

# Welcome to the Marlborough Sounds Blue Cod information session

## Why are we here?

Over the years, pressure on blue cod/rāwaru in the Marlborough Sounds/Te Tauihu has been significant, with high fishing effort and additional stressors such as sedimentation and marine heatwaves.

Our recent survey results show that overfishing is still happening and we need to take action.

In 2022, the commercial catch limit (TACC) was reduced. In 2023, a local advisory group started to discuss issues and identify potential solutions to high fishing pressure.

## We are now:

- consulting on extending the seasonal closure from the end of 2025 onwards;
- asking for your help to develop measures for long-term sustainability of the fishery.

## Today we want to:

- Answer your questions about the fishery and key issues.
- Present suggested measures to address the issues.
- Hear your thoughts on what to do to ensure a sustainable fishery for the future.

Have a look around the room at posters on the fishery, monitoring, issues and potential measures. Please ask questions, share your views, and let us know about other relevant information.

## How to have your say:

Consultation ends on 1 December 2024.

You can make a submission using the template provided at:

-  [www.mpi.govt.nz/consultations](http://www.mpi.govt.nz/consultations) 
-  [FMSubmissions@mpi.govt.nz](mailto:FMSubmissions@mpi.govt.nz)
-  Marlborough Sounds Blue Cod Review Fisheries New Zealand – Private Bag 14, Nelson 7042

Image: T. Enderby



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# Blue cod in the Sounds – Biology

Blue cod is a complex species in the sandperch family. The species is relatively slow growing and long lived, with distinct life stages, behaviours, and reproductive strategies.

## Life history

- Reaches 30+ years and 60cm+ in length.
- Females can change sex to male.
- Considered low productivity.
- No functional swim bladder, so less prone to barotrauma than other species.

## Diet

- A carnivore, eating small fish, crustaceans, molluscs, marine worms and echinoderms (e.g. kina).

## Habitat

- Endemic to New Zealand.
- A bottom-dwelling species.
- Most common south of Cook Strait.
- Found on reef edges, gravel, biogenic reef, and sand close to rocks in up to 150m depth.



## Reproduction

- Reaches sexual maturity in the Sounds at 21-26 cm or about 3-6 years.
- Spawning is thought to occur in late winter to spring.
- A serial/batch spawner, spawning multiple times a season.

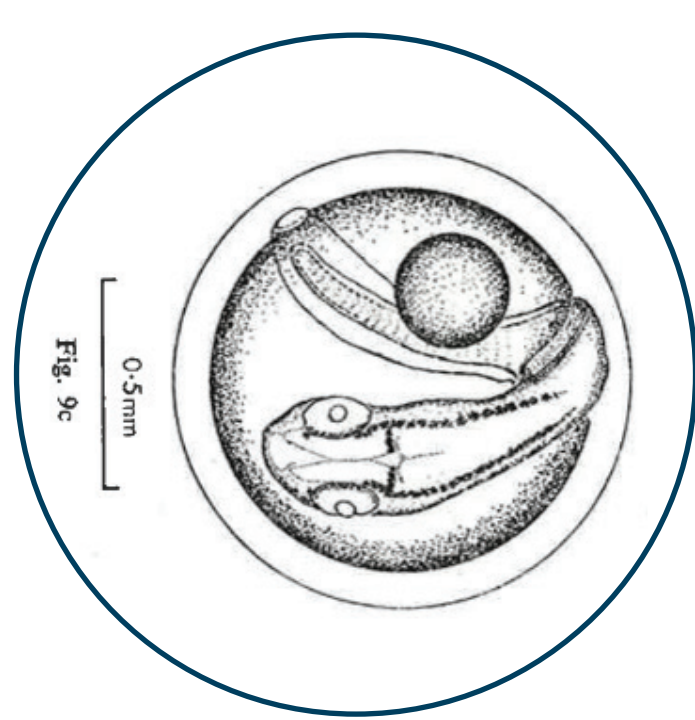
## Environment

- Relies on structure created by other plants/animals.
- Associated with higher water clarity and lower temperature. Prefer water under 21°C.
- An opportunistic predator, they maintain balance in coastal reef and reef edge ecosystems.

## Movement

- Territorial with a limited adult range.
- Juveniles move to secure a home.
- Habitat needs and short egg and larval phases lead to discrete populations.

## Life Cycle



### Pelagic egg and larvae (0-10 days)

- Suspended and transported in the water column before settling on the seabed.



### Juvenile (10 days to 3-6 years, or up to 21-26cm)

- Usually rusty brown in colour and can move moderate distances.
- Small cod (<10cm) inhabit shallow bryozoan and mussel beds, shell drifts and reef/sand borders.



### Adult (3-6 years to 32+ years or 21-26cm to 60+cm)

- An grey/green colour at sexual maturity, and deep blue at 35cm.
- Become territorial with a home range in cobble, shell, and biogenic reef habitats.
- One male establishes a 'harem' with several females.
- Annual spawning cycle, with sites uncertain but ripe cod found across the area.

Images: D.A Robertson (1975), and M. Morrison/ NIWA (BEN2021-01 in prep.)

## More about their reproductive strategy – an important point!

Blue cod are *diandric protogyneous hermaphrodites*, which means females can change sex to male, but not all do. Sex change is thought to be suppressed by the presence of large dominant males, so if they are removed (by fishing or natural mortality), one or more females will transition into males to replace them.

