NSW TOTAL ALLOWABLE FISHING COMMITTEE

OCEAN TRAP AND LINE FISHERY

- Spanner Crab

DETERMINATION FOR THE 2021/22 FISHING PERIOD

7 May 2021

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.

This determination is for Spanner Crab in the Ocean Trap and Line Fishery for the period 1 July 2021 to 30 June 2022.

Management recommendations & supporting actions

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

1. The fishery independent surveys are providing reliable and independent indices of adult (legal sized) and undersized crabs, giving indicators of exploitable biomass and recruitment. These surveys should be maintained as they provide critical information that underpins setting the TACC with a relatively high level of certainty.
2. Options should be evaluated for recording the number of undersized crabs released during fishing operations, to provide an index of recruitment from fisheries-dependent data and to monitor the implementation of industry practices to release undersized crabs in an undamaged condition.

Determination

The Total Allowable Fishing Committee, pursuant to Part 2A of the *Fisheries Management Act 1994*, determines that the commercial catch of Spanner Crab in the NSW Ocean Trap and Line Fishery should be controlled and allocated through the following measure:

1. A TACC of **140 tonnes** during the fishing period 1 July 2021 to 30 June 2022.

Introduction

The NSW Ocean Trap and Line Fishery (OTL Fishery) is a share managed, multi-method, multi-species fishery. The OTL Fishery is described in Schedule 1 of the *Fisheries Management Act 1994* (the Act) as:

> a) the use of a fish trap to take fish from ocean waters;
> b) the use of a line with hooks attached to take fish from ocean waters; and
> c) the use of a spanner crab net to take spanner crabs from ocean waters that are north of a line drawn due east from Korogoro Point (Hat Head).

The overall area of the OTL Fishery extends from the NSW coastal baseline seaward to the 4000-metre depth contour, approximately 60 to 80 nautical miles offshore.

Spanner Crab is a single species fishery that occurs in ocean waters between Korogoro Point (Hat Head) and the NSW-Qld border. There are a combination of input controls (limited entry, restrictions on traps, temporal and spatial closures) and output controls (quota and minimum size limits). Access to the Spanner Crab fishery is limited to those shareholders (or their nominated fishers) who hold a minimum number of shares. New shareholders need a minimum of 40 shares to be eligible for a fishing endorsement. Two management zones exist in the fishery – northern zone (northern breakwall at Yamba to NSW/Qld border) and southern zone (southern breakwall at Yamba and north of Korogoro Point) with 19 shareholders currently endorsed in the northern zone and 6 shareholders in the southern zone. The taking of female crabs is prohibited from 21 October in any year to 20 January in the following year and a minimum size limit of 9.3 cm applies to all crabs[1].

The TAFC met with a number of shareholders in the Spanner Crab fishery in Ballina on 21 April 2021 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. A current stock assessment report on the fishery was also provided to the Committee by the Department.

Biological considerations

Stock structure

Spanner Crab (*Ranina ranina*) constitute a single genetic stock extending from southern Queensland to northern NSW. The bulk of this stock occurs in Queensland and there is thought to be regular southwards movement of crab larvae from Queensland into northern NSW. However, once settled in NSW, Spanner Crabs remain highly resident on suitable areas of seabed, with no evidence of longshore migration between QLD and NSW. This is indicated by the different results of historical fishery independent surveys (FIS) in the two states, with trends in

[1] McKinnon, F (2021) Fishery determination summary report – Spanner crab 2021. NSW Department of Primary Industries

abundance and catch apparently driven by different exploitation rates in the two states[2,3].

Settled Spanner Crabs therefore essentially constitute separate management units in the two states, with the impacts of management measures by each state being largely restricted to each state. This enables NSW and QLD TACCs to be set separately depending on the abundance of the settled crabs in the waters of each state.

