

What were the knowledge and methods used by Whanganui tūpuna to construct, utilise and preserve items for fishing?

A literature review for the Whakarauora Research Project

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Whakarauora Research Project**

**Meri Haami
Dr Rāwiri Tinirau**

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Front cover image credit

Gerrard Albert; The photograph on the cover of this literature review was taken by William Partington, and features Wī Pauro Tūtāwhā (of Ngāti Tamarua and Ngāti Rangipoutaka), together with his wife, Te Paea (of Ngā Paerangi), and their whāngai daughter, Miriama Te Paea (Sophie) Tawaroa. They are sitting in front of their whare, with their two kurī and a hīnaki, made of traditional materials. Wī Pauro Tūtāwhā is the tupuna of Cruz and Connor Pauro, both of whom are involved as wānanga participants and rōpū facilitators with Te Morehu Whenua.

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‘Ko te Awa te mātāpuna o te ora’; nāna i tuku i ōna rawa kia whaiora ai ngā hapū o Whanganui. Nō ngā tūpuna ngā kātū tikanga mō te hopu tuna me te hopu piharau, ngā kai matua mā te iwi o nehe, o nāianeī hoki. Rātau kua whai atu i te awa karihi o Hine-nui-te-pō, haere atu rā kautau. Kautau ngā uri whakatupu e kaha nei ki te whakaora i ngā tikanga me ngā mahinga kai o rātau mā, e mihi kau ana, tēnā rā tātau.

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Introduction

This literature review examines the knowledge and methods used by Whanganui tūpuna to construct, utilise, and preserve items employed for fishing. The literature explores four areas pertinent to Whanganui, including traditional fishing items, traditional knowledge of fishing, interdisciplinary approaches and worldviews of traditional fishing and finally, reintegrating traditional fishing knowledge. The literature review aims to illuminate the historical context surrounding traditional knowledge of fishing to inform further understandings of implementing current and future pedagogical methods for Whanganui uri.

Traditional Whanganui fishing items

Literature pertaining to fisheries for Māori regard fishing as essential, significant, and vital to the survival and livelihood of Māori (Best, 2005; Hakiwai & Smith, 2008; Paulin, 2007). Whakapapa, kōrero pūrākau, and whakataukī reveal rich oral traditions and histories of genealogical links concerning Tangaroa, ecological information of fish and highlight Māori fishing legends, for example Māui fishing Te Ika-a-Māui. These oral traditions and histories signify the close relationship Māori have with their marine environment (Best, 2005; Hakiwai & Smith, 2008; Paulin, 2007; Wehi et al., 2013).

This is further exemplified through the interconnected relationship between the Whanganui River and Whanganui tūpuna. Bennion (1994) notes that the headwaters are high on the volcanic plateau resulting in significant tributaries including Ōhura, Tāngārākau, and Whangamomona, which are on the western side carrying waters from inland Taranaki as well as Manganui-o-te-Ao moving waters from the Ruapehu region on the eastern side. The Whanganui River is considered a taonga (Waitangi Tribunal, 1999), where at least eighteen native freshwater species inhabit a unique river system, comprising of an estuary as well as a substantial tidal zone (Bennion, 1994; Pōtaka, as cited in Waitangi Tribunal, 2007; Whakarake, as cited in Royal Commission, 1950). Twelve of the eighteen species found within the Whanganui River and its tributaries migrate between freshwater within the Whanganui River and saltwater within the ocean (see Figure 1). Subsequently, these fish are called diadromous and migrate regularly in parallel with certain stages of their life cycle as well as the seasons (Kerins, 1997). In order to catch these fish, large fishing weirs and structures were built and used by Whanganui tūpuna to catch eels, lampreys as well as an array of many fish species. These structures are called pā tuna and utu piharau, which use attachments called pōhā¹ (also known as powha) or funnels to capture fish into hīnaki or baskets (Best, 2005; Downes, 1917; Horward & Wilson, 2008; Young, 1998). The fish caught using both pā tuna and utu piharau were central within the tribal economy and management of the Whanganui River (Bennion, 1994; Kerins, 1997; Pōtaka, as cited in Waitangi Tribunal, 2007).

1. Best (2005) refers to the funnel as 'pōhā'; however, Downes (1917) notes that this name originates from Waitōtara and that Whanganui used the term 'powha'. This terminology is conflicted within accounts from Whanganui tūpuna as presented in *The Whanganui River Report* (Waitangi Tribunal, 1999), which uses pōhā as the term for funnel.



Figure 1. A map of the catchment areas within the Whanganui region (Waitangi Tribunal, 1999, p. 14). Reprinted with permission from: The Waitangi Tribunal.