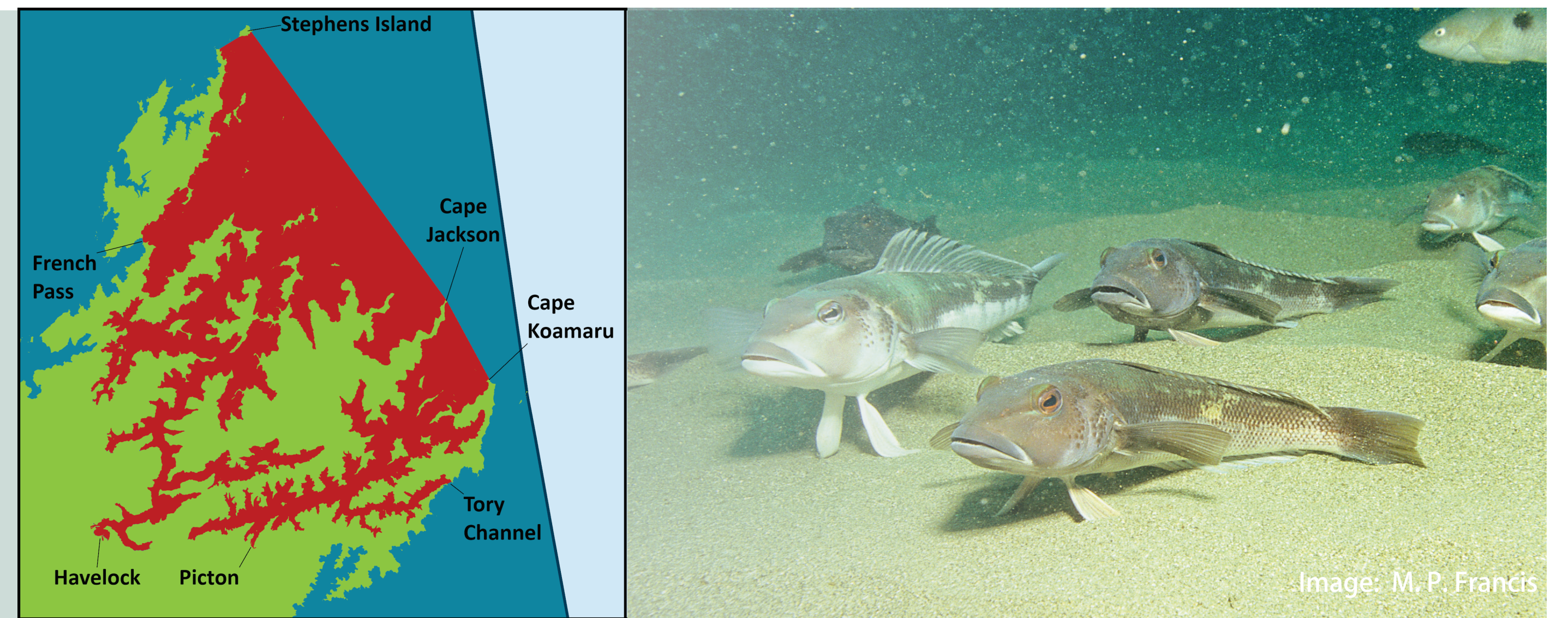




# The Fishery

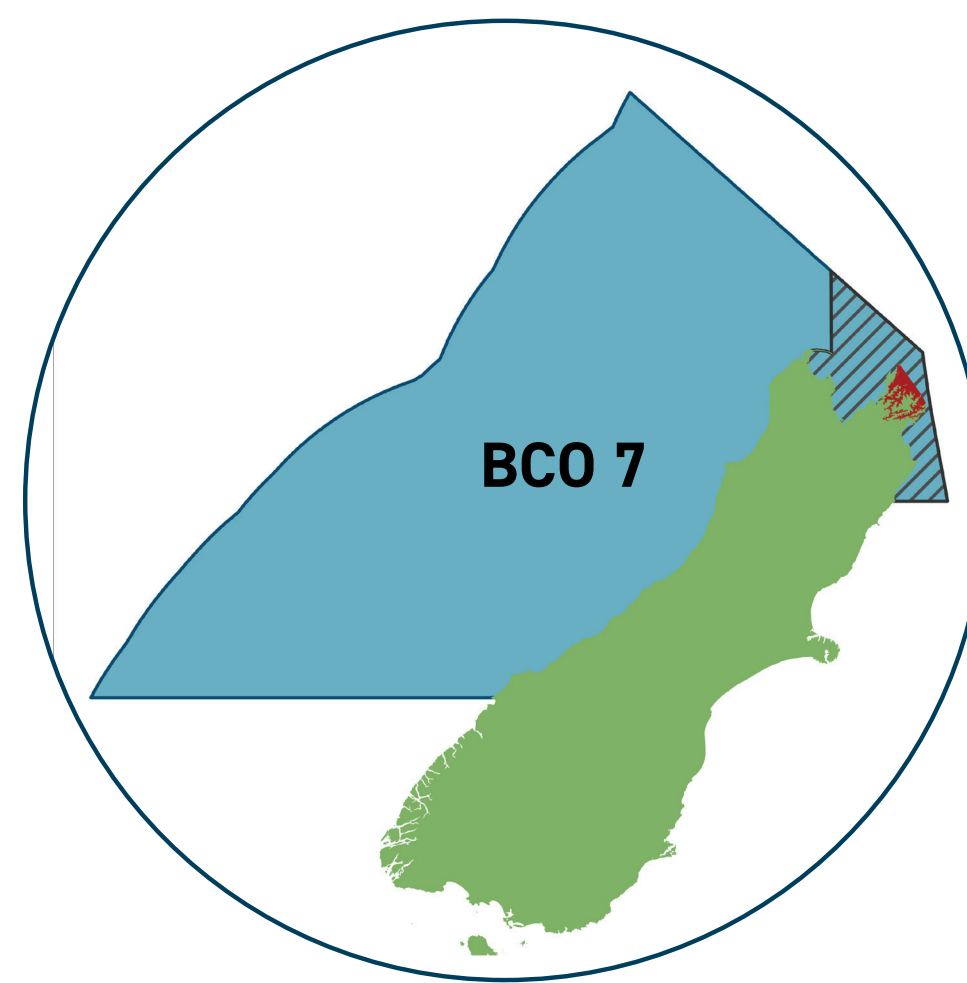
The Sounds blue cod fishery is iconic for many.

- **The top recreational target in the Sounds.**
- **93%** of all commercially caught blue cod from around the country **is eaten here in Aotearoa.**
- The species is a **taonga and mahinga kai** for Māori.

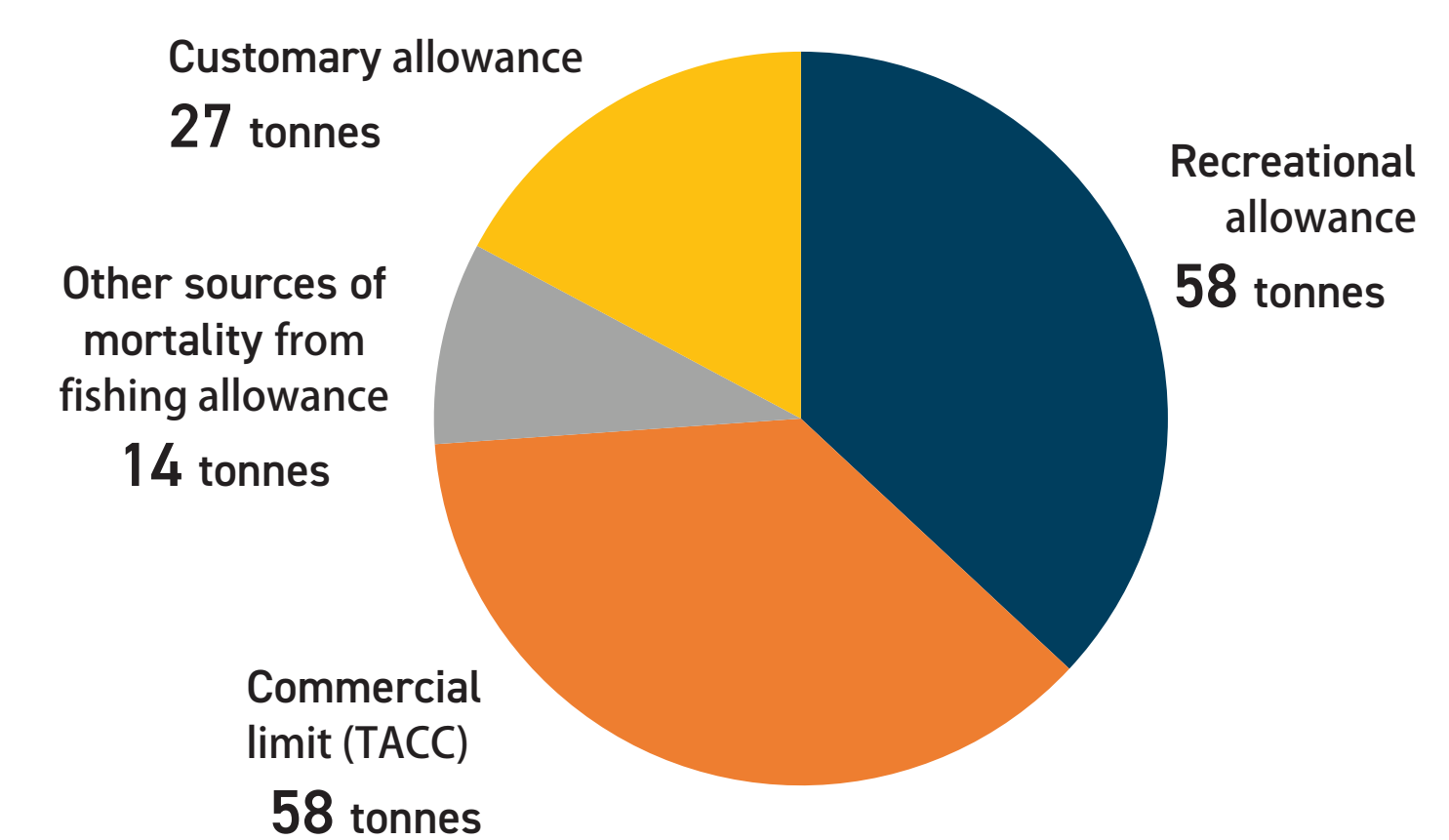


## BCO 7 Quota Management Area

- The Sounds blue cod fishery sits within a much larger **Quota Management Area (BCO 7)**. Within this is the **Marlborough Sounds Area (MSA)**. See map to the right.



