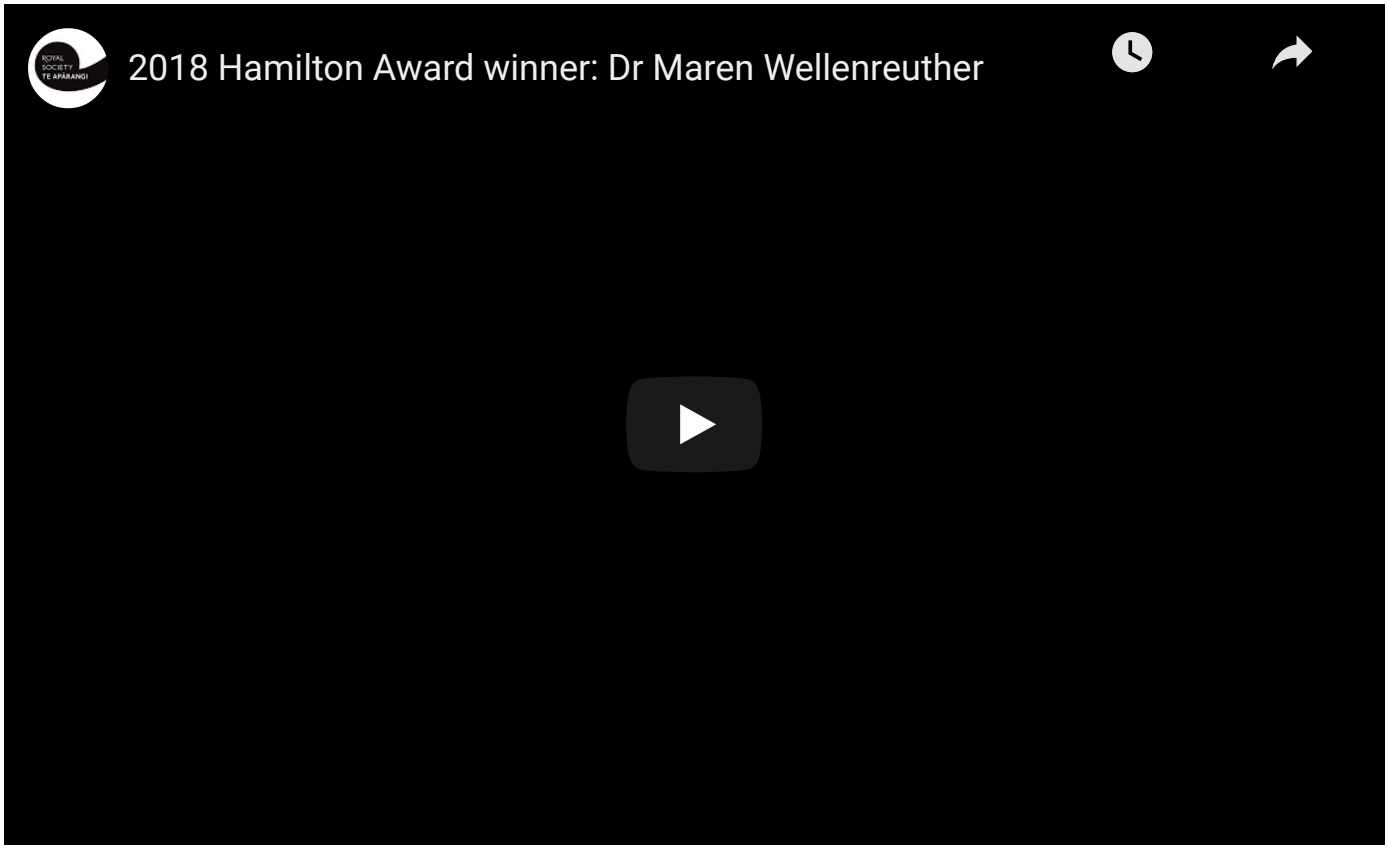
Dr Maren Wellenreuther

2018 Hamilton Award winner, Associate Professor Maren Wellenreuther, divides her time between the land, the ocean and her three children.