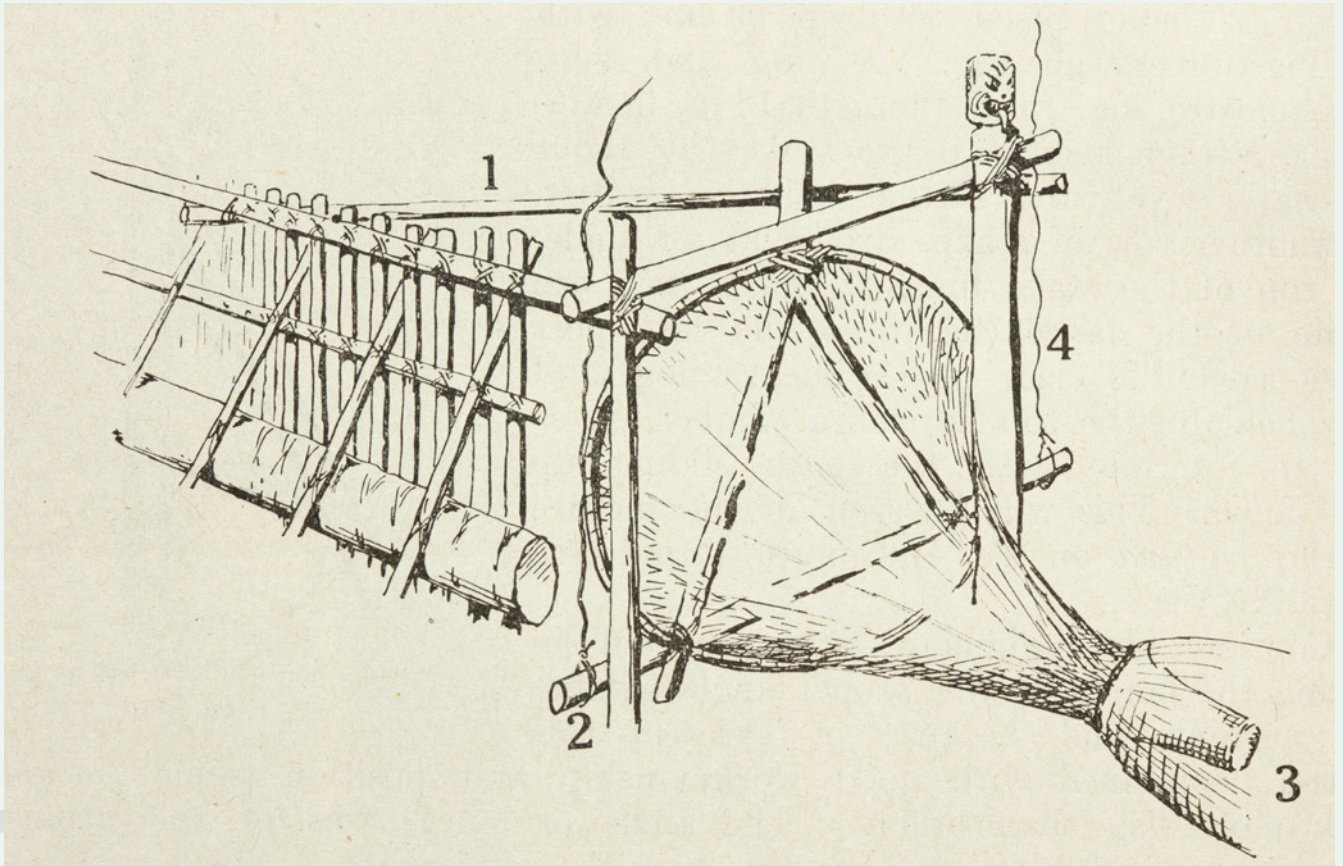
The literature indicates that Whanganui tūpuna exhibited sophisticated knowledge and environmental management understandings of the different ecological systems inhabiting the Whanganui River. This informed potential site excavations and the construction of pā tuna and utu piharau, allowing for complex conservation and spiritual methods, which interweaved with the well-being of iwi and hapū life (Bennion 1994; Best, 2005; Horwood & Wilson, 2008; Kerins, 1997; Ministry for Primary Industries, 2009; Pōtaka, cited in Waitangi Tribunal, 2007; Roberts et al., 2006; Waitangi Tribunal, 1999). There are differences between pā tuna and utu piharau in structure and environmental considerations that cater for the opposing catchment criteria for tuna and piharau species (Waitangi Tribunal, 1999). However, there are similarities found within the communal nature of fishing, its ritual observances, which brought the structures under the care and protection of the atua or gods² as well as conservation methods, occasionally utilising rāhui³ but particularly maramataka. Maramataka indicated the appropriate calendar times for the onset of Whanganui fishing practices, as well as agricultural and horticultural operations (Best, 2005; Ministry for Primary Industries, 2009; Pōtaka, cited in Waitangi Tribunal, 2007; Roberts, et al., 2006).

