ATA RANGI

Sustainability Report 2025


RANGI
NEW ZEALAND

CONTENTS

ABOUT ATA RANGI

THE VESSEL

Ata Rangi (a Māori phrase meaning, 'dawn sky' or 'new beginning') is an 82-foot, single-hull, three-level Viking 82 luxury vessel, equipped for fishing, sightseeing and guest-hosting, including overnight accommodation. Built in 2013, it sleeps six guests in three double cabins overnight, and is surveyed for up to 24 guests for a day charter.

It is operated as a charter vessel for most weeks of the year, with external charter bookings when owners are not using it. The boat is operated by four full-time crew – one captain, one chef/steward, one deckhand and one engineer. Additional part-time crew are hired on a casual basis, either to assist as stewards on charters where there is a high number of guests (typically day charters in Auckland), for cleaning and re-provisioning when there is fast turnaround between charters, or to cover watches when transferring between New Zealand and the Pacific islands.

In a normal year of operation, Ata Rangi is based out of Opua in the Bay of Islands, New Zealand, spending most of the summer and autumn in the Northland region, followed by a maintenance period in New Zealand's winter month of June, before transiting to the Pacific Islands (mainly Fiji and Tonga) for July through to mid-October. A maintenance period in November is followed by a pre-Christmas charter season in Auckland, and then a return to the Bay of Islands before Christmas for the summer.

KEY STAKEHOLDERS IN ATA RANGI

PETER COOPER Co-owner
JOHN BAYLEY Co-owner
STEVE GABRIEL Co-owner

COOPER AND COMPANY
The management company for Ata Rangi.

ATA RANGI CREW
The team that works on the vessel.

ATA RANGI CHARTER GUESTS
The clients who enjoy the vessel's services.

NORTHLAND COMMUNITY
The local community where the vessel anchors, and where most crew members live.

PACIFIC ISLANDS COMMUNITY –
The communities and villages visited during charter trips to Fiji, Tonga and other Pacific islands.

TE TAIAO, IN PARTICULAR TE MOANA
In accordance with tikanga Māori, the land, water and air are acknowledged as holding a right to their own continued existence and integrity.

OPERATING ENVIRONMENT: NEW ZEALAND'S BLUE ECONOMY

Ata Rangi operates within New Zealand's maritime environment. Increasingly, businesses operating within this environment are said to be part of the 'blue economy', particularly when consideration is being given to how the business impacts on the environment.

The vessel operates under regulations and standards set by the New Zealand Maritime Authority (which in turn operates under the broader international maritime system and regulatory context led by the International Maritime Organisation).

The New Zealand Maritime Authority has three core goals for the blue economy:

SAFE *HE HAUMARU* PEOPLE AND OPERATIONS

Supporting physical, social and economic wellbeing through safe maritime operations.

SECURE *HE WHITA* PORTS AND SHIPS

Protecting people, goods and New Zealand's social and economic interests.

CLEAN *HE MĀ* SEAS AND WATERWAYS

Playing our part in protecting and preserving the marine environment by minimising harmful emissions and discharges from ships. These form a solid basis for assessing how well Ata Rangi is playing its part in being a good operator within New Zealand's 'blue economy'.

ALIGNMENT WITH THE UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS

The 17 United Nations Sustainable Development Goals were established in 2015 and have become a widely accepted framework for businesses and other organisations to identify the most important areas of sustainable development to focus on within their work.

The following six Sustainable Development Goals have been identified as the most closely aligned with Ata Rangi's sustainability work, and also reflect the sustainability priorities of Cooper and Company.

Ata Rangi's Sustainability Goals for 2024

MANA WHAKAHAERE GOVERNANCE GOALS 2024

To complete the transition of Ata Rangi's Marine Transport Operating Plan to the SeaFlux system.

ACHIEVED

The system was transferred over, creating more seamless access for the full crew. "It's an easier user interface for all of us to get online and use as far as the maintenance programme and stock of all our spare parts," says captain Barnaby Newton. "Also, we can upload all our survey documents and vessel documents on there, like cruise certificates, and manage that side of it."

TE TANGATA PEOPLE AND CULTURE GOALS FOR 2024

To integrate Ata Rangi's crew wellbeing programme with the wider Cooper and Company Wellbeing Programme to give crew members a wider range of opportunities to pursue.

PARTIALLY ACHIEVED

While Chelsea-Mae was working in the Cooper and Company office during the refit period, she joined in some activities, but the amount of time Ata Rangi's crew spends in the Bay of Islands and their schedules made this hard to achieve.

To schedule training for Chelsea-Mae during the refit period with the team of chefs at The Hotel Britomart lead by Andrew Lautenbach and Tom Hishon, focusing on the utilisation of the full fish to reduce waste and extend Chelsea-Mae's repertoire with the fish caught during charters.

ACHIEVED

Chelsea-Mae spent a week at kingi, working alongside chef Tom Hishon on a five-course degustation dinner focused on using every part of the kingfish. *Read more on page 24.*

TE TAIAO ENVIRONMENTAL GOALS 2024

To investigate the Marine Metre Squared programme and find a way for Ata Rangi's crew to participate, particularly in the surveying of remote areas that are difficult for most people to access.

ACHIEVED

Ata Rangi's crew took a group of preschool students and their teachers to a remote beach to conduct a beach clean-up and undertake a survey on behalf of Marine Metre Squared. *Read more on page 20.*

To decrease Ata Rangi's carbon emissions intensity by two percent.

