

REVIEW OF THE SOUTHERN CALAMARI FISHERY



ANALYSIS OF MANAGEMENT TOOLS

2018



Tasmanian
Government

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1. Introduction

The commercial fishery for southern calamari developed rapidly in the mid-1990s, with landings peaking at around 100 tonnes between 1997/98 and 2003/04. Management interventions such as seasonal closures on some key spawning grounds on the east coast and the introduction of a limited number of species specific licences in the south-east resulted in fishing effort spreading to other areas of the State.

The Tasmanian Southern Calamari Fishery now has four components. The first is where you must be the holder of a fishing licence (southern calamari) to operate without catch limits in South East Waters. The second is the rest of State waters, where you are only required to hold a fishing licence (scalefish A) or (scalefish B) to operate without catch limits. The third is with commercial trip limits imposed if you are not the holder of a calamari licence or are the holder of a rock lobster licence or fishing licence (scalefish C). The fourth is as a recreational fisher with bag and possession limits.

Southern calamari are predominantly taken by squid jigs used on a rod or handline. Although other fishing gears, such as Danish seine, purse seine, beach seine, spear and dip net are also used — albeit to a lesser extent.

Over the past few years there has been increasing interest, both commercially and recreationally, in southern calamari on the north coast — to the level that the estimated recreational catch is now equal to the commercial catch of this species¹.

This increasing level interest and corresponding catch has raised the potential need for further management of the fishery in the north and investigation of measures which might be utilised effectively in this fishery.

Catch data for 2016/17 indicates that commercial catch of calamari stabilised at a high level on the north east coast (compared with the 2015/16 catch) and was higher than total catch on the north west coast for the second year in a row — noting that total catch jumped from 106.2 tonnes in 2015/16 to 122.6 tonnes in 2016/17². Gross Value Production (GVP) of the Tasmanian Calamari Fishery in the 2016/17 Financial Year (FY) was estimated to be \$1,313,046 which was an increase on \$1,090,561 for the 2015/16 FY — noting that the true value is most likely underestimated as most fishers sell their catch directly for a premium and the average beach price was based on monthly processor returns for the respective years.

Recreational targeting of calamari is also expected to be increasing in line with previous estimates. A Statewide survey is currently underway for the 2017/18 recreational licensing year and the results will be finalised in 2019 and it is likely that recreational catch has tracked along at a similar level based on the last recreational survey.

A spawning closure was introduced in 2017 from 6 to 22 October (inclusive).

Independent dive surveys, and anecdotal information from industry, confirmed that there had been a failure of calamari moving to inshore spawning grounds to lay eggs in the latter quarter of 2017. This appears to be system-wide trend across the north coast if not wider. This spawning failure could be due to environmental effects, effects of fishing or a combination of the two. The Institute for Marine and Antarctic (IMAS) studies has investigated apparently anomalous water and temperatures during that period.

An investigation of the water temperatures along the north coast showed that two anomalous events had occurred. The water temperature from early-September through to late-October was

¹ Tasmanian Scalefish Fishery Assessment 2013/14 pp. 145-152

² Tasmanian Scalefish Fishery Assessment 2016/17 pp. 140

cooler than the seasonal average for that time of year. It then warmed rapidly, tracking with the seasonal average for approximately two-weeks in late-October through to early-November, before again rapidly increasing to temperatures well above the seasonal average from mid-November until January.

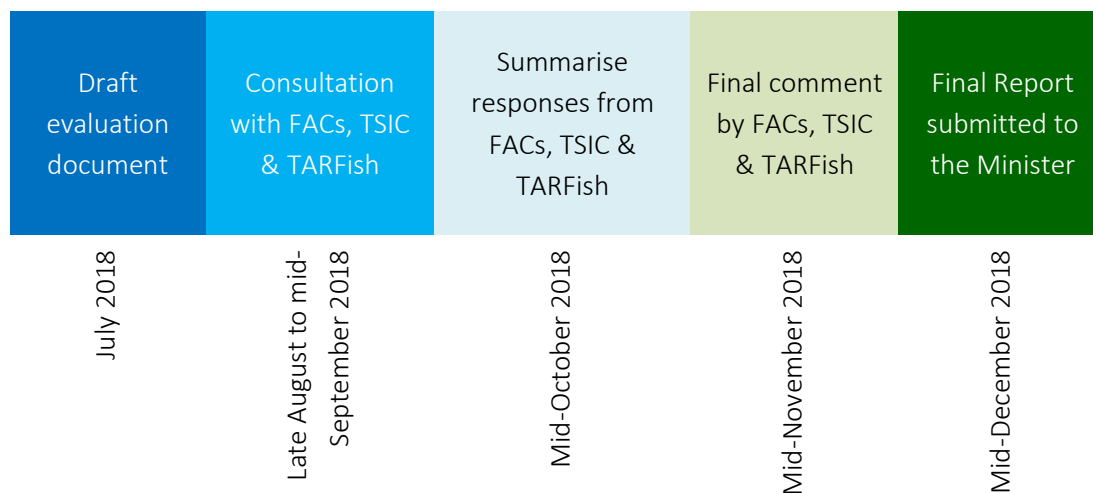
There were several periods during this time where the water temperature was considered a heat-wave event, with temperatures above the ninetieth percentile of the seasonal average for the time of year and persisting for more than five days.

Preliminary catch and effort data for the 2017/18 FY indicates a drop in catch and CPUE for both the north east and north west coasts, as might be expected given the above.