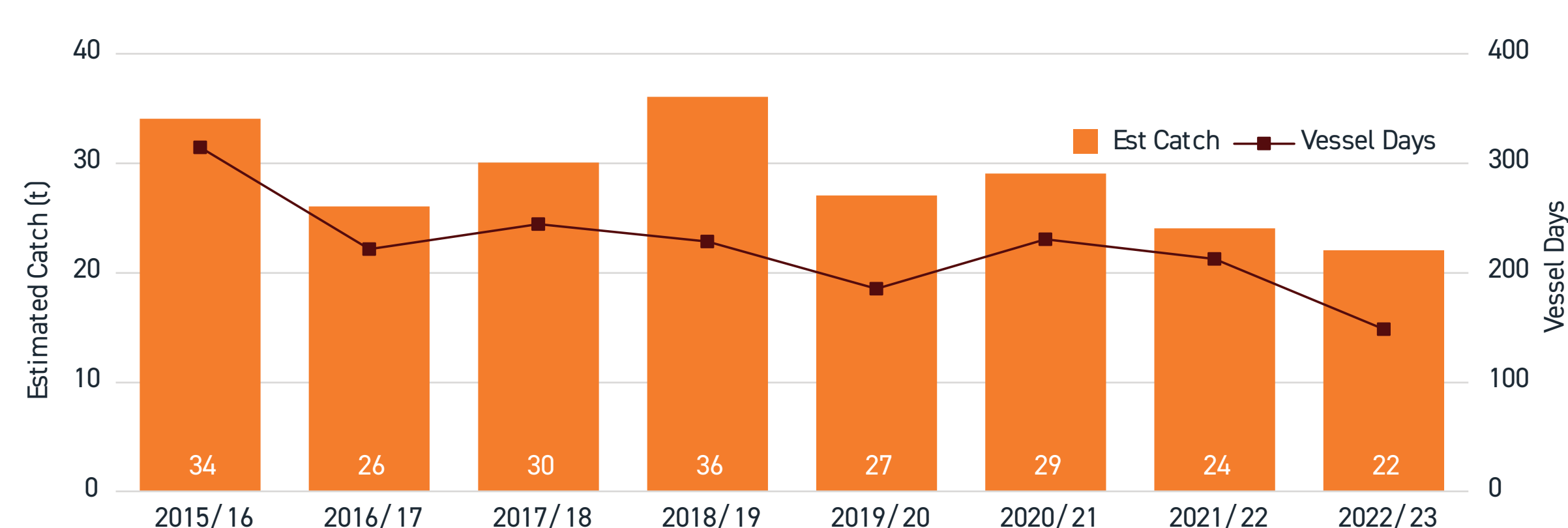
BCO 7 Total Allowable Catch (147t)



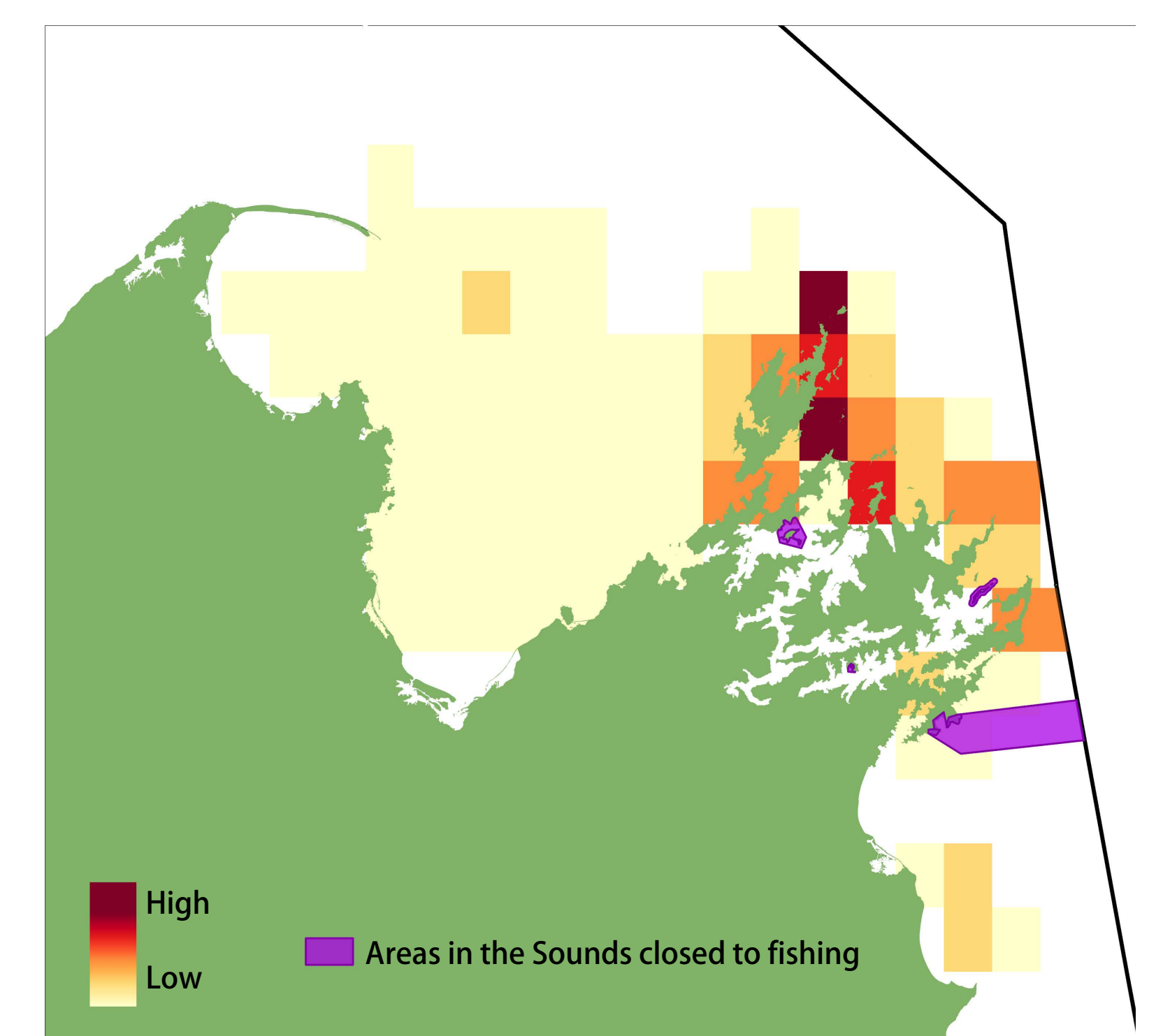
## Commercial

- Most BCO 7 catch is taken by pot/ line around the outer Sounds (~ 90%)
- Of this, around ½ is taken within the Marlborough Sounds Area. No targeting occurs inside the Sounds themselves.
- Some is also taken as trawl bycatch across BCO 7 (less than 5%).
- Catches and the local fleet have declined in the last decade.

Target Catch & Activity around the Sounds



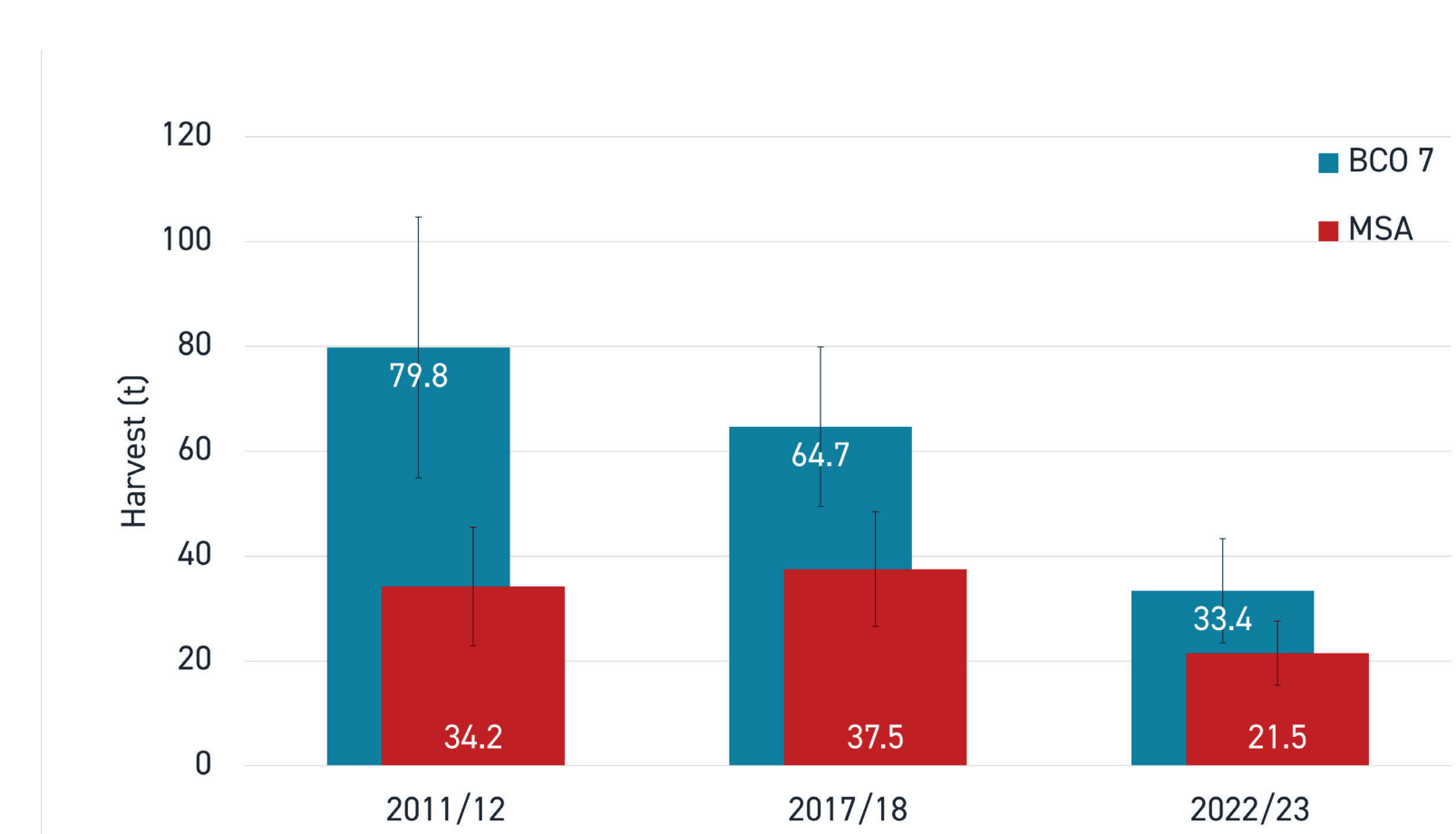
Commercial Catch Heatmap 2019/20 - 22/23