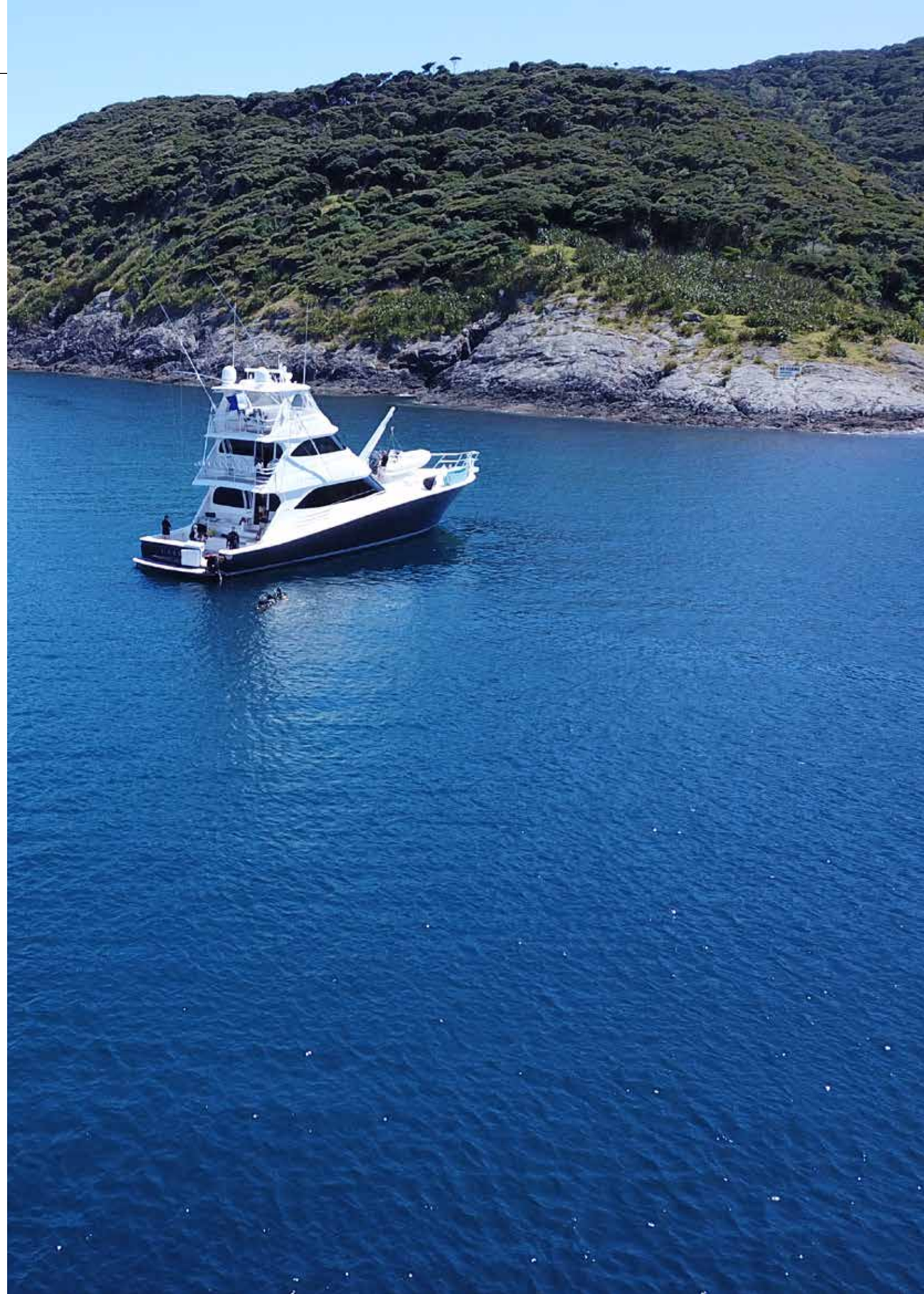
ACHIEVED

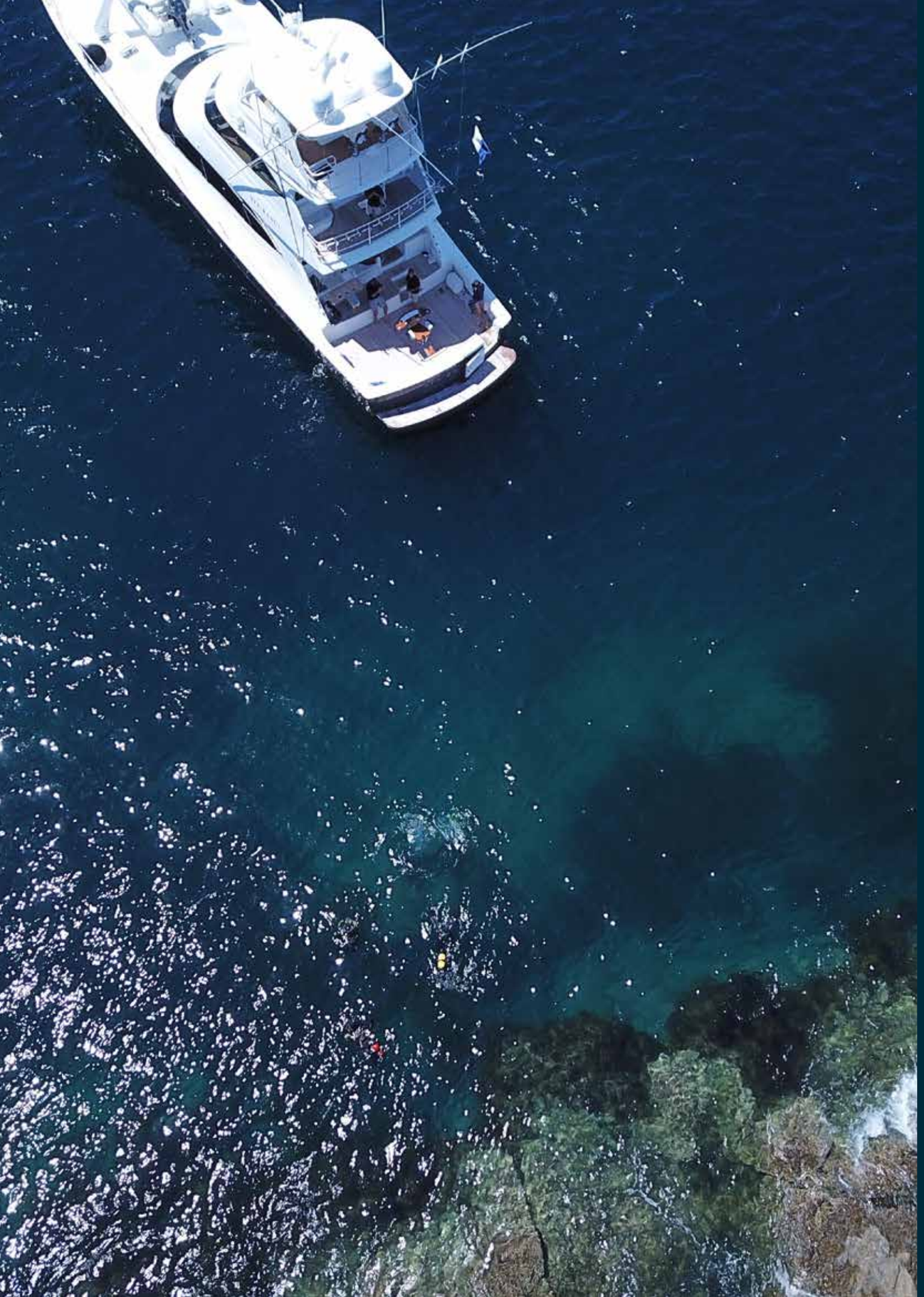
As Ata Rangi was scheduled for several months of repairs in the 2024/25 year, it was decided not to pursue carbon certification for the year.

To investigate Ata Rangi participating in the Mangōpare Temperature Sensor Programme.

ACHIEVED

This was investigated. The Mangōpare programme is currently on hold while wider sources of funding are secured.





Mana Whakahaere

Governance

Ata Rangi operates in a sphere that requires compliance with marine legislation across several territories, including New Zealand, Fiji, Tonga, the Cook Islands and Tahiti.

The business is reliant on the performance of a single capital asset – the boat – so having a good system of technical management is essential to ensure the economic sustainability of the business.

OVERVIEW

The 2024 year saw Ata Rangi's most substantial refit and upgrade in its 12 years of operation. From June until September, the boat was out of the water at SuperYacht Coatings in Tauranga for a full hull repaint (transitioning from gelcoat to paint) and mechanical and interior refit work, before relaunching in mid-October.

