

NSW TOTAL ALLOWABLE FISHING COMMITTEE

ESTUARY GENERAL FISHERY - HAND GATHERING SECTOR

- Pipis
- Cockles
- Ghost Nippers
- Beachworms

DETERMINATION FOR THE 2023/24 FISHING PERIOD

14 April 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.

This determination is for the Estuary General Fishery - Hand Gathering (EGF-HG) for the period 1 July 2023 to 30 June 2024.

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. For the recreational sector, a 7-month seasonal closure (1 May to 30 November) to cockle harvesting be introduced from the next fishing period (1 July 2023), noting that seasonal shellfish closures occur elsewhere in Australia and that the possession limit remains unchanged during the open season.
2. Due to increased IUU fishing, a joint compliance operation be undertaken by fisheries and food safety agencies that target major illegal suppliers to the market and in undertaking this operation, the effectiveness of current deterrents to prevent re-offending and deter new offenders is reviewed.
3. For the commercial fishery, there needs to be full enforcement of the fishery rules, including for filling out and submitting logbooks, without exception. Increased penalties should apply for commercial fishers if they do not comply with the rules.

Determination

The Total Allowable Fishing Committee, pursuant to Part 2A of the *Fisheries Management Act 1994*, determines that the commercial catch of species in the Estuary General Fishery - Hand Gathering, during the fishing period 1 July 2022 to 30 June 2023, should be controlled and allocated through the following measures:

1. A TACC of **156.0 tonnes** for Pipis
2. A TACC of **35.0 tonnes** for Cockles
3. A TACC of **5.6 tonnes** for Ghost nippers
4. A TACC of **8.5 tonnes** for Beachworms

Introduction

The Estuary General Fishery - Hand Gathering (EGF-HG) is a multi-species, share managed fishery, spatially structured into seven regions (Appendix 1). Commercial fishing businesses require an endorsement related to each region and a minimum shareholding related to each species to harvest or nominate an authorised fisher to harvest the species groups in the fishery. The four species groups are: Pipsis (*Donax deltoides*), Estuary Cockles (*Anadara trapezia*), Ghost Nipper (*Trypaea australiensis*) and Beachworms (3 species of *Onuphidae*). Approximately 76 estuaries and over 100 beaches are accessed across all seven regions by the EGF-HG.

The TAFC met with a number of shareholders in the EGF-HG in Coffs Harbour on 30 March 2023 to discuss fishery biology, catch and associated management issues. Written submissions by shareholders on the stock status of the fishery and other fishery management issues were provided to the Committee by the NSW Department of Primary Industries. Current stock assessment reports on Pipsis¹, Cockles², Ghost Nippers³ and Beachworms⁴ were also provided to the Committee by the Department.

Biological considerations

Pipsis

Stock structure

Pipsis (*Donax deltoides*) are a burrowing bivalve, considered to form a single genetic population consisting of local populations found on dissipative beaches in eastern and southern Australia. Recruits are likely to come from the beach on which they settle or from nearby beaches. Individual beaches may therefore be subject to short-term localised depletion if heavily exploited, but can be re-populated over time, provided there are healthy adult populations on nearby beaches.

Catches

Annual commercial Pippi catches increased from 80 tonnes (t) in 1988 to around 200 t per year over 1989-1995, before increasing rapidly to a peak of 670 t in 2000. Catches then declined to a historical low of 9 t in 2010. Catches over this period were primarily used for bait. From 2010 onwards, the fishery transitioned to provide product for human consumption in the restaurant trade, with catches increasing to

¹ Johnson, D.D. 2023. Stock assessment report 2022/23 – Estuary General Hand Gathering Fishery – Pippi (*Donax deltoides*). NSW Department of Primary Industries. Fisheries NSW, Port Stephens Fisheries Institute: 67 pp.

² Chick, R.C. 2023. Stock assessment report 2022/23 – Estuary General Fishery (Hand Gathering) – Estuary Cockle (*Anadara trapezia*). NSW Department of Primary Industries. Fisheries NSW, Port Stephens Fisheries Institute. 37 pp.

³ Chick, R.C. 2023. Stock assessment report 2022/23 – Estuary General Fishery (Hand Gathering) – Ghost Nipper (*Trypaea australiensis*). NSW Department of Primary Industries. Fisheries NSW, Port Stephens Fisheries Institute. 44 pp.

