



Te Pānui Kaitiaki o Ata Whenua

In this issue we provide an update on the new strategy to tackle the invasive seaweed *Undaria* in Fiordland. We explain the rules for catching rock lobster – a timely reminder with the summer season approaching. We dive into some intriguing research on the value of Fiordland's mud, the mysterious lives of broadnose sevengill sharks in Fiordland, and how baited video cameras might be the ticket to monitoring Fiordland's marine reserves and fish abundance. We start off by introducing the newest Guardian, Te Anau local Murray Willans. We wish you a safe, relaxing and fun summer and extend season's greetings to you.



Meet the Guardians



The Fiordland Marine Guardians are an advisory committee that work with government agencies and their Ministers to manage the Fiordland Marine Area (FMA). Our newest member, Murray Willans, is a keen diver and recreational fisher and loves spending time in the Fiordland Marine Area (FMA).

You were involved in the Guardians work in the early days and have recently become a Guardian. Do you think the Guardians' work these days is what that early group envisaged?

Yeah, I think it largely is what was intended by the Beneath the Reflections strategy and probably has largely tracked along as that earlier group thought. I think one job that's now bigger than envisaged is invasive marine pests – lately this issue has gobbled up a lot of resources.

What compelled you to get involved with the Guardians?

Fiordland is such a special place, and I've spent a lot of time there over the past 20 years. It's always a real privilege to go into Fiordland and I enjoy taking my family there. I think we should all do our best to look after it so that future generations can enjoy it too – so I put my hand up to join the Guardians. We should experience the place without making permanent material changes to it. It's pretty neat being part of a group that has that vision.

What would you say you bring to the group?

I have a pretty good understanding of how government agencies work, after working at DOC for about 20 years. I spent lots of those years working on Fiordland's islands, so I know the place and the locals well too. I'm sure there will be lots of dots I can connect.

Have you noticed any changes in the time you've been visiting?

When I used to go snorkelling back in 1999/2000, I'd get scallops and bluff oysters – now those are almost completely gone. Some of those key species are really depleted. It's not a limitless resource and it needs to be carefully managed. It's about changing the perception – see it, explore it but don't deplete it. It's about trying to take everyone on that journey so everyone is on the same page – the vision that if everyone does their bit, we will be able to build stocks back up again. It's about trying to manage the FMA

so people can go in there and have the same experience as 25 years ago – enjoy it, use it, but not contributing to permanent change – that's the challenge.

You have the perspective of this group as a staff member of an agency (DOC) and now, as a Guardian. How does the management of the FMA differ to other parts of the country?

It's a very collegial approach to looking after the place – involving the Guardians, management agencies, and users – which I think sets it apart from how other parts of the country are managed. The fact that they managed to establish the Fiordland Marine Management Act in the first place is rather unique. There's something really special about Fiordland – people are blown away by the place when they visit it; it gets under their skin and then they are more likely to want to do the right thing in managing and looking after the place.

What do you see as the biggest challenge currently facing the FMA?

Enabling visitors without leaving permanent impacts.

What would you like people to know about the Guardians?

The Guardians are keen for a chat. We are keen to talk about any issues or concerns and are accessible to the public.

Finally – what's your favourite kai moana?

I'd have to say pan-fried butterfish (and the fun of catching it too!).



A new chapter in Fiordland's *Undaria* battle

A new strategy is underway to tackle the invasive seaweed *Undaria pinnatifida* in Fiordland.

Since 2017, a joint-agency team from Environment Southland, the Department of Conservation (DOC), and Biosecurity New Zealand, with support from the Fiordland Marine Guardians, has worked to contain *Undaria* within Te Puaitaha/Breaksea Sound and Tamatea/Dusky Sound. Through years of diving, biomass removal, and careful surveillance, the team has made impressive progress — even achieving a major milestone in 2024 when Taiari/Chalky Inlet was officially declared free of *Undaria*.

But the work is far from over.

New *Undaria* populations have recently been discovered within Breaksea and Dusky Sounds, triggering a strategic rethink. The updated approach now shifts from large-scale removal to smarter, more targeted action.

Environment Southland marine biosecurity team leader Kathryn McLachlan says we aren't stepping back from the programme but rather stepping up in a different way.