Normal operation resumed from November to May, with a corporate season in Auckland, owners' charters and Bay of Islands charters in January, a run of fishing tournaments from February to April and a return to Auckland for some further haul-out work for barnacle treatment and engine work. The season saw some good yellowfin tuna catches, but was mainly quiet on the marlin front (with the exception of one prize-winning fish during the Kubota Classic tournament), validating the old fishing saying that if it's a good yellowfin season, it'll be a poor marlin season.

REFIT AND REPAIR WORK

The refit of Ata Rangi was undertaken to address various maintenance, repair and upgrade needs. Prior to the refit, a project budget was created. As part of this budget, incidentals and a 20% contingency were added for potential out-of-scope works.

As expected during the refit, additional works were identified, and some works were more complicated than originally anticipated. While the majority of the work could be completed within the projected timeline, one item extended the duration of the refit (due to delivery timings), resulting in a project timeline extension of four weeks. This four-week period was used to finesse the existing works as well as complete any commissioning and system run-ups that could be done.

The additions, upgrades, modifications and extension-related costs were absorbed within the allocated incidentals and contingency, eliminating the need for additional funds to be introduced.

"The refit was successful and put the boat back mechanically to the level it should be kept at," says captain Barnaby Newton. "That puts it back into a more efficient programme where we shouldn't have to be maintaining things as frequently as we were."

The boat was subsequently taken out of the water in April 2025, for a short period to remove barnacle growth on the hull. "Opua is the worst place in the country for barnacle growth," says Barnaby. "The marine climate there has the perfect ingredients for growth. Many years ago the New Zealand authorities banned all the substances in anti-foul paint that stopped barnacle growth because the substances caused environmental issues. We weren't due for another anti-foul so we tried pressure-washing, but because the growth was so bad, some paint came off while pressure-washing the barnacles off."

A new Altex paint designed to repel barnacle growth looks promising. "They've done a lot of testing and I've seen photos without and then with that new paint, and it's all barnacles and no barnacles," says Barnaby. "So we may have to come out again in November and put some of this new paint on once it gets product approval and goes into the market. It will be more expensive, but if it gives us the results, it'll be worthwhile."

CERTIFICATIONS

In early 2025, the crew completed a renewal of their Oceana Medical Certificates, which is a boat-based first aid training programme.

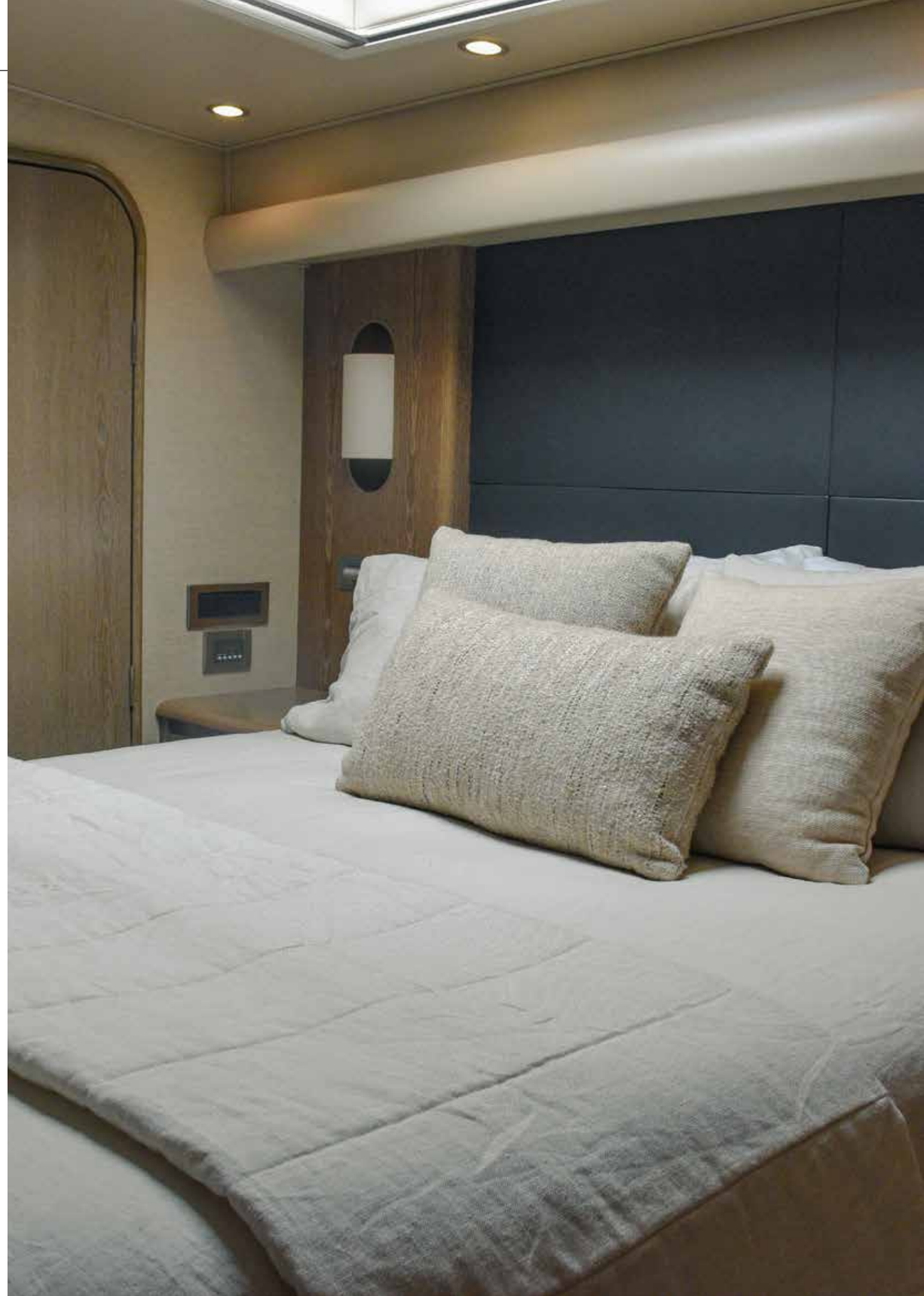
TOITŪ CARBONREDUCE

As certified by Toitū Envirocare, Ata Rangi's total greenhouse gas emissions for the 2023/24 financial year were 298.90 tCO_2e. These emissions were primarily associated with diesel use, with very minor (less than 1 percent each) amounts coming from indirect emissions from imported energy, fuel use for crew transportation and emissions from products used.

For the 2024/25 year and future years, it was decided to no longer pursue Toitū Carbonreduce certification for Ata Rangi.