Pōtaka discusses the significance of fishery maintenance and conservation for Whanganui hapū stating:

Fishing for our people was only ever about sustenance for our whānau and hapū and to manaaki manuhiri on important occasions. We did not fish for recreational purposes or commercially. We were taught to exercise our kaitiaki role with respect for the Awa and the fisheries. We looked after the fishery resource and never over fished. My belief is that there was an intuitive management plan for our fisheries (as cited in the Waitangi Tribunal, 2007, p. 3).

Prior to colonisation, each hapū had their own fishing area to look after within the Whanganui River. Tikanga dictated fishing rights within certain areas and if other hapū wanted to fish within particular areas cared for by another hapū, permission would be sought through whakapapa and whanaungatanga links. Certain hapū members were designated as fishermen and would share the catch amongst different whānau, or certain catches were for hapū (Pōtaka, as cited in Waitangi Tribunal, 2007; Whakarake, as cited in Royal Commission, 1950). Following court appeals regarding Whanganui River ownership, and during the 1950 Royal Commission, Hekenui Whakarake gave evidence on pā tuna. Whakarake expressed that pā tuna were critical sites that supported Whanganui hapū claims of ownership to the river that when accumulated, meant that the river was 'owned' within Western definitions of law, by all Whanganui uri. Moreover, this evidence given by Whakarake highlights how Whanganui iwi links to the Whanganui River through the whakapapa of hapū to pā tuna sites, aims to conserve not only Whanganui hapū fishing knowledge, but also interests and sovereignty over the Whanganui River (Royal Commission, 1950; Waitangi Tribunal, 1999). Further conservation methods were illustrated within the design of pōhā and hīnaki used to capture tuna and piharau. In order to retain a plentiful population, the end of the hīnaki contained a tiny opening, allowing for the smaller tuna to pass through (Best, 2005; Waitangi Tribunal, 1999).

2. For the construction of utu piharau, ceremonial processes were significant, as karakia was performed by elders at sunrise after utu piharau site excavations (Waitangi Tribunal, 1999). Pā tuna involved rituals of depositing a talismanic object known as iho, which was concealed away from the pā tuna in either neighbouring waterfalls or cascades to avoid malicious magic. Iho meant kernel or the innermost part and was made of stone (Best, 2005).
3. Rāhui refers to a ban placed on the area and is a form of tapu. This was placed on an area as a form of conservation and retaining plentiful animal populations for the fishing season, or if a tragic accident occurred within this place. A person of great influence can place rāhui on an area with often spiritual consequences for trespassers (Best, 2005; Ministry for Primary Industries, 2009).



The structural engineering, construction and catchment criteria required of pā tuna as well as utu piharau are highlighted throughout the literature (Best, 2005; Downes, 1917; Waitangi Tribunal, 1999). During the 1900s, around 350 pā tuna and 90 utu piharau were documented along the Whanganui River and that each hapū and whānau had their own (Pōtaka, as cited in Waitangi Tribunal, 2007). There were two forms of the pā tuna structure, which consisted of the single fence, known as pā auroa (distinct to the Whanganui region) as well as the “V” shape or double “VV” sometimes referred to as pā tauremu. The operational diagrams of pā tuna forms are highlighted below (see Figures 2 and 3), as well as the utu piharau (see Figure 4). The functionality of pōhā and hīnaki utilised for both pā tuna and utu piharau, as well as the tools used to erect pā tuna, are shown in Figures 5 and 6.

Figure 2 The single fence weir called pā auroa. The numbers on the diagram represent different names and functions of the pā auroa. Parts of the pā auroa are named as follows: 1) the angle brace or noko; 2) the sliding timber or rango as well as huapae (when fastened); 3) the attaching pōhā to the hīnaki; and lastly, 4) the rope of twisted kareao or karewao (Downes, 1917, p. 312). The pā auroa was erected parallel with the current and did not extend across the entire river but had offset posts downstream as protection from driftwood brought by flooding. Te Wera Firmin (as cited in Waitangi Tribunal, 1999) explains that pā tuna had to withstand the full body of the main current, as the Whanganui River would flow through it taking tuna downstream and towards the sea to spawn. Following the path of least resistance, tuna would follow the fence until reaching the pōhā and into the hīnaki, with the force of the current preventing the tuna from escaping. Reprinted with permission from: Alexander Turnbull Library, Wellington, New Zealand.