*"We've learned a lot over the past few years. While wide-scale control helped slow the spread, the next phase is about staying one step ahead and stopping *Undaria* before it can reach other parts of Fiordland."*

*"The funding received through the Jobs for Nature programme in 2021 provided a much-needed boost to *Undaria* control efforts in Fiordland. However, with the seaweed continuing to spread, it is no longer feasible to contain it within the current management area using existing resources."*

The new strategy focuses on preventing *Undaria* from hitching a ride on vessels, moorings, and gear. This approach is called vector management. By zeroing in on high-risk anchorages and increasing surveillance across the marine area, the team aims to detect new arrivals early and act fast.

The strategy includes targeted removal in key hotspots within Breaksea and Dusky Sounds, expanded surveillance across all of Fiordland, including in marine reserves like Moana Uta/Wet Jacket Arm and Taumoana/Five Fingers Peninsula and stronger collaboration between agencies, divers, and local communities.

Ongoing success depends on staying focused and adaptable, Kathryn says.

*"Protecting Fiordland's pristine marine ecosystems is no small task, but it's one we're deeply committed to. The earlier we find and respond to marine pests, the better chance we have of keeping the rest of the fiords *Undaria* – free."*

Rock lobster rules

As summer approaches, it is timely to remember the rules for one of the most popular recreational species caught in Fiordland – the rock lobster (kōura/crayfish).

The rock lobster rules remained unchanged in the most recent round of updates to catch limits made to the Fiordland Marine Area, but they are quite complex so please take note.

Within the Fiordland Marine Area, fishers are allowed to possess and accumulate rock lobster taken over 3 or more days if:

- not more than 15 rock lobsters are possessed by an individual fisher
- the daily take limit of 6 rock lobsters was not exceeded on any day
- not more than 3 rock lobsters were taken from the Piopiotahi/Milford Sound Internal Waters.

It is important to remember that rock lobsters held on board or landed from a vessel must be 'bagged and tagged'. This means that each individual fisher's daily catch (up to 6 rock lobster) is separated into each individual day's bag or container, and clearly labelled to identify the:

- individual fisher's full name
- number of rock lobster in each bag
- date the rock lobster were taken.

If any were taken from within Milford Sound, this must also be recorded.

Failure to bag and tag is one of the most common fisheries breaches that we see in Fiordland, so please remember to take some plastic bags or containers to separate your individual day's catch, and a marker pen to label the plastic bag or container with the required information. You must do this as soon as you have finished collecting rock lobster, ready for inspection by a fishery officer. Failure to do so could result in any rock lobster beyond the 6 daily limit being confiscated, and you ending up with an infringement notice.

In the case of live rock lobster held temporarily in a holding pot at sea, the fisher must maintain and be able to immediately produce upon the request of a fishery officer, a legible written record containing the following information:

- the individual fisher's full name
- the date on which the fisher took the rock lobster
- the number of rock lobster held in each rock lobster holding pot, including the number of rock lobster taken from within the Milford Sound Internal Waters

- the global positioning system (GPS) coordinates or physical location of each holding pot
- the date on which the fisher removed rock lobster from each holding pot
- the number of rock lobster removed from each holding pot.

Holding pots can be used to hold or store rock lobster, and there is a limit of 1 per person with a maximum of 2 per vessel if there is 2 or more people on board. Holding pots, along with their attached surface float or bouy, must be marked with the vessel name and the characters HP1, and HP2 for the second holding pot if applicable.

It is important to remember that if you remove rock lobster from a holding pot and have them held onboard, you must have each fisher's daily catch separated and labelled correctly with the fisher's full name, the date they were taken, and the number of rock lobster held in each container.

All rock lobster catching pots, along with their attached surface bouy or float, must be marked with the person's initials and surname. Make sure you have done this before you leave home as this applies to pots which are in your possession and haven't been set yet. Rock lobster catching pots must have escape gaps which are the required size and position to allow undersize rock lobster to escape from the pot. See the Fiordland Marine Area brochure online or the NZ Fishing Rules app for escape gap measurements and pot types.

You may only use, set, or possess up to 3 rock lobster catching pots regardless of how many people are on the vessel. Please remember if there are 2 or more people on the vessel, there is a 6 pot vessel limit which includes any lawful combination of species-specific catching pots (eg, cod pots) and any rock lobster holding pots.