THE REASONS FOR THIS ARE FOURFOLD

- In the 2024/25 year, Ata Rangi was set for a substantial refit that would put her out of the water for at least five months. This meant that the annual total would not represent a normal year of operation.
- After three years of completing audited greenhouse gas assessments, the boat's 'normal' emissions profile has been established. It is almost entirely tied to diesel use, which gives the crew a good ability to accurately estimate each year's emissions without going through the certification process.
- In the absence of suitable alternative fuels, the crew found that their ability to meaningfully decrease emissions was extremely limited. Ata Rangi is already operated in a highly efficient way, with a policy for minimising cruising speeds. The only way to decrease fuel use significantly would be to decrease the use of the vessel, which is contrary to the operation of the business.
- In light of the above, it was decided that the annual cost of emissions certification could be more meaningfully invested in supporting projects or organisations that are making a measurable positive environmental or social impact.



INTERVIEW

Melissa White, South Pacific Director, SeaKeepers

SeaKeepers is an international organisation that partners scientists with boat owners to help advance scientific work, while educating the wider community about the value of protecting our oceans. With the launch of a South Pacific chapter earlier this year, Ata Rangi has volunteered to find ways to help the organisation.

MELINDA WILLIAMS **Congratulations on the recent launch of the South Pacific chapter of SeaKeepers. Can you tell us a bit about the organisation?**
MELISSA WHITE SeaKeepers is a global nonprofit. It's based around ocean conservation through working with the boating and yachting community. We have four main chapters – the United States, which is our headquarters, the UK, we have a chapter in Singapore which encompasses Asia and then under Singapore they have a sub-chapter in Bangladesh and now the South Pacific chapter with me based here in New Zealand.

We're the newest of all the chapters, and I've been here for two years, so our recent "launch" was at the end of the two years of being here. But the first year was about creating my network and figuring things out and then in the last year we've been able to do a lot of actual hands-on work. Now, going forward, my range in the South Pacific goes from French Polynesia, all the way through the Pacific Islands to New Zealand, and Australia. Recently I've been getting a lot of requests in Micronesia. I also work a lot with our Asia chapter. Their focus has mostly been on education and not as much on the expeditions, so when we've been getting projects in their region, like in Indonesia, I have helped find the vessels.

MELINDA WILLIAMS How did you come to be working with SeaKeepers – what's your background?
MELISSA WHITE My background is in marine biology and the yachting industry. So it worked out really well that I'm working with SeaKeepers and getting to combine those two things.

MELINDA WILLIAMS New Zealand has quite a large boating community, doesn't it?
MELISSA WHITE Yes. In the South Pacific region in general, I found I get a lot more people coming through on sailing boats and people doing world cruises than in the US, where you get the boats that move between the Mediterranean and the Caribbean. I think with people on big journeys, you're more often getting boats that want to participate in what we're doing, versus boats that are solely for charter.

MELINDA WILLIAMS What kind of projects are SeaKeepers working on here in New Zealand?
MELISSA WHITE Within SeaKeepers we have our programming department, and within that we have four main areas. We have our scientist-led expeditions. That's our top tier, where a vessel can take a group of researchers out on the water. Sometimes they can be day trips, sometimes they're overnight or need a week or two. I think the longest we've done is three weeks to a month onboard a vessel. It all depends on what the vessel can give. Sometimes we work with small teams that have one or two people and they only need a few days. So we try to find projects that work with what the vessel can offer as well. After that, we have our citizen science data collection that the vessels or the crew can do for researchers, but without having to host anybody on board. We have a few different projects that are global projects and then we have some projects that are local to the area. Depending on the vessel and what their itinerary is, we will push for different data collections from them.

We bring everything back into our education and community engagement, we do beach cleanups and dive cleanups. We'll speak at conferences, we attend events. We can go into classrooms and do activities, we have floating classrooms where we try to find vessels that can host a class on board a boat and we can do hands-on activities on the water.

And then we have our Junior SeaKeepers programme, which is geared towards high school students between 14 and 18 years old, and that's a little bit more in depth. Those are for students who may be interested in going into the marine science field. We're giving them knowledge of the scientific method, and they get to participate in webinars from our global researchers. This year, we've just launched the International Junior SeaKeepers programme. This used to only be held in South Florida, but now all of the chapters are going to be participating, and this year we have 10 students from New Zealand.

We also have a teacher workshop. So we're teaching the teachers things they can bring back to their classroom. The first weekend in May, we had our very first teacher workshop here in New Zealand and that went really well. We did that in Leigh at Goat Island and partnered with the Discovery Centre so we could use all the facilities there, which was the perfect location.

MELINDA WILLIAMS Do you find you're collecting a lot of rubbish on the beach clean-ups? On beach clean-ups we've done on Ata Rangi in the past, there's always litter, but often it is more of the microplastic variety.
MELISSA WHITE South Florida is a huge tourist spot, so those beaches are just completely littered every day and there's certain waterways that the SeaKeepers go into to clean up. They have beach clean-ups two to three times a month and then they do dive cleanups during the summer months. This is not a bad thing, but it's a lot harder to find a beach in New Zealand that has a tonne of trash on it so we can do beach cleanups. We did one in Auckland and we had about 13 people attend and although the more you look, the more you find, it wasn't near as much as they as they pick up in South Florida. So we probably wouldn't do those as regularly as they do there unless we did find a beach that really, really needed it or perhaps a waterway that feeds into the ocean. So we are looking at other ways.

MELINDA WILLIAMS What are the main scientific organisations you work with here?
MELISSA WHITE With our scientists-led expeditions we either are in contact with researchers from around the South Pacific area or they find us and they'll submit a proposal to us for a project. That's when I use my magic with the yachting industry and promote it through yacht agents or marinas or going to boat shows and going to different yachting events.

So if I've connected with a vessel that's going to be going from Tahiti to Fiji and stop in at the Cook Islands and I have a project there, I'll try to propose that to them and see if it works out.

We work really closely with Manta Watch *(read more on page 26)*. We have a couple of vessels that are based out of the Auckland area that pretty much always say yes when there's an opportunity because they love it. So we've been able to get Lydia out on the water more often and for longer periods of time because the vessels we use have overnight capacity. We are trying to find vessels in other areas of New Zealand because she's really interested in surveying the Far North and down in the Bay of Plenty and even on the West Coast. That's something we'll probably focus on a lot next year is finding the time to do the expeditions and having the weather windows.

We are also starting work with the Department of Conservation. They have some big projects that are far south in the Subantarctic Islands, which are hard to find vessels for. And we are now partnering up with WWF. We have quite a few partners in New Zealand, but research-wise, I say Lydia keeps us the busiest here. Another organisation called Green Wave and Envirostrat, is doing work with replanting kelp forests and removing kina from the kina barrens and we are hoping to help get them access to vessels to do their work.

MELINDA WILLIAMS Do you have a minimum size boat that you're looking for or can even a little runabout that you might pop over to Waiheke for the day on take part?

MELISSA WHITE Yes, they can. For example, the Waiheke Marine Project are doing lobster surveys around Waiheke, so they are needing day boats. We were able to find a couple for them but most of my boats have just left New Zealand to go to Fiji with the weather window.

