

Queensland east coast Spanish mackerel fishery

Consultation on management action

Discussion paper

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Background

In 2021, Fisheries Queensland completed a stock assessment of Australian east coast Spanish mackerel using the most current biological data and commercial and recreational catch data. **This stock assessment estimated that the number of east coast Spanish mackerel (biomass) was between 14% and 27% of unfished levels, and most probably at around 17%** (see Figure 1).

The latest Status of Australian Fish Stocks Report for the fishery, published by the Fisheries Research and Development Corporation, has classified the east coast Spanish mackerel stock as 'depleted'.

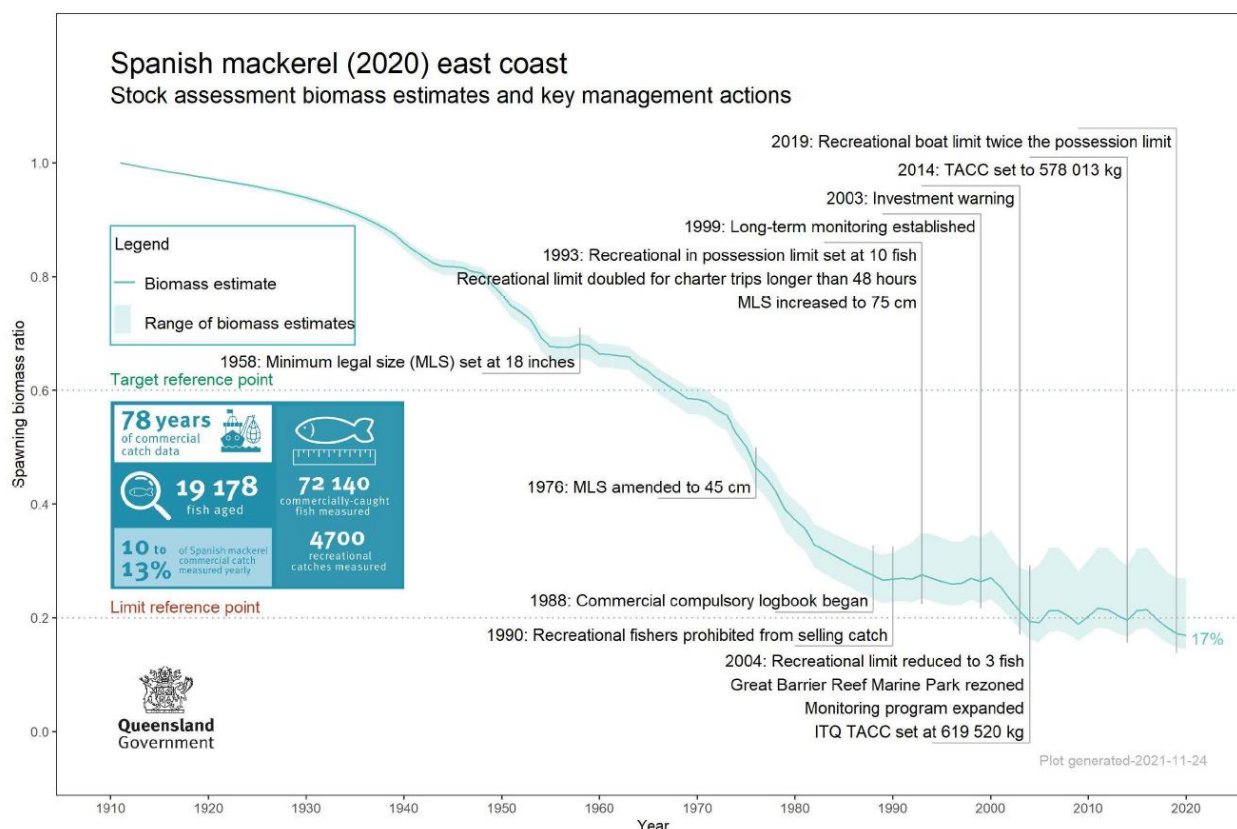


Figure 1: Chart of 2020 Australian east coast stock assessment biomass estimates and key management actions for Spanish mackerel

In line with best practice, Fisheries Queensland conducts independent reviews of stock assessments and other scientific reports on a regular basis.