⁴ Chick, R.C. and Fowler, A. M. 2023. Stock assessment report 2022/23 – Estuary General Fishery (Hand Gathering) – Beachworms (*Onuphidae*). NSW Department of Primary Industries. Fisheries NSW, Port Stephens Fisheries Institute. 48 pp.

around 150 t per year from 2015 onwards. Catch have generally declined over the past five years.

Stock assessment

The NSW Piri stock has been assessed using catch rates, depletion models, length-based spawning potential ratio and a catch-only method (OCOM).

The main indicator of the stock is the catch rate (catch per unit effort – CPUE). This provides an index of abundance of the harvested portion of the resource. Over the period 1990-2010, CPUE declined from a historical maximum of 218 kg/day in 1990 to a low of 17 kg/day in 2010. The combined decline of total catches and CPUE over this period indicated over-fishing and depletion of the NSW Piri resource on the harvested beaches.

Management measures implemented in response to this depletion, including spatial closures of some beach areas; a six-month temporal closure over the spawning season; a 45 mm minimum size limit to allow spawning to occur at least once before harvesting and a daily catch limit of 40 kg per fisher. These measures resulted in a reduction in fishing pressure and an apparent rebuilding of the stock in the currently fished areas. These substantial changes in the fishery also mean that CPUE cannot be easily compared before and after the management intervention. Current stock status therefore focuses on trends since 2009.

CPUE from 2009 is standardised to account for year, zone, month and fisher. CPUE plateaued in 2012 and has declined somewhat since. It is still above levels determined in 2009. The pattern varies slightly across regions where Piri fishing mainly operates in Regions 1,3 and 4 (Appendix 1). CPUE in Region 1 dropped precipitously in 2019 when size limits were changed. The trend in CPUE in Regions 3 and 4 have been increasing.

Catch and effort data from 2009-2018 and 2018-2020 are used in within-season depletion models to estimate exploitation rates. Exploitation rates in two of the regions (Region 1 and 4) were between 24% - 29%. In Region 3 they were between 28% - 73%. Catch data are also used in low information Optimized catch-only models (OCOM) say that the stock was depleted to a minimum in 2007, but has since recovered, although still considered to be in an over-fished state.

Length data are used to calculate length-based spawning potential ratio using data to 2019. Estimates of relative fishing pressure (F/M) were high (3.7 – 4.1), but spawning potential (SPR), the proportion of the unfished reproductive potential is between 0.43 – 0.45. All of these methods rely on the assumption that CPUE is a representative measure of abundance.

Stock status

The NSW Piri resource appears to have been highly depleted over the period 1990-2005. Since 2010, reductions in fishing pressure have resulted in an apparent rebuilding of the stock, but it is still likely to be in an over-fished state. There is no evidence of serial depletion, but CPUE continues to decline. Current size limits indicate that the spawning stock has a degree of protection from the fishery.

Cockles

Stock structure

The structure of Estuary Cockle (*Anadara trapezia*) is poorly understood in NSW. Genetically distinct populations apparently co-habit across estuaries. It is not clear how such genetically distinct populations could be separately managed, given that they occupy the same habitat, so they are managed as a single stock.

Catches

Total reported Cockle catches increased from 5 t in 1988/89 to a historical peak of 93 t in 1991/92. The fishery has shown three periods of activity with average annual catch averaging 82 t per year over 1990/91 – 1993/94, 43 t per year over 1994/95 – 2001/02 and 25 t per year over 2002/03 – 2011/12. Catches then increased rapidly again to a recent peak of 79 t in 2014/15 and averaged 65 t per year over 2014/15 – 2018/19. The current TACC of 45 t was raised two years ago to harmonise the TACC setting reference periods 2009/10 – 2016/17 over which initial TACC calculations across all species were based.

Stock assessment

Catches between 2014/15- 2017/18 were similar to the historically high catches in the early 1990s. The TAFC have a serious concern that Cockles are being serially depleted across estuaries. Most of the catch was taken from Merimbula Lake between 2014-2017, followed by Wallis Lake. Catches at Shoalhaven which were consistent from 2012/13 are almost non-existent now. Over the past year, estuaries outside of those reported in the past now dominate the catch, indicating serial depletion.

The NSW Cockle stock is assessed using catch rates. Several concerns with catch rates have been raised previously. The localised nature of cockles may not provide an accurate indication of biomass as expected. Of most concern however, reporting of commercial catch and effort data in logbooks is incomplete and has been particularly poor in recent years. About 40% of catches of the allocated, and reportedly used, 45 t TAC were not reported in 2021/22.