MELINDA WILLIAMS And what other ways can people support your work?
MELISSA WHITE If you don't have a boat, people can come and volunteer to do a cleanup or be a part of any of our education, we're always looking for volunteers there. If they want to support us financially, that's also an option. We've just set ourselves up as a charitable trust here in New Zealand. We're also setting us up as a charitable trust in Australia to be able to give people who want to donate on this side of the world tax benefits. Or if they've got an education background or can help create education materials, we're always just looking for volunteers. If somebody has skills that they want to offer we're happy to work with them.

Te Tangata

People & Culture

Working on a charter vessel requires flexibility in working hours, solid operational knowledge and experience with a range of maritime conditions, as well as strong health and safety understandings and first aid skills.

OVERVIEW

Ata Rangi runs four full-time crew, plus additional casual staff when charters require it. In 2024, Andre Duurentijdt joined the crew as deckhand, and MEC4 engineer is currently being sought. Ata Rangi's full-time crew are paid at a good market rate, well above the Living Wage standard.

Due to the nature of charter vessel work, periods of work can sometimes extend beyond a standard working week. When this occurs, the rostered days off expected in the course of normal full-time work are calculated and supplied to the crew as lieu days, a practice that is fairer than the industry standard. All crew members on Ata Rangi are able to privately access mental health and wellbeing support via the Employee Assistance Programme, at the cost of the company.

MARINE METRE SQUARED COMMUNITY DAY

In November 2024, the crew of Ata Rangi took a group of teachers and children from the Paihia Early Childhood Centre out to a beach on the Okahu Passage (between Okahu Island and Waewaetorea Island) in the Bay of Islands for a beach walk and engagement with the Marine Metre Squared programme.

"The childcare centre does a great job for the community," says captain Barnaby Newton. "We have a long-term relationship with them so it was nice to be able to do something that gives back to them."

Established in 2013, the Marine Metre Squared programme is an citizen science ecology initiative that asks people to set a one-metre square frame down somewhere on New Zealand's coastline and carefully document everything found within the frame, which is then submitted to the New Zealand Marine Studies Centre at the University of Otago.

The key goals of the project are to have the world's most well-documented coastline, to build a rich database for New Zealand and Australia's marine scientists, and to engage the New Zealand community in learning about and caring for our seashore.

"I'd like to do more days like this," says Barnaby. "It would be good to try some other beaches, because the beach we went to was pristine, which was good, of course. But it'd be nice to go somewhere where there is more to examine."

TOWEL DONATIONS

During the linen refresh in Ata Rangi's staterooms, the towels were changed out for new ones. This left 14 bath towels, 13 hand towels, 17 facecloths and 3 bath mats available for donation.

Although the towels were in excellent condition, most charity shops will not accept towels for resale. Instead, the towels were donated to the Auckland SPCA to be used in their animal shelter.

Te Taiao

The Environment

New Zealand's marine environment confronts a range of human-caused challenges. Climate change-related acidification and marine warming, overfishing, commercial fishing bycatch, seabed destruction, ocean pollution from oil spills, liquid waste from boats, industrial and agricultural pollutants and waste (especially plastic) from vessels and land all impact on the purity and functioning of the marine environment and the blue economy that relies on it.

OVERVIEW

This year, Ata Rangi's crew continued to fish sustainably according to vessel policy, and encouraged charter guests to do the same. Kingfish, tuna and snapper are the most typically 'landed' fish, with the vast majority of marlin and other large gamefish being released.

On the rare occasion that guests catch more fish than they need themselves, additional fish is distributed to neighbours at the marina and even guests on subsequent charters who have not had a catch. Food waste reduction was also a focus, with chef-steward Chelsea-Mae undergoing training at sustainable seafood restaurant kingi at The Hotel Britomart.

FOOD WASTE REDUCTION

Minimising food waste is an ongoing project for chef-steward Chelsea-Mae Wheeler. Although much of the minimisation can be done at the front end of the food preparation process, through good menu-planning and careful provisioning, she is always keen to find new ways to reduce waste. Last year she had the opportunity to work with some experts – the chefs at kingi restaurant at The Hotel Britomart, who are closely focused on reducing waste.

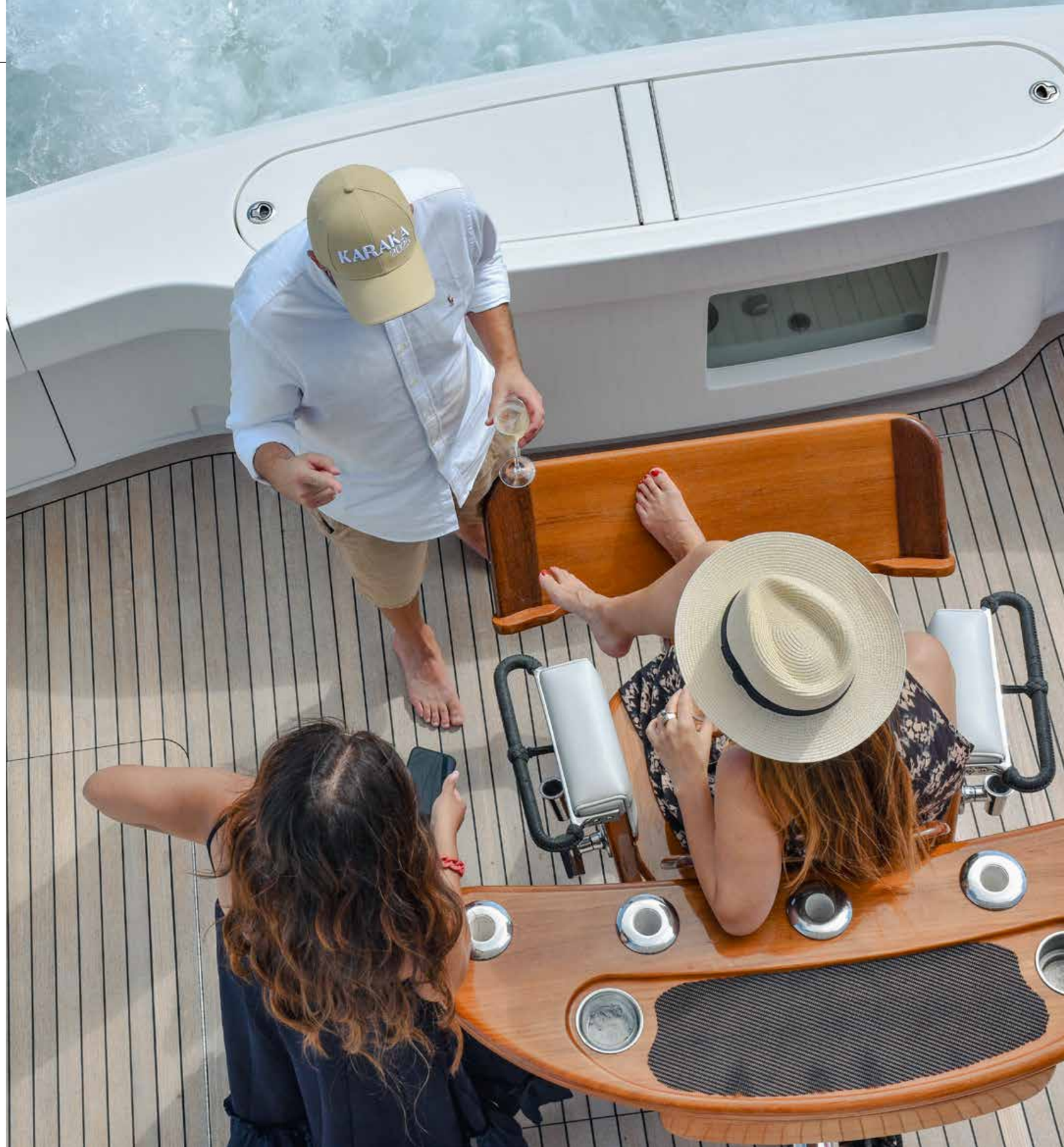
"Last year I spent a week at kingi, and during that time the main thing I was working on was the Kingfish 5 Ways Dinner, where the idea was to use a whole kingfish," says Chelsea. "We did five courses that used different areas of the kingfish. Some of them were a bit eccentric, including a seafood caramel."

