

Kia ora, gday and welcome to the History of Aotearoa New Zealand. Episode 64: Oh yea, We Still Talking About Nets. This podcast is supported by our amazing Patrons, such as Chanel. If you want to support HANZ go to patreon.com/historyaotearoa. Last time, we were talking mostly about scoop nets for kehe, kahawai and warehou. This time we are going to talk more about nets with bag nets, set trap nets and a bit about freshwater species.

Bag nets are basically harakeke woven against some circular hoops and rely bait to attract fish, rather than channels and beaters like the scoop nets. I should probably be a bit more specific about what these nets actually looked like cause it was kinda integral to how they worked. If you imagine two or three wooden rings that were between half a metre to a metre apart and between each ring was the harakeke netting itself with the last ring having a space where the net is tied off. So it's kinda like a short, fat tube that would be sat vertically in the water, or more specifically laid flat on the sea floor so the three rings touched each other. When the fish were seen to be above the net or the fisherman felt the fish nudge it, they would draw the net up, extending it vertically and catching the fish. This worked doubly well cause Māori knew that startled fish often dive to get away from danger, which in this case would get them right into the net. Like the scoop nets, the bag nets could be split into three categories based on the species they targeted, crayfish, tāngahanga, banded wrasse, and maomao.

Crayfish were plentiful along the East Coast of the North Island and the Bay of Plenty and there were four methods used to catch them, the most common of which is still in use today, diving. Whereby the fisher dives down to find the cray, grabs it and brings it back up. Sometimes the most simple methods are the most effective. Another was to use a matire, a rod with strands of harakeke looped over one end with some paua acting as bait within the flax. The rod is thrust into rock crevices and the crayfish, being big fans of all sorts of shellfish, try to get at the piece of paua. However, they would end up getting their legs tangled in the flax, which the fisherman would feel and be able to pull the cray up. The third method is by baited crayfish pots called taruke made of mānuka rods.. They are set on the sea floor with a long rope with wooden flats to mark the spot. These would be returned to later on and pulled up, hopefully with crays inside them. The fourth method is where the bag net would come in, called a pouraka. Interestingly, this name is used a bit differently depending on the region, for example it means a bag net for crayfish in the East Coast and Bay of Plenty but in Taupō pouraka means a set trap used to catch kokopu. Again, paua would normally be used to catch crayfish in the bag net with sinkers in it, sometimes being set in shallower water at night. If the line is held, the fisherman will be able to feel the paua being nibbled on, so will know when to pull the net up to catch them but it was common for lots of nets to be set and tied to rocks or other prominent features. Once all the nets were set he would double back to the first one and pull it up with whatever was in it, if anything. By the time he got through them all, it would be time to go back and check the first one. So you could either have one net with more precise catching or many nets with a bit less discretion. During the day they would be set in deeper water with the use of a mōkihi, raft, made of houama, an endemic tree. Again, the nets would be dropped in the water with wooden floaters to mark their spot and the fisherman would do essentially the same thing, paddling around to each net and pulling it up before repeating the process. When the crayfish were particularly abundant a net could hold up to 12 crays.

Crayfish were caught year round, being at their best, around Sept-Oct, but mostly in September when the kowhai was in bloom. Though I think this may have been just an indicator rather than having an actual influence on the crays themselves. However, more often they would be caught in October, after the bloom, when they were moulting. This was called maunu, which means to loosen or cast off, it's also the same term used to refer to bird moults and a pāpera maunu is a moulting

grey duck. It can also mean a person who can't swim, since ducks can't go in the water when they are moulting. Soft shell crayfish were the most highly prized of the crays as this is when they were at their fattest, which is the reason they were moulting in the first place. Fun fact, it is illegal to pull up soft shell crayfish in the modern day. In addition to their size, this made the crays easier to catch as they would tend to hang out in the holes in rocks to avoid predators having a go at them, meaning they weren't roaming around. These holes were called rua maunu or rua kōura, shell shedding holes or crayfish holes. These holes were well known and sometimes named due to their importance. Names were also given to the different sizes of crayfish, potentially to distinguish the ones best for eating.

Diving for crayfish was by far the most popular method, even today. When diving, a basket would be tied around the waist, called a kāwhiu, which would also be used when gathering shellfish. The diver would feel around in the crevices of rocks with her foot, unless the water was shallow in which case she would just get her arm in there. On the flip side if it was deep, the diver would go down head first. Once a cray was found, it would be grabbed by the back and turned upside down to render it harmless, which is basically how it is done today. Sometimes the cray would be grabbed by the leg on accident, causing it to break off. If this happened, then the leg would be removed from the site otherwise the cray wouldn't use that hole again. It's unclear whether this was something based on observations or something more spiritual, though they were often one in the same. When the diver was ready to come up, she would often have filled their basket, have one cray in each hand and one in her mouth, which is kinda badass. However, Hiroa says of his time, "In these degenerate days an old sock is often used as a glove to protect the hand from the sharp spines." Interestingly, the job of gather crays was given to the women, rather than to the men, perhaps due to the crayfish being seen in a similar vein to that of shellfish?