An independent review of the Spanish mackerel stock assessment was conducted by a former Commonwealth Scientific and Industrial Research Organisation (CSIRO) fisheries scientist. The reviewer agreed the data was used appropriately in the assessment, that the assessment model itself was suitable and agreed with the stock assessment’s recommendations on data, monitoring and research and future management of the stock. However, the reviewer questioned the model setting for a lower resilience in the ability of Spanish mackerel to bounce back from high fishing pressure – referred to as ‘steepness’.

The department conducted further analysis of the stock assessment model based on the concerns raised. The analysis found a higher steepness value was not supported by model testing and that the stock assessment had used a more appropriate value. A higher value was also in contrast to findings from the most up-to-date and comprehensive examination of data from independent studies to determine overall trends of ‘steepness’.

The stock assessment, independent review and Fisheries Queensland's response to the independent review were presented to the independent Queensland Sustainable Fisheries Expert Panel. The Expert Panel commented that, while the reviewer's findings were justified, the department's response was considered appropriate. Further, **the Expert Panel considered that the most responsible way forward is to accept the estimated biomass of 17% as the most credible scenario and to make management decisions accordingly.**

The need for action is further supported by longstanding concerns about sustainability, with evidence of a 70% reduction in the number of Spanish mackerel spawning aggregations within two decades, a decline in historically important spawning aggregations from waters east of Cairns, a reduction in the size and frequency of spawning aggregations in the Lucinda region and a long-term decline in commercial catch rates.

Under Commonwealth and Queensland harvest strategy guidelines, immediate management action is required to rebuild fish stocks when the biomass falls below the limit reference point of 20% biomass.

Doing nothing is not an option and would go against the fundamental principles of the *Queensland Sustainable Fisheries Strategy: 2017–2027*, the main objective of the *Fisheries Act 1994* and the Queensland's Government's responsibility to ensure our public fishery resources are managed in a responsible and sustainable manner.

The sustainable management of the Spanish mackerel fishery is also crucial in maintaining ongoing export (accreditation) approval under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth).

This discussion paper is seeking feedback on possible management measures to rebuild the east coast Spanish mackerel stock to sustainable levels (40% of unfished biomass).



The stock assessment, the independent review of the assessment and the response to the review is available at <https://era.daf.qld.gov.au/id/eprint/8226>.

Information on the Expert Panel (including membership, terms of reference and meeting communiques) is available at www.daf.qld.gov.au/business-priorities/fisheries/sustainable/sustainable-fisheries-expert-panel.

Information on the Spanish mackerel fishery working group is also available at www.daf.qld.gov.au/business-priorities/fisheries/sustainable/fishery-working-groups/spanish-mackerel-fishery-working-group.

Have your say

No decisions have been made and none will be made until after consultation.

Fisheries Queensland is seeking feedback from commercial, recreational, charter and traditional fishers, environmental groups and other stakeholders on management measures presented in this discussion paper to rebuild the Queensland east coast Spanish mackerel fishery. Feedback on this discussion paper will be used to develop options for management action and a draft harvest strategy to rebuild this important fishery.

Different management measures will have different impacts on individual sectors within the fishery (e.g. commercial fishers, recreational fishers, traditional fishers, fish and chip shop owners, tackle retailers and environmental organisations). Therefore, it is important to understand the preferences of people who have an interest in the fishery so we can make a balanced decision on final management arrangements.

The fastest and easiest way to provide your feedback is to complete the online survey at:

daf.engagementhub.com.au/spanish-mackerel-2022

The survey questions are also available at the end of this document if you would prefer to print out the survey and post your submission to:

Spanish mackerel fishery discussion paper
Department of Agriculture and Fisheries
GPO Box 46
Brisbane Qld 4001

PLEASE NOTE: The survey questions are designed to seek your input – **they are not a voting tool.** Answers to these questions will be used to help develop options for management action and provide an insight into the preferences of all stakeholders.

Submissions close 5 pm, Wednesday 5 May 2022.



For more information, email fisheriesmanagers@daf.qld.gov.au or call 13 25 23.