Remember, to avoid any infringement notices you must return:

- undersize rock lobster
- female rock lobsters carrying eggs (in berry)
- rock lobster in their soft-shell stage
- rock lobster that cannot be measured due to damage on their tail preventing an accurate measurement of the tail width between the tips of two large spines on the second segment of the tail.

If you are unsure whether you have caught a male or female rock lobster, make sure you use the larger female measurement of 60mm, instead of the smaller male measurement of 54mm. See the Fiordland Marine Area brochure or the NZ Fishing Rules app for diagrams on how to accurately identify and measure rock lobster.

We look forward to seeing you out on the water this summer, enjoying the magic of Fiordland.



Fiordland's valuable mud

Fiordland's underwater environment is well known for iconic corals and precipitous rock walls, but it turns out the mud that fills the fiord's many basins may not have been given enough attention. Until now – Fiordland's mud is having its moment.

The mud that settles on the floor of each fiord is rich with organic carbon. This carbon was captured during photosynthesis by Fiordland's rainforest and marine algae, and as it is buried on the seafloor, it is securely stored. In fact, fiords are carbon 'hotspots', burying the largest amount of organic carbon per unit area in the world, thus helping to regulate Earth's climate.

Researchers are seeking to understand the carbon storage capacity of the fiords and how vulnerable that may be to any changes on land and in the sea in the future. You may have seen them in the fiords on one of their many research expeditions aboard the University of Otago Research Vessel Polaris II, busy collecting mud and water samples and making measurements. Supported by the Government's Endeavour Fund, the research team includes scientists, economists, iwi, and environmental conservation partners. The team are building scientific and economic models to understand how changes to water circulation in the

fiords might affect carbon burial. They are also looking for connections between the Manapouri Power Station outflow and carbon burial in Patea/Doubtful Sound.

A lot of hard work in the fiords and back in the lab is starting to yield some surprising findings. It appears that the carbon burial rates in the fiords could be on average 30 percent higher than previously published. While there is a huge amount of forest carbon being buried, particularly on the estuarine deltas/fans in shallow waters, these carbon stores are quite vulnerable to disturbance. It appears that seafloor disturbance through activities like mooring and anchoring could cause carbon dioxide to be released from the mud. It might be time for seafloor disturbance to be considered from a carbon perspective when management decisions are being made, such as the consideration of marine protection measures.

The team is working with international collaborators to explore the possibility of taking deep cores into the seafloor that will enable the reconstruction of climate and ocean records over the past 10,000 years or so. This past-to-present perspective will sharpen predictions of how Fiordland's natural carbon sink will perform in a warming world.

Broadnose sevengill sharks in Fiordland

Contributed by Dr. Alice Rogers, Victoria University of Wellington

Research into the movement and behaviour of broadnose sevengill sharks in Te Pūaitaha/Breaksea Sound and Tamatea/Dusky Sound has been ongoing for almost 18 months. The project is seeking to understand how climate change and extreme weather events might affect how sharks move and behave in Fiordland.

The project kicked off in earnest in May 2024 when we fitted the first 11 sharks with acoustic transmitters to provide information on their depth and body temperature whenever they swim within range of an acoustic receiver, which were deployed throughout the region. During subsequent expeditions in October 2024, May 2025, and October 2025, more sharks have been tagged, detection data has been retrieved, and the array has been serviced and modified.



Figure 1: External 'spaghetti' tag.

Thirty-four sevengill sharks are now fitted with acoustic tags. The majority of these also have an external 'spaghetti' tag (figure 1) to identify them as part of the study. A further 10 sharks have spaghetti tags only, so there are plenty of tagged animals swimming around the region.

Interestingly, in all the time we have been catching sevengills, we have only caught the same animal twice on one occasion! This suggests that there is a large population, perhaps even more than we expected. If you see or catch a sevengill shark with an external tag, we would love to hear about it (email: alice.rogers@vuw.ac.nz), and most importantly, we urge you to please carefully release the animal so that it can keep contributing to the study.