## Recreational

- Blue cod is almost exclusively taken by line fishing, and most of BCO 7 catch comes from the Sounds.
- The NPS shows declining catch in the area in the last decade.
- Annual Waikawa ramp survey results are stable but uncertain.
- Most catch (60% in 2017/18 and 45% in 2022/23) is taken in December and January upon reopening.

National Panel Survey (NPS) Recreational Catch Estimates



## Customary

- There are currently no customary management areas in the Sounds, but harvest is managed under permits issued by tangata kaitiaki.
- Relevant regulations for customary harvest permits have recently changed in Te Taihū, so more information will become available.

## Current Rules

Talk to us for a brochure of current rules. Key rules include the seasonal closure in the MSA, daily limit of 2 cod, combined daily limit of 20 finfish, and a range of closed areas and marine reserves.





# Summary

Fisheries New Zealand and the advisory group have reviewed evidence, identified key issues, and discussed a range of potential measures.

From this a staged plan of action has been developed, with a measure to reduce fishing pressure in the interim, and development of a wider package to address the range of issues.

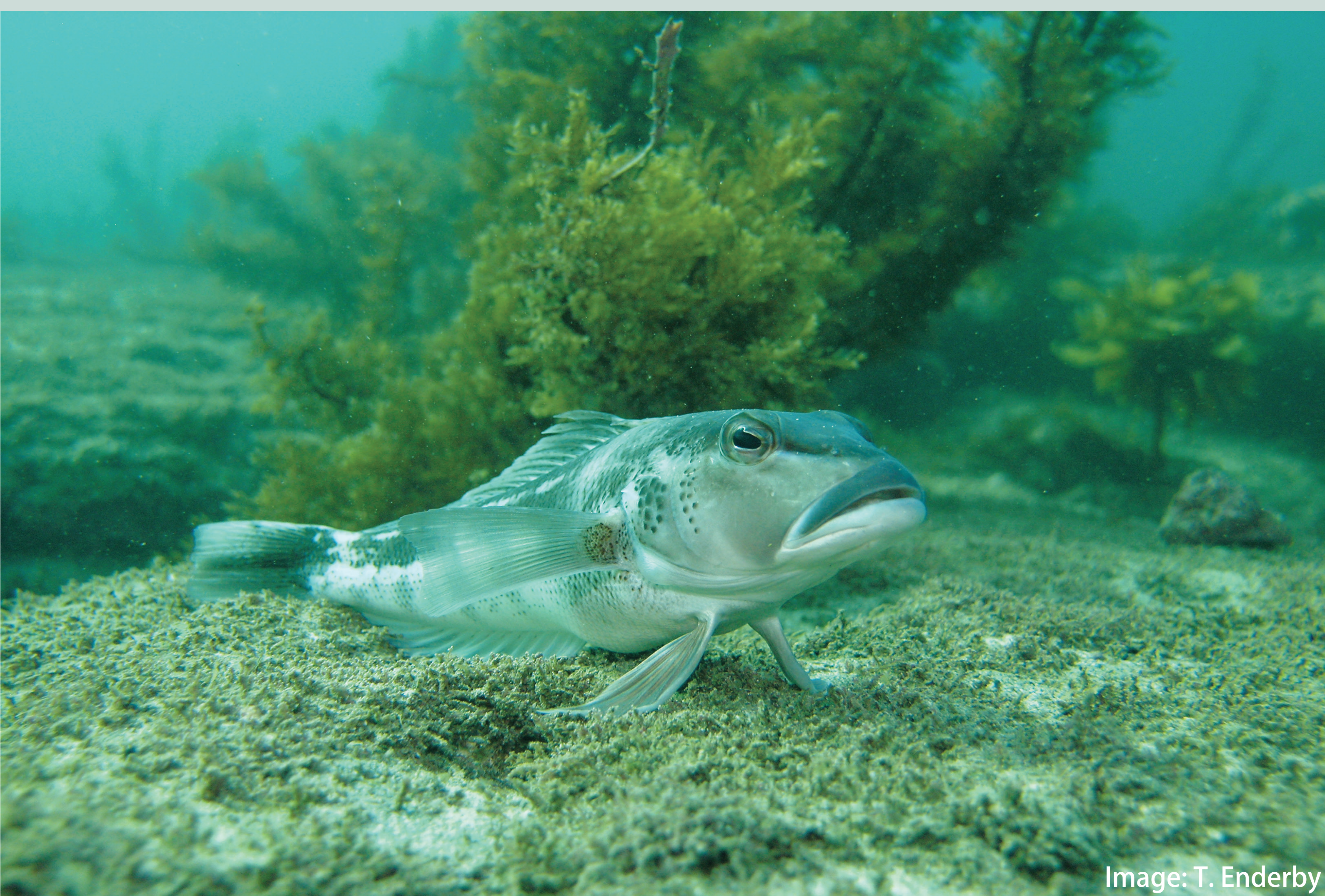


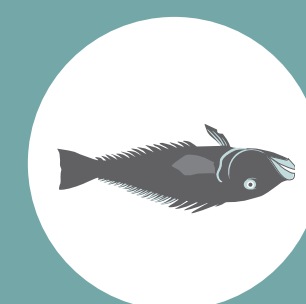
Image: T. Enderby

## Key Issues



**High fishing pressure**

Surveys have found unsustainably high levels of fishing mortality.



**Release mortality**

Anecdotal information suggests many returned fish are predated or die.



**Cumulative stressors**

Sedimentation and warming waters are degrading habitat.



**Low & localised abundance**

High fishing pressure is leading to patchy distribution and abundance, especially in the inner Sounds.



**Unbalanced population and compromised spawning**

Overfishing has led to a population of small and predominantly male fish. Few large females means reduced egg production in many areas.

## The plan

### Staged approach – reduce fishing pressure and follow up

- The key to ensuring a sustainable blue cod fishery is to **ensure recruitment (fish maturing into the fishery) is equal to, or more than, fishing and natural mortality (predation, disease, ageing etc.)**.
- Previous measures have moved the fishery in the right direction, but we know more needs to be done to achieve a sustainable balance. Our plan is to:
  - reduce fishing mortality now** by extending the season closure into the period of greatest pressure. Also, the combined daily limit could reduce the number of returned cod and resulting mortality.
  - help boost recruitment** through spawning recovery areas and better fishing practices. Balanced and healthy local populations could then replenish local areas.

Stage One (Now – End of 2024)	Stage Two (Mid to late 2025)	Final Package (2025/26)
Consult on an initial measure and develop a full package proposal	Return to consult on wider package and implement non-regulatory actions (if supported by input and research).	Implement remaining regulatory measures.
<ul style="list-style-type: none"> <li>Extended seasonal closure from the end of 2025 onwards</li> </ul>	<ul style="list-style-type: none"> <li>Spawning recovery areas</li> <li>Combined daily bag limit</li> <li>Education campaign</li> <li>Tools to reduce release mortality</li> <li>Tools to improve recreational fishing information</li> </ul>	Results of next potting survey in October 2025 provide a baseline to assess effectiveness of package.