Despite being born far away from the sea, Associate Professor Maren Wellenreuther has devoted her career to studying life underwater.

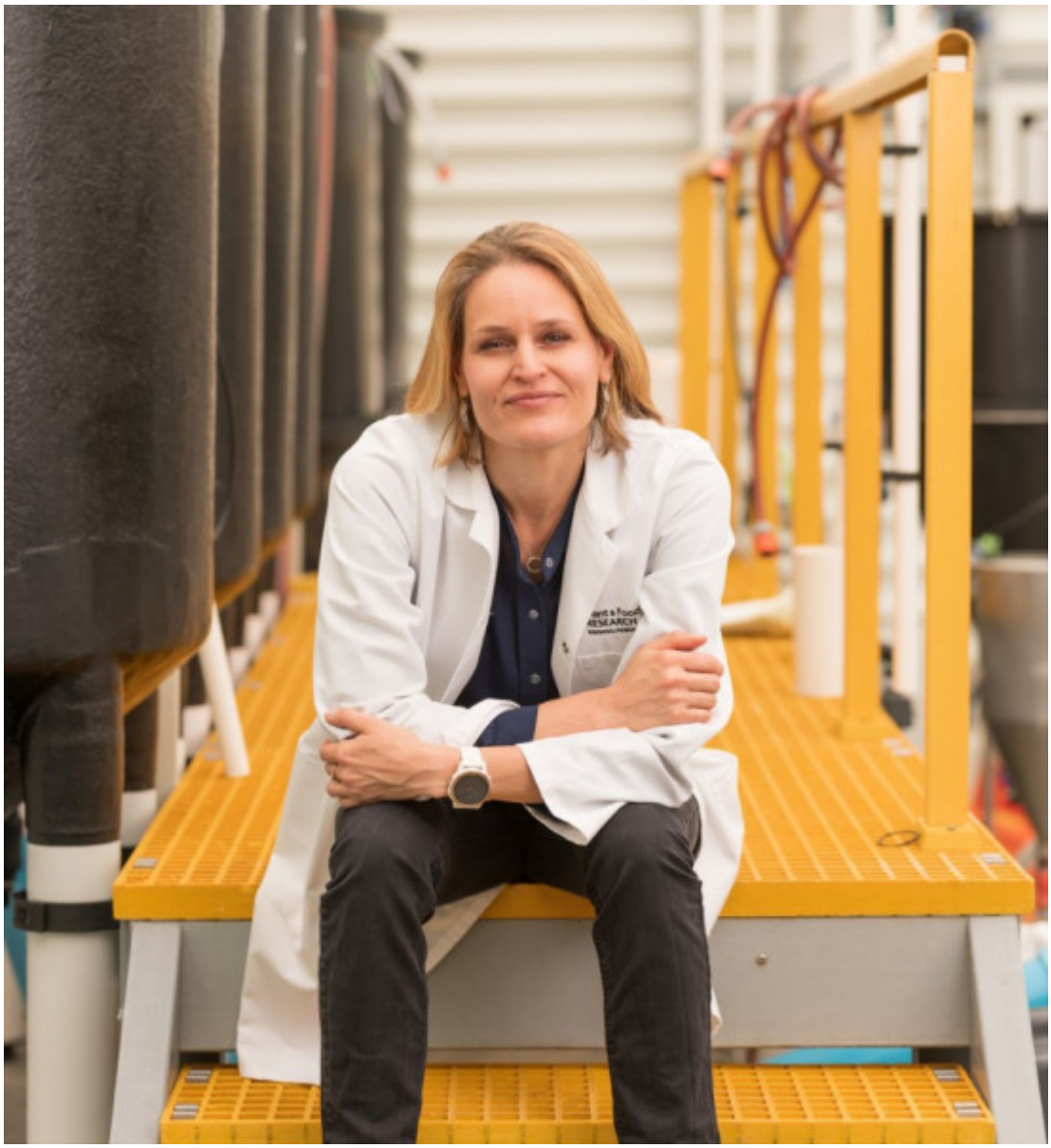
From a young age, she expressed a passion for the outdoors, but it was a trip to Malaysia in her twenties where she learned to dive that really sparked her interest in studying marine life.