The way that fishing effort has been reported has also changed frequently over the years. Historically, effort was calculated in days fished, possibly estimated in different ways over different periods, and now effort is reported in hours fished, but only by some fishers. Indicators calculated using the available commercial catch and effort data are therefore subject to substantial uncertainty and bias, in addition to being difficult to compare over time. Long-term trends in catch per unit of effort (CPUE) are thus difficult to interpret. The TAFC therefore considers the CPUE data as an unreliable representation of the stock status.

Stock status

In the absence of a reliable indicator of stock status and evidence that the fishable stock is being serially depleted, the TAFC recommend a reduction in total fishing mortality for precautionary purposes, until a better picture of the stock emerges from improved logbook data and standardised CPUE data. Every effort must be made to ensure that all commercial cockle fishing catch and effort data are completely and accurately reported in commercial fishing logbooks, with accurate documentation of

fishing method, fine-scale fishing area, fishing effort in actual hours fished and catch per fishing operation.

Ghost Nippers

Stock structure

Ghost Nipper (*Trypaea australiensis*) form a large component of the invertebrate fauna inhabiting low energy intertidal beaches and mudflats along the eastern and southern coast of Australia and are common in many NSW estuaries. There are no published studies on the genetic stock structure of Ghost Nipper and they are assumed for management purposes to constitute a single management unit in NSW. However, the combination of brooding females and slow water movement along the estuarine beaches they inhabit suggest that recruitment in estuaries comes from adult populations in those same estuaries, so that populations within estuaries could constitute functionally separate biological stocks. This suggests that exploitation rates should be kept to moderate levels in all areas, to reduce the risk of localised depletion in any one estuary.

Catches

The total reported commercial catch of Ghost Nippers increased steadily from 1 - 2 t in the early 1990s to around 4.5 t in 2019/20. Catches fluctuated between 2 and 4 t over 1995/96 – 2008/09 and have averaged 4.1 t per year since 2009/10.

The Ghost Nipper fishery is concentrated mainly in Port Hacking, which is responsible for >90% of catches. There is substantial recreational harvesting of Ghost Nippers for bait in estuaries north and south of Sydney, with estimates from surveys indicating a decline in recreational catches from about 7.5 t in 2000/01 to about 2 t in 2017/18.

Stock assessment

Commercial nominal CPUE in kg/fisher day has increased slightly since 2009/10. CPUE (in kg/hr) has fluctuated, but appears to have increased more substantially, with a linear trend increasing by 42% over 2009/10 – 2019/20. These CPUE trends primarily reflect the status of the most heavily exploited Port Hacking area. Standardised CPUE for the Port Hacking area has been stable above the 10-year average since 2015/16 and surveys indicate that harvest rates in this most heavily fished area are probably less than 10% of the resource in this area. Other estuaries north and south of Sydney are comparatively lightly exploited by recreational fishers mainly during holiday seasons.

Stock status

Based on the above indicators, the NSW Ghost Nipper resource is classified as sustainable. There are no indications of historical depletion in the catch series and CPUE indicators all appear to be increasing or stable above the 10-year average. This indicates that current catches are sustainable.

Beachworms

Stock structure

Beachworms in NSW refers to three species of polychaete worms (*Onuphidae*) harvested from the intertidal zone of beaches for use as bait. The Stumpy or Kingworm (*Australonuphis teres*) makes up the bulk of the catch, with smaller quantities of Slimy (*A. parateres*) and Wiry (*Hirsutonuphis mariahirsuta*) worms. Assessment results presented here are therefore derived primarily from data for the Stumpy worm.

There is evidence of multiple genetic groups of Stumpy worms along the NSW coast, but with no clear geographic distribution patterns and high genetic flow between them. All three species are broadcast spawners with larvae potentially being distributed widely by tides and ocean currents. For the purposes of assessment and management, it is therefore assumed that beachworms in NSW constitutes a single multi-species management unit.

Catches

Reported annual commercial catches of beachworms increased from 3.8 t in 1984/85 to a historical high of 37.7 t in 1996/97 and averaged 20 t per year over 1997/98 – 2004/05. Catches then declined steadily from 2005 onwards to 5.4 t in 2019/20. Anecdotal information provided by fishers ascribes this decline to recreational anglers changing to using plastic baits rather than beachworms. Over 2009/10 – 2019/20, commercial catches have averaged 7.4 t per year.