To date, the key management measures introduced to the fishery have been increased protection at key spawning times across the north coast. Given the recent trends in the fishery data and spawning activity, the Minister has approved a one month closure across the entire north coast from 1 October 2018 to the 31 October 2018 (inclusive). This closure will apply to both commercial and recreational fishers for all squid species.

Further, there has been continued debate regarding other management measures that might be utilised in this fishery as required. Such discussions have been held with the commercial industry and through the Scalefish Fishery Advisory Committee. Following a recommendation from this committee, the Minister for Primary Industries and Water has approved a review (or evaluation) of any management measures that might be utilised in the fishery. This evaluation will be analysing the management tools available and will discuss a cost-benefit analysis of each option.

Below is the process of this review. The peak fishing bodies and formal advisory committees for both the commercial and recreational sectors will be utilised as the key mechanism for progressing this review.



The Department will consult closely with the Scalefish Fishery Advisory Committee (SFAC), the Recreational Fishery Advisory Committee (RecFAC), the Tasmanian Seafood Industry Council (TSIC) and the Tasmanian Association for Recreational Fishing (TARFish).

The final report will be submitted to the Minister by mid-December 2018.

2. Purpose

Since 2009/10 (when the new licence was introduced for South East Waters) landings have steadily increased off the north coast to a level that current landings from this area now exceed those combined from the east and south-east. These catches have been accompanied by increased levels of fishing effort, which rose sharply in 2014/15 to an historic high in the north of the state in the 2016/17 assessment³. Recreational catches (last estimated at 65 tonnes in 2012-13) have also increased Statewide since 2000, and in particular off the north coast, and are currently likely to be at a level equivalent to the commercial catch.

Despite increases in fishing effort, catch rates in the northern areas have continued to rise, while remaining stable in the southern areas of the State. While southern calamari may be vulnerable to intensive fishing pressure there are no indications as yet that fishing mortality is excessive and likely to cause the stock to become recruitment overfished.

Whilst southern calamari is currently assessed as sustainable, resource sharing between and within sectors is increasingly an issue — while recognising that the fishery performance will need to be monitored closely.⁴

The increased interest in southern calamari from both the commercial and recreational sectors on the north coast, particularly the north west coast has been highlighted as a potential issue of sustainability by commercial fishers located in that area, with a small number of fishers calling for a cap on effort in the north-west for the take of southern calamari to ensure the sustainability of the species and viability of the industry into the future.

This document aims to evaluate the costs and benefits of various management tools potentially available for this fishery — noting that this area of commercial fishery is currently managed by input controls (scalefish A or B licence and maximum of five squid jigs) and trip limits for certain licence types, while the recreational fishery is limited by a maximum of five squid jigs and a bag limit of 10 calamari.

3. Recent History and Current Management

After the introduction of a limited licence for South East Waters in late 2009 commercial fishing effort for southern calamari has shifted to other areas, particularly in the north of the State.

There is increasing interest for in calamari from both the commercial and recreational sectors. It is significant to note that half the total catch is now taken by recreational fishers, particularly on the north coast. The new Scalefish Fishery legislation — introduced on 1 November 2015 — reduced the recreational bag limit down to 10 from 15 (Statewide).

In terms of spawning activity — temporally and spatially — that information was non-existent for the north coast. Consequently, research on calamari stocks located off the north coast was prioritised by both the commercial and recreational sectors.

The objectives of the funded research are to get a clear idea of timing, distribution and duration of the spawning season along the north coast. It is important to note that this is a research project, not a stock assessment, and will not be looking at connectivity of stocks or providing stock levels for determining catch limits. It is purely about collecting and analysing temporal and spatial spawning data to inform the timing and duration of a spawning closure.

The Institute for Marine and Antarctic Studies is responsible for this research and in 2016 travelled to the north-west to gather anecdotal information on commercial fisher observations of calamari

³ Tasmanian Scalefish Fishery Assessment 2016/17 IMAS, pp. 140

⁴ Tasmanian Scalefish Fishery Assessment 2016/17, IMAS, pp.145

from a seasonal perspective. Dive surveys were undertaken to look at egg densities and taking small samples to look at the spawning potential in 2016 and 2017 — with the final surveys being undertaken in 2018. Data collected from these surveys have informed the timing and area of future closures for 2017 and 2018.

In year one the research project sampling had been delayed due to adverse weather conditions, but preliminary sampling commenced in mid-October 2016 and were mainly focused off Robbins Island and Little Musselroe Bay. Egg densities were high at both sites.

In year two, sampling took place from September to December 2017 at sites located at Robbins Island, Wynyard, Ulverstone, Low Head, Bridport and Little Musselroe Bay. In 2017, egg densities were extremely low at the Robbins Island and Little Musselroe Bay sites. It appeared there had been a failure of calamari moving to spawning beds to lay eggs and this trend seemed to be consistent across the entire north coast. There are a few reasons why this may have occurred. Squid species have a lot of inter-annual variability and failure to lay eggs may be due to environmental effects in the current year, the effects of fishing in the previous year or a combination of the two.

In 2017 a spawning closure was introduced from 6 October 2017 to the 22 October 2017 (inclusive) in two areas located on the north west and central north coasts.

For 2018, the Minister has approved a spawning closure for the entire north coast (Cape Grim to Cape Naturaliste) from 1 October 2018 to 31 October 2018 (inclusive). The Minister also directed the Department to review the management of the Calamari Fishery.