Now, Maren leads a research project to develop a new species for aquaculture in New Zealand. This species will be a native finfish, such as snapper or trevally, which she plans to have ready within the next decade.

A $5.5 million MBIE grant allowed Maren to gather together a diverse team of scientists to work on this project - but her team is not always limited to scientists. Sometimes, Maren is joined by "little helpers" - her three young children - who also like to get their feet wet and investigate life that swims and flies in

Research Excellence Award for Science) for her advocacy in applying genomic-based methods to the seafood sector and highly innovative approaches to aquaculture breeding.

Maren discusses life back in Germany, motivations behind her research, and how she juggles a very busy schedule by taking life day by day. She also shares her hopes to contribute to a more sustainable future for her family, and for Aotearoa.



Q: You grew up in Germany, what drew you towards the water?

A: I was born in Gottingen which is smack bang in the middle of Germany. I was basically as far away from the ocean as you can be when living in Germany. As a kid, I had holidays at the beach, and I always loved to be near the ocean, but at that time I had no idea that I would end up focusing my professional life a lot around what lives in the ocean. The game changer was a holiday during my early twenties that took me to Asia. I took a short holiday break during my biology studies to visit Malaysia and that is where I learned to dive. Seeing life in the ocean for what it really is was fascinating and made me very interested to find out more about it.

Q: What brought you to New Zealand?

A: I studied for my MSc degree in Australia and visited a friend of mine in New Zealand for Christmas. During that visit I ran into the father of my children. He was from Auckland and we decided to do a PhD at the University of Auckland. After that we moved for eight years to Scandinavia and following that we moved to Nelson, where we are now based.

Q: How do those lifestyles differ?

A: It's a little upside down. Right now, when we are getting close to Christmas, I certainly feel the differences in season and climate. People in New Zealand are real outdoor lovers and I enjoy that people on the streets are so diverse.

Q: Do you miss anything in particular about Germany?

A: The bread!

Q: Are a lot of your family and friends still there?

A: Everyone is there, except my sister who is currently living in Australia.

Q: Do they know about your research here?

A: Yes, we talk about it. My family has always been really supportive of what I am doing and showed a lot of interest. They are, of course, sad that I live far away, but I try to see them once every year.

Q: Growing up, did you always know you wanted to be a scientist?

A: I realised from an early age that I wanted to pursue biology. My dad always took me on long walks through the forest and talked to me about the trees and birds around us. He also, even though he is a social scientist, had a real experimental approach to life, and that was strictly embedded in my thinking early on in life.

Q: We (the Society) recognised you for remarkable research, but you are also a young mother of three?

A: My life is busy and it's not easy to sit down. My kids are 3, 8 and 10, and they are all little firecrackers. They certainly make you decompress from work when you are with them, because they need 100 per cent attention, so that is great. Their father has been extremely supportive which has allowed me to travel once the kids were a bit older, and work longer hours when I needed too.

Q: How do you balance these two worlds?

A: I do not have a lot of strict rules. I take my week day by day. With kids and a big work load you need to retain flexibility in case one gets sick or when a proposal has an approaching deadline. Talking about what is pressing in your schedule with the people around you helps to prioritise, and to make time for it. One also needs to learn to say no and to delegate, and this needs to be learned. I am a person with a lot of energy and a lot of optimism which has helped me through trying times.

Q: Do you have a go-to meal for busy times?

A: Spaghetti bolognese with a large salad and garlic baguette. It's comfort food that the whole family loves.

Q: Does researching the fish industry change the way you grocery shop?

A: It does to some extent. I try to have fish at least once a week and whenever I buy fish I try to buy products that were caught or produced locally, ideally using sustainable methods.

Q: In Nelson, is your backyard your lab? Does this make it hard to step away from it?