If you would like to receive updates on the Spanish mackerel consultation, email your details to fisheriesmanagers@daf.qld.gov.au.

About the fishery

The east coast Spanish mackerel commercial fishery is a line-only fishery that exclusively targets Spanish mackerel (*Scomberomorus commerson*) by trolling or towing lures and baited lines behind the vessel and near the surface of the water.

Spanish mackerel are also a highly popular target species for recreational and charter fishers. Recreational and charter fishers take Spanish mackerel by trolling or towing lures and baited lines behind boats, fishing from rocky headlands and beaches, or using spearguns around reefs and rocky outcrops.

Catch statistics

During September to November each year, Spanish mackerel school to form one of the most notable and predictable spawning aggregations of fish on the Great Barrier Reef. These spawning aggregations are primarily located in the Lucinda region in waters north of Townsville. Approximately 40% of the total Queensland commercial harvest is taken from this region each year during the spawning season.

Commercial harvest peaked at around 1000 tonnes per year during the 1970s, before declining to 700 tonnes per year in the 1990s and early 2000s. In 2004, there was a further decline following the rezoning of the Great Barrier Reef Marine Park and introduction of a total allowable commercial catch (TACC) of 619.5 tonnes. Commercial harvest has remained stable since this time at about 300 tonnes per year and approximately 50% of the TACC has been caught each year on average.

Recreational harvest has also remained relatively stable since 2004 at around 180 tonnes each year (including charter). However, charter harvest has steadily declined since 2009 and is at an all-time low, possibly, in part, reflecting the recent impacts of COVID-19. More than a quarter of recreationally caught Spanish mackerel are released.

The fishery also includes a traditional fishing sector, which remains the least understood of all sectors. However, it is assumed that this sector has comparatively low levels of effort, with fishing activities aligning closely with the recreational fishing sector.

The stock is also fished in northern New South Wales, where approximately 48 tonnes is harvested each year (9.5% of total harvest across Queensland and New South Wales).

There are strong concerns about the hyperstability of Spanish mackerel due to its aggregating behaviour. Other issues include latent effort in the fishery (fishing capacity such as licences and quota authorised for use, but not currently being used), the influence of environmental drivers on recruitment success and unquantified sources of fishing mortality such as depredation (typically by sharks) and post-release mortality.

CASE STUDY: What is hyperstability?

Hyperstability occurs when catch rates remain high even as fish populations decline. Fisheries that target fish spawning aggregations can exhibit hyperstability because these aggregations provide easy opportunities for fishers to target and catch large quantities of fish, resulting in an 'illusion of plenty'.

A prime example of hyperstability is the North Atlantic cod fishery. With the improvement in fishing technology, catch rates skyrocketed in the 1960s to more than 800 000 tonnes per year, before dropping to zero by the early 1990s. North Atlantic Cod naturally gather in massive schools and as the population declined, the cod aggregated together in even larger numbers giving the impression the fishery was in great shape. This combined with fishers who had centuries of knowledge about when and where North Atlantic Cod would aggregate, led to the collapse of the species.

Reference: Hamilton, R.J., Almany, G.R., Stevens, D. et al. Hyperstability masks declines in bumphead parrotfish (*Bolbometopon muricatum*) populations. *Coral Reefs* 35, 751–763 (2016). <https://doi.org/10.1007/s00338-016-1441-0>.

Economic and social value

The east coast Spanish mackerel fishery is an iconic fishery in Queensland, supplying fresh local seafood to coastal communities, providing a valuable source of recreation for many Australians and maintaining the connection between traditional fishers and their sea country.

In 2018–19, the fishery's commercial sector contributed 66 full-time equivalent jobs and \$6.7 million (including flow-on effects) to the economy, while recreational fishers were estimated to have spent approximately \$6.8 million on Spanish mackerel fishing trips. The total value of commercially landed catch was estimated to be \$3.4 million, with around 90% sold in Queensland and the remainder sold interstate. Beach prices for Spanish mackerel were estimated to be approximately \$12.10/kg.