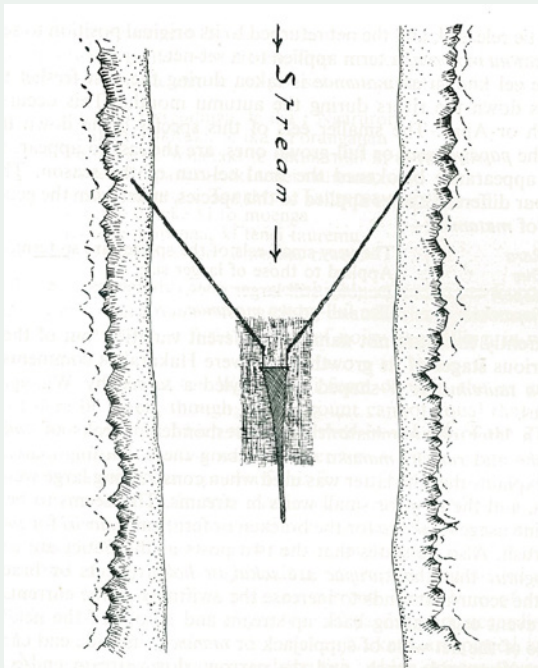


Figure 3

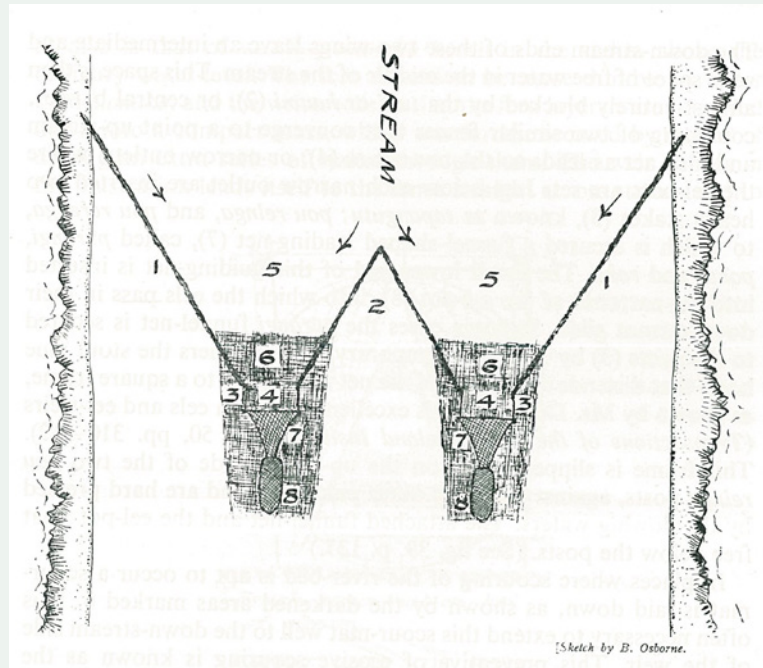


Figure 4

Figure 3 & 4. The other form of the pā tuna known as the “V” or double “VV” shape, sometimes termed pā tauremu (Best, 2005). Pā tauremu had two openings or ngutu and the numbers included on the sketch represent the names of each part. These names include; 1) paihau; 2) tuki; 3) tapangutu; 4) ngutu; 5) waha; 6) whakareinga, whakatakapau or whāriki, which are the scour mats; 7) pūrangi is the leading net; 8) and hīnaki (Best, 2005, p. 143; p. 135). Image credit: illustrated by Harold Hamilton, reprinted with permission by the Museum of New Zealand Te Papa Tongarewa.