Catches

Recorded catches of Spanner Crab by the NSW fishery increased rapidly from 149 tonnes at the start of the fishery in 1984/85 to a historical maximum of 488 tonnes in 1987/88, then decreased to 209 tonnes in 1989 before increasing again to a peak of 444 tonnes in 1994. Recorded catches then decreased to remain around the long-term average of 218 tonnes per year over 1999/00 – 2003/04, then decreased again to a recent average of 114 tonnes over 2005/06 – 2019/20, although exceeding 140 tonnes in 2013/14 and in each year over 2015/16 – 2017/18.

Stock assessment

The NSW component of the Spanner Crab stock is assessed annually using a number of fishery dependent and fishery-independent indicators, including commercial logbook catch per unit of effort (CPUE), fishery independent survey (FIS) CPUE and proportions of undersized crabs in FIS surveys[2]. CPUE provides indices of abundance for the exploitable stock, while the proportion undersize provides an index of recruitment. A formal harvest strategy for this fishery has yet to be developed, so there are no reference levels or harvest control rules for these indicators. However, trends in the above two indicators can be used to indicate whether current catches are sustainable and can be increased or should be reduced.

Commercial Spanner Crab catch rates (from logbook CPUE - kg/fisher day) have shown three distinct periods with alternating trends. Commercial (unstandardised) CPUE increased rapidly from about 83 kg/fisher day in 1984/85 to a peak of 189 kg/fisher day in 1995/96, and then declined to a low of 107 kg/fisher day in 2006/07. Commercial CPUE then increased to record high levels of over 200 kg/fisher day in 2016/17 and 2017/18 before declining again back to the long-term average in 2019/20. Commercial CPUE has recently become more variable as a result of adaptation of fishing practices associated with the introduction of interim total commercial catch limits (ITCALs) over 2015/16 – 2017/18 and formal TACCs since 2018/19.

[2] Johnson, D.D. 2021. Stock assessment report 2020 – Ocean Trap and Line Fishery – Spanner Crab (*Ranina ranina*). NSW Department of Primary Industries. Fisheries NSW, Port Stephens Fisheries Institute: 57 pp.

[3] Campbell MJ, MF O'Neill and JG McGilvray 2016. Queensland Spanner Crab Fishery - Commercial quota setting for June 2016 – May 2018. Queensland Government, Department of Agriculture and Fisheries.

Stock status

Recent (2005/06 – 2019/20) trends in the main CPUE-based indicators for the NSW component of the Spanner Crab stock are summarised in Figure 1.