The average commercial Spanish mackerel fisher does not specialise in the fishery, earning around 72% of their revenue in other fisheries. The commercial sector is almost entirely comprised of part-time boats, except for a smaller group (20–25 boats) of dedicated Spanish mackerel fishers that primarily target spawning aggregations. These fishers earn more than 80% of their revenue in the fishery and are responsible for approximately 50% of the total commercial harvest.



More economic and social data for Queensland's fisheries is available at www.daf.qld.gov.au/business-priorities/fisheries/monitoring-research/data/economic-and-social-data.

Current management arrangements

Under the *Fisheries Act 1994*, the fishery is currently managed via a mixture of input controls, which limit the amount of fishing effort put into the fishery, and output controls, which directly limit the amount of fish harvested (see Table 1).

Of the known key reefs for Spanish mackerel spawning on Queensland's east coast, two are classified as no-take (green) zones within the Great Barrier Reef Marine Park. Green zones cover approximately 33% of the Great Barrier Reef Marine Park area. The two known reefs that are Spanish mackerel spawning reefs in green zones cover less than 1% of the Great Barrier Reef Marine Park area.

Table 1: Overview of current management arrangements for the east coast Spanish mackerel fishery

Sector	Input controls	Output controls
All	Gear restrictions	Minimum legal size
Commercial	<ul style="list-style-type: none">Limited entryVessel and tender restrictions	<ul style="list-style-type: none">Total allowable commercial catchIndividual transferable quota
Recreational (incl. charter)	Nil	<ul style="list-style-type: none">In-possession limitsBoat limits (primarily to address black-marketing of priority species)
Traditional	Limited to fishing for purposes of satisfying personal, domestic or non-commercial needs, carried out in accordance with the particular traditional laws and customs of the native title holders	

Objective of management action

Under the *Queensland Sustainable Fisheries Strategy: 2017–2027*, the minimum standard for all Queensland's fisheries is to achieve at least a maximum sustainable yield of 40% to 50% of unfished biomass. For stocks assessed to have a biomass below 20%, a timeframe for rebuilding back to sustainable levels with a reasonable level of certainty should be defined within a range of the minimum time, and twice the minimum time, taken to rebuild the stock in the absence of fishing.

For east coast Spanish mackerel, this equates to a rebuilding timeframe of between 7 and 14 years.

To achieve a rebuilding timeframe of 7 years, there would need to be a 100% reduction in harvest, meaning a total closure of the fishery. To achieve a rebuilding timeframe of 14 years, there would need to be at least a 35% reduction in the total harvest of east coast Spanish mackerel. The combination of management measures implemented would inform the overall reduction in harvest across all sectors and the rebuilding timeframe.

The benefits of adopting a shorter rebuilding timeframe of 7 years and a total closure include:

- maximum protection for the stock with the fastest rebuilding time and greatest chance of successful recovery
- management restrictions can be lifted sooner
- simpler to communicate and comply with
- easier to identify black-marketing.

However, there are potential risks associated with this approach, including:

- significant socio-economic impacts with flow-on effects for all stakeholders, including commercial and recreational fishers, charter operators, tackle store owners, seafood processors, tourism operators, etc.
- catch and effort data would no longer be available, meaning fishery-independent research and surveys will be required to monitor fishery performance and stock recovery
- lack of supply affecting future market access
- removal of supply of locally caught Spanish mackerel to Queenslanders on the east coast
- devaluation of commercial fishing endorsements and equipment
- increased risk of effort shift into other fisheries
- increased risk of black-marketing and non-compliance.

In comparison, the benefits of adopting a longer rebuilding timeframe of 14 years with a 35% reduction in harvest include:

- lower socio-economic impacts by allowing a moderate level of fishing to occur
- maintenance of local supply and market for Spanish mackerel, supporting fishing-related businesses (commercial fishers, seafood wholesalers, tourism operators, etc.)
- catch and effort data would still be collected to monitor fishery performance and stock recovery.

However, the potential risks of a longer rebuilding time and allowing moderate fishing to continue include:

- longer timeframes to rebuild the stock
- less protection for the stock and a lower chance of successful recovery
- export accreditation and other Commonwealth approvals may be affected
- greater risk that stronger measures might be required in the future, such as a full closure of the fishery.