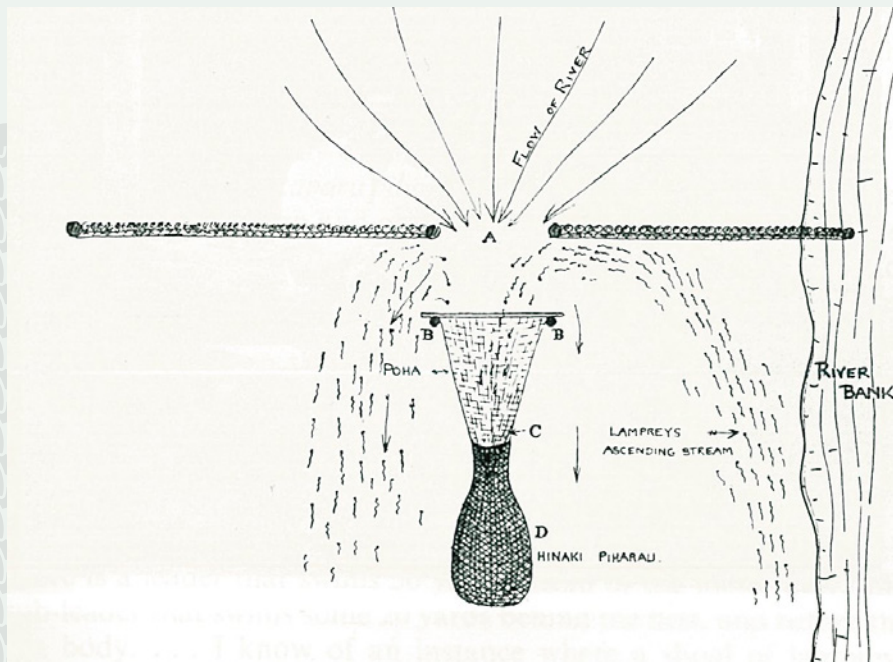


Figure 5. The utu piharau. The letters within the diagram are the different parts of the utu piharau. These parts include; A) ngutu; B) pou (posts/stakes), huahua (horizontal posts) and ngākau (top horizontal posts); C) pōhā; D) and lastly, the hīnaki (Best, 2005, p. 194-195). Titi Tihu (as cited in Waitangi Tribunal, 1999) discusses several environmental factors prior to constructing utu piharau, which included; understanding water volume levels for catchment and construction; suitable locations for manipulating the capture of piharau; the ground of proposed construction being solid, flattened and cleared; and lastly, karakia performed by elders. Unlike tuna, piharau travelled upstream avoiding stronger currents in the middle of the Whanganui River (Best, 2005; Waitangi Tribunal, 1999). Image credit: illustrated by Harold Hamilton, reprinted with permission by the Museum of New Zealand Te Papa Tongarewa.

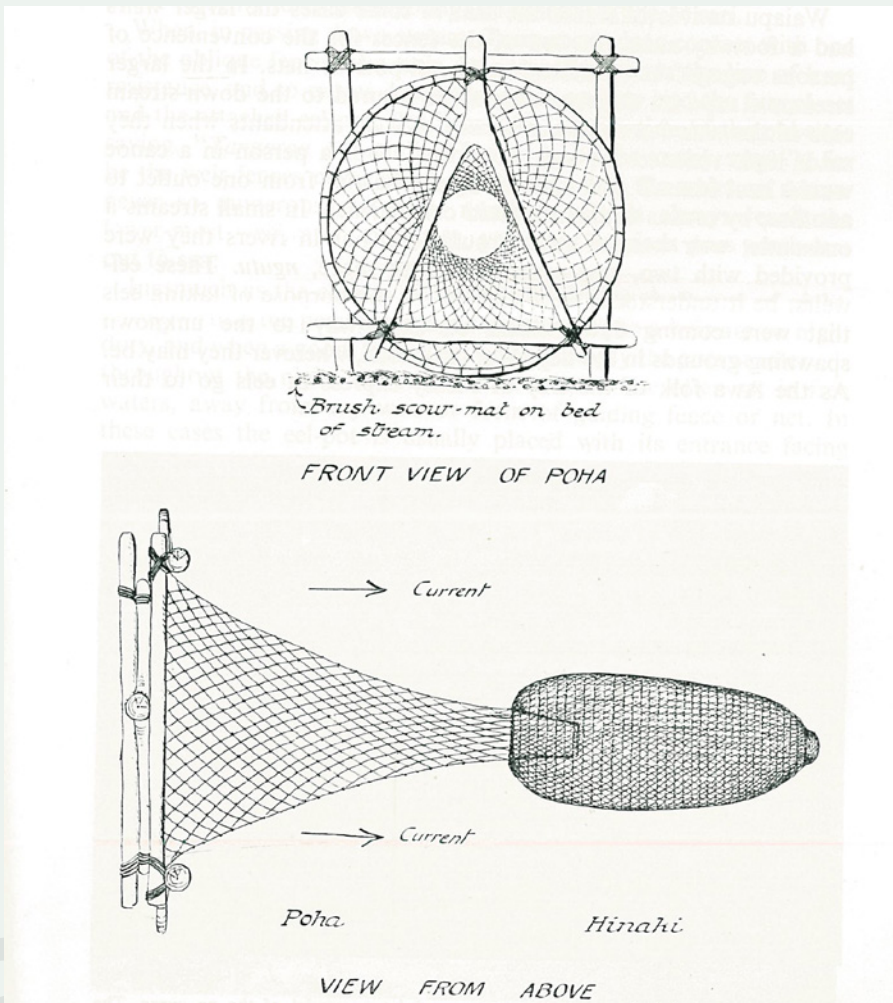


Figure 6. The operational structure of the pōhā and hīnaki used separately and attached to both pā tuna forms and utu piharau (Best, 2005, p. 137). Image credit: illustrated by Harold Hamilton, reprinted with permission by the Museum of New Zealand Te Papa Tongarewa.

Tools for erecting pā tuna and utu piharau

Te reo Māori	English
Pou or mātia	Stakes that are driven into the bed of the river
Tā	Maul used to strike the pou or mātia into the bed of the river, made of the knotted roots of the maire tree

Table 1. Te reo Māori and English names and definitions for the tools used to erect pā tuna and utu piharau. The construction is discussed comprehensively in Best (2005). Both forms of pā tuna were made of mānuka, with a row of pou, which were known as mātia acting as the fence of the weir. Mātia were driven into the bed of the river using a tā or maul and were converted into a wattle barrier, allowing the water (but not the tuna) to filter through (Best, 2005; Horwood & Wilson, 2008; Kerins, 1997).