Her main improvement came from refining her knowledge of the usable parts of the fish. "I learned more in terms of what was edible and what was completely fine to cook with, compared to what I would normally trim off. In that way there's been less food waste. My knife skills also improved, so I can trim better and lose less fish."

Although she learned a wide range of techniques for reducing food waste, some of them were difficult to transfer to her working environment. "A lot of the techniques they use I can't do because of the size of the galley, and the space we're working with, and we don't have the same extractor fans, so I can't deep-fry or smoke fish on board because the smell would be quite overpowering."

However, she could see the benefits of the techniques she learned. "Having a smokehouse or the option to smoke fish would probably reduce quite a bit of waste, because you've got parts of the fish like the wings [fins], that would normally be thrown away. It would have to be at a marina because it would probably damage the teak if I used one on the boat."

The recent refit of the boat has also seen Chelsea-Mae enjoying a more sustainable cooking set-up. "We've got an induction stovetop now, so that been quicker to heat up, and it's more efficient than an electric cook top. All the pots and pans already worked on it, so we didn't have to change anything over."



INTERVIEW

Lydia Green, founder, Manta Watch

This year, the Ata Rangi crew signed up to become part of the informal team of citizen scientists helping study New Zealand's manta rays. Anyone who is a regular boat user can download the Manta Watch app, and add sightings of two types of manta rays that frequent New Zealand's waters. Three sightings have already been reported through the app by the crew and they will continue to look for mantas when they travel to the Pacific Island in the middle of 2025.

Although manta rays are typically found in tropical oceans, they often venture into New Zealand's subtropical and even temperate waters. We spoke to Lydia Green, founder of Manta Watch and the associated app, about why she calls manta rays the "gateway drug" into a fascination with ocean life.

MELINDA WILLIAMS Hi Lydia. Could you start by giving us a brief history of Manta Watch and what its aims are?
LYDIA GREEN Manta Watch New Zealand (MWNZ) is a charitable trust that I set up in Feb 2020. The initial mahi began in 2017, when the project was primarily citizen science and information-gathering focused. MWNZ are now in our fifth year of dedicated research on Aotearoa's oceanic manta ray population.

Oceanic mantas are a globally endangered species. A key threat in New Zealand is the lack of data; we simply don't know enough about the mantas to be able to protect them. Another key objective for MWNZ is to achieve greater ocean and ecosystem-wide protection through manta ray conservation. Manta rays are majestic creatures and a real conservation connector. People get obsessed with the species as soon as they encounter or learn about them. And so, a massive part of our mahi is enabling or facilitating that wider connection for people to the moana and to our vulnerable offshore spaces. We primarily do that through education and outreach.

We actually have two species of mobulid ray in New Zealand waters: oceanic manta rays can get up to 7m across and their smaller cousins, the spinetail devil rays max out at about 3m across. Spinetail devils are the largest of the seven devil ray species found globally. Like mantas, they're also an endangered species, and we know even less about them. The main reason for that is that they spend most of their time in deeper water, so they're harder to access. We have received a lot more data about them since the release of the Manta app in Dec 2024, which has enabled the project to tap into those less accessible marine environments.

MELINDA WILLIAMS Can you explain how the Manta Watch app – which the team on Ata Rangi have downloaded and are using – operates?
LYDIA GREEN The Manta App has been designed to streamline MWNZ's data collection process, as over 70% of the project's data is submitted by citizen scientists. Time, date and GPS location are critical and recorded automatically by the app. This enables users to concentrate on taking videos and photos. We can verify the species, whilst learning about population and specifics relating to the individual animals. Manta rays have a unique spot pattern on their belly and shading on their heads, so it's possible to photographically identify individual manta rays. MWNZ catalogues these 'Photo ID' images, which form the basis of a lot of our research. Individual mantas encountered multiple times are known as a resighting and the more re-sightings we collect, we can start to get a wider understanding of the size, health and threats that the population is exposed to. This research method allows us to track an individuals' development and movements over time, in addition to injuries and recovery time and for females, we record signs of mating and/or pregnancy.

MELINDA WILLIAMS Do you have any idea at the moment, rough estimates?
LYDIA GREEN At the moment we have 206 manta Photo IDs and only six re-sightings. On big field work days, where 30 to 40 animals are all feeding together, you'll get as many IDs as you can. You can go back to the same area the next day and you'll have all new animals. We use a combination of aerial drone and underwater photography to collect the high-resolution imagery that we later analyse. When the conditions are just right and there's enough food, huge numbers of oceanic manta rays are attracted to our inshore waters. I've also seen big feeding aggregations in the Hauraki Gulf spanning several nautical miles. We know that the NZ manta ray population is connected to the Fiji and Tonga and a lot of other areas, so I'd say that the population is at least low thousands. It's significant.

MELINDA WILLIAMS What are the rays feeding on in these large aggregations?
LYDIA GREEN Manta and devil rays are filter feeders. The main reason they're called mobula rays is that they have two lobes on the front of their heads called cephalic fins. These lobes unfurl and help funnel food into the rays mouths as they swim through their prey. Manta and devils rays eat zooplankton, tiny marine animals like krill. Late spring to early autumn is peak manta season in Aotearoa, this is when our inshore waters are at their most productive.

Mantas have a variety of ways of feeding, but one of their most spectacular strategies is called somersault feeding, where they essentially do a backflip with their mouth open. The motion creates a little whirlpool or eddy in the water, concentrating the krill, making it easier for the manta to gobble up as much as possible. You actually see the krill jumping out of the water as the manta gear up to somersault. It looks a bit like fairy dust as they catch the light. So when the mantas are somersault feeding right on the surface, we hover a drone over the top, and then we can take high resolution video and the super important photo ID that we need.

