DEEP-SEA SCIENTIST SPOTLIGHT

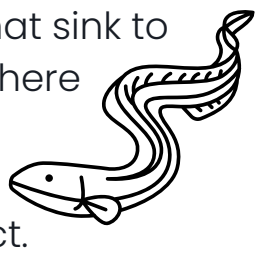
THOMAS LINLEY

DEEP-SEA FISH BIOLOGIST

Dr. Thomas Linley is a Curator of Fishes at the Museum of New Zealand Te Papa Tongarewa, moving after falling in love with New Zealand and the museum collection during his research into the Kermadec Trench. Thom specializes in deep-sea fishes and in developing the technology that makes deep-sea studies more efficient, more accessible, and less costly. His desk is often covered in cables and the guts of electronics. Thom likes to explore different ways of communicating science to reach as many people as possible. He frequently gives public talks and created and co-hosts The Deep-Sea Podcast, which offers a fun but accurate portrayal of the deep sea. He studied in the UK at Aberystwyth, Bangor and Aberdeen Universities and has industry experience in marine survey, consultancy and environmental monitoring. Thom has over 800 days of seagoing experience but still gets seasick.

What do you study? What techniques do you use in your research?

I specialize in deep-sea demersal (living close to the bottom) fishes from 4000 m depth and deeper. I am particularly interested in their ecology and distribution – how are they living down there and why are they found in some places and not others. My work has mainly used freefalling landers, devices that sink to the seabed, perform some tasks, and then drop ballast to float back. There isn't much demand for the specialist tools we need, so we often find ourselves developing our own technology. I have built a few cameras, lights, lures, batteries and other items to try to get access to my subject.



ADVICE & LESSONS FROM DR. LINLEY

Other than your studies in Marine Biology, what experiences have helped you build skills that you use to study the deep oceans?

Literally everything. **Drama** helped me with presenting in public, **art** helped with taxonomic illustration and designing infographics, **working in industry** toughened me up and gave me a lot of offshore experience. I was a field environmental scientist with a marine survey company and worked at a scientific consulting company, and using science in these industries also gave me a broader horizon. It made me aware of stakeholders, differing viewpoints and value systems, and helped me show the value of the deep sea to people with differing priorities from my own.

One very singular turning point would be a standup show. I always admired people who were good at public speaking, so I put a lot of time into practicing it. Somehow, I found myself giving a stand-up routine about my research at a comedy club. If I could do that, any other public speaking would be easy. It also made me aware of how much fun you could have while still relaying good science. This would eventually lead to The Deep-Sea Podcast which has been going for three years now and is in the top 2% of global podcasts.

Clarifying Misconceptions

Scientific reporting is dry by necessity, sharing the facts and offering well-reasoned hypothesis without bias. This means removing the 'self' from our writing and it can make us seem very robotic. I never get tired of hearing a respected world expert squee with delight at their subject matter. These are passionate and interesting people, and I am glad that there are more avenues now to show that. We talk a lot about other deep-sea misconceptions, discussing problems with thinking of the deep as "alien" and how much of the deep oceans have actually been explored on The Deep-Sea Podcast.

My Advice to Future Scientists

It's the journey, not the destination. Keep a little loose with the path you take. The skills that make you an invaluable member of a deep-sea research team may well be those that you picked up on a total tangent. Don't rush to become a deep-sea scientist, you might miss out on experiences that can make you stand out. Be the deep-sea scientist who can also code a custom Minecraft world, make a fiberglass surfboard or model the gut flora of farm animals. It's the extra skills that will get you jobs.

For more of Dr. Linley's work, visit:
https://www.armatusoceanic.com/the-deepsea-podcast

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What made you want to become a scientist?

I don't know why a kid from the land-locked British midlands became singularly obsessed with fish. **I see science firstly as a method rather than a job.** I wanted to learn everything there was to learn about fish and the scientific method was the way to do that.

What was your first science experiment?

It may count more as animal husbandry than an experiment, but my first publication was a letter in the magazine **Practical Fishkeeping** at 16. I kept reedfish (*Erpetoichthys calabaricus*) and mine had started to show nesting and mating behavior. They had never been bred in captivity, so I wanted to let other keepers know what to look out for.

Is there a research project, moment of discovery, or science experience that you're most proud of being a part of?

Because our equipment records remotely, we don't know what we have until it comes back. You pop out an SD-card and you know you are about the see part of the world that no other human has... and then something swims into shot.
The best example was in 2014 at the Mariana Trench aboard the original Schmid Ocean Institute, RV Falkor. A task camera was recording a sediment corer. It was only meant to ensure that it had deployed properly. Something truly beautiful swam into shot, deeper than we thought fish could live. This was what we dubbed the ethereal snailfish. The footage went on to get millions of hits and feature on Blue Planet II. The deep sea was undeniably beautiful and fragile.

Why is it important to study the deep seas? What motivates you in your work?

How could we not? It's most of the planet's surface and almost all its livable habitat. **This isn't just a blue planet; it's a deep-sea planet.** To think that we have any idea what's going on with our planet without an understanding of the deep sea seems the peak of human arrogance. '*We live up on these rocky bits, we are all that matters, everything that isn't us is less important and weird*'. The deep sea is the motor under the hood, it is the engine that is keeping our planet running. If it starts to sound different or there's a 'clunk' that wasn't there before, you are going to want someone who knows how your engine works.

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