In the IMAS produced scalefish fishery assessments, commercial calamari catch is analysed by financial year. As indicated in table 1 and figure 1, catch taken in South East Waters — where access is limited by the requirement to hold a fishing licence (southern calamari) — has remained fairly stable over the last three years. Preliminary catch data for the 2017/18 Financial Year indicates that total catch is likely to be around half that of the previous two years — with catch taken in SE Waters remaining relatively stable.

Table 1: Calamari catch (in tonnes) from South East Waters, East Coast, North East Coast and North West Coast for the 2015/16, 2016/17 and 2017/18 Financial Years — noting there is almost no catch taken on the West Coast (<1 kg) and the current year is based on all returns received as at 13 August 2018. To operate with no catch restrictions in SE Waters a fisher is required to hold a fishing licence (southern calamari). Source: DPIPWE logbook data as at 13 August 2018.

Region	2015/16 (t)	2016/17 (t)	2017/18 (t)
North West Coast (NWC)	25.0	37.4	11.4
North East Coast (NEC)	45.8	44.2	17.1
East Coast (EC)	3.4	1.7	2.5
South East Waters (SEW)	31.9	39.2	27.0
TOTAL (tonnes)	106.2	122.5	58.0

It is interesting to note that total catch on the north coast for the 2016/17 financial year was around 67 percent of the total commercial catch of calamari. In 2017/18 catch in SE waters appears to be remaining relatively stable, whereas on the north coast catches have dropped dramatically. Catch west of Whale Head and south of Cape Grim is negligible.

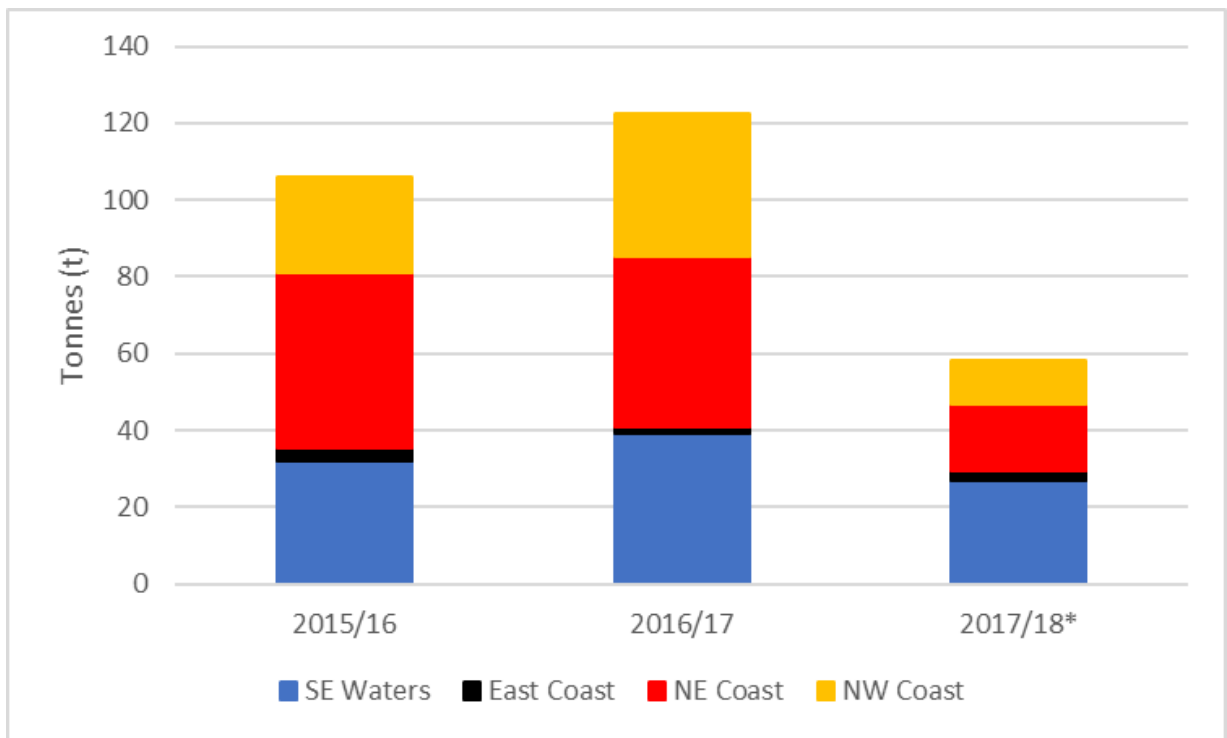


Figure 1: Calamari catch (tonnes) by region and financial year for 2015/16, 2016/17 and an incomplete year for 2017/18. Data source: DPIPWE logbook data as at 13 August 2018.

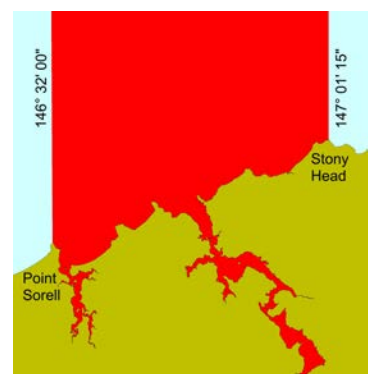
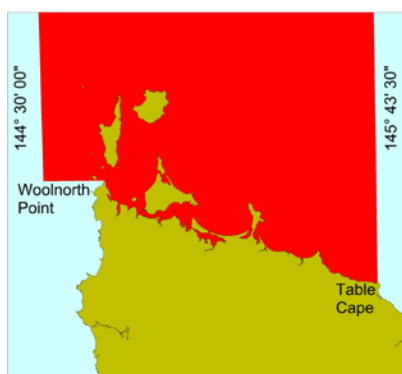
Southern calamari is currently assessed by the Institute for Marine and Antarctic Studies (IMAS) as “sustainable” and the issues facing the fishery are primarily related to resource sharing and access — within and between both the commercial and recreational sectors. Any measures introduced would need to be effective and equitable across both sectors.