Results are still being analysed but detections of all sharks during the first year indicate some very sharky hotspots to take note of (figure 2). We also think there may be differences in the movements of male and female

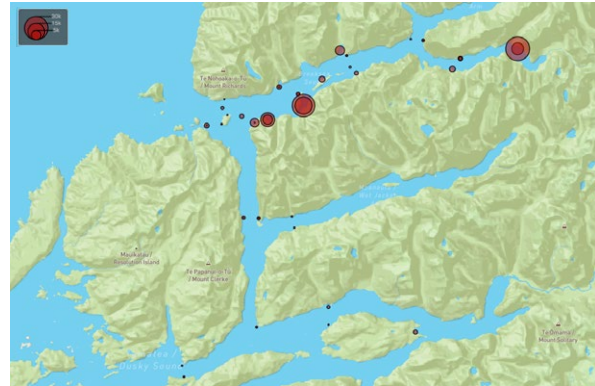


Figure 2: Shark hotspots

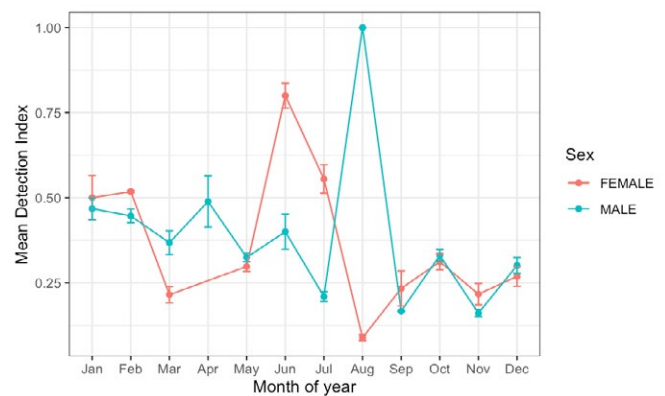


Figure 3: Movements of male and female sharks

sevengills throughout the year (figure 3), with early results indicating that males are more common in March, April, and August, and females more common in June and July. The sexes seem to come back together during the summer months, which could suggest a season for mating/breeding. Our captures on different expeditions show similar trends with more males caught in October and more females in May. There is still a lot to learn, and we hope to keep everyone up to date as we find out more.

This research is made possible by a huge team of people. The project is part of the Southern Fiordland Initiative, supported by Fiordland Charters. Funding and equipment have been provided by the Save our Seas Foundation, Victoria University of Wellington (VUW), Earth Sciences New Zealand, the Ocean Tracking Network, and Te Papa Atawhai | DOC. We have partnered with experts from the University of the Sunshine Coast, Earth Sciences New Zealand, Biopixel, and Auckland Museum, and our trips are only ever possible with endless hard work and support of students and staff from VUW. We are also extremely grateful for the ongoing support of The Fiordland Marine Guardians, Te Ao Marama Inc., Te Rūnanga o Ngāi Tahu, and Environment Southland.



Fishy secrets revealed

For many years the status of fish stocks within the waters of Fiordland have been a hot topic. They underpinned many of the gifts and gains that informed the original Fiordland marine conservation strategy, and more recently indications of declining abundance of blue cod, hāpuku/groper and other species have resulted in tighter controls.

The case for restrictions on recreational fishing inside the fiords has been built on a body of experiential knowledge that fishers have shared with the Guardians. There has been little quantitative scientific information, as getting this information at a helpful scale is cost-prohibitive. The Guardians acknowledge the challenge of trying to manage fish stocks that remain largely unmeasured. The Guardians, DOC and MPI Fisheries NZ are supporting the development of baited remote underwater video (BRUV) technology to better understand fish diversity and abundance.

BRUV's are units that can be dropped to the seabed, with a bait pot and a camera to understand what fish live in a particular place. A pilot study was carried out in 2021, a full study in 2024 and in February 2025 the most comprehensive study yet surveyed 209

locations throughout the Te Puaitaha/Breaksea Sound and Tamatea/Dusky Sound complex.

The advantages of BRUVs are that they record every species that they encounter rather than target individual species, so it's possible to record all recreationally important species that are drawn to bait.

One of the most exciting discoveries with the BRUVs was that there are still discrete areas in the inner fiords where hāpuku/groper are surviving within the Dusky/Breaksea complex. The location that seems to hold the best numbers of hāpuku is within the Moana Uta (Wet Jacket Arm) Marine Reserve. For several years there have been reports of a school of hāpuku at the head of the reserve (see New Zealand Geographic article) and the BRUV videos confirmed that they seem to be doing well.

