NSW TOTAL ALLOWABLE FISHING COMMITTEE

ABALONE FISHERY

DETERMINATION FOR THE 2024/25 FISHING PERIOD

8 April 2024

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 shareholding or 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. Currently, there is no formal harvest strategy for this fishery.

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 preliminary draft Harvest Strategy for the Abalone Fishery was developed in 2015 in consultation with industry and a working group (that included industry representatives and national abalone fishery scientists). No further progress has been made to finalising this draft strategy.

This Determination is for the Abalone Fishery for the period 1 July 2024 to 30 June 2025.

Management recommendations & supporting actions

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

1. That the catch rate standardisation diagnostics be included in the stock assessment report.
2. That DPI Fisheries and industry work together to finalise an agreed harvest strategy for the Abalone fishery.

Determination

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

1. A TACC of **100 tonnes** during the fishing period 1 July 2024 to 30 June 2025.

Introduction

The NSW Abalone Fishery extends the entire length of the coastline of NSW and is managed as a single stock, although there are four identified spatial management units in the fishery, which assist in pursuing sustainable fishing and monitoring the performance of the fishery (Table 1). The Abalone Fishery was developed through the 1960s and annual catches peaked around 1,200 tonnes in the early 1970s. This catch was not sustainable and the fishery was restricted in 1980 to control over-exploitation. Quota management was introduced in 1989 at 10 tonnes (t) per licence. In the early 2000s, the fishery experienced a sustained period of lower catches, with the TACC dropping to 110 t in 2007/08 and 75 t in 2009/10. The TACC was then increased and ranged between 120 and 130 tonnes from 2012/13 to 2017. Since 2018, the TACC has been 100 tonnes.

There are currently 44 shareholders in the fishery with shareholdings between 10 and 90 shares from a total pool of 3,454 shares. 35 shareholders hold the required minimum number of shares (70) to have an endorsement that authorises the taking of abalone. Quota can be traded within each fishing period, with a maximum of twice the initial shareholding able to be transferred to their existing shareholding[1].

Table 1: Spatial management units and fishing areas in the NSW Abalone Fishery

Spatial Management Unit	Fishing areas
1	Tweed, Port Stephens, Kiama, Ulladulla, South Brush, Batemans
2	Tuross, Narooma, Bermagui, Bunga, Moon Bay, Turingal, Long Beach
3	Eden, Saltwater, Bittagabee, Green Cape, City Rock
4	Wonboyn, Saltlake, Howe

The Abalone Fishery is subject to a range of spatial closures arising from the comprehensive system of marine protected areas in NSW waters. These include marine parks, aquatic reserves and intertidal protected areas in which commercial fishing is restricted or prohibited.

Abalone are subject to a regulated legal minimum length (LML) to assist in protecting the stock from over exploitation and ensure fish mortality does not result in the depletion of reef systems, whereby all abalone are removed. The LML for commercially harvested abalone was increased from 117 mm to 119 mm in 2018 and further increased to 120 mm and to 125 mm south of Womboyn in 2019. Recreational fishers are subject to a LML of 117 mm.

An annual assessment of the Abalone Fishery is commissioned each year by the Department of Primary Industries, with support from the Abalone Council of NSW[2]. The TAFC met on-line with fishery scientists, fishery managers, compliance officers

[1] McKinnon, F (2024) Abalone Fishery Management Report: Total allowable catch determination. Department for Regional NSW 34 pp

[2] Abalone Council of NSW (2024) Assessment of Abalone stocks in NSW: Submission to the TAC setting process for 2024/25, Sydney 176 pp

and participants in the Abalone Fishery on 20 March 2024 to discuss the current fishery assessment, economic conditions and compliance in the fishery.

Biological considerations

Biology and stock structure

The NSW abalone fishery harvests Blacklip Abalone (*Haliotis rubra*). Spawned larvae are dispersed by ocean and tidal currents for one week after spawning, and once settled, are highly resident, forming aggregations on suitable reef habitat, often in substantial localised densities. Aggregations typically are genetically indistinguishable from one another and do not constitute separate biological stocks. The species grows and matures slowly, reaching a maximum age between 20 and 50 years. Aggregations therefore can be rapidly fished down and are susceptible to serial, localised depletion.