The literature highlights detailed catalogues, drawings and names of many fishing tools, structures and devices used by Māori as well as Whanganui tūpuna (Best, 2005; Downes, 1917; Hakiwai & Smith, 2008; Horwood & Wilson, 2008; Kerins, 1997; McKergrow & Taylor, 2011; Paulin, 2007; Starzecka et al., 2010). These fishing tools, structures, devices and names that are specific to Whanganui are listed below (see Figures 7-15).

Pā tuna

Utu piharau

Te reo Māori	English	Te reo Māori	English
Pou or mātia	Kōpuka stakes	Pou or mātia	Kōpuka stakes
Huahua	Top horizontal timber	Huahua	Top horizontal timber
Kaiwai	Second horizontal timber	Ngakau (Ngākau) ⁴	Second horizontal timber
Huahua kaiwai	Heavy bottom totara log	Huahua kaiwai	Heavy bottom totara log
Noko	Angle stakes	Noko	The braces
Noko panawai	Angle log head of weir	Noko panawai	Angle log head of weir
Hoi	Return angle/wing at foot	Hoi	Return angle/wing at foot
Pou riri or turu	Side posts	Pou riri or turu	Side posts
Rango • Huapae	Sliding timber • When fastened	Rango • Huapae	Sliding timber • When fastened
Ihonui	Water between fences	Ihonui	Water between fences
Auroa	Water outside fences	Auroa	Water outside fences
		Pāwai (Pawai) ⁵	Blocked part of the fence
		Ngutu	The opening
		Whāriki	Fern floor
		Tapatu ⁶	Poles holding the floor
		Tarapi ⁷	Crossed pegs holding poles down

Table 2. Te reo Māori and English names and descriptions for features of both pā tuna and utu piharau. These were large fishing weirs and structures used by Whanganui tūpuna to catch eel and lampreys. For images of pā tuna and utu piharau refer to Horwood and Wilson (2008). From the figure above, utu piharau contains more devices on the structure than the pā tuna. This was collated from many sources of literature (Best, 2005, pp. 186-188; Downes, 1917, pp. 309-313; Horwood & Wilson, 2008, p. 107; Kerins, 1997; Young, 1998). Names and descriptions are generally the same in both structures and there are subsidiary names of the tools that change once they are actioned. These are listed underneath their primary name.

4. 'Ngākau' is written as 'ngakau' and differs in meaning as well as function between Best (2005, p. 147; p. 186), Downes (1917, pp. 303-313) as well as Horwood and Wilson (2008, p. 107). According to Downes (1917) as well as Horwood and Wilson (2008), 'ngakau' refers to the second horizontal timber used for utu piharau. However, Best (2005) uses 'ngakau' in reference to pā tuna, being the lower rail of the weir fence. The term, 'ngakau' is predominantly spelt with a macron over the 'a' (for example, 'ngākau'). Williams (1957, p. 227) uses 'ngākau' to describe vitals and queries whether this truly denotes to the literal heart. Therefore, the term 'ngākau' could refer to a pivotal part of supporting the utu piharau structure. Best (2005), Downes (1917) as well as Horwood and Wilson (2008) do not use a macron over the 'a' when referring to 'ngakau' as a part of the utu piharau or pā tuna structure.
5. Downes (1917, p. 313) and Horwood and Wilson (2008, p. 107) refer to 'pawai' as the blocked part of the fence for utu piharau. However, the term 'pawai' is often used with a macron over the first 'a' (for example, 'pāwai'). Williams (1957, p. 273) refers to this as the bilge of the canoe or the collar bone. Therefore, there are contested versions of the proper spelling, meaning and use of the term.
6. Downes (1917, p. 313) as well as Horwood and Wilson (2008, p. 107) use the term 'tapatu' to denote to the thin mānuka poles holding the floor of utu piharau. According to Williams (1957, p. 383) there are two different terms, which include 'tapatu' and 'tāpatu'. 'Tapatu' has three meanings: coming down to the lower level; to flow down; or to stumble. 'Tāpatu' also has three meanings: the thatch cover of the roof; a cover; or to beat and strike. Therefore, there is uncertainty around having a macron over the first 'a' for the term in reference to a component of the utu piharau.
7. Downes (1917, p. 313) as well as Horwood and Wilson (2008, p. 107) use the term 'tarapi' in reference to the crossed pegs holding down the poles for the utu piharau. Williams (1957, p. 388) notes the term 'tarapi' with a macron over the 'i'. However, the definitions provided by Williams (1957) do not reference a component of the utu piharau. Williams (1957, p. 388) provides three definitions, which include: the fine and small fibres of finely dressed flax; a fine streak; or to squirt in a fine stream. Furthermore, whether the term 'tarapi' has a macron over the 'i' and denotes to a component within the utu piharau is undetermined.