Recreational anglers are permitted to take up to 20 beachworms per day. Results of recreational angling surveys estimated the recreational harvest at about 2.9 t in 2000/01; 2.5 t in 2013/14 and 1.5 t in 2017/18. While these estimates have a level of uncertainty associated with them, this apparent decline probably also reflects the switch to use of plastic baits by recreational anglers. The catch by indigenous fishers has been estimated at <0.5 t per year.

Beachworms are caught primarily in Regions 1,3,4 and 6. Catches in these regions have been relatively consistent since 2009 and there is little evidence of serial depletion.

Stock assessment

NSW beachworms are currently assessed using fishery dependent catch and effort information, particularly catch rates (catch per unit effort – CPUE) which provides indices of abundance for the various estuary regions. In contrast to the decline in catches, commercial unstandardised catch rates (CPUE) remained stable at or above 3 kg/fisher day over much of the period 1994/95 – 2019/20, only dropping below that level briefly over 2006/07 – 2007/08. Catch per fisher day has decreased slightly since 2009/10, whereas catch per hour has increased slightly, as a result of the hours fished per day decreasing from about 3.5 hrs/day in 2014/15 to 2.5 hrs/day in 2019/20.

Standardised CPUE in Regions 3,4 and 6 have been relatively stable. Standardised CPUE in Region 1 has been declining steadily since 2009.

Stock status

The NSW beachworms stock is currently classified as sustainable. Based on trends in CPUE, the stock appears to have remained stable at recent average catch levels for at least the past decade, with most CPUE indices being at or above the recent 10-year average. The stability in CPUE indicates that the current catches are sustainable. However, lack of significant increases in CPUE indicates that the TACC should remain at the current level, until increases in CPUE indicate an increase in stock size.

Economic considerations

Introduction

EGF-HG activities are generally augmented by other commercial fishing activities in the Estuary General Fishery. BDO EconSearch (2022) have undertaken a review on economic and social indicators for the EGF-HG. This information is aggregated across the Estuary General Fishery, which limits its direct application to just the hand gathering component of the fishery.

While no quantitative information is available, an understanding of the nature of the Ghost Nipper and Beachworm fisheries leads to the conclusion that capital investments in gear and vessels are low compared to many other fisheries. While capital investment to harvest Pipi and Cockle is also low, the cost of marine biotoxin management planning to permit human consumption is high and this cost significantly influences the spatial scale over which harvesting is economically viable.

Pipis and Cockles

The NSW Pipi fishery transitioned from a low value fishery for the recreational bait market to a predominantly high value seafood resource. In contrast, the NSW Cockle Fishery has always serviced the seafood market. Pipis are utilised by the restaurant trade as well as being consumed at home. Economically, Pipis are the most valuable component of the EGHG Fishery. Pipis from NSW compete with Pipis from South Australia and Victoria in the marketplace. The Pipi catch in the South Australian fishery is substantially larger than the NSW Fishery, although the closed season in South Australia between 1 June and the 31 October creates a potential market opportunity for the NSW Fishery. When NSW beaches are closed to the take of Pipis for human consumption due to biotoxin levels, commercial fishers are still permitted to take and sell Pipis for bait. This provides them an alternative market during these times, albeit at a lower price. Based on Sydney Fish Market (SFM) prices, Pipis fetched approximately \$23.00 per kilo in 2021/22. Although variable, prices have shown a general upward trend from 2012/13. Prices peaked in 2009/10 at approximately \$35 per kilo. No information could be sourced for the price of Pipi for bait.

SFM prices for Cockles have ranged from approximately \$3.00 to just under \$14.00 per kilo from 2006/07 to 2021/22. Although variable, there has been a general upward trend in prices during this period, with the highest price in the period recorded in 2021/22. The continuing trend in increasing price for cockles is likely to be contributing to IUU fishing for the species. The price per kilo of Pipis and Cockles

is sensitive to volume. Their prices are also linked, as there can be a level of substitution between them in the marketplace. However, the exact nature of the interrelationship is not well informed by empirical data. Industry anecdotally reports a stronger demand in the home market for Cockles compared to Pipsis. For the home cooking market, NSW Pipsis compete with those from interstate, which are available in convenience packaging with enhanced shelf life.