There has been a substantial increase in catch and effort on the north coast, which is reflected in the total commercial catch for 2015/16 and 2016/17. Consequently, this increasing interest has resulted in increasing overlap and interactions within and between the commercial and recreational sectors.

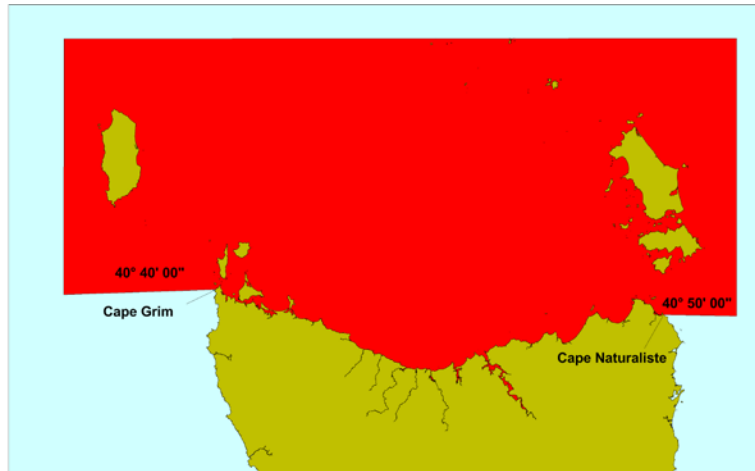
The IMAS research project is targeting areas that have historically had large catch taken from them and have expanded the number of sites from two (Robbins Island and Little Musselroe Bay) in 2016 to six (Robbins Island, Wynyard, Ulverstone, Low Head, Bridport and Little Musselroe Bay) in 2017. The sites that were sampled in 2017 will again be sampled in 2018.

Preliminary information from this research indicated that peak spawning occur during October.

In 2017 the first spawning closure for this part of the fishery was introduced in two locations on the north coast from 6 October 2017 to 22 October 2017 (inclusive). The locations were in the north west region and the central north region (indicative maps below).



For the 2018 spawning closure, the Minister has approved an expanded closure of the entire north coast in waters north of Cape Grim in the west and Cape Naturaliste in the east from 1 October 2018 to the 31 October 2018 (inclusive). This closure applies to both commercial and recreational fishers.



The Minister has tasked DPIPWE with examining the Calamari Fishery and to investigate the use of all management tools — including limiting access to the fishery in regions outside the existing licenced area — to ensure the sustainability of the resource, the economic viability of fishing operations and maximising the value of this resource to the State.

This document will investigate all management tools available that may be utilised to manage the calamari fishery outside of South East Waters and will include a cost-benefit analysis of each option.

An investment warning was released on Thursday, 23 August 2018 and highlighted that this process does not pre-empt any outcome. More details can be found on the DPIPWE website at www.dpipwe.tas.gov.au/southerncalamari.

4. Cost-Benefit Analysis of Potential Management Tools

4.1 Seasonal Spawning Closures

One of the key aspects of any possible measure is the legislative or statutory process that might be required for developing and implementing those measures. One of the simpler and easier management tools are area closures — as these can be done without changes to the management plan and can be implemented through a Public Notice.

Correspondingly such closures can be managed in an adaptive process, fine-tuned as needed and do not require significant resources for implementation.

Information on possible timing and area of any closure is required before a final decision is made. Any proposal would be consulted through both the Scalefish Fishery Advisory Committee (SFAC), Recreational Fishery Advisory Committee (RecFAC), the Tasmanian Seafood Industry Council (TSIC), the Tasmanian Association for Recreational Fishing (TARFish). Seasonal closures are advertised by public notice published in the Tasmanian Government Gazette and the Tasmanian Government Public Notices website. Notices are generally also published in the Saturday Mercury, Examiner and Advocate newspapers.

Issues of introducing a seasonal spawning closure include:

- Determining the timing of the closure.
- Determining the area of the closure.
- Providing timely information to stakeholders of the timing and area of the closure.

Cost

- Information on timing and area of main spawning activity would be required.
- Reduces fisher profitability as limits catch during the peak catching period.
- A public notice detailing the timing and area of the closure must be published in the government Gazette and the three main Tasmanian newspapers.
- Would require a change in FILMS database for logbook data entry — i.e, data entry flag of the fishing blocks where the closure applies and dates when closure applies.

Benefit

- Protects spawning fish, thus allowing more eggs to be laid.
- Does not require a lot of resources to implement.
- Relatively quick and easy to implement by Public Notice.
- Can be adapted or changed in response to information or data relatively quickly.
- All existing scalefish A and B licence holders retain full access to calamari outside of South East Waters.

Key issues

This management tool is simple to implement requiring limited Departmental resources as no changes to the management plan are required. Spawning closures are generally accepted by both the commercial and recreational fisheries.

The Department currently utilises spawning closures in an area off the east coast (at the northern end of South East Waters) and along the north coast. On balance, it is likely that such closures in some form will continue as part of the management mix.

4.2 Commercial Trip Limits

Trip limits have been used for other species in the Scalefish Fishery — such as striped trumpeter, bastard trumpeter and boarfish — to limit commercial catch. Trip limits can apply to a class of person, for example, the holder of a scalefish licence or the holder of a fishing licence (personal).