The preference is to rebuild the stock to sustainable levels (40% of unfished biomass) allowing some targeted fishing, providing it can be achieved within an appropriate timeframe.

However, if this cannot be achieved or the stock continues to decline, the east coast Spanish mackerel fishery may have to be closed for a period of time, similar to snapper in South Australia.

CASE STUDY: Action to protect the future of snapper stocks in South Australia

Like Spanish mackerel, snapper (*Chrysophrys auratus*) is an iconic fish in Australia and a primary target species for commercial, recreational and charter boat fishing sectors in a range of jurisdictions, including South Australia, Victoria, Western Australia and Queensland. Similar to Spanish mackerel, snapper in South Australia aggregate and are targeted by fishers due to their strong schooling behaviour.

In South Australia, the decline of snapper stocks had been noted anecdotally by the recreational, commercial and charter sectors for several years. This was supported by science and stock assessments, with low numbers of juvenile snapper entering the fishery over a long period of time, combined with a decline in the overall biomass of the fishery and a reduction in commercial catch rates.

Since 2011, South Australia made incremental management changes in response to continued evidence of stock decline. Despite these incremental changes, snapper stocks continued to decline. In 2019, tough decisions were announced to secure the long-term future of the snapper fishery following consideration of the latest available science and feedback from all stakeholders.

Commencing 1 November 2019, the snapper fishery was closed (for all sectors) for the West Coast, Spencer Gulf and Gulf St Vincent regions until 31 January 2023.

In the South East Region, the stock has remained at sustainable levels and has been kept open, subject to strict new provisions that have evolved over time. These have included a seasonal closure, a total allowable commercial catch limit and quota management, a total allowable recreational catch limit, daily recreational bag and boat limits, mandatory recreational catch reporting, size limits, charter access through tags and regulated daily passenger limits, as well as encouraging good handling and release practices to maximise survival of released snapper.

Reference: Government of South Australia, Department of Primary Industries and Regions, <<https://www.pir.sa.gov.au/fishing/snapper>>.

Recent examinations of global fish stocks indicate that 'data-rich' stocks with formal model-based assessments of biomass and fishing mortality have a more positive outlook and, on average, have recovered to sustainable levels. There is evidence that more than 150 overfished stocks around the world have recovered within a 10-year period under effective fisheries management.

While the east coast Spanish mackerel stock is at risk of further decline, it is a 'data-rich' stock supported by a robust monitoring and assessment program. Spanish mackerel also has the right management framework in place (including recreational in-possession limits and a total allowable commercial catch) to take immediate and effective action.

Overall, this means the successful recovery of Spanish mackerel should be achievable in a reasonable timeframe if the management response is appropriate and timely.

Management measures

The following management measures can be used to reduce fishing pressure and allow the east coast Spanish mackerel stock to rebuild to sustainable levels.

In line with the principles of the *Queensland Sustainable Fisheries Strategy: 2017–2027*, any combination of management measures should aim to minimise impacts on fishing efficiency (prioritising output controls over input controls), address fishing pressure across all sectors equitably, maintain historical catch shares and mitigate unintended effects such as increased post-release mortality or effort shift into low-capacity fisheries.

All fishing sectors have a shared responsibility in the management of this stock. This means an equitable approach that reduces fishing pressure from all sectors is required for successful stock rebuilding. The proposed management of the Spanish mackerel fishery assumes a 60% commercial and 40% recreational (including charter) catch share arrangement, which reflects historical catch shares since the introduction of quota in 2004. Fisheries Queensland will consider the consultation feedback received and aim to maintain this catch share in determining appropriate combinations of management measures to rebuild the stock. Different combinations of management measures will have different impacts on, and rebuilding times for, the Spanish mackerel fishery.

Total allowable commercial catch

Quota units are used in commercial fisheries across Australia to manage the sustainability of fish stocks and improve catch rates and profitability by controlling competition and allowing fishers to plan their activities and minimise their operational costs. A quota unit is not a fixed weight of fish – it is a fixed percentage of fish.