Beachworms and Ghost Nippers

Both Ghost Nippers and Beachworms are not sold in a traditional seafood market, as they are destined solely for the recreational fishing bait market. Ghost Nippers are sold live in NSW, although some value-added frozen products are emerging in Queensland. Beachworms are sold live or as a cured/frozen product. Live products are sold directly to specialist bait shops and the provision of these baits to recreational anglers allows these shops to differentiate themselves in the marketplace. The local demand for these products will be influenced by whether they can be easily accessed by recreational fishers for their own use. Although not quantified, the supply of live bait can contribute positively to enhancing recreational fishing tourism activities, as well as servicing dedicated local anglers. BDO EconSearch (2023) identified a price of \$1.36 per beachworm, but no estimates for nippers are available in that report. The beachworm price represents a slight reduction from \$1.46 the previous year.

Quota Usage, Transfers and Holdings

Initial allocations for all four species/species groups resulted in quota being concentrated in a small number of businesses. This initial quota allocation largely reflected historical catch for each species, although all fishers that held access shares for the period considered in the allocation formula received at least a small allocation. Over half of the Beachworm quota shares were initially allocated to five fishing businesses and over 80% were initially allocated to 11 businesses. The general distribution of Beachworm quota shares remains the same with five shareholders holding 54% of Beachworm quota shares. Quota usage during the current fishing period is low at approximately 29%, with 63% of the fishing period completed. This is similar to the temporal pattern quota usage in the preceding fishing period. Eighty-five percent of the beachworm quota has been caught in Regions 3 and 4 during the current fishing period.

Some consolidation of Pippi quota share holdings has occurred, although it appears to have slowed. Initially, Pippi quota shares were allocated to 58 fishing businesses, with over half allocated to 10 fishing businesses. Currently there are 49 fishing businesses holding Pippi quota shares, with approximately 62% allocated to nine fishing businesses. This only represent a 1% increase from 2020/21. At the time of writing, quota usage for the current fishing period is 50%. At a comparable stage of the 2020/21 season, quota usage was 34%, although this figure was potentially impacted directly and indirectly by COVID-19 restrictions. Quota usage is on track to returning to similar levels prior to COVID-19 restrictions.

Eighty percent of the cockle quota was allocated among three shareholders and 99% of Cockle quota shares are distributed among 10 shareholders. Cockle quota usage during the current fishing period is high, with approximately 80% of quota used and 63% of the fishing period completed. It is however slightly lower than comparative quota usage in the preceding fishing period (85%).

Quota shares for Ghost Nippers are highly concentrated and the harvest is focussed in Port Hacking. Around 95% of Ghost Nipper quota shares were allocated to just three fishing businesses. Quota usage during the last fishing period is low with only 50% of the quota used with 63% of the fishing period completed. It is slightly higher than the quota usage (41%) at the same stage of the previous fishing year. One shareholder (through two fishing businesses) represents 80% of the reported quota usage.

The economic benefits from Ghost Nipper harvest, including enhanced regional economic benefits, would be increased by greater access to suitable harvest areas outside of Port Hacking. This however is a policy decision for the Department in consultation with stakeholders and not part of the remit of the TAFC. It could potentially be undertaken by expressions of interest by suitable fishing business for access to additional quota shares and regionalisation of quota and management arrangements. An alternative would be to increase the volume of Ghost Nippers able to be harvested per quota unit outside of Port Hacking. Any further development of the Ghost Nipper fishery would need to ensure that existing quota holders are treated equitably, while also addressing Aboriginal access.

Considerations for Current TACC Setting

There is no strong economic imperative for either an increase or decrease in the TACC for pipis. For pipis, Marine Biotoxin Management Plans represent a significant cost of production and operational impost and represent a significant constraint on the fishery. From anecdotal evidence, this cost is increasing and biotoxin testing is harder to obtain meaning that timely access to beaches for harvesting cannot be guaranteed. Further, the need for biotoxin testing limits where pipis can be harvested from, meaning that beaches where catch rates may be higher and could otherwise be harvested for greater economic benefit cannot legally be accessed for human consumption.