A: Nelson is beautiful. My office is located next to the port, and oversees the ocean. You can see snow-tipped mountains from my tea room. Right next door we have our finfish facility where we breed and hold fish, and our experimental sea pen is in the Marlborough Sounds. I always have a big smile on my face when I arrive at work in the morning and think 'my wallpaper today is stunning'. On the weekends I like to explore the surrounds and go trail running. I love going up the hill and seeing the rest of Nelson getting smaller and smaller. It puts things into perspective, and we all need to do that from time to time to reset.

Q: Do your children like to head into the field with you?

A: Oh yes, they have been little helpers since they could walk. They have been catching damselflies and seaweed flies with me in Scandinavia when I was studying insects, and also collected washed-up seaweed with me from the beach to feed my seaweed flies in the lab. They love fishing and then dissecting the fish afterwards. However this does not happened too often as I am not a good fisherman, and rarely catch a fish.

Q: Do you ever watch "Finding Nemo" with your family?

A: We have not done that yet - and when we do I have to be careful not to have my scientist's hat on. For example, my science brain might think - why does Nemo's dad not become his mummy? This is because clown fish can change sex and when the female dies then the dad typically becomes the mother...

Q: Can you explain what got you interested in aquaculture? How is it a sustainable alternative to commercial fishing?

A: New Zealand has an extensive coastline. Aquaculture has the potential to remove some of the stress from the land that we live on, and to utilise the ocean in a much better way to produce healthy seafood. Aquaculture is a promising area because fish convert food really efficiently into body mass. I do not necessarily see it as a competitor to commercial fishing but more of an additional area that is

more controllable and tunable. Compared to land based agriculture, aquaculture has quite a good environmental footprint, however, we need to further reduce our reliance on fish meal in aquaculture feeds, to improve sustainability and also keep the need to transport them down.

Q: On that topic, why snapper? How are you using 'ancient' DNA to make a better fish?

A: By comparing old with new DNA signatures we can learn what has happened to the snapper fish stocks over time. For example, we can understand if they were always so widely distributed and abundant as they are today, and also what impact sustained fishing had on the populations. These insights may be used to understand the current fisheries stocks better, and also how humans can alter the evolutionary trajectories of a species when harvesting populations over many decades.

Q: Do you think that gene editing technologies could encourage sustainable production across industries?

A: Gene editing is a powerful tool that can have a significant impact on how we breed animals and plants to keep track with the rapidly changing environment, and the needs of humans when it comes to food requirements. We need to have an evidence-based conversation about the risks and opportunities that this technology holds. How we can feed the growing world in a sustainable way for the next decades is such a pressing question and I think that we cannot afford to not consider gene editing in this discussion.

Q: What do you hope your research can accomplish for your children, and the rest of Aotearoa?

A: I hope that my research will help to support a sustainable seafood industry, so that we can enjoy delicious and healthy seafood that has a minimal environmental footprint for the generations to come.

Q: How has the Hamilton Award helped you with your goals?

A: The Hamilton Award has allowed me to talk about the need to apply genomic technologies to better understand the species that live in the ocean. The ocean is opaque and we really know very little about the vast majority of species that inhabit it. Genomic technologies are powerful in that they can tell us a lot about a species by just extracting and sequencing a little bit of DNA from a finclip. For

example, this DNA can then be used to understand how big a fish stock is, how it is connected with others and how many different stocks we have around the country. I would love to see us using this approach more in the future to better understand our fisheries stocks, so that we can better manage them.

View more on Maren's research.

About the Hamilton Award

The Hamilton Award, Royal Society Te Apārangi Early Career Research Excellence Award for Science, previously known as the Hamilton Memorial Prize, is awarded annually for the encouragement of early-career researchers currently based in New Zealand for scientific research in New Zealand, and consists of a framed certificate and $2,500.

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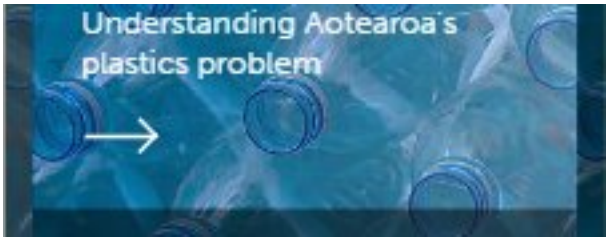

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