

Kia ora, gday and welcome to the History of Aotearoa New Zealand. Episode 65: It's the Last Fishing One, I Promise. This podcast is supported by our amazing Patrons, such as Andrew. If you want to support HANZ go to patreon.com/historyaotearoa. Last time, we were talking about nets and how they worked. That was a bit more about freshwater fishing than the marine fishing we have been talking about previously. So this time we are going to continue talking about freshwater fishing, as it was just as important to those living inland as marine fishing was to those living on the coast. We are also going to be talking a lot about māturanga Māori and how it relates to Western science

The reason it was so important to those living deeper into the interior of Aotearoa was that they of course didn't have access to the coast and the fruits of Tangaroa, so the awa and roto, rivers and lakes, offered an excellent source of food and protein. In saying that though, they were generally important for all Māori given everyone needs freshwater to drink but also because a lot of species, like tuna (eels), were easily accessible when travelling. In terms of freshwater species that Māori would have recognised upon their arrival to Aotearoa, it was basically none of them, all the species here would have been new to them except the shortfin eel, which is found in many places across the Pacific. Like they had done with species of plants and other animals, Māori still named the species in the rivers and lakes after or in recognition of species that they were familiar with from Polynesia. For example inanga and kōkopu, two species of whitebait likely are from the same root word as hinana and o'opu which are names for fish in Hawai'i. However, these species both in Aotearoa and Hawai'i were not the same species that the words were harkening back to.

One of the interesting things about naming species in Aotearoa and later New Zealand is that by 1859 European scientists had described about 100 species of fish, but this paled in comparison to the species Māori had identified. 300 of which can't be matched to fish today because science didn't recognise them at the time. This is because over time the people who could match the name to the fish species in the wild passed away without passing on the skill, leaving behind the name we know was associated with a fish, but not knowing which fish. Cause you have to remember that there was no documents or books that would explain how to identify a fish species from behavioural or structural features, at least not from a Māori perspective. They would pass on their knowledge orally, of how if a fish is a certain shape and colour, it's this fish, or if it migrates up rivers at a particular time of year it's probably that fish. Nowadays the amount of fish species known to science in Aotearoa is over 1300.

In terms of freshwater species, they weren't really fully understood by European science until the 1940s and it wasn't until the 1960s that they got scientific names. Of the 1300 fish species known, only 38 of those are freshwater, so it's not a lot but what we find for a large amount of Māori names for fish is that the names may have applied to the same species but referred to the fish during different stages in its life or migratory cycle. However, this hasn't been fully investigated as it often dismissed as unreliable, but there are other examples across the globe of similar instances. The one you are probably most familiar with is that the Inuit peoples of North America have hundreds of different words for snow. Citation needed but my understanding is that they have different words for different types of snow, thick snow, sludgy snow, soft snow and so on, because depending on what kind of snow it is, you may want to convey to someone that it would be best to change their behaviour based on that. Such as not eating yellow snow. Going back to fish, part of the reason that this Māori knowledge is often dismissed is because by the time Pākehā knowledge of fish got to a point where they knew quite a bit and would have something to compare the Māori knowledge to, a lot of Māori knowledge had already been lost. Partially because Pākehā scientists were already dismissing it. One such example is with smelt, a small thin fish species that looks rather silvery in colour. Originally, they were treated by scientists as separate species in each lake and river. That is

to say that a population in Lake Taupō would be treated as a separate species to one in the Whanganui River, for example. There was a logic to this in that given they were a freshwater species, it was extremely unlikely that they managed to get out to sea and find new rivers or lakes to live in, being able to live in both freshwater and saltwater is actually somewhat of a specialised adaptation, which is why not every fish can do it. So their thinking was probably that various rivers and lakes were probably connected millions of years ago but have since split, resulting in similar but slightly different species who have evolved independently for some time. While this is a reasonable assumption to make, assuming makes an ass out of you and me and there are a number of other ways that fish species can reach independent bodies of water, however in this case, it was actually because smelt have been found in coastal areas, so they actually do have the adaptation to be able to survive in saltwater. Adding to this was that scientists also labelled the juvenile form of smelt as a separate species as well, which is a fairly common mistake for Victorian era scientists to make, such as with caterpillars and butterflies. Today though, only two species of smelt are recognised.

To expand on this, sometimes there can be confusion between the two systems of Western science and mātauranga Māori as a single name in Māori can be used to refer to multiple species of fish, such as pākura, which is used for four species of red coloured fish. You also see this with the word maratea referring to orange perch and red moki. This doesn't really reflect that Māori had a lesser or incomplete understanding of fish species though. Pākura is one of the words in Te Reo that means red or crimson, additionally each of these species occur in shallow coastal waters within 80m depth. So when people in each region saw a fish that looked similar and lived in a similar place to that of another species in a different region, it's not entirely unreasonable to want to name them the same thing. Since from a practical stand point of catching them, they won't need any different techniques.