For Cockles, market demand continues to be high with a trend in increasing price. Industry reported that catches are limited by available quota and the TACC, and not by the availability of Cockles in the water or market demand. They highlighted that they could not meet the market demand during the latter part of the current fishing season. However, incomplete reporting including the reporting of effort in the fishery requires a precautionary approach to setting the TACC independent of economic benefits. Further, as discussed elsewhere in this report, IUU is likely to be high and this includes product illegally sold. The impact on market demand and price of cockles sold illegally is uncertain. Under the current management regime, Cockle harvesters can make business decisions as to when they harvest their Cockles. As such, they can spread their harvesting effort over the quota year to best meet market demands. The concept of individual transferable quota units and the obligations that

they bring (e.g., prompt and accurate reporting of catch and effort) may not be fully understood by all participants in the fishery.

This determination has recommended a reduction in the cockle quota. This is likely to have an economic impact on cockle fishers and reduce the supply of cockles to the market. These economic impacts may be partly offset by increasing prices for cockles due to the decreased supply. However, given the paucity of information it is not possible to determine the magnitude and distribution of any impact.

For Beachworms and Nippers there is a lack of economic information in which to guide quota setting. Both fisheries appear to be able to meet market demand with no significant changes to the market demand predicted. There is no strong economic imperative for either an increase or decrease in the TACC for beachworms or nippers.

Fishery management considerations

General Issues

The commercial EGF - HG management system is based on individual transferable quota for each species (or species group) under total allowable commercial catches (TACCs) determined by the TAFC.

The EGF - HG has four sub-fisheries - cockles, pipis, nippers and beachworms, with a total GVP of \$3-4 million per annum. The 'Estuary General- Hand Gathering Fishery Management Report – Total Allowable Catch Determinations 2022/23' provides a summary of the management arrangements that apply to the fishery (Department of Regional NSW, March 2023). The EGHGF is a significant source of bait for recreational fishers (beachworms, nippers and some pipis) particularly in the Sydney region. Many commercial fishers hold multiple endorsements and quota, meaning they can fish in multiple regions for multiple species.

In addition to the commercial catch, there is a significant recreational and Aboriginal harvest for bait and human consumption across the four species. Possession limits apply to both sectors, but there is a significant level of non-compliance along with a likely high level of illegal, unregulated and unreported (IUU) catch. Many submitted commercial logbooks still do not record effort and added to this NSW DPI has a backlog of logbook data to enter. State-wide TACCs also increase the risk of localised depletion, which is common in benthic invertebrate fisheries. The combination of illegal catch, incomplete logbooks, the data entry backlog and localised depletion risks increase uncertainty in stock assessments and result in the TAFC considering more precautionary TACC levels.

Biosecurity measures are also in place to ensure cockles and pipis are safe for human consumption. Maintaining areas open to commercial fishing and opening new areas to harvesting is subject to significant data gathering, time and cost, many of which have risen over the past three fishing periods. This is placing greater pressure on the commercial fishery to get a return on their investment in the fishery.

At the TAFC meeting in Coffs Harbour with stakeholders on 30 March 2023, concerns were expressed by many present that changes to nominated fisher and additional crew rules may have a significant impact on fishing effort and fishing efficiency. These in turn can affect both the stock assessment and compliance with fishery rules. NSW DPI undertook to consider the consequences of these recent management changes on the EGF-HG.

Cockles

The TACC has been 45 t for two years and the fishery has experienced steadily increasing market prices during that time. The TACC was almost fully caught in the 2021/22 season and may be caught before the season ends in 2023. With demand greater than the TACC can supply the market, the risk of quota evasion, recreational fishers exceeding possession limits and IUU fishing is high. These high risks were supported by NSW DPI compliance advice.

Quota evasion risk is elevated when the reporting of catch is not effectively real time and is compounded when logbook information is incomplete or submitted well after the fishing operation. These issues are present in this fishery. Compliance evidence suggests that many recreational fishers are taking advantage of the possession limit rules (e.g., a person fishes multiple times a day and quickly disperses the accumulating catch to extended family/friends and 'recreational' fishing at night when offences are harder to detect). The TAFC was also informed that IUU catch is potentially high, with 5 t being seized, implying an underlying IUU catch of between 20-50 t depending on an assumption that enforcement efficiency is between 25%-10%. All this activity can seriously undermine fishery management (including the effectiveness of the TACC) and all sources of risk suffer from poor data quality.

Overall, there appears to be an attitude present amongst many who harvest in the fishery that cockles are there for the taking, with a low likelihood of being caught breaking the rules and the consequences of doing so minor. It is worth noting that this attitude also has consequences for human health, as some recreational harvest and IUU catch is very likely to come from areas with no biosecurity plan, thereby exposing consumers to shellfish toxins and disease.