Trip limits already exist for southern calamari taken in South East Waters if you are not the holder of a fishing licence (southern calamari). Any trip limit would need to be designed to limit or reduce potential catch, keeping in mind the existing pattern of fishing operations.

Recreational fishers are usually constrained by bag and possession limits. Currently there is a recreational bag limit of 10 and a possession limit of 20 southern calamari.

Issues of introducing a trip limit for the commercial sector include:

- Determining the limit that should be set.
- What areas it would apply to, for example, all areas outside South East Waters or more specific areas.
- A review of the *Fisheries (Scalefish) Rules 2015* would be required.

Cost

- Would require resources to implement.
- Would require time to implement.
- Reduces fisher profitability as limits catch.
- Reduces fisher efficiency on a targeted fishing trip.
- Would require a change to the relevant legislation.
- Would require a new rule in the FILMS database for logbook data entry.

Benefit

- Will limit the commercial catch.
- All existing scalefish A and B licence holders would retain limited access to calamari outside of South East Waters.
- Does not require an individual allocation process.

Key issues

This management tool would be relatively easy to implement once the process of determining what the trip limit should be set at has been completed. However, this would require an amendment to the relevant legislation via a public consultation process before it could be implemented.

It should be noted that southern calamari are a short lived species whose populations known to fluctuate in certain environmental conditions and are currently assessed as sustainable — therefore introducing a trip limit may be of limited benefit to the stock and/or reduce the profitability of fishers during times when large amounts of calamari are present.

4.3 Recreational Bag Limits

Recreational bag limits are the main tool for restraining recreational catch of many species. The last review of the Scalefish Fishery legislation (completed in 2015) reduced the bag limit for calamari from 15 fish down to 10 fish Statewide. A daily individual bag of ten good sized calamari might be considered generous within “need for a feed” scenario – often a boat might carry several fishers. The possession limit for calamari is 20 fish.

Issues of reducing the bag limit for the recreational sector include:

- Determining the limit that should be set.
- Potential increase in incidences of high grading.
- A review of the *Fisheries (Scalefish) Rules 2015* would be required.

Cost

- Would require resources to implement.
- Would require a change to the relevant legislation.

Benefit

- Will limit catch of calamari — with the bag limits for Gould's squid probably remaining the same.
- A simple clear measure which provides good enforcement capacity.
- Spreads/shares available catch between fishers.

Key issues

Reducing the recreational bag limit of southern calamari would be a simple tool to restrain recreational catch of this species — however this option would require an amendment to the relevant legislation which would require a public consultation process.

4.4 Recreational Boat Limits

Recreational boat limits are another tool used for restraining recreational catch of many species — albeit to a lesser degree than bag limits.

The last review of the Scalefish Fishery legislation (completed in 2015) reduced the bag limit for calamari from 15 fish down to 10 fish Statewide. A daily individual bag of 10 good sized calamari might be considered generous within the “need for a feed” scenario — often a boat might carry several fishers. The possession limit for calamari is 20 fish.

Issues of reducing the bag limit for the recreational sector include:

- Determining the limit that should be set.
- Potential increase in incidences of high grading.
- A review of the *Fisheries (Scalefish) Rules 2015* would be required.

Cost

- Would require resources to implement.
- Would require a change to the relevant legislation.

Benefit

- Will limit catch of calamari — with the bag limits for Gould's squid probably remaining the same.
- A simple clear measure which provides good enforcement capacity.
- Spreads/shares available catch between fishers.

Key issues

Reducing the recreational bag limit of southern calamari would be a simple tool to restrain recreational catch of this species — however this option would require an amendment to the relevant legislation which would require a public consultation process.

4.5 Catch Cap

An alternative method of restraining catch is to introduce a catch cap for each region(s) outside of the licenced area (South East Waters). This tool has most recently been used in the Rock Lobster Fishery to restrain commercial catch along part of the east coast — noting that for this fishery it was relatively easy to monitor in almost real time as quota docket data was utilised which must be sent in to the Department within 48 hours of landing the fish, which is not an option for the Calamari Fishery.

IMAS would be asked to provide advice on a recommended maximum amount that could be taken during a specific period over a specific area and once that amount has been reached then the DPIPWE would close that area of the fishery for a defined period.

Issues of introducing a catch cap include:

- Determining the areas/regions where a catch cap would be applied.
- Determining the catch cap limit for each area/region.
- Would potentially cause a race to fish for both the commercial and recreational sectors.
- A telephone report is likely to be necessary so the Department is aware of who is targeting calamari in the catch cap area?
- Would require returns to be sent in within 48 hours of the end of the fishing trip and for the catch and effort data to be entered into FILMS so that the catch cap area could be monitored in almost real time.
- Would need to determine if a regional closure would also apply to the recreational sector even though the catch cap is a commercial sector mechanism.

Cost

- Would require research to inform if a catch cap would have any benefit above other management options.
- Would require resources to implement — for example, fishers would be required to send in their catch and effort returns within 48 hours after the end of each fishing trip and this catch and effort data would need to be entered as it came in so that catch could be monitored close to real time.
- If telephone reporting is utilised there is the cost to set this up and use it. This cost will need to be borne by commercial fishers accessing the catch cap area.
- Would require research to inform what the catch cap for each area/region should be.
- Would encourage a race to fish in both the commercial and recreational sectors.
- May limit profitability.