Figure 7. A photograph of an established pā auroa on the Whanganui River. However, the site is unknown (Horwood & Wilson, 2008, p. 107). Reprinted with permission from: Museum of New Zealand Te Papa Tongarewa: Pa Tuna or Eel Weir, 1921, by James McDonald. Te Papa (MU000523/005/0443).

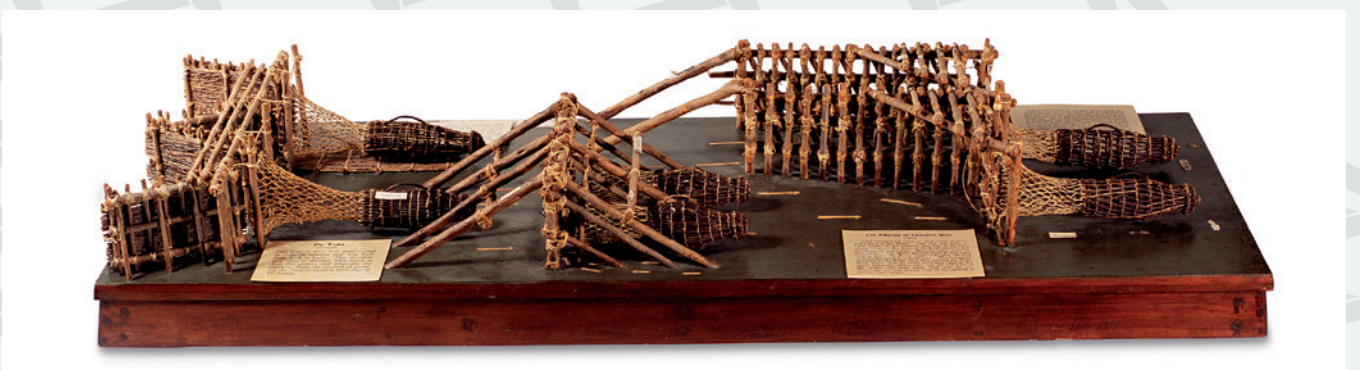


Figure 8. A model of the "V" shaped pā tuna forms or pā tauremu as it would operationally look within the Whanganui River (Horwood & Wilson, 2008, p. 107). the Whanganui Regional Museum Collection, with thanks to the tangata tiaki. Scale model made by George Shepherd, as instructed by Te Hekenui Whakarake. Photographed by Max Thompson, 2008.

Names of pā tuna

Name	Place
Ngā Purua	Hiruhārama
Te Arero	Koriniti
Te Rere	Tawhitinui
Te Rua Tangata	Tawhitinui
Te Ruruanga	Hiruhārama

Table 3. Names given to large pā tuna along the Whanganui River and were assigned in relation to neighbouring pā as well as marae (Best, 2005, p. 140).

Baskets

Te reo Māori	English
Hīnaki	Eel basket
Korotete	Storage baskets
Pūhara (puhara) or pūwai ⁸	Corf basket used to keep eels alive

Table 4. Te reo Māori and English basket fishing tools used by Whanganui tūpuna. These three baskets were made from aerial roots of kiekie, akatea or rātā as well as karewao, which was used sometimes. Additionally, these baskets can be used individually or be attached by a funnel (called pōhā) to either pā tuna or utu piharau (Best 2005, p. 188; Downes, 1917; Horwood & Wilson, 2008, p. 108-109; Young, 1998).

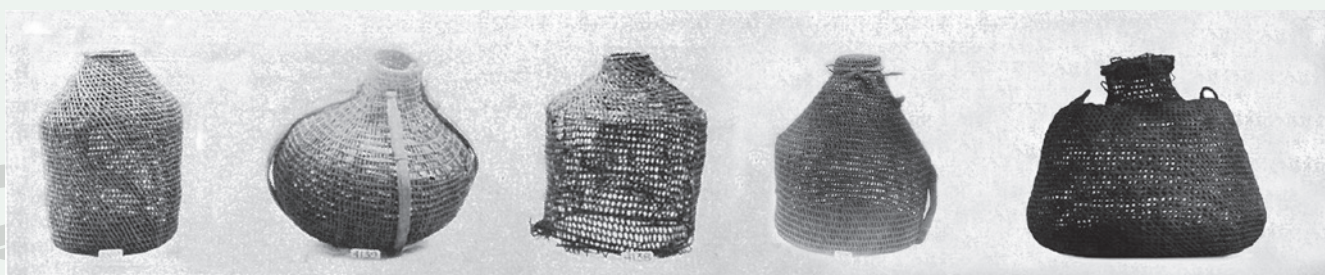


Figure 9. Whanganui hīnaki and korotete structure and design. Whanganui had distinct design and structural differences from other iwi, with the baskets being short and squat (Best, 2005, pp. 165-166; Horwood & Wilson, 2008). The photograph above showing the fourth (pictured on the centre right hand side) korotete is currently housed at the National Museum of New Zealand Te Papa Tongarewa (No. 3837, as cited in Best, 2005) and originates from Pipiriki, Whanganui. Wiwi from Pipiriki explained that it would be used to keep eels alive. First four images from left: photographed by Bernard Osborne (Best, 2005); last image on the right: the Whanganui Regional Museum Collection, with thanks to the tangata tiaki.