Poor quality data combined with large data gaps remains the dominant stock assessment issue and underlies why the stock status is classified as 'undefined'. To help address this, NSW DPI has commenced a FRDC-funded project to investigate some of the key species' parameters that would underpin a harvest strategy. However, this project alone will not guarantee any change to the stock status without the risks raised above being effectively controlled. As a result, the risk the current 45 t TACC poses to the sustainability of the stock is unknown.

In such circumstances, a precautionary approach to TACC setting is necessary. Any increase in the TACC cannot be contemplated given the highly uncertain stock assessment. Given the poor enforcement of fishery rules by both management and compliance, it also appears unlikely that small to moderate reductions in the TACC will make much difference to the total fishing mortality, as any gap in the market will likely be supplied by IUU catch. It is therefore necessary to consider a significant

TACC reduction in expectation that the NSW Government will take immediate action to similarly reduce recreational catch and address IUU fishing.

Recommendations

- For the recreational sector, a 7-month seasonal closure (1 May to 30 November) to cockle harvesting be introduced from the next fishing period (1 July 2023), noting that seasonal shellfish closures occur elsewhere in Australia and that the possession limit remains unchanged during the open season.
- Due to increased IUU fishing, a joint compliance operation be undertaken by fisheries and food safety agencies that targets major illegal suppliers to the market and in undertaking this operation, the effectiveness of current deterrents to prevent re-offending and deter new offenders is reviewed.
- For the commercial fishery, there needs to be full enforcement of the fishery rules, including for filling out and submitting logbooks, without exception. Increased penalties should apply for commercial fishers if they do not comply with the rules.

The TAFC determination for the TACC is that it be reduced from 45 tonnes to 35 tonnes for 2023/24 fishing year.

In summary, the cockle fishery is currently unmanaged in terms of total fishing mortality and un-assessable in terms of sustainability status. It is the TAFC's view that the 'undefined' status given to the stock hides these realities and that all who legally harvest from the fishery and seek to manage it should be extremely concerned about its future, unless management is significantly improved.

Pipis

The pipi TACC is 156 tonnes and is unlikely to be fully caught, as has been the case for the past several fishing periods. An updated stock assessment suggests that, on average, the legal sized state-wide pipi stock is below the limit reference point. However, this status is buffered by the commercial minimum legal size (4.5 x 3.2 cm) limit, which protects a proportion of spawning animals and supports recruitment to the adult stock, although this has not been quantified. Other assessment methods applied to the stock generally suggest the stock is stable at current harvest rates. Considering the above, the TAFC has determined that TACC should remain at 156 tonnes for the next fishing year (2022/23).

Nippers

The Port Hacking nipper fishery supplies the Sydney market with bait. It is assessed by NSW DPI as sustainable. Shoalhaven/Crookhaven, Myall and Hawkesbury Rivers also make minor contributions to the overall NSW nipper catch.

Nippers are known to be culturally important to Aboriginal people but quantifying state-wide historic catch has not been undertaken, something that should be considered for the future for all culturally important species. The recreational catch is

estimated between 2-2.5 t per annum based on regular surveys and IUU catch is regarded as low.

Given commercial fishery catch rates are stable, the TACC is not constraining commercial catch (4-5 tonnes p.a.) and there is no compelling reason to change the TACC, the TAFC has determined that the current TACC of 5.6 t should remain for the 2023-24 fishing year.

Beachworms

A single TACC for all of NSW is used to manage several species of beachworm. The fishery is assessed as sustainable by NSW DPI with generally stable catch rates around the long-term average. Recreational catch is 0.5 to 1.5 t p.a. The beachworm stock at Kingscliff Beach is in long-term decline and re-enforces the need for a DPI policy about how localised depletion is managed. Notwithstanding this, the state-wide TACC of 8.5 tonnes is sustainable and the TAFC has determined it remain at that level for the 2023-24 fishing year.

Departmental responses regarding progress against TAFC recommendations made in 2021 and 2022

1. *To support the setting of sustainable catch limits at various scales (e.g., regional or estuary) the Department develops a policy and any necessary statutory instruments for these fisheries to guide the TAFC when it considers determinations that seek to set sustainable catch levels below a state-wide level.*

This may be considered during the development of a Harvest Strategy for this fishery. Harvest strategies are currently in development for Lobster, Spanner crab and Mulloway. Further harvest strategies will be developed in a staged process to provide guidance to decisions of the Secretary or the TAFC in making total allowable fishing determinations under the *Fisheries Management Act 1994*.