Each commercial fisher is allocated a number of shares, or quota units, in a fishery, which can be bought, sold or leased. These quota units are a percentage of the total allowable commercial catch (TACC) for that fishery. The TACC is the total catch limit for the commercial sector in a fishery and does not include fish caught by recreational, charter or traditional fishers. The TACC can be lowered or raised in response to changes in a stock's biomass and is the most direct method to control commercial harvest levels.

The current TACC for east coast Spanish mackerel is 578 tonnes but, on average, only half has been used or landed each year since 2004. Consequently, any revision to the TACC will need to take this into consideration.

Table 2 presents the estimated effects of setting a revised TACC, which, in combination with other measures, could rebuild the stock within the required timeframes.

Table 2: Estimated effects of setting a revised total allowable commercial catch

Management measure	Estimated reduction in harvest	
	Commercial	Recreational
Set the total allowable commercial catch (TACC) to:	53 tonnes (9% of current TACC)	N/A
	107 tonnes (18% of current TACC)	N/A
	160 tonnes (28% of current TACC)	N/A
	214 tonnes (37% of current TACC)	N/A

Recreational in-possession and boat limits

Recreational in-possession limits are a direct control on recreational harvest and are used to:

- conserve species that are sought-after or easily caught
- ensure everyone has the opportunity for a good fishing experience
- reduce black-marketing
- promote responsible fishing.

In-possession limits do not apply on a per day basis, meaning that any fish caught previously but still in your possession (e.g. at home in the freezer), are included in the in-possession limit.

Boat limits are in effect for nine priority black-market species – mud crab, prawns, snapper, black jewfish, barramundi, Spanish mackerel, shark, tropical rock lobster and sea cucumber. For these species, no more than two times the in-possession limit for that species is permitted onboard a boat with two or more people on board at any time. For example, the current individual in-possession limit for Spanish mackerel is three, with a boat limit of six. Boat limits may help to reduce the overall recreational harvest; however, their primary purpose is to combat black-marketing by preventing commercial quantities being taken on a recreational fishing trip. Boat limits do not apply to licensed charter fishing trips.

Boat ramp and recreational survey data indicate that, of those recreational fishers who landed Spanish mackerel in Queensland, approximately 70% only landed one Spanish mackerel per trip. Consequently, any revision to the in-possession limit will need to take this into consideration.

Table 3 presents the estimated effects of setting a revised recreational in-possession and boat limits, which, in combination with other measures, could rebuild the stock within the required timeframes.

Table 3: Estimated effects of setting a revised recreational in-possession and boat limits

Management measure	Estimated reduction in harvest	
	Commercial	Recreational
Set the recreational in-possession limit and boat limit (currently 3 per person / 6 per boat) to:	1 per person (2 per boat)	N/A
	1 per person (3 per boat)	N/A
	1 per person (6 per boat)	N/A
	2 per person (2 per boat)	N/A
	2 per person (4 per boat)	N/A
		9–18%
		7–13%
		6–12%
		8–16%
		2–4%

Minimum legal size limit

Minimum legal size limits prevent the take of fish below a certain size and are intended to protect juvenile fish, providing a greater opportunity for those fish to spawn at least once and contribute to recruitment. Minimum legal size limits can allow fish to grow to a greater size, with potential benefits for the value per fish for commercial fishers and the availability of 'trophy-sized' fish for recreational fishers.

Spanish mackerel typically reach sexual maturity at 90 cm total length, which is above the current minimum legal size of 75 cm. Increasing the minimum legal size to 90 cm could potentially allow a greater proportion of the stock to reproduce, leading to faster rebuilding of the stock.

However, it is important to note there are implications for increasing the minimum size limit for Spanish mackerel, including dangers associated with releasing large active fish and poor survival of fish that have been released due to predation by sharks or the stress of being captured. Previous research has suggested that increasing the minimum legal size for Spanish mackerel would have little benefit in improving egg production or the yield per fish.

It should also be noted that only a small proportion of Spanish mackerel caught by commercial and recreational fishers are in the 75 cm to 90 cm size range. Therefore, increasing the size limit would likely have limited effect on rebuilding the stock, even without considering the low survival of released fish.

Table 4 presents the estimated effects of setting a revised minimum size limit to better align with the size at which half the population is sexually mature (90 cm), which, in combination with other measures, could rebuild the stock within the required timeframes.