Lets talk about maomao, which are a deep sea fish that travel in shoals, frequenting various areas based on the season, with the fishing season beginning at the end of January and going until early April. These guys were caught with a large bag net from a waka, called a matarau by Ngāti Porou, mata meaning mesh and rau meaning many, whereas Te Whānau-a-Apanui and Ngāti Awa called it a wahanui, large mouth. When the fishing ground was reached, four lines would be baited with crayfish tails, which Hiroa states was the "proper" bait. The lines would be baited with so much crayfish it would take "a sack and a half of crayfish to completely bait the lines". Which as someone who loves to eat crayfish, that just hurts me in my soul to see them used for bait. The net would be put over the side with a line attached to a rod so as to bring it back up. More crayfish would be thrown overboard as well to attract fish, along with the lines being set above the net. When the maomao did come, they would swim close to the surface, stirring up the water with their tails and fins as they fed, the net about a metre below them. When there was a good amount of fish above the net, it would be raised, causing the maomao to panic and swim down into the net. The net would be lowered again before taking out the catch to allow for more fish to come and then raised again until the net was filled. The fish would then be tipped into the waka. This was apparently a very good method, capable of catching many fish, anywhere between 700-2000 on one outing. Any less than that was considered a poor catch.

A cool little fact about bag nets in general is how they were stored when they weren't being used. The two hoops that made it up were turned over on each other in a figure eight to make it occupy less space, kinda like how you loop a rubber band over your finger or do up a hair tie.

Lets move on to nets that required a bit less direct interaction and management with that of the set trap nets. You can kind of think of it like a scale where scoop nets require the most handling and set trap nets require the least, with bag nets sitting somewhere in the middle. Set nets were, as the

name might imply, set in a position and relied more on currents, tides and human to get fish into them rather than a deliberate action from a person holding it. They also differ from bag nets in that they are unbaited. Ngāti Porou and Whānau-Apanui had four types of these nets, three for fresh water and one for marine. The one used for marine is the seventh method to catch kehe that we didn't talk about last episode, so lets start there.

This method of catching kehe was called hauā by Whānau-Apanui and hinaki kehe by Ngāti Porou. Previously we have said that hinaki referred specifically to eel traps but it looks like it may have been used to mean all horizontal traps in some cases. To use this kind of net, a place was selected that had a lower water level and where there was a lot of seaweed. The area was cleared to fit the net and stones arranged to form a channel towards the net. Sticks would be attached to the net and stones placed on top of the ends to keep the net down in the water and ensure it didn't just float away, given no one would be holding onto it. The narrower end of the net would also have stones laid on top to help with this along with ropes attached from the front to the rocks in the back, keeping the net in place even when the tide rose or fell. The net would also be placed facing towards the shore, the catching being made at low tide when the fish had less options on where they could go. Fish returning to sea as the current heads out would go down the channel and accidentally get into the funnel shaped net and be unable to get out, due to the way the net is designed with smaller holes/funnels. Other fish such as snapper and moki are also caught like this. Sometimes a shark would get into the net and knock it around or shags would dive down to get at the fish in the net, however they would drown if they did manage to make it in as they usually weren't able to figure out how to get out again. Once the tide had fully gone out, the net and whatever was inside it would be retrieved.

We haven't really talked about freshwater all that much so far but there were three types of set traps that were used to catch fish as well as one scoop net that had a very fine mesh to catch whitebait. One of the species caught with set nets was upokororo, the New Zealand grayling. At the time it was there loads of them in rivers and streams, travelling in shoals with the nets being set in rapids to catch them. This net was similar to a scoop net but with a shorter handle that was used to secure the net in place rather than someone holding it. As I said, the net would be placed in shallow, fast moving rapids but first you had to know where the upokororo were hanging out. Typically they would hang out in deep pools during the day and come out at night to feed on algae growing on rocks. The algae being eaten down or even the bite marks on the rocks were the signs that Māori were looking for to locate where they graylings were hanging out and where to put the net. When a set of rapids was chosen, the net would be placed in them with a set of stones arranged in a V shape leading towards the net. These were designed to guide the fish towards it so the channel didn't need to totally block them off, just enough to get them to follow along as well as gently direct the current, something else that these fish would be acutely attuned to. Once the net was in place, beaters armed with raupoto, leafy branches of ferns, would go upstream to the pools where the graylings were resting and push them towards the net. They did this by thrusting their branches down to startle the fish as they swam in the deep pools. They would continue to follow them into the shallow water and then into the rapids until they ended up in the net. Sometimes a fish would take their chances with the beaters and head back towards them but if this happened, they were often killed by them. Like some of the other nets we have talked about, if the shoal was particularly big, some of the upokororo would be allowed to escape to ensure the net didn't get too full and break. After Europeans arrived, the beaters would sometimes be on horseback, forgoing the ferns and just careening down the stream to scare the fish. Obviously this method required appropriate terrain for this to occur so it wasn't super widespread. Another method to catch graylings would be to leave the net overnight and some fish would just be swept by the current of just get complacent and end up in

the net. The season for these fish was in March and April, when the algae they feed on would be in bloom.