2. *The Department takes immediate steps to ensure the commercial sector completes its logbooks; ensures there is an appropriate education and compliance regime in place to increase recreational sector compliance and in future provides coordinated Departmental advice to the TAFC regarding estimated total fishing mortality for each of the EGHG Fishery species/species groups.*

No changes to current monitoring and enforcement of commercial catch and effort reporting requirements have been implemented.

The Department has commenced the Integrated Angler Monitoring Program, which involves repeat state-wide surveys of recreational fishing (similar to the Survey of Recreational Fishing in New South Wales and the ACT 2013/14 (West et.al. 2015)) every two years. The most recent survey was completed in 2017/18 (Murphy et al. 2020). Detailed information regarding recreational harvest estimates is provided in the Stock Assessment Reports for each quota species.

3. *Economic information be collected for the EGHG Fishery that focuses on assessing profitability in the fisheries and the underlying drivers and constraints to profitability. DPI is seeking to better understand these economic and social values of the industry and to establish a monitoring program to track how they change over time.*

NSW DPI has engaged BDO EconSearch to produce an annual time series of economic and social indicators for NSW commercial fisheries. A report will be produced for each fishery for three financial years (Financial Years 2019/20, 2020/21 and 2021/22). The objectives of the monitoring program are to:

- inform discussions and decisions about fisheries management with evidence to demonstrate the economic contribution of commercial fisheries to New South Wales and its regions, and
 - provide data for developing harvest strategies The monitoring program includes all activities associated with NSW commercial fisheries. This includes fishing activity, associated business and administration operations and fisheries management. The economic contribution indicators will quantify the effects that NSW commercial fishing activity has on the broader economy through processing, capital expenditures of fishing businesses and flow-on effects elsewhere.
4. *NSW DPI takes immediate steps to ensure the commercial sector completes its logbooks and that improvements are made to estimates of non-commercial harvest, with these actions supported by effective education and compliance programs, so that robust stock assessments can be undertaken in future years.*

Monitoring and compliance of Catch and Effort Logbook records within the Estuary General Hand Gathering Fishery has taken place through a targeted and ongoing compliance operation. Since the start of the operation DPI has received a significant increase in Catch and Effort Logbook records from fishers. DPI is developing an internal process to assist with real time quota reconciliation (i.e., finalising pending and mismatched / incomplete fishing activity workflows) that will commence in the coming fishing period.

T AFC comment against progress

Regarding Recommendation 1, the T AFC notes the harvest strategy process that is underway and understands the need to prioritise their finalisation. However, this does not directly address the need for a state-wide policy approach to setting catch levels at various spatial scales, which is a necessary part of the fishery management system and remains a high priority recommendation from the T AFC. In relation to Recommendation 2 and consistent with the commentary in the 2021 and this 2023 determination, there is an urgent need to further improve both catch and effort reporting and compliance in the EGF-HG Fishery. If this is not addressed, the T AFC's confidence in setting sustainable catch levels will remain low and any expectation that TACCs can be increased should be tempered accordingly. The T AFC strongly urges both NSW DPI and the industry to address poor reporting and


compliance, so the full benefits from these fisheries to NSW can be realised. Regarding Recommendation 3, the TAFC has considered the BDO EconSearch report for the EGF-HG sector in its deliberations. Much of Recommendation 4 is covered in the response to Recommendation 2 and proposed improvements to quota reconciliation are strongly supported.

Determination

The Total Allowable Fishing Committee (TAFC), pursuant to Part 2A of the *Fisheries Management Act 1994*, determines that the commercial catch of species in the Estuary General Fishery - Hand Gathering sector should be controlled and allocated through the following measures:

Species	Catch Limit 2023/24 (tonnes)
Pipi (<i>Donax deltoides</i>)	156.0
Cockles (<i>Anadara trapezia</i>)	35.0
Ghost Nipper (<i>Trypaea australiensis</i>)	5.6
Beachworms (3 species of <i>Onuphidae</i>)	8.5

Signed (for and on behalf of the TAFC)



William Zacharin
Chair, TAFC

14 April 2023

Appendix 1: Map of NSW coastline showing the main ports of landing, broad fishing zones and estuary fishing regions (1 to 7) for commercial catch and effort reporting.