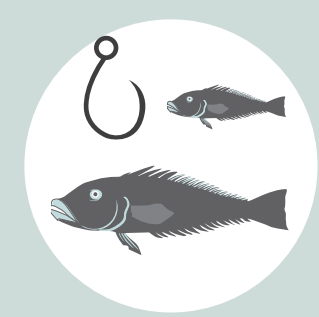


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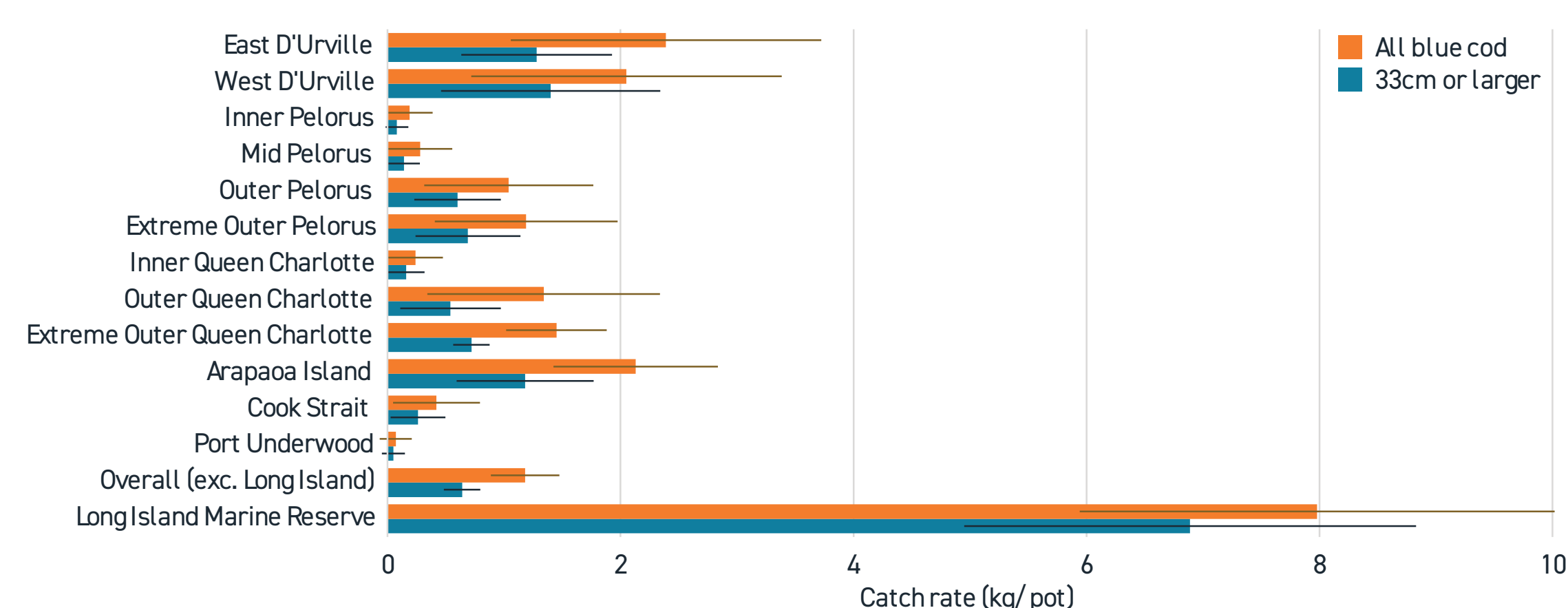
# Step 1 – Current Proposal



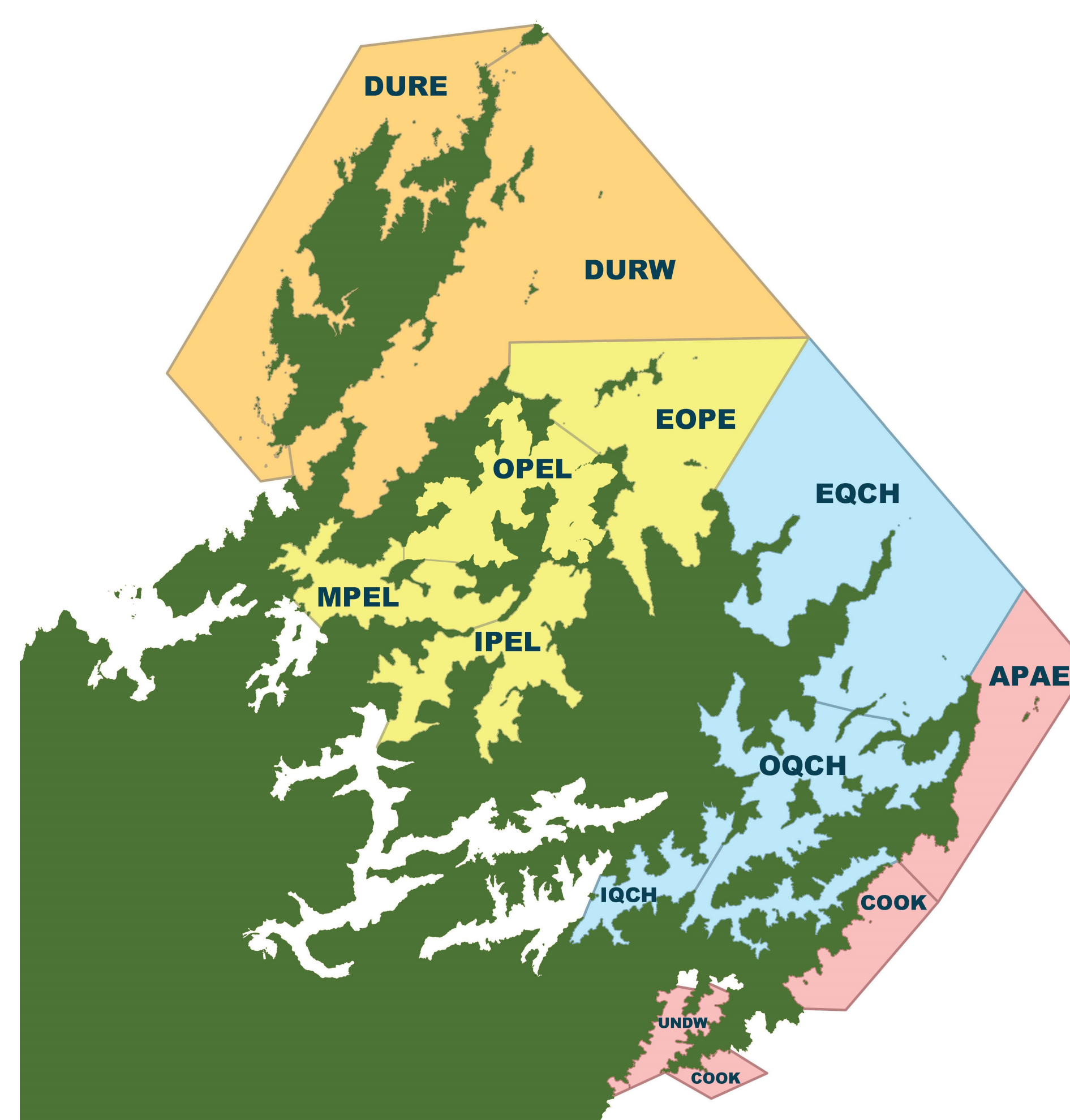
## Issue – high fishing pressure

- The effects of fishing on cod abundance have been recorded in areas of the Sounds as far back as the 1950s.
- Blue cod are voracious predators, territorial, easy to catch, and sought after for eating quality. The Sounds is a regional food basket and classic Kiwi destination. Consequently, fishing pressure is at **unsustainable levels**.
- The fishery is monitored using potting surveys by NIWA every 3-4 years.
- The latest survey, in 2021, indicated **significant overfishing** of blue cod is very likely occurring. Fishing **mortality was over 3 times the management target** and the fishery is based on young (6-7 year old) fish.
- **While stable, the fishery is at a low level (especially the inner Sounds).**