Upokororo are actually a bit interesting in their own right, not just in how they were caught. As I mentioned before, they were extremely abundant during the pre-European era but at some point in the 19th century they were being caught and thrown onto gardens as fertiliser. Well, perhaps not unprocessed, I don't think they were just throwing whole fish into fields, but they were being used for fertiliser nonetheless. We do know that in the middle of that century the species was still abundant. In 1869 a water wheel apparently came to a standstill due to the amount of graylings in the river. However by the early 20th century, their population had been drastically reduced with the last catch being recorded in the early 1920s. It wasn't until later in 1953 that they were formally declared extinct and it wasn't until after that that they were given protection under New Zealand law, which was too little too late. To this day it is New Zealand's only known native freshwater fish to go extinct. For quite some time we didn't know what caused this decline, it was thought that it was a combination of habitat degradation and poorer water quality due to human activities, which usually means farming and urbanisation, as well as the introduction of trout which predate and out compete some native species. It wasn't until 2019 that Professor George Perry and his PhD candidate Finn Lee discovered that it was a bit more complicated than that. I won't get too much into the nitty gritty, scientific papers can get a bit dry, but basically the idea was that the upokororo life cycle was to spawn in rivers before going out to sea and then return to rivers to spawn again. However, unlike other fish species that do this, graylings don't return to the exact same river they were born in, so they would sometimes end up in rivers that had been severely degraded, had crap water quality or had a large amount of trout in them. This essentially created a population sink whereby some of the population was constantly removed every year from being unable to spawn or the spawn dying before they could reach the sea. The ones that did spawn didn't do so at a high enough rate and as such, species eventually went extinct. So although the degradation, water quality and trout were part of the story, it was the dispersal strategy of the upokororo that really was the nail in the coffin. It's a great piece of work that helps us understand how freshwater fish species could go extinct in the future and as such helps us plan for their conservation.

For the final net we will talk about today, we will be going back to the moana. The baited trap net only has one example of it ever found but it was apparently different enough to the bag nets and set trap nets that it warranted its own category. They were called tōrehe or toemi and were circular nets with a sinker at the bottom that were kept flat by radials made of supplejack and could be closed by putting a line around it and giving it a tug. It kinda looks like a bit of an oval that snaps shut by folding in half. The bait would be tied to a crosspiece in the middle of the trap, which would usually be crayfish tails. When in use, the net would be lowered from a waka, amongst rocks or just laid flat on the water to sink to the bottom. This would be done quite carefully so as to not have the line pulled on too hard, making the trap shut. The trap wasn't set under tension, meaning they wouldn't need to bring it up and reset it, but of course you want to make sure it reaches the bottom still open as best you can to give you the best chance of catching something. Once in position, the line would be drawn until it was just taught, again not enough to cause the trap to snap shut. Once a fish could be felt nibbling on the bait through the line, it would be given a big tug to close the trap around it, making the radials touch in that now half oval, the action being aided by the counterweight of the sinker. Now that the fish was caught, the line would be pulled up as quickly as possible, making sure it didn't slacken on the way. Again, the trap wasn't under tension so it was possible that if force wasn't applied through the line to keep it shut, it would just lazily open and allow the fish to escape. When a fish was caught, it would usually be when it had its head down into the bait, so the tail would be the first thing popping out of the water with the scales caught on the netting itself. Once

the net was in the waka, the line would be slackened to allow the trap to open and the fish to come flopping out, at which point the trap could be reset. One cool thing about this is that if you were quite skilled or quite lucky it apparently was possible to catch two or more fish at once!

The sorts of fish that were caught this way were species like moki, tāmure, leather jacket and butterfish. As the traps were used more and more it was common for the supplejack radials to become weak and lose some of their spring, meaning the trap would lose its form a bit. These were easily replaced though to ensure that the trap worked as it should. Hiroa makes an interesting comment that this type of net would be very useful to naturalists trying to catch specimens for smaller marine fish, possibly because it kept them quite intact and it meant that the fisherman could be rather selective in what kind of fish they wanted to catch, rather than the other more indiscriminate nets or hooks. He also says that this kind of trap was quite easy to make and use so it was a great neat for anyone who was fishing for fun such as “women, children or indifferent fishermen.” Definitely see myself in that last one!

Overall, it should be noted that the nets we have talked about aren't the be all and end all of Māori nets. In fact, most of this info was gathered from the east coast of the North Island, from Ngāti Porou and neighbouring iwi, such as Te Whānau-ā-Apanui, by Eldson Best, Te Rangi Hiroa and a few others at the behest of Āpirana Ngata, a famous Māori politician in 1923. It does give a good idea of what Māori were using when it comes to fishing but I just don't want to give you the idea that this all there is to it.

Next time, we will talk about fishing in freshwater, rather than in the big, wide moana. Within that we will discuss mātauranga Māori, how fish were named and identified and how species like eels, whitebait and lampreys were caught.

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