Another aspect of this issue is that Western science and mātauranga Māori are each based on different foundations and assumptions, making it difficult to reconcile them with each other. For example, Māori classification of species isn't species-specific or based on evolutionary principles. Which is just a fancy way of saying that Western biologists like to have each separate species in its own little box, which we know is a single species and we can then join that box to another box cause we know those two boxes are linked via evolution. Think the tree of life and how humans and chimps evolved from the same root ancestor and diverged at one point. But again, mātauranga Māori doesn't work that way, which for someone who has been educated in a Western university to understand the world based on species and evolution, is quite difficult for me to wrap my head around. That's not to say the Māori knowledge is unreliable or useless. It was just built from and for a different purpose, such as recognising certain animals at certain times of the year so they knew when it was best or sometimes even just safe to eat them. This would also flow into other areas such as how it was best to cook them or the best way to preserve and store them. As such, Māori could identify different species by the morphology and colour, which would in turn inform them which lake or river a species was from, which could be important to know for things like fishing rights between neighbours as well. This was also wrapped into how Māori viewed their relation to the whenua, land, as well as their tīpuna so in the broader sense, it strikes at the core of their being, especially when put into the context of colonisation. On the flip side, Western science has the purpose of, I would guess, knowledge for knowledge's sake and to forward our understanding of the world around us. Which isn't bad, neither of these methods are, they're just different.

One of the key freshwater species in Aotearoa were tuna, not tuna as the big fish that speed through the sea but rather the Māori word for eels. There are three species of eel in New Zealand, the endemic longfin, native short fin and Australian spotted eel, from those three species Māori have

200 names to refer to its various growth stages, though this number likely includes regional variations as well. We also aren't sure if those different names and those different stages were recognised as being totally different animals or whether Māori knew that it was the same type of animal just at a different point in its life cycle. Most other animals were given at most about a dozen names by Māori but usually it was just one or two, so the sheer amount of names they had for such a small group of species should indicate how important eels were for Māori diets! Interestingly though they only account for about 2% of the archeological record, which doesn't really add up. This led to the thinking that large scale eeling was a post-European occurrence but we have a lot of accounts and other sources that say that eels were a big part of the pre-European diet. It's also common to see eel bones in middens across the Pacific but not in Aotearoa, which would make New Zealand rather unique in that regard. This has happened in the past with lots of other aspects of Māori culture but there is just enough evidence that it all doesn't quite add up. The reason this may be is down to New Zealand's soil being rather acidic, meaning eel bones have a more difficult time surviving in the record but we aren't totally sure.

Tuna in particular have some interesting spiritual significance around them. Tapu restrictions were placed on them so that they could only be harvested at certain life stages, which led to the sustainability of the fishery, though it isn't clear whether this was done with the intent to keep the fishery sustainable, but it definitely helped. Some eels could also be revered or even feared as atua or tipua, demons or some other vindictive supernatural force. This was most often attributed to the females which could get up to a whopping 2m long and 23kg, though it is rare for it to happen today. Best also notes that the practice of following eels as atua wasn't all that common in Aotearoa but he doesn't expand upon this further.

The way eels would be caught would be done by making a V-shaped weir to catch them as they moved downstream. This weir was called a hutu and would cover most of the river, leaving a bit of room at the side for some eels to get past and for waka that were travelling along the river to be able to continue on their way without having to take the whole thing down. The idea of these weirs was to force the eels into a hīnaki but the catch (heh) was that it only worked when the eels were moving downstream, it didn't work if they were headed upstream. This was because the flow of the river ensured that the net was facing the right way, the net would kinda collapse if the opening was facing towards the mouth of the river and wanted to face the other way. You could secure it down but then it would be fighting against the current the whole time and fish have slightly different behaviour when moving upstream than down, given they are having to use more energy to push forward. So for a few different reasons it didn't work, except for lamprey, they were caught when moving upstream, which we will talk about in a sec. These weirs were fiercely guarded due to their importance, particularly in the autumn. Reason being that in those autumnal months the eels they caught could provide up to double the caloric intake compared to kūmara or fernroot, as well as providing fats, fatty acids, protein, vitamins and minerals that plant matter just couldn't give.

I just want to quickly note before we move on that the spotted eel, sometimes called the Australian longfin isn't one that is seen all that often in New Zealand's waters. It was only confirmed to be here in 1997 so it is possible that it wasn't present in the pre-European period, but we don't know that for certain. Just in case anyone was wondering.