2021 Potting Survey Catch Rates by Strata



Potting Survey Strata



## Proposed measure to address this – extend seasonal closure

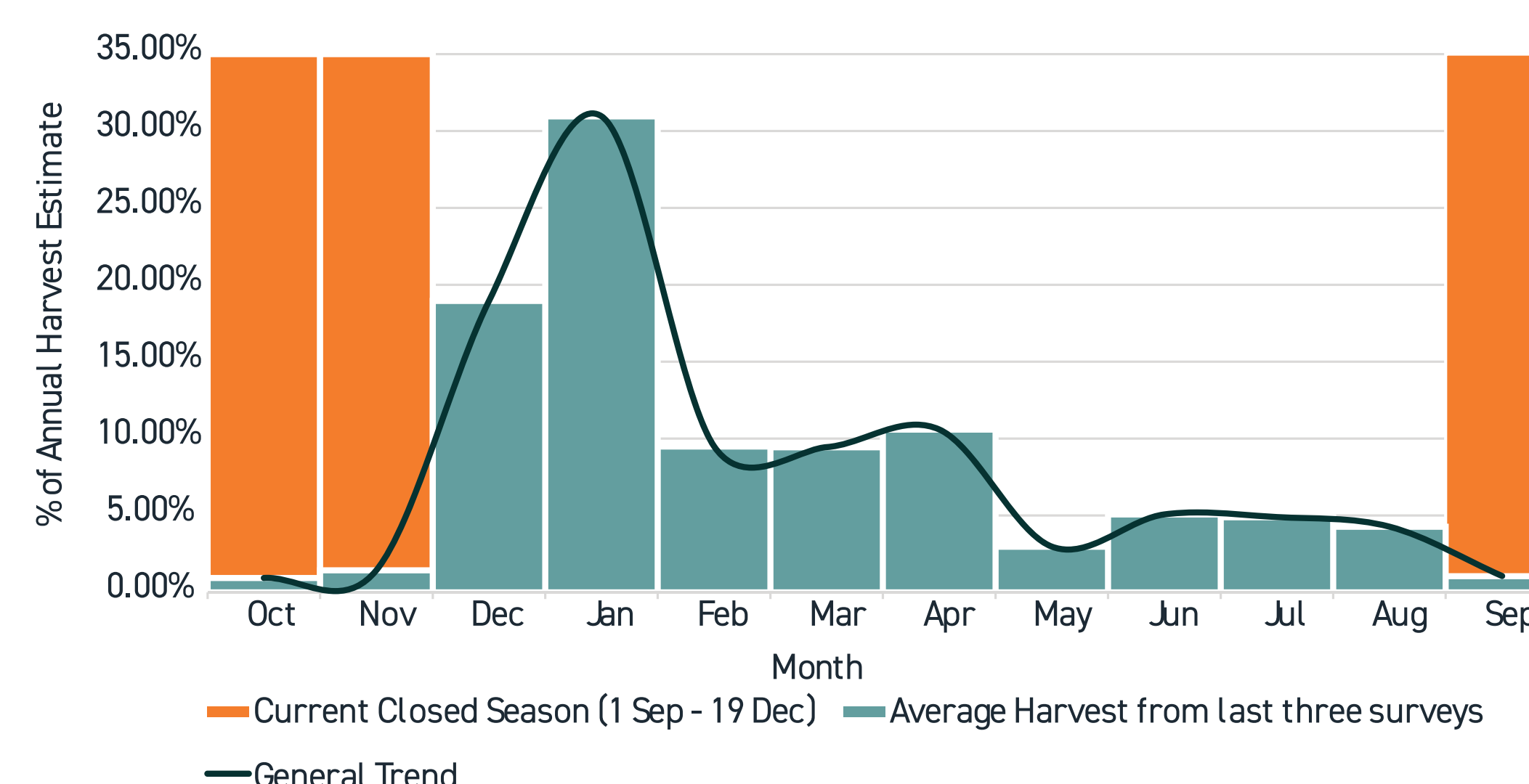
- A closure of the Marlborough Sounds Area for blue cod take between 1 September – 19 December annually has been in place since 2011 for recreational, and 2015 for commercial.
- It was introduced to protect blue cod during their **peak spawning period**.
- However, the advisory group at the time recognised **benefit in extending it into the summer holiday period to cover the peak of recreational effort**, and therefore recommended this.

Option	Description	Possible effort reduction
1	Status quo	None.
2	Extend closure to 31 Dec	10-25%
3	Extend closure to 5 Jan	25-40%
4	Extend closure to 15 Jan	40-45%

### Any changes would:

- Be for both recreational and commercial fishers and only blue cod.
- Come into effect **from the end of 2025**, to allow for building awareness.

Percentage of Annual Recreational Harvest by Month (NPS)



### Pros

An extension of the closure further into the of the holiday period could reduce fishing pressure significantly, avoiding other options which restrict access further, or have less evidence to suggest effectiveness.

It would get fishing pressure down while broader measures are implemented to address the wide range of issues.



### Cons

Access for holidaymakers and families would be reduced, with broader socio-economic impacts.



### Questions

**Gold rush mentality** – is there a risk that the opening rush will just shift later?

**Shifting effort** – is there a risk that effort will be concentrated in surrounding areas?

**Release mortality** – how do you think an extension would affect this?



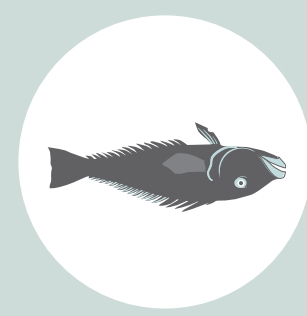
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# Wider package



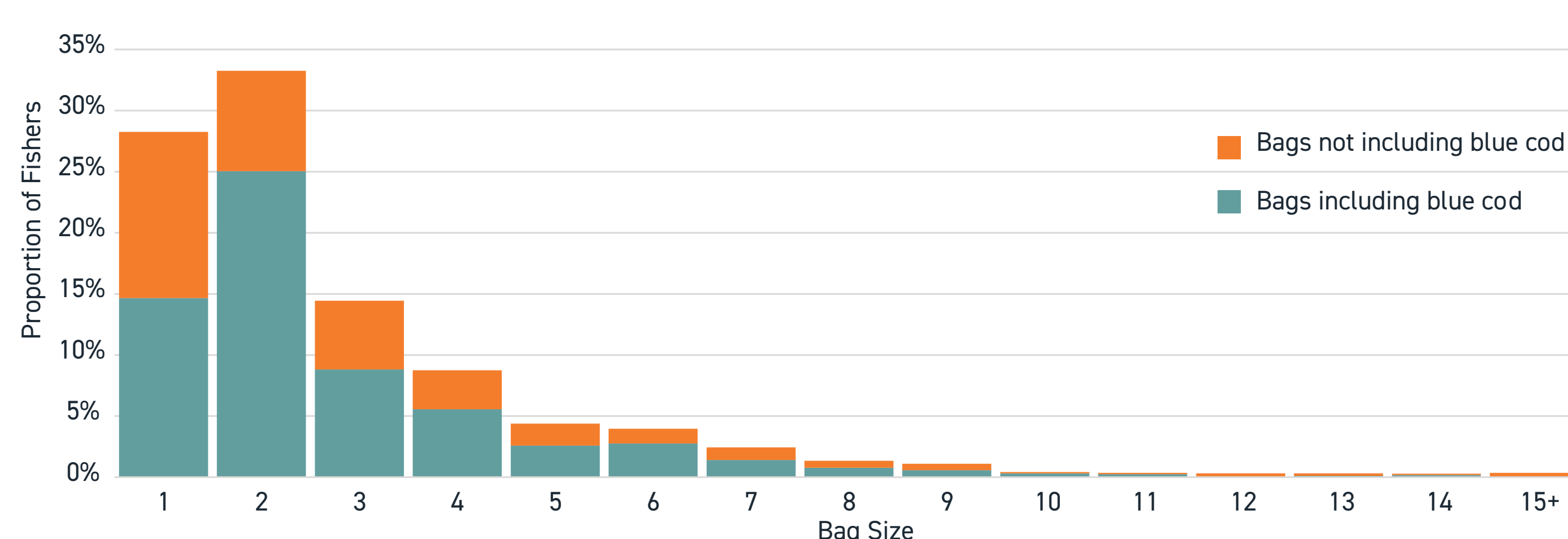
## Issue – release mortality

- For every cod kept, a further four are potentially caught and released.
- When you scale this up, **hundreds of thousands of small fish are being caught and thrown back each year.**
- Survival can be poor with **bad handling practices, gut hooking, and predation.**
- Assuming 10% of returned fish die (a conservative assumption), this equates to **almost 30,000 fish, or 8 tonnes of cod, lost annually.**
- **These fish should be next year's fishery.**



## Potential measure – reduced combined daily limit

- The combined daily limit for finfish is 20, but most people catch less than 10 fish per trip.
- Less time spent fishing might mean less small blue cod caught.