Benefit

- Limits catch in specific regions.
- Limits effort in specific regions.
- All existing scalefish A and B licence holders would retain access to calamari outside of South East Waters.
- May increase recreational satisfaction if the commercial fishery is closed when a catch cap has been reached and the area is still open to non-commercial fishers.

Key issues

The viability of this option for the immediate period is questionable. This management tool would be difficult to apply to the Calamari Fishery within the current management framework. The key issue is availability of near real time data, such issues remain, for example:

1. Catch and effort returns are monthly and are sent in by fishers at the start of the subsequent month — i.e., they are not sent to the Department in almost “real time” like quota docketing are for quota managed fisheries.
2. Additionally, not all catch and effort returns are sent in in a timely manner — some are months late and current resources do not allow for late returns to be chased.
3. Currently data entry of scalefish fishery catch and effort is entered as priorities and resources allow. This has seen a lag in data entry of scalefish catch effort.

There would be potential to use this option if the following tools were able to be utilised on a cost recovery basis:

1. Telephone reporting — so that the Department would know which fishers were accessing the catch cap area and direct participating fishers to send their catch and effort returns to the Department within 48 hours of each fishing trip.
2. Priority data entry of all returns relating to the catch cap area.
3. Potential for the use of an electronic logbook — say a simple electronic form on a mobile device — that could be utilised to monitor catch and would enable data to be entered into FILMS without relying on Fisheries Monitoring staff to manually enter the data. However, there would be a cost to develop this

4.6 Size Limits

One of the most common forms of regulation in both commercial and recreational fisheries are size limits, which determine the size of fish which can be retained — minimum and/or maximum limits — by commercial and/or recreational fishers.

In many cases minimum size limits are set to ensure that fish — or a certain percentage of a fish stock — grow large enough or old enough to spawn at least once before they can be retained in order to maintain an adequate spawning potential for a stock. In other cases, minimum sizes have been used in commercial fisheries to ensure that fish are taken at a size which makes the best use of the productivity of the fish stock — i.e., preventing growth overfishing — and/or to ensure that fish landed are at a size appropriate for a market. Both of these approaches assume that fish caught at less than the minimum size survive the capture process.

Southern calamari are a short lived species and the benefits of introducing a size limit would not necessarily be of any biological value, as size is not necessarily a reflection of maturity. Eggs that hatch in the winter are likely to have slower growth and will be smaller adults than eggs that hatch during the warmer months — and the winter hatchlings will still reproduce.

Further scientific advice would be required to determine if there would be a sound case that implementing a minimum size limit would improve the robustness of the fishery.

Issues of introducing a minimum size limit include:

- Would a minimum size limit have any benefit on the calamari stock biologically? I.e., would a size limit protect fish if they die soon after spawning anyway irrespective of their respective growth rates?
- Survivability when released.
- If so, what should the minimum size be set at?
- Would the size limit apply Statewide?
- Once set these are a simple tool to support.

Cost

- Would require research to inform if a size limit would have any benefit.
- Would require a change to the legislation relevant to the Scalefish Fishery and resources to implement changes.
- May limit profitability.

Benefit

- Would limit catch.
- Would remove smaller fish from the market and potentially improve profitability.
- All existing scalefish A and B licence holders retain access to calamari outside of South East Waters.

Key issues

While this management tool would be relatively simple to implement, as mentioned above, further information would be required to ensure there is an appropriate rationale to support the measure. In addition a review of the scalefish rules would be required through public consultation so would not be a quick process.

4.7 Area Closures

Temporary or permanent closure of specific areas would potentially protect fish in those areas. The mechanism for closing areas could be similar to those for a spawning closure. However, if/when such closures become stabilised they should be inserted into the scalefish rules.

Area closures (other than direct spawning closures) may be considered in different forms to address different objectives. Extending closures beyond spawning times might be introduced as a direct measure to reduce or limit the commercial and recreational catch — similar to a catch cap in some regards except pre-emptive closures from an extrapolated impact.

An alternate model might be to close certain areas permanently or for significant periods to limit catch and provide areas of refuge to portions of the population as a “buffer”. Appropriate advice would be required to assess any such proposals.

Issues of closing specific areas to fishing for calamari include:

- Determining the area to be closed — i.e., what area and the rationale for closing it.
- Determining the timing of the closure — i.e., would it be a permanent or temporary closure?

Cost

- Reduces area available for fishing.
- Reduced access rights for existing scalefish licence holders
- Potentially shifts effort on to other areas.

Benefit

- Limits catch.
- Protects fish (spawning or otherwise).
- Retention of access rights to calamari for existing scalefish licence holders.

Key issues

This management tool may be considered a somewhat blunt methodology, although implementation and enforcement would be relatively simple.

4.8 Access by Permit

Permits are generally only issued for specific purposes such as to develop a fishery, test new fishing apparatus or for research purposes. Permits are not issued to circumvent rules or to limit access to an already open fishery.

Issues of limiting access by permit include:

- Purpose of permit would need to meet one stated under section 12 of the *Living Marine Resources Management Act 1995*.
- Determining the criteria for a permit. This process might be considered to be a resource allocation process, when access is currently allocated. Any potential further allocation process should be conducted through appropriate formalised processes.
- What happens after the permit expires after 12 months?

Cost

- Would require resources to implement.
- What criteria might be utilised.
- Fisher would be charged a fee to cover cost of administration and research — where relevant.
- Would require a minor change in FILMS to capture logbook data received from permit operations.
- Would reduce access rights for existing scalefish licence holders.