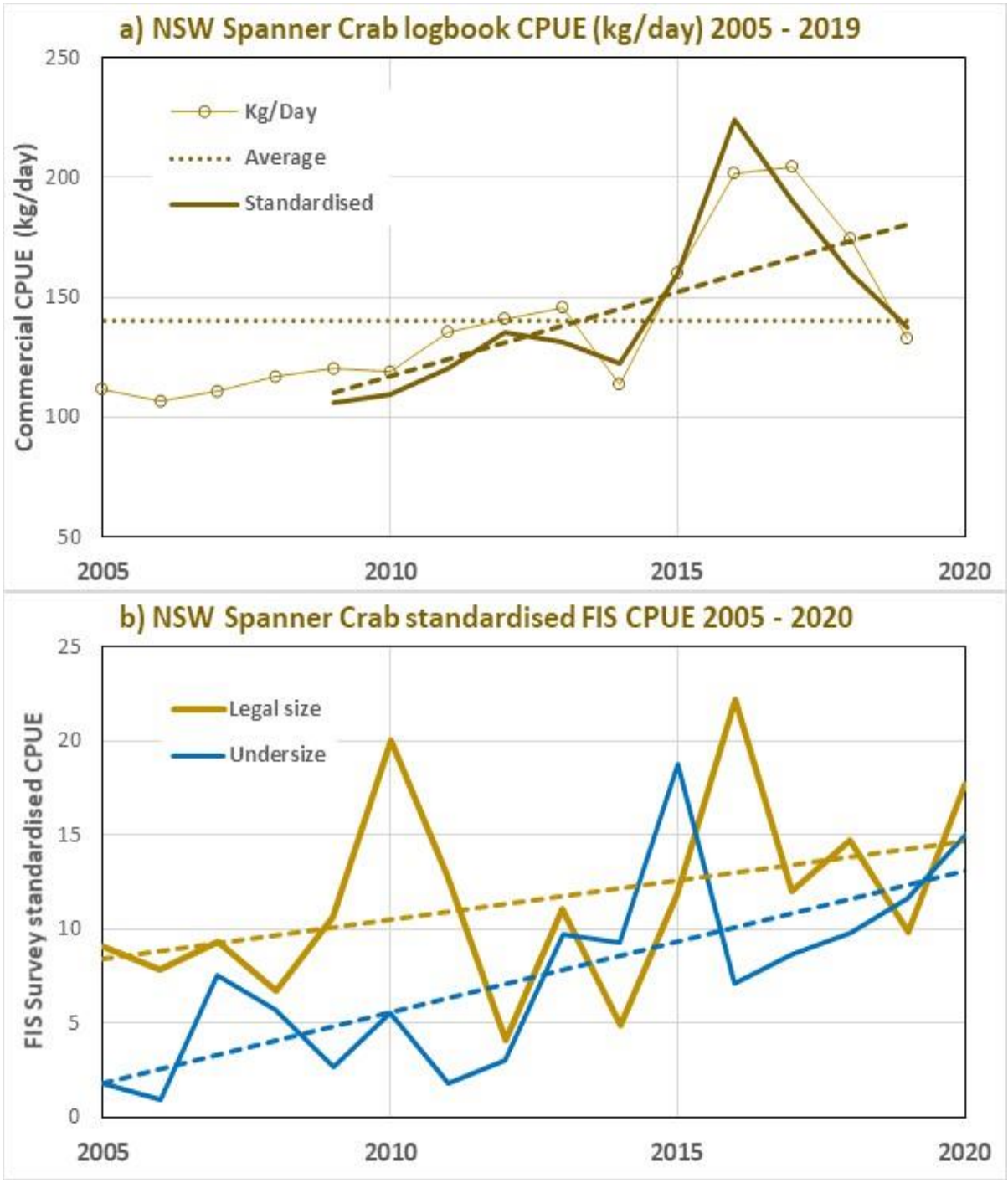

Figure 1: Catch rates (CPUE) of Spanner Crab in the NSW fishery over 2005 - 2020 showing; a) commercial logbook unstandardised CPUE over 2005 - 2019, long-term average CPUE over 1984 – 2019, standardised commercial catch rates and the linear trend in standardised CPUE over 2009 - 2019; and b) standardised catch rates in fishery independent (FIS) surveys over 2005 - 2020 for legal sized (9.3 cm carapace length) and undersized crabs.

The linear trend through standardised commercial CPUE (Figure 1a) increased by 64% over 2009 – 2019. The linear trend through FIS survey CPUE for legal sized crabs (Figure 1b) increased by a total of 75% over 2005 – 2020. In addition to these positive commercial and FIS CPUE indicators, there has been a rapid increase in the proportion of undersized crabs in FIS surveys. A linear trend through the FIS survey standardised CPUE for undersized crabs (Figure 1b) increased six-fold over 2005 – 2020.

Steadily increasing recruitment over the past 15 years indicates that the positive trend in legal-sized crab abundance (seen in increasing commercial and FIS CPUE trends) is likely to continue, at least in the short term, as these undersized crabs grow into the fishery. Projecting the commercial and FIS CPUE trends forward by one year and assuming that abundance will increase in proportion to these trends, the TACC for Spanner Crab could be increased moderately above the 2020/21 level of 135.5 tonnes to 140 tonnes, for 2021/22.