MELINDA WILLIAMS How did you come to be interested in manta rays in general?
LYDIA GREEN I've been obsessed with and deeply connected to the moana since I was about four years old. I was born inland, so I didn't have access to the ocean for most of my childhood. From the age of about 10, I've been fascinated with sharks and rays as well as fish generally. I've worked in the marine space coming up 20 years now, in all many sectors, learning about and gaining first hand experience in the many ways we interact with our marine spaces. I started getting into manta conservation in 2015 through another job, and I was like, 'Oh, these guys are pretty cool.' And there's so much that we don't know about them.

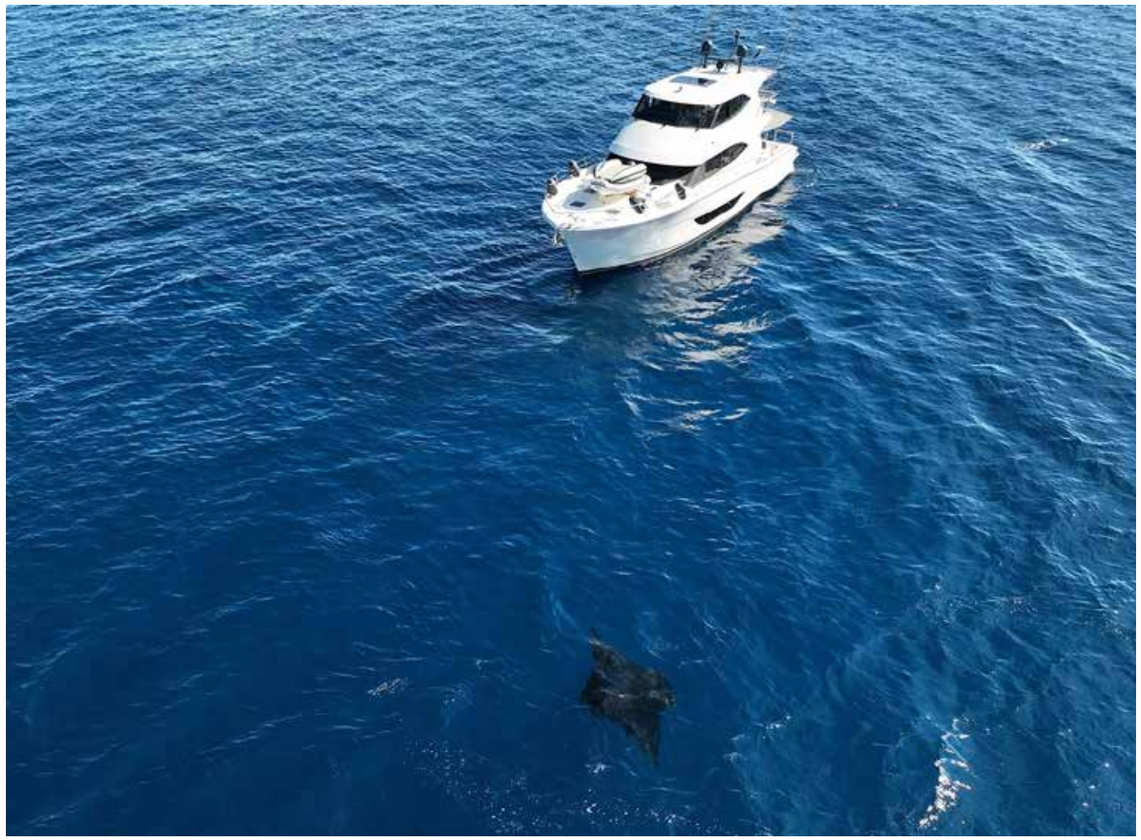
The discoveries we've had so far with New Zealand's oceanic manta have broken all the records for what we thought was possible for the species. We've tracked them further than any individual manta has been tracked, a return migration of over 9,000km. They dive really deep, down to at least 1.6km. And as a result of that, they're going into really cold water about 3.5 degrees Celsius. We didn't know any of that 4 years ago! We believe that mantas dive down when they're migrating to a depth where they can access the earth's magnetic field, and they use it to navigate. Through our satellite tag analysis, every time we've had a deep dive, the animal generally changes direction slightly. They're also highly intelligent, social, and really interactive. There's a lot of cool and exciting things that we're just starting to get an understanding of.

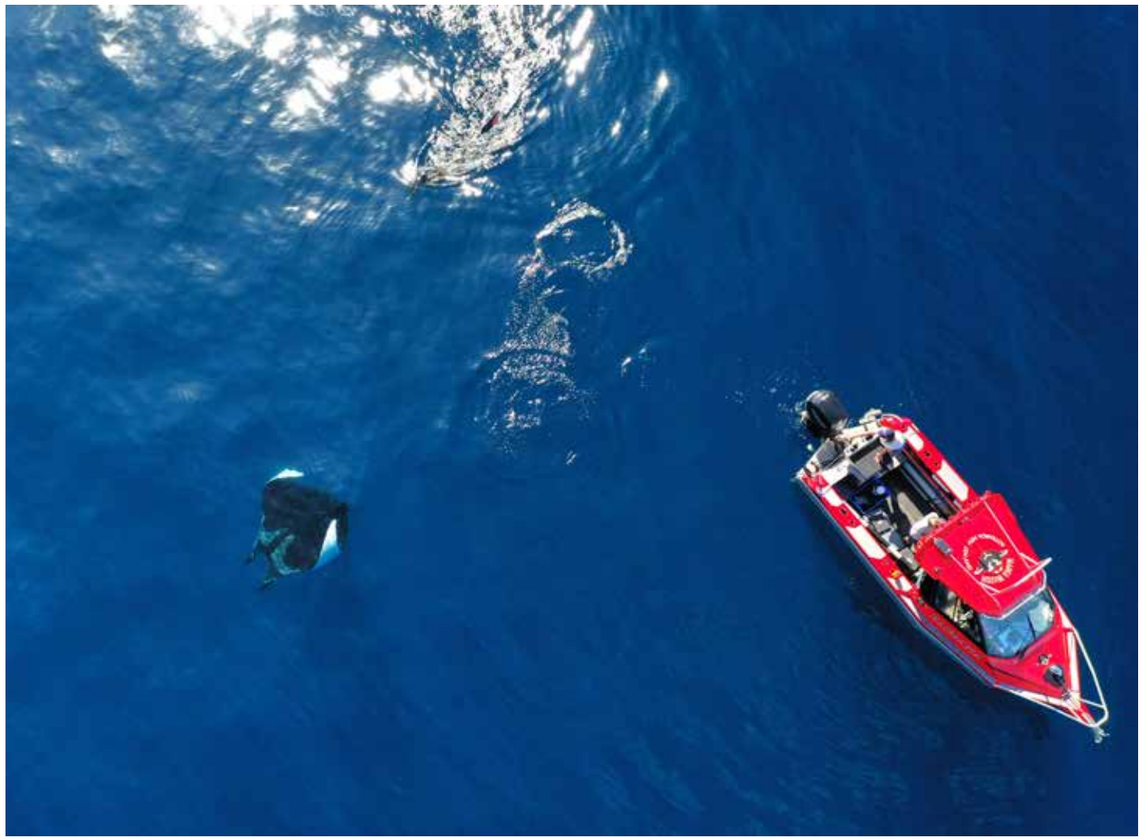
MELINDA WILLIAMS When you say 'interactive', do you mean they're interested in humans?
LYDIA GREEN Yeah, they'll fully check you out. Mantas are the only fish species to have passed the mirror test, as have dolphins and chimpanzees. Basically, proving that they are self-aware and know what they are in relation to everything else. Certain mantas can have an affinity or bond with a particular human. Manta rays really do make eye contact with you, and they can tell different faces apart. When you have a really good interaction, the manta will come right up to you, and check you out, even hover directly over you. I've been pinned onto the sand whilst a manta has hovered inches above me, just checking me out. Each manta ray has a different personality and a different mood. They are truly captivating animals.