Now, lamprey are just a generally all round weird fish, not just in how they were caught but just to the very core of their being. In fact, to call them fish isn't really fair to average fish. For starters, lamprey have no jaw, instead they have a round sucking mouth that they use to grip onto other fish and scrape their scales and skin off to be able to suck blood. They also have no gill covers, only having external gill holes and have no paired pectoral or pelvic fins. They are also cartilaginous fish but I

won't hold that one against them. Only one species of lamprey is found in Aotearoa, *Geotria australis*, the pouched lamprey, which is also found in Australia, Chile, Argentina, the Falkland Islands and South Georgia (the islands, not the country or the state). To Māori they are known as piharau, kanokano or korokoro, depending on where you are and who you ask. Like a lot of the freshwater species we have talked about, lamprey aren't based exclusively in freshwater, they actually spend most of their time at sea and move into rivers in late winter, early spring to mate and reproduce. When they do this, their colouration changes slightly to be a bit silvery with a couple of blue stripes on the back. When heading upstream, they usually move during the night, preferring to hide behind rocks, under overhanging banks or other areas they can feel safe during the day. When moving further up the river, they can perform some pretty great feats, such as climbing up waterfalls or even small dams apparently! This migration can take months to complete and during this time they don't eat anything, only surviving on their fat reserves. Once they reach their destination, they go through another transformation. They turn into a muddy brown colour and all remaining energy is sent to the gonads, commonly called the sex organs. The females during this point get very large and the males develop an enlarged mouth and a baggy pouch under their throat, the purpose of which isn't fully known. At this point in their lifecycle, they weren't considered to be super good for eating, as you probably guessed. The prime time to catch lamprey at their most delicious was apparently during the migration up the stream, when they were more silver in colour. This is why Māori needed to solve the problem of how to catch lamprey, if they wanted to catch them as they moved upstream they needed to somehow counteract the current. The solution was to, well, not counteract the current at all. Instead Māori would force the lamprey to double back and go downstream and into the net. The way this worked was rather simple but pretty ingenious. The hīnaki would be set up as it normally would be, facing upstream so the water flowed through the mouth of the V-shaped net acting as a funnel into the hīnaki itself, though these didn't always cover the entire awa. Two wooden barriers would then be erected in front of the hīnaki but just to the right and left of it, so that the water flowed between them and into the net. Sometimes struts would be added to the back of these barriers to help them withstand the river flooding. Then, they waited for the lamprey to arrive. The way it worked is that the lamprey would swim up the river and hit the wooden barriers, though they would still be able to feel the lighter current coming from the gap in the middle. This is a key sense for fish travelling upstream as it helps them know where to go, since if you can feel a current, you know that the water keeps flowing from that direction, kinda like how you are able to find a gap in your window cause you can feel a draft. So the lamprey would follow this current along the barrier and once they reached the gap, the full force of the current would hit them and sweep them into the net, thus rendering them caught.

Īnanga were also a highly prized food in many regions and were often dried and preserved for later use. Īnanga being one of the species of whitebait in Aotearoa, along with three species of kōkopu and one species of kōaro though it seems that Īnanga may have been somewhat of a catch all term for white bait in general. Similar to tuna, Īnanga were caught with a V-shaped weir, sometimes facing downstream with pegs to keep it open, which is a bit unusual. Again similar to tuna, these weirs could cover most of the river but would always leave a gap on one side. If Īnanga were caught as they migrated downstream, beaters would be used to chase the fish into the net. They weren't always caught in awa though, whitebait could be caught in lakes which required a different method since putting a net across a lake isn't exactly feasible. Instead a net would be used on a waka, either as a seine or drag net as we have talked about in previous episodes, so they could be put between two waka or dragged behind one. These nets were usually pretty large, about 45-90m, which was unusual for freshwater use but since they were so big they were only used in lakes. A bit more of a unique way to catch Īnanga involved exploiting their desire to find slow running sections of water as

they migrate upstream. A small ditch would be excavated from the sandier side of the stream and would continue to be dug until it hit another part of the stream. This was usually set up in the bend of a stream, essentially making a small channel for the water run down. The fish would then feel the current of this much smaller, and thus slower running, stream and start to move through the about 15cm of water. When there was enough fish in the ditch, each end would be blocked off and the fish scooped up in baskets, which was pretty easy since they had nowhere to go. The only caveat to this strategy was that sometimes the ditch wouldn't have enough flow, which was based on what kind of substrate was in it. If the īnanga couldn't feel any current coming from the ditch then they wouldn't enter it, since they thought it didn't lead anywhere, again thinking of the airflow example. Sometimes instead of scooping out the fish a small trap that was closed at one end would be placed in the ditch to catch them. The trap would be partially submerged and cover the entire width of the ditch so the fish had no choice but to swim into it.

Next time, there won't be a fishing episode! We have spent a whopping six episodes and approximately three months on it so those of you who don't like getting wet will be much relieved! We will be instead doing a dramatic retelling and then moving on to a quick epilogue of the wider food episodes, talking about how all these plants and animals were cooked.

If you want to send me feedback, ask a question, suggest a topic or just have a chinwag you can find my email and social media on historyaotearoa.com. You can also find helpful resources there like transcripts, sources and translations for some of the Te Reo Māori we have used. This podcast is a one man band, if you enjoy listening to me talk history, you can support us through Patreon, buy merch or give us a review, it means a lot and helps spread the story of Aotearoa New Zealand. As always, haere tū atu, hoki tū mai. See you next time!