## Potential measure – educational campaign

The advisory group felt that there is limited public understanding of the current state of the fishery and the impacts of fishing. A refreshed educational campaign and any new measures need to:

- reflect the finite capacity of the Sounds;
- plainly communicate the issues confronting the fishery; and
- and encourage responsible fishing practices based on clear evidence, for the benefit of fishers.

## Questions

What info would you like to see publicised?

Should we encourage people to stop fishing, target other species, or try other activities in the region?

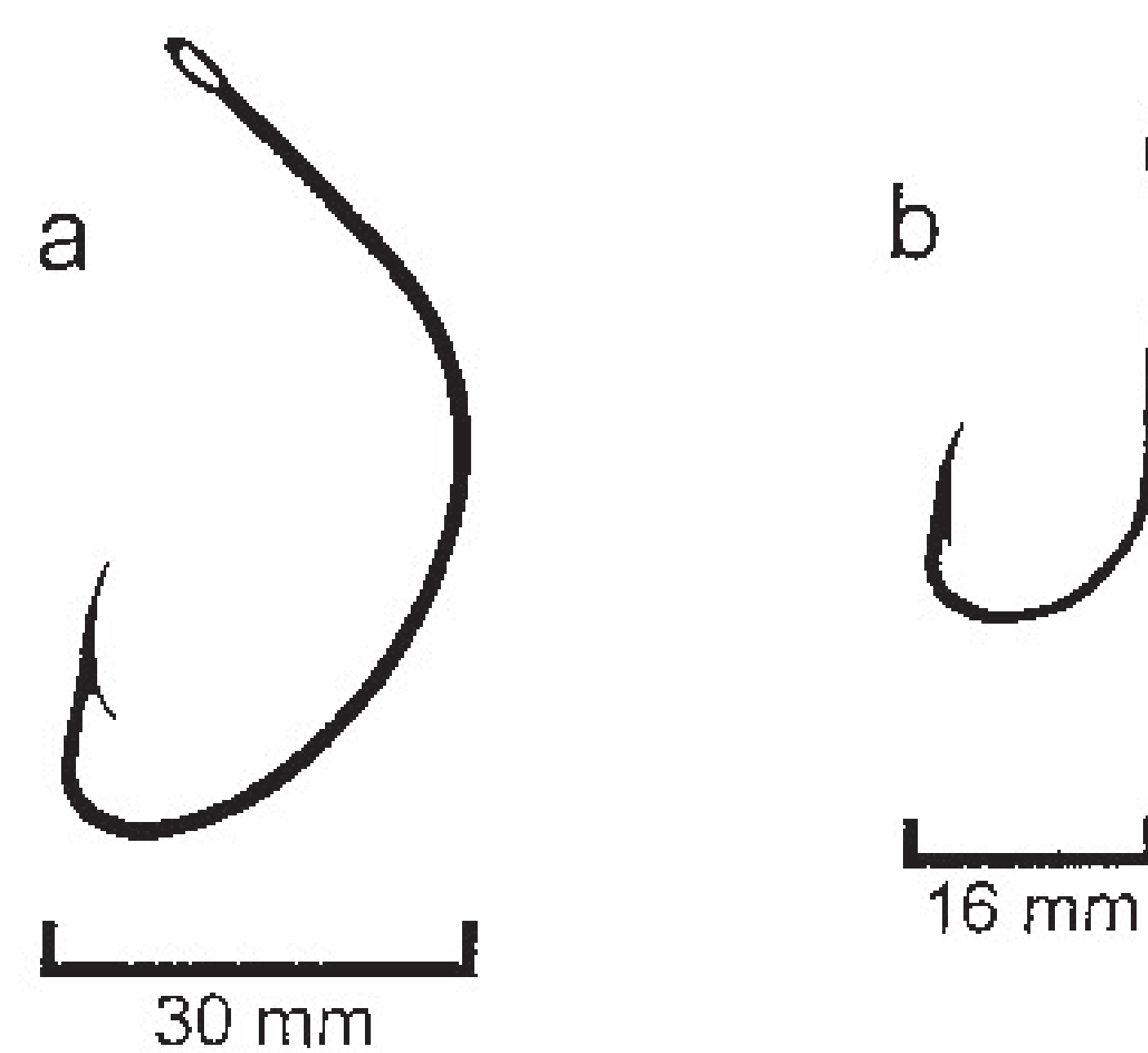
How could we better reach the fishers who need this info?

## Potential measure – ideas to reduce release mortality

- Return tubes, rigs, and cages.
- Hook sizes, types, or barbless hooks to prevent smaller fish being caught and gut hooking.
- Enable live storage for release in batches.
- Tinkering/research fund to prove effective mitigations and regulate their use.

## Questions

What's your trick?



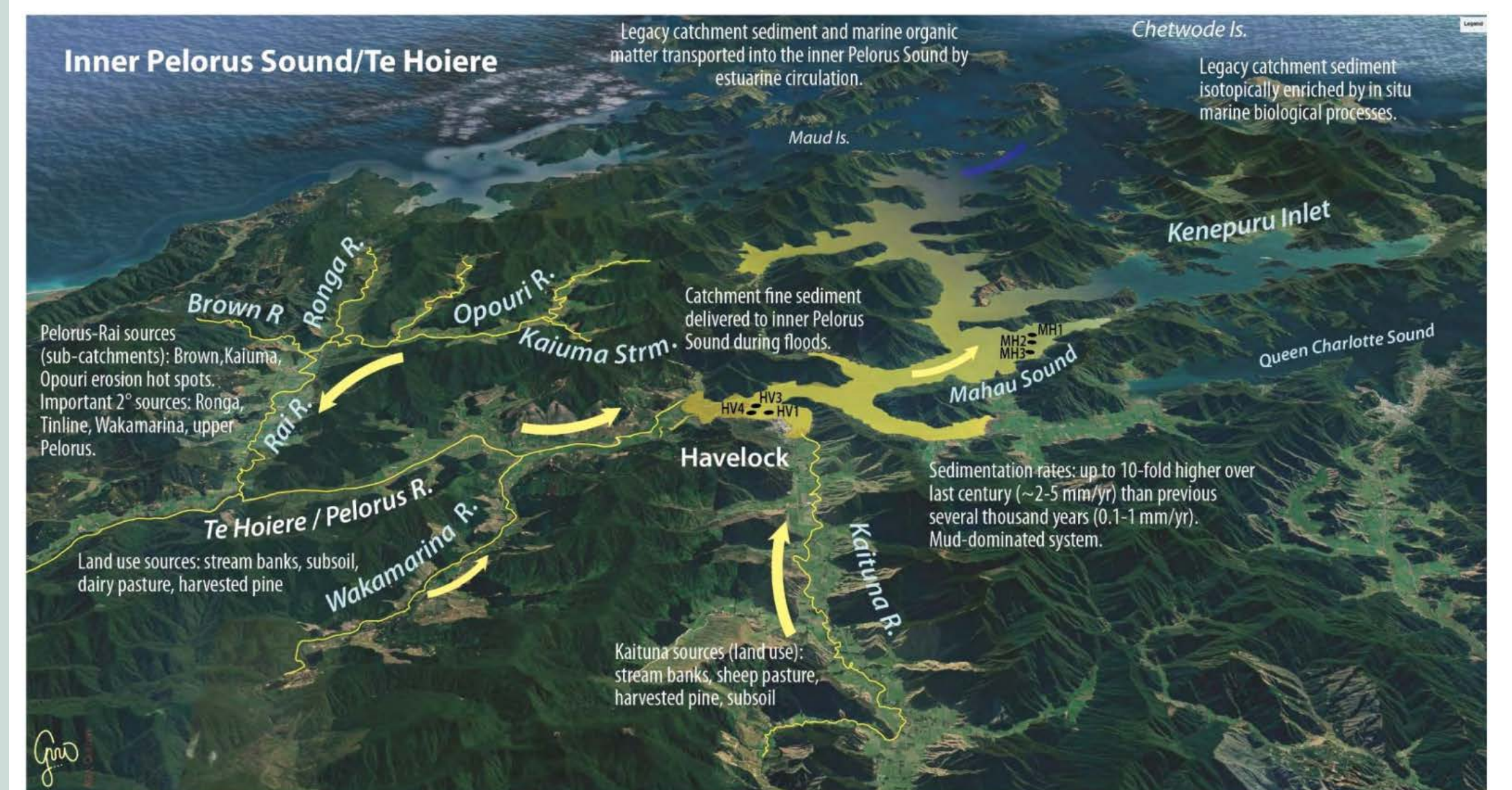


# Wider package

## ! Issue – cumulative stressors

Compounding the situation resulting from heavy fishing pressure is:

- the increasing occurrence of marine heatwaves affecting cod habitat, species assemblages, and reproductive success.
- Effects of fishing on habitats and the ecosystem.
- land-based sedimentation and resuspension causing habitat loss and degradation.