Benefit

- Would limit access to calamari.
- Would potentially limit catch and effort.

Key issues

This tool is not appropriate to use for restraining access or catch to the calamari fishery due to the specific purposes of issuing a permit under the *Living Marine Resources Management Act 1995*.

4.9 Limit Commercial Access

Introduction of a new licence

A widely used tool in fisheries management is to limit commercial access to a fishery, or part of a fishery — such as introducing a specific licence to access southern calamari in a specific area similar to that already in place for south east waters.

Such processes allocate access to a portion of the resource preferentially to a portion of the fishery whilst excluding others — i.e., this is a formalised resource access allocation process.

Allocation processes are some of the most sensitive and challenging fisheries management processes undertaken. If progressed, it is critical that the process is seen as transparent and equitable — even if some fishers are inevitably disenfranchised by the outcome.

Any proposal must provide concrete fine details that must ultimately be addressed — including, but not limited to:

- The area of any proposal(s) must be considered — i.e., the north coast to northern east coast;
- Potential criteria developed;

- Rules for allocation of catch history if utilised; and
- Appropriate legislation developed and pass through the formal public consultation development processes.

The legislation must be scrutinised and passed by both Houses of Parliament before an implementation and appeals process can be conducted. New licence and arrangements must then be phased into practice.

While a simple tool in theory, introducing a new licence is an intensive process that would require considerable resources to complete — and time frames are usually longer than anticipated.

Qualification criteria such as parameters for catch history would need to be determined as all fishers who have taken calamari using squid jigs, or seine nets in the specific area in question would be able to be considered for a licence. This is usually the most contentious part of the process — as this will determine who will qualify for a licence and who won't. Inevitably, some will believe too many qualify whilst other believe the criteria are too draconian.

A licence granting fee and licence renewal fee would need to be set at appropriate amount that would cover the costs of managing this sector of the scalefish fishery — i.e., a move towards cost recovered management.

Consequential changes would also be required to be made to the Fisheries Integrated Licensing and Management System (FILMS).

Full public consultation would be required for this process to be approved as amendments would be required — not only within the *Fisheries (Scalefish) Rules 2015*, but also consequential amendments to the *Fisheries (General and Fees) Regulations 2016*.

An appeals process would need to be put in place.

Issues of introducing a specific licence access calamari include:

- Determination of licence parameters such as:
 - The area of operation
 - If the licence be a species licence only — which must be used with a gear licence.
 - Alternatively, if the licence would be allocated with own squid jigs — similar to the fishing licence (automatic squid jig) — so that it can be operated independently of a scalefish A or B licence.
- Determination of criteria for licence application such as:
 - Catch history — which are the qualifying years and area.
 - Rules of accrual of catch history.
 - The method of catch — squid jig catch only or would other gears be considered.
 - The minimum amount of catch required.
- Determination of allocation process.
- The appeals process.

Cost

- Would require substantial departmental resources to implement.
- Would require substantial changes to the management plan and consequential amendments to other relevant legislation.
- Would require substantial changes in the FILMS database.
- RMPAT appeals process would be required.

- Cost recovery (management and research) would need to be factored in to the licence granting and renewal fees.
- Is not a quick fix process.
- The number of licences issued may end up higher than expected due to the criteria used and the appeals process. There will likely be a number of people who will feel disenfranchised as a result.
- Reduced access rights for existing scalefish licence holders that do not qualify.
- Shifts effort on to other areas that are not covered by the licence — potentially adding to the problem.
- Will not necessarily reduce or limit total catch.

Benefit

- Limits access to a smaller group licence holders only — this may limit catch itself and also assist in supporting any other management tools implemented (e.g. closures).
- Will increase economic viability of licence holders.
- May limit effort.

Key issues

Introducing a new licence is a complex, and sometimes emotive, process which takes time and resources to implement.

Determining the qualifying criteria is time consuming and will inevitably make some fishers — who currently have access to this species but lose access — feel disenfranchised as a result of the process. Also the number of licences subsequently issued may be higher than originally anticipated due to the criteria and appeals process.

4.10 Total Allowable Effort

Introduction of Individual Transferable Effort (ITEs)

Effort based fisheries management is an alternative management system to the total allowable catch (TAC) system.

Cephalopod species are short lived, have a poor stock-recruitment relationship, and high variability in mortality owing to variability in environmental conditions.

All forms of rights-based management tend to reorient the economic incentives motivating fisher behaviour from the open-access “race to fish” to those that closely align the private behaviour of fishers with society’s desired social, economic and ecological objectives of harvests that would satisfy a sustainable yield or effort target and sustainable social and economic benefits.

Although limited (vessel) access, including licence limitation and limited entry, is a widely used form of effort management, some unit of time or gear (particularly pots and traps) are also used to limit effort.

Effort rights-based management programmes represent a major step forward from open access and limited entry by providing a more completely structured right through stronger exclusive use of the right by individuals or companies.

Effort rights-based management programmes set an annual TAE for the fishery, typically denominated in nominal units of effort such as days at sea, or number of sets of gear, or number of gear, such as pots, traps or hooks. Flexibility and economic efficiency increase when

the TAE is allocated to individuals and explicit transferability of effort rights is allowed between individuals — enabling individual transferable effort (ITE).

For these reasons, resource conservation is addressed through an escapement target — i.e. fish that are not caught — to ensure that a sustainable spawning stock biomass remains at the end of each fishing season.