The Moana Uta Marine Reserve has been in place for 20 years and there has been little sign in other DOC monitoring programmes of a change in fish abundance. It is possible that using BRUVs is a better way to monitor these species, but it is also likely that it takes a while before full protection starts to influence species numbers, especially in the innermost reaches of fiords.

With BRUV data now available to make better decisions on the fishery, DOC, MPI Fisheries, and the Guardians are better equipped to manage important fish stocks, and to understand what marine reserve protection may do in the future.

NZ Fishing Rules app – your must-have fishing companion

We get it – Fiordland's recreational fishing rules are getting rather complicated. To ensure you have the most up-to-date information at your fingertips, download or update this app before you head over the hill. [NZ Fishing Rules mobile app](#) | [NZ Government](#)





Ocean Guardian Award: Pete Young and Dr Rebecca McLeod, with Philipp Neubauer, Director, Dragonfly Data Science

Awards

We were thrilled to receive the Ocean Guardian Award at the Seafood Sustainability and Innovation Awards in September. The award is recognition of the Guardians' long tradition of environmental stewardship and decades of hard work by many people. It acknowledges the focus and determination of not just the current crop, but a long line of Guardians spanning more



Environment Southland Community Awards: Stewart Bull, Pete Young, Dr Rebecca McLeod, Kathryn McLachlan (Environment Southland), Jen Geange (MPI Biosecurity NZ), John Cushen.

than 20 years. The award is a testament to the way the Guardians promote collaboration and foster community support to address a wide range of issues in the Fiordland Marine Area.

We received two honours at the 29th Environment Southland Community Awards in October. The Guardians with the Deep Cove Outdoor Education Trust received Highly Commended in the 'Environmental Action in Education' category for the Fiordland Marine Education Programme. The Guardians' Chair, Dr Rebecca McLeod, won the

prestigious Kaitiaki Tohu Pou Award in recognition of her marine science expertise, leadership, and dedication to the protection and preservation of the Fiordland region.

It was such an honour to receive these awards and to have our mahi acknowledged in front of the community of Murihiku Southland, including many people who have supported and been involved with the Guardians. To receive these awards during the 20th anniversary of the Fiordland (Te Moana o Atawhenua) Marine Management Act made it extra special.

Heading to Fiordland this summer? Be prepared Hold a clean vessel pass

Applying for
a clean vessel
pass is a simple process
that can be completed online at
www.es.govt.nz/fmpp or by calling
Environment Southland on **0800 76 88 45**
to receive a hard copy form.

Your clean vessel pass comes with a copy
of our new book *Fiordland by Sea* – the
must have guide for boaties.



FMG-agency meetings 2025/26

Wednesday 26 November 2025

**Distinction Te Anau Hotel & Villas,
Te Anau**

Thursday 19 February 2026

Environment Southland, Invercargill

Monday 25 May 2026

Environment Southland, Invercargill

Thursday 13 August 2026

Environment Southland, Invercargill

Wednesday 11 November 2026

Te Anau (venue TBC)

For more information visit
www.fmg.org.nz

All welcome

Our quarterly FMG-agency meetings are
open to the public and agenda items
for discussion at these meetings can be
sent to the Guardians. The agenda is set
three weeks in advance of a meeting.



Te Rūnanga o NGĀI TAHU



Fiordland
Marine Guardians
Beneath the Reflections



Biosecurity New Zealand
Ministry for Primary Industries
Manatū Ahu Matua



environment
SOUTHLAND
REGIONAL COUNCIL
Te Taiāo Tonga



Fisheries New Zealand
Tini a Tangaroa



Ministry for the
Environment
Manatū Mō Te Taiāo

Ministry for Primary Industries
Manatū Ahu Matua



Department of Conservation
Te Papa Atawhai

Keeping in touch

The Guardians work hard to facilitate
community-led, proactive approaches
that are informed by the best scientific
information and knowledge available.
We place a high value on the experiences
and understanding of the Fiordland
community and encourage you to share
your thoughts with us. Please let us know
if there is anything you would like us to
cover in our next issue.

For more information visit fmg.org.nz or
email info@fmg.org.nz.

Thank you

Thanks to the following individuals
and organisations for the photos used
in this issue: **Dr Adam Smith, Dr Alice
Rogers, Dr Chris Moy, Department
of Conservation, Environment
Southland, Murray Willans, Ministry
for Primary Industries.**