Aggregating behaviour also means that abalone are susceptible to hyperstable catch rates, which occur when catch rates remain constant while the actual population declines. This creates an illusion that population levels are stable, when they are not, thus masking fishery declines. This has important implications. First, it means fishery-dependent data usually will not detect the changes in abundance, or density in areas beyond where the fishery is operating. Second, it also means that the abundance seen by the fishery and industry, is not indicative of the broader stock abundance, setting up potential tension and disagreement between scientists, managers and stakeholders.

Stock assessments and performance indicators

Formal stock assessments that estimate abalone stock status are not currently conducted in NSW. In their absence, key performance indicators are used to provide evidence of trends in the stock. All indicators rely on fishery dependent data, and care must be taken because fisheries dependent data can often confound stock inferences with regulatory, or socio-economic changes.

There are three main performance indicators used to inform management advice. Two of these are derived from fisheries logbook data and the third is derived using data captured by automated dive loggers, now used by most divers:

1. Catch rates (kg caught per dive hour) by area and SMU are calculated from logbook catch and effort data, providing an index of relative abundance of retained (legal sized) abalone.
2. Standardised average weights of harvested abalone by area and SMU are estimated from counts and bin weights of landed abalone, providing an index of the size being attained by mature adults in the population under current fishing pressure.
3. A biomass index based on density obtained by dive loggers and area of suitable abalone habitat. These are compared to catches to estimate harvest fractions by area.

The main indicator of the NSW abalone fishery, catch rates, typically are assumed to represent the biomass available to the fishery. As size limits and the technology used to catch the fish change, so would the catch rate be expected to change as well. This effect is seen in the catch per day since 2008.

Current catch rates are high relative to 2008 and there is concern that these do not reflect changes in stock biomass. If catch rates are used as indicators in the fishery they should be standardised against explanatory variables in the fishery, with associated diagnostics to provide confidence in the results.

Stock status

The TAFC view the assessment report as a reflection of the stock status in the currently fished SMUs. The assessment report showed that after fluctuating between 2000 and 2009, catch rates increased rapidly in all four SMUs from 2010 –2015, from about 20 kg/hr to between 35 kg/hr (SMU 1) and 60 kg/hr (SMU 4). The reason for this increase is not clear, but much of the increase coincides with changes in size limits.

After a period of stability over 2000 – 2008, standardised average weight of landed abalone increased, likely as a result of changes in size limits, in all SMUs over 2009 – 2022. There is the potential that the higher average weight of fish, combined with static to declining catch rates, is masking declining numbers and recruitment failure in the fishery. An indicator of pre-recruits coming into the fishery is strongly needed to address this concern.

Trends in the logger-based estimates of legal sized abalone density are complicated by size limit changes. SMU 1 shows signs of continued decline, even under light exploitation. This also means that there is little data available from the area to make a confident assessment. Trends in SMU 2, 3 and 4 have fluctuated and indicate that density, from the perspective of the fishery, appears not to have declined markedly.

The current TACC of 100 tonnes is not likely to threaten the stock, but the committee noted the large uncertainty in IUU catches. The TAFC is concerned that there is still a large uncertainty regarding a biased assessment (fishery dependent) and that a rapidly changing climate and a significant amount of IUU, all represent a persistent and potentially compounding risk.

Recommendations

- The committee recommend that the catch rate standardisation diagnostics be included in the assessment report.

Economic considerations

Details of the economic characteristics of the abalone fishery, namely catch, price, gross value of production (GVP), quota transfers, reported share trading prices and management charges, are provided in the most recent management report (McKinnon 2024). Information on productivity factors directly affecting the economic performance of the fishery, namely catch, effort and catch rate for the fishery overall

and by fishing area and Spatial Management Unit (SMU), is provided in the report Assessment of Abalone Stocks in NSW.

Table 1 compares key economic indicators for the 2019/2020 and 2020/2021 financial years derived from BDO EconSearch (2022 and 2023). This remains the most up to date information for the fishery. For 2019/2020, this information was derived from 11 of 28 active fishing businesses, while for 2020/21 it was derived from 9 of 23 active businesses.

Table 1: Summary of Key Economic Indicators for 2019/2020 and 2020/2021 Financial Years.