Table 4: Estimated effects of setting a revised minimum size limit

Management measure		Estimated reduction in harvest	
		Commercial	Recreational
Set the minimum legal size (currently 75 cm) to:	90 cm	4–7%	7–14%
	85 cm	1–2%	3–6%

Seasonal closures

Seasonal closures are used in Queensland and Commonwealth fisheries and by environmental regulatory authorities to prevent people from fishing at certain times of the year to protect species at vulnerable times in their life cycle – such as when fish are migrating in large numbers or in the lead up to, during or after spawning events. While they are not currently used in the Spanish mackerel fishery, closures may provide some protection to Spanish mackerel stocks and help rebuild the stock.

Spanish mackerel form large spawning aggregations in reefs off north Queensland each year between September and November. These aggregations contribute substantially to the stock's overall reproduction level during the spawning months and currently support up to 40% of the total commercial harvest. Spanish mackerel are also thought to aggregate throughout the year when feeding and migrating.

Seasonal closures can be an effective tool in reducing harvest and protecting vulnerable aggregations. Fishery-wide or regional closures may afford more protection than fine-scale area closures, especially for highly mobile species like Spanish mackerel.

Due to the seasonal movement patterns of Spanish mackerel up and down Queensland's east coast each year, seasonal closures could be applied separately in the northern and southern areas of the fishery. This would prove less restrictive than fishery-wide closures while offering a comparable level of protection.

Closures are not a direct control on harvest and may also result in the redistribution of fishing effort outside the closure period or to other fisheries. Longer closures may have significant impacts on market access and can disproportionately affect some fishers that have historically operated during the closure periods.

Table 5 presents the estimated effects of introducing seasonal closures, which, in combination with other measures, could rebuild stocks within the required timeframes.

Table 5: Estimated effects of introducing seasonal closures

Management measure	Estimated reduction in harvest		
	Commercial	Recreational	
Introduce seasonal closures*	16 weeks all east coast OR 8 weeks each north & south	13–41%	13–26%
	12 weeks all east coast OR 6 weeks each north & south	9–30%	10–19%
	8 weeks all east coast OR 4 weeks each north & south	6–20%	6–13%
	4 weeks all east coast OR 2 weeks each north & south	3–10%	3–9%

* Estimated effects of seasonal closures assume that closure periods will include February, March, October and November

Fine-scale area closures

Fine-scale area closures (or regulated waters) prevent people from fishing in certain areas, including:

- where a population of endangered or threatened species is known to live
- where fish congregate in the lead up to, during or after spawning
- where fish may mass or get trapped near artificial barriers and be susceptible to overfishing
- to separate incompatible uses (e.g. spearfishing in a swimming area).

These can be highly effective for species that have limited movement or evidence of localised depletion, but are generally less effective for a highly mobile species like Spanish mackerel. However, there is evidence that Spanish mackerel return to the same reefs for spawning, meaning that they may benefit from area closures that protect key spawning reefs (noting that two of the key spawning reefs are already protected by Commonwealth and state marine park zoning).

The effects of fine-scale area closures are difficult to estimate for Spanish mackerel and further monitoring and research would be required to assess their effectiveness. This form of management can also be more complex (if they include multiple area or reef-based closures) and make compliance with regulations more challenging.

Better recreational fishing data

The Spanish mackerel stock assessment has one of the largest datasets of all Queensland fisheries and includes more than:

- 231 000 Queensland commercial logbook records
- 7 000 New South Wales commercial logbook records
- 37 600 Queensland charter logbook records
- 70 100 recreationally and commercially caught Spanish mackerel measured through routine biological monitoring and more than 1 400 boat ramp surveys
- 18 100 age data records.

Understanding the catch and effort and participation rate of recreational fishers is an important part of sustainably managing and assessing Queensland's fisheries. The recreational fishing data used in the Spanish mackerel stock assessment is collected through statewide recreational fishing surveys and boat ramp surveys. These surveys have been extensively designed to provide statistical rigour in the results.