A manta ray's brain structure is quite different and more complex compared to other shark and ray species; they're actually more comparable to a marine mammal. They're cold-blooded because they're a fish; however, the heat they generate through movement is re-circulated back into their brains, making it warmer than the rest of their bodies, promoting cognitive function.

MELINDA WILLIAMS When you said 'cleaning stations' before, what did you mean?
LYDIA GREEN Cleaning stations can be found on certain coral reefs or bomies and rocky reef systems, in tropical and temperate oceans respectively. These stations are made up of communities of smaller 'cleaner' fish species that in turn attract larger species by providing a cleaning service. For example, manta rays and turtles will routinely spend time at cleaning stations getting parasites removed by cleaner fish, and in exchange the cleaner fish get a free meal. Cleaning stations also serve as social hang outs for manta rays, research has shown certain mantas even go and get cleaned together aka spa buddies. A key aim of our project is finding out whether we have cleaning stations in New Zealand, what they look like and how they function for mantas and other large marine species. Currently, our main interactions with mantas are when they're actively feeding, they usually swim fast, often erratically. As you can imagine, this behaviour makes the tricky job of collecting data even harder! So, if we could find mantas relaxing at a cleaning station, it would totally revolutionise our project.

MELINDA WILLIAMS On the sightings map on the website, it seems like the vast majority are down the east coast of New Zealand to the top of the East Cape. Is that fully reflective of where they live, or is that in part due to not having as many eyes on the water further south?
LYDIA GREEN Our sightings data is skewed in terms of survey effort. My team and I do the majority of our manta surveys around the Hauraki Gulf through to the Poor Knights. And we obviously have the largest human population in Auckland, so it's expected that we will get the most sightings in areas of high use i.e. the Gulf. But yeah, the general distribution for mantas is from North Cape to East Cape on the east coast. I'm pretty sure we also have a significant manta population





Drone images of manta rays captured in New Zealand's inshore waters.

on the west coast too; however, we have very little survey effort out those ways. That said, we have received a few sightings out of Manukau and a couple around Kapiti Island. Mantas can handle the cooler waters down there. I also think that we probably have quite a lot outside of Taranaki, and around the upper Northwest coast of the South Island. Basically, anywhere where you have resident baleen whale populations, e.g. blue whales, as they're all feeding on the same food source.

MELINDA WILLIAMS So you're looking to recruit people all throughout that upper two thirds of New Zealand.

LYDIA GREEN Yes, New Zealand ocean users in known manta areas and further afield into the southwest Pacific. We know a proportion of the New Zealand manta population migrate out of New Zealand waters towards Fiji and Tonga mid to late autumn and back again in spring. Whilr they're using this extensive migratory corridor, mantas rays don't have any conservation protections, so it's really important to learn more about manta movements in these multijurisdictional spaces. We recently received our first migrating manta sighting outside of New Zealand, 500 nautical miles northeast of the North Cape! Just through the last three years, we've gained significant traction with the public and ocean communities. For example, manta were originally thought of as a purely offshore species. Now we know they're just as inshore, even coastal over New Zea;and summer. And as a result, we understand more about the threats that mantas are exposed to in these areas. They're huge, but can be very hard to spot, especially when they are slowly cruising just under the water's surface, not making a splash. Hanging out in busier waters and in the middle of shipping lanes poses a high risk of boat strike, which we previously were not aware of.

MELINDA WILLIAMS Where do you typically derive funding from?

LYDIA GREEN Currently, Whakatupu Aotearoa Foundation are our main funders. I'm still not on a full-time wage yet. That's a key target that I'm trying to achieve this next year, while also building project capacity. As the Trust's founder and project primary scientist, I feel like I have 12 different jobs. I'd like to drop that down to 5 or 6! I'm training people all the time, but we need the funds to enable the right people to commit to these roles. Another side of the project is building capacity within the community, providing training, internships, and fostering long term partnerships with mana whenua. We also get some funding through Live Ocean, the last two years they have done a public ask, which is always massively appreciated. We also get some money through community funds. Having to regularly reapply for wages takes my capacity away from other important mahi, which isn't ideal. We also run educational fundraising events, like movie screenings, where a proportion of ticket sales go back into the project. People can directly donate to the project via our website, purchase manta merch and even Adopt-a-Manta. As with any small charity, it's important to diversify income streams and ensure it is super easy for people to donate.

MELINDA WILLIAMS Is there anything else that you think is important for people to know about Manta Watch?

LYDIA GREEN The key take home message I want to emphasis, is that everyone who submits data to the project is actively contributing towards valuable science, that will not only positively benefit manta rays, but also our oceans. The data we've collected as a community has resulted in some hugs conservation wins. Firstly, this data has supported the upgrade of the New Zealand threat classification status of oceanic manta rays from Data Deficient to Nationally Vulnerable. Consequently, the government / DoC are now obligated to put more resourcing into learning about and protecting manta. Secondly, we've been able to establish three key areas of significance: both the inner and a proportion of the Outer Hauraki Gulf have been recognised as important feeding areas for manta and devil rays respectively. And last but no means least, the huge 400,000 km ocean basin between Aotearoa and Fiji and Tonga has been recognised as an important migratory corridor, not only for manta, but for multiple threatened shark species. These areas are called ISRA, Important Shark and Ray Areas. 3D sections of ocean from the surface to the sea floor, that help set the foundation for future protections. We know that our oceans are hurting, and they need our help. I believe we can gain greater ocean protection through manta ray research and conservation, which will ultimately result in a healthier, more resilient ocean that will benefit us all.

Summary of Ata Rangi's Sustainability Goals for 2025

2025 **MANA WHAKAHAERE** GOVERNANCE GOALS

— To investigate setting up a tree planting programme in partnership with The Landing as an informal method of carbon mitigation.

TE TANGATA PEOPLE & CULTURE GOALS

— To produce a booklet guide to reducing seafood waste for guests, using Chelsea-Mae's knowledge gained during her time at kingi.

— To work with Manta Watch to support their data-gathering.

— To find a way to work with SeaKeepers to support either their research or education goals.

2025 SOCIAL GOALS

— To find another worthy local community organisation to take out on a Marine Metre Squared project and beach clean-up day.