	Parameter Value	
Year	**2019/2020**	**2020/2021**
Indicator		
Catch	83 tonnes	94 tonnes
Gross Value of Production (GVP)	$3.6 million	$2.3 million
Fisheries fees (% of GVP)	4.9%	6.5%
Rate of Return on Total Boat Capital	6.6%	2.2%
Active Share Value per Active Business	$892,250	$1,251,663
Gross State Product (direct + flow-on) (GSP)	$4.9 million	$2.9 million
Employment (direct + flow-on)	33 FTE	32 FTE
Net Economic Return	$1.6 million	$0.4 million

The most significant difference between the years presented in Table 1 is the difference between price per kilo, which influences other parameters including GVP, GSP and net economic return. This difference does not represent a fall in price per kilo of abalone or a change in product, but rather a difference between how the price estimate was derived. For the 2019/2020 financial year and the preceding years, price was derived from Sydney Fish Market (SFM). As pointed out in previous determinations and advised by industry participants, because of the low volume of abalone sold through the SFM, the price is not representative of the beach price overall. The price also represents a wholesale price and not beach price. The estimate for the 2020/2021 financial year was derived from SFM data, augmented with information from one abalone processor.

The use of SFM prices to value the NSW Abalone Fishery clearly remains contentious among industry participants. It is the Committee's understanding that the Department has requested on many occasions price information directly from the industry, but that information has not been broadly forthcoming. The Committee sees three ways forward for the industry and the Department on this matter:

1. The Department continues to rely on SFM prices as a method of obtaining information on the price of abalone, while noting the imprecision of this estimate, but also that in the absence of any additional precise and representative information that it represents the best available information.
2. The Department and industry work together for the routine provision of price information that more precisely estimates beach price.
3. The Department continues to use SFM prices as the principal source of ongoing price information, but with industry and the Department working together on an agreed evidence-based conversion of SFM wholesale price to beach price.

The second option above represents the best option in terms of obtaining a precise estimate of beach price.

Share transactions for both the 2021/22 and 2022/23 fishing periods and the completed part of this season remain low in frequency and volume. It is not compulsory for prices to be recorded or recorded accurately in share transfer application. The following information on share transfers was provided in the NSW Abalone Fishery Management Report 2024/25:

- For the 2021/22 fishing period, there were four share transfers for a total of 190 shares. Value was reported for 120 shares totalling $1,240,000 ($10,333 per share).
- For the 2022/23 fishing period, there were three share transfers for a total of 40 shares. Value was reported for two of the share transfers, 20 shares combined, and totalled $150,000 ($7,500 per share).
- For the current fishing period there have been three share transfers for a total of 40 shares. Value was reported for one of the share transfers, 10 shares combined, and totalled $77,000 ($7,700 per share).

The low number and volume of share trades, together with incomplete data on share trades does not make it possible to robustly determine recent trends in share price. The lack of compulsory recording of prices associated with share prices and the validation of any prices provided is an area where economic data collection can be improved with limited or no additional management cost.

The estimated illegal, unregulated and unreported (IUU) catch of abalone in NSW is high, according to Fisheries Compliance and involves organised crime in some instances. The impacts of this IUU fishing on the demand for legally obtained abalone and price per kilo of legally obtained abalone is uncertain.

Fishery management considerations

The NSW Abalone Fishery is a limited entry fishery managed through legislative instruments and a co-management arrangement between the NSW Government and Abalone Council of NSW.

A TACC is applied to the fishery under which individual transferable quota (ITQ) is allocated among all shareholders in the fishery on an annual basis. The TAFC determines the TACC for each fishing period, which is divided into a weight value in kg per share. Other fishery controls are minimum legal sizes, controls on fishing gear, areas closed to fishing (including marine protected areas) and mandatory use of GPS loggers. The TACC had historically been fully caught, except for some disruptions during the COVID-19 pandemic and bushfires which led to variations to the usual pattern of fishing.

The fishery is divided into four spatial management units (SMUs) with most of the catch coming from the southern half of SMU 2 and SMUs 3 & 4. Geographically these are Tathra to Eden, Eden to Womboyn and Womboyn to Cape Howe,

respectively. Given the sessile nature of abalone and its susceptibility to, and history of, localised depletion, spatial management measures are an important consideration in this fishery. In an effort to spread fishing activity along the NSW coast, the management framework includes regional catch caps and spatially variable minimum size limits. It is unclear if these measures are having the desired effect and noting their scale, they are unlikely to prevent more localised depletion of reefs and small areas.

The TAFC recognises the difficulty and cost of implementing finer scale spatial management, however given the risk of localised depletion and hyperstability undermining sustainability, the TAFC encourages DPI Fisheries and industry to continue exploring practical improvements to spatial management. Finer spatial scale monitoring and management may become more accessible given the implementation of mandatory GPS loggers in recent years.