The latest statewide recreational fishing survey contacted more than 8500 households to determine recreational fishing participation rates, with more than 2100 households taking part in a 12-month logbook program to record fishing activity and expenditure. More than 2900 boat ramp surveys are conducted across the state each year to monitor changes in effort, catch rates, value of recreational fishing and fish lengths over time.

Notwithstanding this, many stakeholders have expressed a desire for better recreational catch data for Spanish mackerel. Improved monitoring and research is also a foundational reform of the *Queensland Sustainable Fisheries Strategy: 2017–2027* and includes several actions relating to improved data collection, additional monitoring of key biological stocks and the use of novel technologies such as apps.

Other jurisdictions such as Victoria and South Australia have introduced mandatory recreational catch reporting for at-risk or high-value species such as rock lobster and snapper. There are a range of ways that recreational catch can be reported in a timely and cost-effective way, such as using modern technology like smartphone apps.

Shark depredation

Recreational and commercial fishers in Queensland, and in other Australian jurisdictions, are anecdotally reporting increases in shark depredation. Shark depredation occurs when a hooked fish is partially or completely removed by a shark before the catch can be retrieved by the fisher. While the 2020 east coast Spanish mackerel stock assessment did investigate the potential effects of shark depredation on biomass, there is limited data on shark depredation. Shark depredation has been identified as a key research priority by Fisheries Queensland and there are a number of research projects currently underway.

Commercial fishing for shark and ray (including hammerhead shark) on Queensland's east coast is primarily managed through a TACC, as well as in-possession and maximum size limits for commercial fishers who do not hold a specific endorsement (the 'S' fishery symbol). Over the past five years, the Queensland east coast shark and ray fishery has landed, on average, less than 25% of the total TACC for shark, suggesting there may not be a strong market demand for shark (commonly called flake).

Next steps

Feedback from this first round of consultation will inform the development of options for management action and a draft harvest strategy for the fishery. Further consultation will be conducted before a preferred option is presented to the Queensland Government for a final decision.

Survey questions

Your say matters and we want to hear from you about which management measures you prefer. The questions with an asterisk (*) are mandatory.

Question 1. Tell us who you are:

Name:

Address:

Postcode*:

Email address:

Question 2. What sector of the Spanish mackerel fishery are you part of?*

- Commercial fisher
- Recreational fisher
- Charter fishing operator
- Traditional fisher / Traditional Owner
- Seafood wholesaler/marketer
- Hospitality (restaurant, café, fish and chip shop) owner/worker
- Fishing tackle retailer
- Environmental group, industry peak body or other non-government organisation
- Interested community member
- Other

Question 3. How many times per year do you go fishing for Spanish mackerel?

Question 4. How many Spanish mackerel on average do you catch each trip?

Question 5. Which rebuilding timeframes should be considered?*

- 7 years
- 9 years
- 11 years
- 14 years

Question 6. The total allowable commercial catch (TACC) should be set at:

- 53 tonnes
- 107 tonnes
- 160 tonnes
- 214 tonnes

Question 7. The recreational in-possession and boat limit should be set at:

- 1 per person, 2 per boat
- 1 per person, 3 per boat
- 1 per person, 6 per boat
- 2 per person, 2 per boat
- 2 per person, 4 per boat

Question 8. The minimum size limit for Spanish mackerel should be set at:

- 75cm
- 85cm
- 90cm

Question 9. Do you support a whole east coast seasonal closure?

- Yes
- No

Question 10. How long should a whole east coast seasonal closure be?

- 16 weeks
- 12 weeks
- 8 weeks
- 4 weeks

Question 11. Do you support a split north/south seasonal closure?

- Yes
- No

Question 12. How long should a split north/south seasonal closure be?

- 8 weeks each north and south
- 6 weeks each north and south
- 4 weeks each north and south
- 2 weeks each north and south

Question 13. Would you support different recreational and commercial seasonal closures?

- Yes
- No

Question 14. Which recreational combination would you prefer?

- Higher recreational in-possession limit and a longer recreational seasonal closure
or
- Lower recreational in-possession limit and a shorter recreational seasonal closure

Question 15. Would you support better recreational catch reporting?

Yes

No

Question 16. Are there any other issues, opportunities or solutions that you would like to raise?
