aboriginal sector. While there is apparently no record of how many lobsters were taken against each permit, it provides an upper bound on what could have legally been taken. For the previous three years (2019/20 to 2021/22), the permitted number of lobsters for harvest under permit has been in the range of 200 to 500,

equating to a weight of approximately 150 to 400kg. However, there are several other sources of Aboriginal catch (*Aboriginal Cultural Fishing Local Management Plans, Aboriginal Cultural Fishing Interim Access Arrangements, Native Title*) for which there is also no catch information. This does not mean the current estimate of < 1 tonne is wrong, but how the Aboriginal catch is estimated requires an assessment review.

Recommendation

- **DPI makes an estimate of Aboriginal catch based on permits granted and other likely sources of mortality attributable to that sector, and the methodology and data sources are included in the ERL stock assessment.**

Other sources of fishing mortality are bycatch from other fishing fleets and compliance seizures. Demersal fish and prawn trawling are two fishing methods that can have significant ERL bycatch. Historically there are countervailing forces at work. On the one hand, fishing effort in both the NSW and Commonwealth trawl fleets that overlap the range of the ERL stock has been in decline for several decades. On the other hand, the abundance of lobsters has been increasing over the last two decades. Furthermore, the survival rate of lobsters caught in trawl nets is unknown.

Recommendation

- **The significance of rock lobster bycatch mortality in fisheries other than ERL should be investigated and estimated at least every five years and included in the calculation of the TAC.**

Regarding 2021/22 commercial compliance rates, these were influenced by a major rock lobster compliance audit in Coffs Harbour during that year. While many offences were detected, most were low grade and responded to with cautions, with a small proportion related to tagging and penning proceeding to prosecution. However, the number of prosecutions was the highest in almost a decade. It appears that the rock lobster industry still has some way to go in gaining a high level of compliance (and therefore public credibility) which has varied between 45 and 75% over the past decade.

Recommendation

- **DPI sets an initial two-year compliance target for the commercial fishery at 80% given this has never been exceeded and aim for a 90% target within 3-5 years to bring the commercial compliance rate up to that of the recreational sector.**

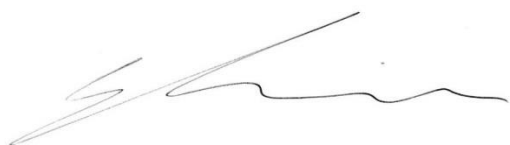
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- A TACC of **200 tonnes** during the fishing period 1 August 2023 to 31 July 2024.

Species	Catch Limit 2023/24 (tonnes)
Eastern Rock Lobster (<i>Sagmariasus verreauxi</i>)	200

Signed (for and on behalf of the TAFC)



William Zacharin
Chair, TAFC

14 June 2023