Total Allowable Effort (TAE) is currently used in the [Commonwealth Southern Squid Jig Fishery](#) (SSJF) managed by the Australian Fisheries Management Authority (AFMA) — by limiting effort. AFMA restricts how many boats can fish in the area of the fishery and regulate what gear they can use. Trigger catch levels also apply to both the SSJF and other fishing gears, such as trawl.

In some respects, ITE systems are somewhat similar to ITQ systems in terms of the allocation issues and the complexity and cost of supporting their administration. It would be questionable that this relatively small fishery might warrant an ITE system. Additionally, all the issues and cost around allocation, mentioned above for limiting entry also apply to an ITE system.

Issues of introducing Total Allowable Effort include:

- Determination of the criteria for ITEs.
- Determination of an allocation process for ITEs.
- Determination of the access parameters for ITEs
- Would ITEs need to be linked to a licence?

Cost

- Would require substantial resources to implement.
- Would require substantial changes to the management plan and consequential amendments to other relevant legislation.
- Would require substantial changes in FILMS.
- Cost recovery (management and research) would need to be factored in to the licence granting and renewal fees.
- Reduced access rights for existing scalefish licence holders that do not qualify.
- RMPAT appeals process would be required.
- Will not necessarily reduce total catch.

Benefit

- Is likely to limit effort.

Key Issues

In the Commonwealth Southern Squid Jig Fishery the unit of effort relates to number of machines not the number of jigs used on a machine — currently set at 10 machines. All scalefish licence holders are limited to a maximum of five squid jigs. It would be difficult to determine a unit of effort for this fishery.

4.11 Total Allowable Catch

Introduction of Individual Transferable Quota (ITQs)

An individual transferable quota (ITQ) is an allocated privilege of landing a specified portion of the total allowable catch (TAC) of a specific fish species in the form of quota shares. This differs from the traditional limited licenced access approach to commercial fisheries.

ITQs divide the total annual catch quota into smaller individual portions. ITQs are generally transferable, which means fishing vessel owners can sell their ITQ shares or buy someone else's shares or, in some cases, lease their quota shares — depending on how much they want to participate in the fishery. ITQs are not considered property, but a privilege to catch a share of the total allowable catch of a fish species in a given year. The initial allocation criteria for ITQs are generally controversial decisions established by the Department — usually based on the historical catch of vessels — to benefit current active fishing vessel owners.

ITQ management is intended to reduce overcapitalisation, promote conservation of stocks, improve market conditions, and promote safety in the fishing fleet. ITQ management guarantees a share of the catch, thus generally slowing or eliminating the "race to fish" and allowing fishermen flexibility over the rate and timing of their fishing.

A TAC is not generally used for cephalopod species, but if pursued would have similar issues and cost/benefits to Total Allowable Effort.

Issues of introducing Total Allowable Catch include:

- Determination of the criteria for ITQs.
- Determination of an allocation process for ITQs.
- Determination of the access parameters for ITQs
- Would ITQs need to be linked to a licence?

Cost

- Would require substantial resources to implement.
- Would require substantial changes to the management plan and consequential amendments to other relevant legislation.
- Would require substantial changes in FILMS.
- Cost recovery (management and research) would need to be factored in to the licence granting and renewal fees.
- Reduced access rights for existing scalefish licence holders that do not qualify.
- RMPAT appeals process would be required.
- Will not necessarily reduce total effort.

Benefit

- Is likely to limit catch.

Key issues

This management tool is not generally used to limit the take of cephalopod species. In the Commonwealth Southern Squid Jig Fishery the unit of effort relates to number of machines not a unit of catch. It would be difficult to determine a unit value for this fishery based on the biology of the species — consequently the introduction of ITQs would be problematic for this fishery.

APPENDIX 1 – Southern Calamari Assessment Regions

Catch and effort data was analysed by region. The largest region is South East Waters with no catch limit for holders of a fishing licence (southern calamari). All other licence holders are restricted to 10 calamari in a 24 hour period. Holders of a fishing licence (scalefish A) or (scalefish B) are able to access all other waters with no limit on catch.

REGION	LICENCE TYPE	FISHING BLOCKS
South East Waters	Southern calamari licence	6H12, 6H13, 6H31, 6H32, ES13, ES14, ES15, ES16, 6H33, 6H34, 7H11, 7H12, 7H13, 7G21, 7G22, 7G23, 7G24, 7G25, ES17, ES18, ES19, ES20, ES01, ES02, ES03, ES04, ES21, 7G11, 7G12, 7G13, 7G14, 7G31, 7G32, 7F41, 7F43
East Coast	Scalefish A or B	5H11, 5H12, 5H13, 5H14, 5H15, 5H31, 5H32, 5H33, 6H11, ES11, ES12
North East Coast	Scalefish A or B	ES09, ES10, 4F41, 4F42, 4G31, 4G32, 4G41, 4G42, 4H32, 4H33, 4H34, 3G41, 3G42, 3H31, 3H32, 4G21, 4G22, 4H11, 4H12, 4H13, 4H14, 4H31, 4H32, 4H33, 4F3, 5F11, 5F12, ES08
North West Coast	Scalefish A or B	4D21, 4D22, 4D3, 4D41, 4D42, 4D43, 4D44, 4E1, 4E31, 4E32, 4E41, 4E42, 3C41, 3C42, 3D31, 3D32, 4C2, 4D1
West Coast	Scalefish A or B	6E32, 6E31, 6E12, 6E11, ES07, 5E3, 5D41, 5D42, 5D21, 5D22, 7F42, ES05, ES06, 7E21, 7E22, 7E4, 7F31, 7F32