Graphical abstracts: key study findings – views from the catchment (top) and looking towards Havelock (bottom) from outer Pelorus Sound/Te Hoiere. NIWA Report 2021291HN for Marlborough District Council (2021)

## Wider action needs to occur for long-term success

- Issues such as land-based sedimentation require broad collaborative actions. We need to ensure the stock is maintained at a level that ensures resiliency to these cumulative stressors in the short-term, while improving our understanding of these issues and building consensus on tangible solutions.
- Fisheries New Zealand is providing input into Council plans, participating in collaborative land-to-sea initiatives through Kotahitanga mō te Taiao Alliance (KMTT), and supporting catchment and coastal restoration. KMTT provides a pathway for communities, tangata whenua, and agencies to progress land-to-sea restoration and sustainable use of the marine space for future generations.
- Kina barrens – recent changes to limits, special permits, and greater analysis of ecosystem effects of fishing. Most obviously in the Sounds, increasing cod abundance will mean more kina predation.



## 📍 Issue – low abundance and localised depletion

- Potting surveys show significant depletion in the inner Sounds.
- There are reports of some reefs being fished hundreds of times a day over summer.
- As people move to find the fish, the distribution/abundance of cod can become patchy.

## Potential measure – improved recreational information

If we can better understand where and when fishing is occurring, we could manage at finer scale. Various options have been discussed, including:

- Recreational catch reporting
- A voluntary registry for sampling/surveying fishers
- Increased monitoring at ramps and on the water

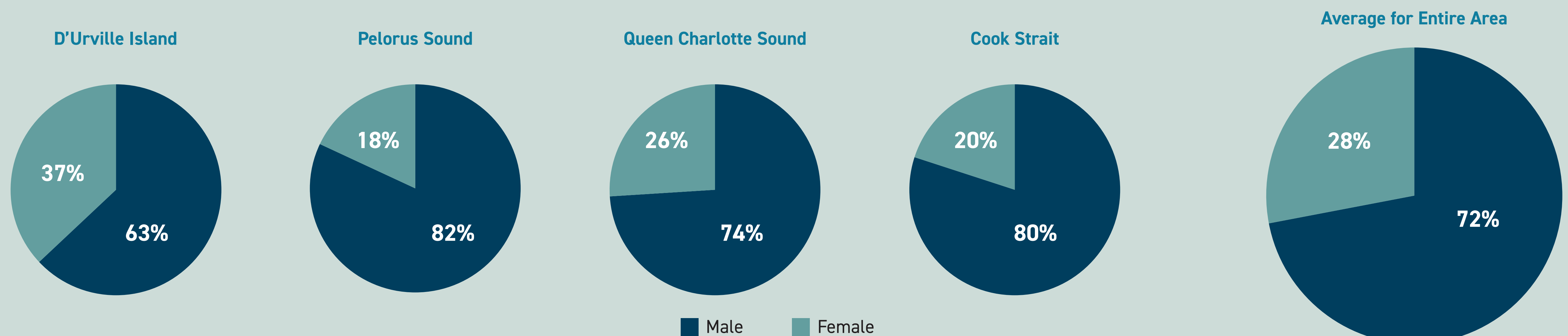




# Wider package

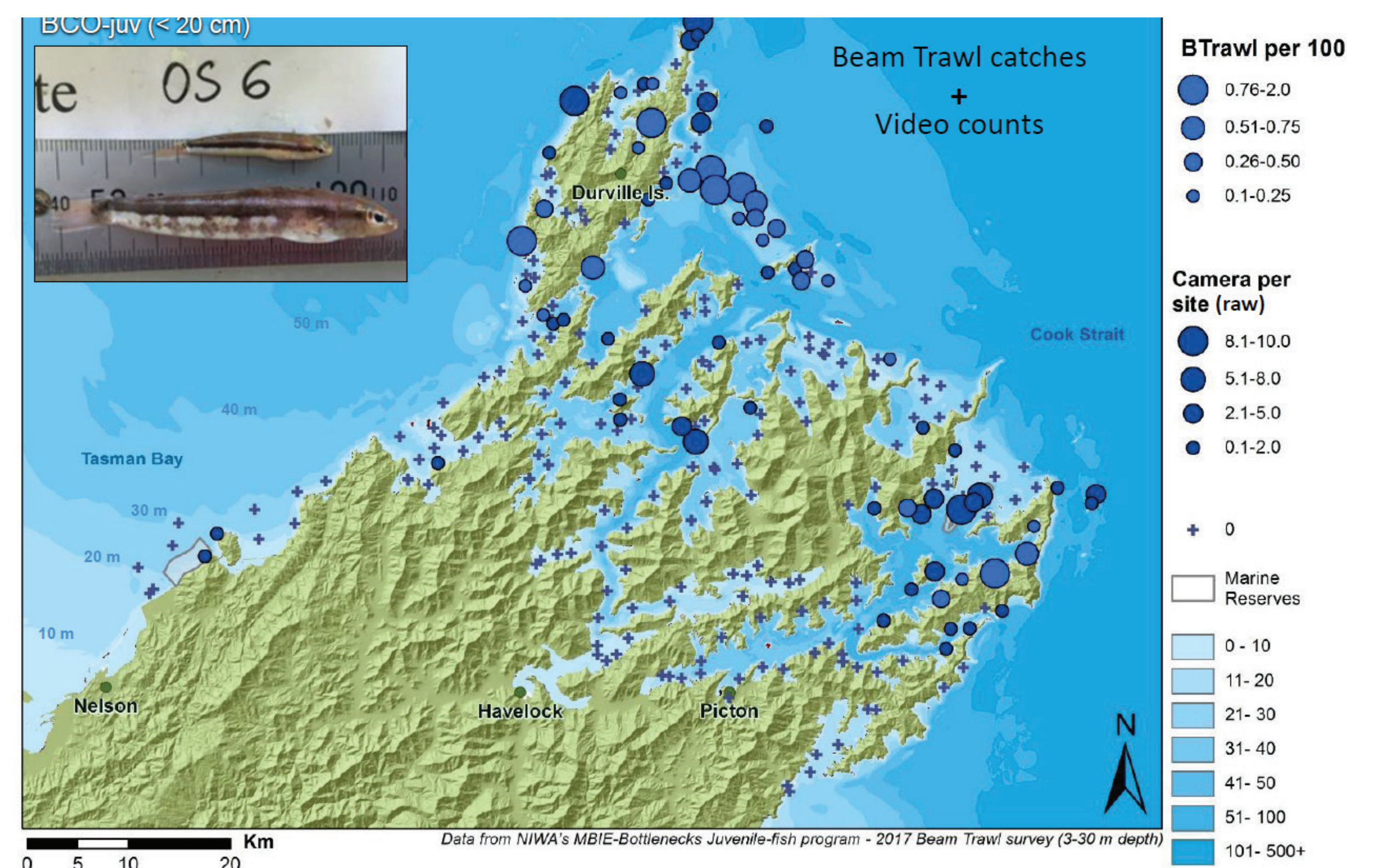
## ♀♂ Issue – unbalanced population and compromised reproduction

- There are relatively few larger, older, and female fish.



- In 2021 **only 6% of the population were females larger than 33 cm.**
- This skewed sex ratio and lack of large female spawners has led to the key issue for some time in the Sounds – compromised reproduction.
- Spawning and recruitment are diminished, **most obviously in the internal Sounds where larger female cod, and subsequently juveniles, are effectively absent.**
- Scaled for equivalence, Fiordland is 15 times more productive than the Sounds, because of the greater proportion of large females.
- **No breeding fish means no eggs, which means no juveniles.**

2017 NIWA Survey of Juvenile Blue Cod



M. Morrison/ NIWA (Unpublished MBIE Endeavour Fund project CO1X1618)

## Potential measure – spawning recovery areas

- Discrete spawning recovery areas, closed under the Fisheries Act, where balanced local populations of large cod can develop and seed adjacent depleted areas.
- **Fisheries New Zealand has commissioned research to identify potential areas that might best achieve this outcome, with results available next year.**
- Should results indicate sufficient spawning recovery areas and they prove successful, it would be theoretically possible to review current measures.