Recreational catch of abalone is managed with a daily possession limit of 2 abalone per person and a minimum size limit of 117 mm. Catch from this sector is estimated to be less than 5 tonnes per annum. A small amount of catch (estimated to be less than 1 tonne per year) is also taken by the Aboriginal cultural fishing sector, which has a daily limit for take and possession of 10 and permits available for larger harvests for cultural events.

DPI Fisheries advises that the IUU catch has increased in recent years and may now constitute up to 50 tonnes per year. This estimate is based on an assessment by compliance officers, who have observed an increase in illegal catch and sale of abalone and a southerly shift of illegal fishing operations. The TAFC noted that there was high uncertainty about the exact quantum and effect of IUU fishing on the abalone stock, however the risk of illegal harvest to sustainability of the stock is clearly a concern. IUU abalone catch is a serious issue, involving organised crime in those jurisdictions with abalone fisheries. The TAFC noted that NSW DPI Fisheries Compliance uses both deterrence and prosecutions to counteract offenders with varying degrees of success and is currently reviewing their Abalone Compliance Plan. A number of compliance operations have been conducted over the past year in the abalone fishery and DPI works in coordination with NSW Police on these efforts.

There remain differences in abalone minimum size limits between the recreational (117mm) and commercial (117, 120 & 125 mm) sectors. These differences within and between sectors make management and compliance more complex, and DPI Fisheries are encouraged to monitor and review them to ensure that all size limits are achieving the intended effect.

A draft interim Harvest Strategy for the abalone fishery was developed in 2015. Recently the Abalone Association has prepared a revised draft harvest strategy that seeks to simplify the approach and reflect the framework currently being utilised in the fishery. Noting that a Harvest Strategy would provide a useful framework to guide

future TACC setting processes, the TAFC recommends that DPI Fisheries and industry work together to finalise an agreed Harvest Strategy for this fishery.

DPI Fisheries considers the current stock status to be ‘sustainable’ and indicators of stock health are generally stable, although there are a number of uncertainties and risks as discussed in the scientific section above. As such, the TAFC recommends that the TACC remain at 100 tonnes for the 2024/25 fishing season.

Recommendation

- The TAFC recommends that DPI and industry work together to finalise an agreed harvest strategy for the Abalone fishery.

Departmental responses regarding progress against TAFC recommendations made in 2023

1. *The TAFC recommends that the Abalone Industry and Department complete the development of an Abalone Fishery Harvest Strategy with the aim of implementing it no later than 1 July 2023.*

No progress.

2. *The Committee notes the high reliance on fishery-dependent data to inform the primary and secondary indicators of stock status. The Committee recommends that NSW DPI and the commercial industry address the potential for bias in fishery-dependent data by applying an independently designed and statistically structured data collection and monitoring program as a regular validation tool.*

As part of developing new spatial catch and size limits for the fishery an independent survey, sampling length-frequency and collection rate of abalone at 23 sites between Cape Howe to Bermagui, was completed during October 2022. The aim of the survey was to provide baseline information to assist evaluation of the impacts of opening a specified area to a 117 mm LML.

The survey has provided recent information on current densities and size-frequency distributions of abalone, including sub-legal sized at the sample sites that will contribute to future stock assessment research. The program, which supported industry to collect the data, will potentially lead to future data collection to assist the development of finer spatial scale management arrangements which may be incorporated in the future harvest strategy for the fishery.

3. *The Committee recommends an independent review of the stock assessment be conducted to be consistent with best practice.*

No progress.

4. *NSW DPI seeks advice from abalone processors and/or fishers on abalone prices for input into management reports and not rely on Sydney Fish Market prices for abalone.*

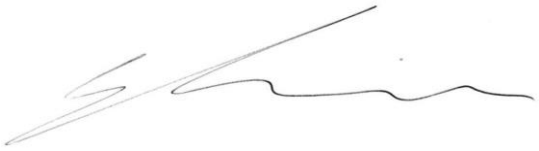
Not completed.

Determination

The Total Allowable Fishing Committee (TAFC), pursuant to Part 2A of the *Fisheries Management Act 1994*, determines that the total allowable commercial catch of Abalone should be controlled and allocated through the following measure:

1. A TACC of 100 tonnes during the fishing period 1 July 2023 to 30 June 2024

Species	**Catch Limit 2023/24 (tonnes)**
Abalone (*Haliotis rubra*)	100



William Zacharin
Chair, TAFC

8 April 2024

Alice McDonald – Fisheries Management member

Daryl McPhee – Natural Resource Economist member

Rich Little – Scientific member