The apparent increase in the proportion of undersized crabs on the fishing grounds indicates the likelihood of increasing abundance and better future catches, provided that any small crabs caught can be released undamaged. Every effort must be made to develop, implement and maintain industry protocols and procedures for the release of undersized crabs in an undamaged condition.

Recommendations

- The fishery independent surveys are providing reliable and independent indices of adult (legal sized) and undersized crabs, giving indicators of exploitable biomass and recruitment. These surveys should be maintained as they provide critical information that underpins setting the TACC with a relatively high level of certainty.
- Options should be evaluated for recording the number of undersized crabs released during fishing operations, to provide an index of recruitment from fisheries-dependent data and to monitor the implementation of industry practices to release undersized crabs in an undamaged condition.

Economic considerations

Details of the economic characteristics of the Spanner Crab fishery, namely catch, price, gross value of production (GVP) are provided in the most recent management Report on the NSW Spanner Crab Fishery (McKinnon 2021). Information on productivity factors directly affecting the economic performance of the fishery, namely catch, effort and catch rate for the fishery is provided in the assessment of Spanner Crab stocks in NSW (Johnson 2021). In some parts of NSW (e.g., Ballina) access by fishers to the spanner crab fishing grounds is influenced by the condition of surf bars on any given day. Although not quantified, fishing efficiency may be influenced by bottom currents, which increase the range over which olfactory cues from bait can be detected. Commercial fishers have reported increased interactions with sharks, which may also impact fishing efficiency.

Most Spanner Crab in the NSW fishery is sold domestically (mostly as live product) through the Sydney Fish Market. Although prices vary from year to year, based on Sydney Fish Market prices, there has been a long-term price increase from $8.73 per kilo in 2009/10 to $16.72 per kilo in 2019/20. Prices for NSW Spanner Crab are influenced by the activity and harvesting patterns of the Queensland Spanner Crab Fishery which operates under a much higher TACC. Increased competition on the domestic market with WA rock lobsters was raised by some commercial operators as an emerging economic issue. Given the relative differences in the size of the TACC in NSW compared to Queensland, small changes in the NSW TACC are unlikely to significantly impact overall market supply of Spanner Crab, or significantly impact price to volume ratios. However, small changes may positively or negatively impact some fishing businesses and the post-harvest sector in NSW.

Concerns from some industry participants were expressed that the Spanner Crab quota could not be fully caught, because quota shares were held by businesses not actively fishing in the fishery (e.g., investors). In response to this, it is reaffirmed that a fishery managed by ITQs can have a mix of business structures to obtain a diversity of economic outcomes including owner-operator businesses, vertically integrated businesses and those that focus on obtaining and leasing quota shares. Some industry participants expressed a willingness to buy further quota, but identified that they had not been able to obtain information on who held quota shares in the fishery. However, perusal of publicly available information determined that such information is readily available and up to date[4].

NSW Spanner Crab quota among fishing businesses remains relatively dispersed with shareholdings ranging from 1 to 310 quota shares. Twenty-five business entities were identified as holding Spanner Crab quota shares, with the median holding being 55 quota shares. Eight fishing businesses held less than 20 Spanner Crab quota shares, while six held more than 100. Quota transfers as a percentage of the ITCAL/TACC have trended down from 27% in 2015/16 to 10% in 2019/20. It was also 10% for 2020/21, although that financial year is incomplete at the time of writing. The trend probably represents maturing of the quota market after initial implementation of the NSW fishery reform processes. It is unclear from available information if transfers are largely from related parties with separate business entities (e.g., between family members).

While information on GVP and Spanner Crab price in NSW is available, profitability in the fishery cannot be calculated, as there is no information on the costs of fishing. Recent economic information[5] has been collected for the Queensland Spanner Crab Fishery, but it cannot be directly applied to the NSW fishery, principally due to the much longer transit times to most of the Queensland Spanner Crab fishing grounds.

However, by way of background, for the Queensland Spanner Crab Fishery in 2018/19, total variable costs were estimated to be $101,623 per fishing business and

[4] https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0020/632441/NSW-Commercial-Share-Management-Fisheries-Shareholding-Information-25-March-2021.pdf. Accessed 25/4/21

[5] BDO EconSearch (2020) Economic and Social Indicators for the Queensland Spanner Crab Fishery, 2017/18 and 2018/19.

total fixed costs were $66,558 per fishing business. Overall, the Queensland Spanner Crab Fishery generated a positive rate of return on total working capital of 4.7%. It is likely to be higher in the NSW Spanner Crab Fishery.

Fishery management considerations

The management of the NSW Spanner Crab Fishery is set out in the Spanner Crab Fishery Management Report (McKinnon 2021). The fishery is based in northern NSW and has two zones - Yamba to the Queensland Border (Northern) and Yamba to Hat Head (Southern). Almost all the catch is taken in the northern zone. There is a single genetic stock spanning Queensland and NSW, but the NSW fishery is treated as a separate management unit. It is highly probable that the NSW Spanner Crab fishery relies on recruitment from both the NSW and southern QLD fisheries. The NSW Spanner Crab Fishery is regarded as sustainable and has been assessed as such since 2015. However, when combined with the Queensland fishery (which represents about 80 percent of the total catch), its national status was recently assessed as depleting.

Fishing for Spanner Crab is generally undertaken from small boats (less than 15m in length) with many having to traverse the Ballina bar, which can be unnavigable in some weather conditions. Environmental factors such as ocean currents (especially on the seafloor), floods and storms can all impact the fishery, affecting both catch and catch rate. This may mean that in some years the TACC is not able to be fully taken, regardless of Spanner Crab abundance.

Catch and catch rate analysis is also affected by industry not completing the commercial logbook and submitting it to NSW DPI. Logbook derived catch rate is used as a key indicator of the sustainability of the fishery, but is currently limited in its reliability, due to incomplete logbook data or logbooks not being submitted in a timely manner. Given this, the Fishery Independent Survey (FIS) provides a better data series on which to base TACC determinations. Its provision of size classes from across the fishing grounds enables both the current fishery catch to be better understood and to know what to expect in terms of commercial catch over the next one to two years.

Catches of Spanner Crab by the recreational and Aboriginal sectors are unknown, but are not regarded as significant, based on qualitative evidence. The same is true of any illegal, unregulated or unreported (IUU) catch.

The TAFC understands that a harvest strategy is being developed by NSW DPI with the participation of the Spanner Crab industry and other stakeholders, including QLD. This will provide greater certainty to commercial fishers regarding the circumstances under which the TACC may increase, decrease or stay the same. Once complete, the TAFC will give considerable weight to the harvest strategy when making future TACC determinations.

There was some discussion at the Ballina shareholder's meeting on 21 April 2021 between the TAFC, the Department and industry about fishery closures and the need to adapt when berried females are present outside of the current closure period (21 October to 20 January). The TAFC supports the industry and Department

working towards a more flexible approach to closures, noting this would require the appropriate statutory instruments to be created.

Multi-year TACCs were also discussed at the Ballina meeting, but given the harvest strategy is under development and that some logbook data had not been submitted, the TAFC has determined a TACC for 2021-22 only at this time. Given the positive stock indicators from the FIS and CPUE being around the long-term average and above the performance targets in the Qld fishery harvest strategy, the TAFC saw scope to increase the TACC to 140 tonnes.

Determination

The Total Allowable Fishing Committee, pursuant to Part 2A of the *Fisheries Management Act 1994*, determines that the commercial catch of Spanner crab in the Ocean Trap and Line Fishery should be controlled and allocated through the following measure:

1. A TACC of **140 tonnes** during the fishing period 1 July 2021 to 30 June 2022.

Species	Catch Limit 2021/22 (tonnes)
Spanner crab (*Ranina ranina*)	140

Signed (for and on behalf of the TAFC)

William Zacharin
Chair, TAFC

7 May 2021