8. Best (2005, p. 164; p. 187) refers to 'puhara' and 'puwai' as the names used within the Whanganui district in reference to eel baskets. Williams (1957, p. 304) uses a macron over the 'u' for 'pūhara' and provides two definitions, which include: an elevated platform in a pā on a level with the top of the tūwatawata; or a platform from which to fish from. Furthermore, this highlights uncertainty surrounding the correct term of 'puhara' as having a macron over the 'u' in reference to an eel basket. However, Williams (1957, p. 318) provides the term 'pūwai' to denote a basket for fish.



Structure of baskets individually and attached to pā tuna or utu piharau

Te reo Māori	English
Akura or kuao or te ure	Net or funnel shaped entrance for pā tuna or utu piharau
Kaharoa	Mānuka handle at side
Popoia	Vine handle at the top
Popoki	Eye for securing lid
porowhita or popoki	Outside protecting vines
Pōtaka/potaka ⁹	Ribs
Tāheke/taheke or kōpiha/kopiha ¹⁰	Pin for securing lid
Taupoki	Lid
Toroaka	Vine hinge
Whatu	Two ply twists following round the ribs
Whenu	Ribs continuing in spiral

Table 5. Te reo Māori and English names for the structure of the baskets when they are attached to pā tuna and utu piharau as well as individual names for certain parts of the basket (Downes, 1917; Horwood & Wilson, 2008).

9. Downes (1917, p. 309; p. 313) refers to 'potaka' as the ribs of hīnaki. Horwood and Wilson (2008, p. 108) also quote Downes (1917). Due to these references, whether or not the term 'potaka' contains a macron over the 'o' is uncertain. Williams (1957, p. 296) uses a macron over the 'o' for the term 'pōtaka', which has two definitions. These definitions include the top of an object, or as a part of an expression used in reference to an 'umu potaka', which is a sacred oven.

10. Downes (1917, p. 309; p. 313) refers to 'taheke' and 'kopiha' as the pin for securing the lid of the hīnaki. Horwood and Wilson (2008, p. 108) also quote Downes (1917). Due to these references, whether the term uses a macron over the 'a' for the term 'tāheke' is unclear. This is also the same issue with the term 'kopiha', which predominantly has a macron over the 'o' for the term, 'kōpiha'. Williams (1957, p. 358) uses a macron over the 'a' for 'tāheke', which has five definitions including; to descend; to drop; to be quick; steep or precipitous; or a waterfall or rapid. Williams (1957, p. 137) gives three definitions for the term 'kōpiha', which includes: a pit for storing potatoes or taro; a pool of water; or witchcraft (with the use of rua).

Miscellaneous eel and lamprey weirs

Te reo Māori	English
Whakaparu piharau	Form of weir composed of stones lined with fern and grass for taking lampreys
Whakarau	Mat of bracken, which is laid down on a riverbed. There are accounts of Whanganui usage of a portable mat that could be pegged down on the bed of the stream

Table 6. Te reo Māori and English names and definitions for other structures used for catching both eels and lampreys within the Whanganui River (Best, 2005, p. 197; Downes, 1917).

Miscellaneous fishing tools, structures and devices

Te reo Māori	English
Patu tuna	Used during transference of tuna from hīnaki to korotete. Tuna were divided for either ritual or consumption
Matau	Circular or round fish hooks
Pā kahawai	Fish hook used for catching kahawai

Table 7. *Te reo Māori and English names for other miscellaneous tools used by Whanganui tūpuna and wider Māori (Hakiwai & Smith, 2008; Paulin, 2007). These tools pertain more to coastal and sea fishing practices. There is little to no literature exploring these specific tools, techniques and practices of Whanganui tūpuna within the context of sea or coastal fishing, other than seasonal migration accounts (Best, 2005; Downes, 1917; Horwood & Wilson, 2008). For images of the matau and pā kahawai see McKergrow and Taylor (2011), Starzecka et al. (2010), as well as Hakiwai and Smith (2008). These images show catalogued fishing tools in Te Manawa Museum of Art, Science and History, the British Museum and National Museum of New Zealand Te Papa Tongarewa.*

Traditional Whanganui knowledge of fishing

Literature has shown that Whanganui tūpuna held intricate knowledge of river fishing tools, techniques and practices. However, there is only brief literature pertaining to the seasonal, coastal and sea fishing migrations of Whanganui tūpuna and little to no literature regarding specific sea and coastal fishing techniques (Best, 2005; Downes, 1917; Horwood & Wilson, 2008; Kerins, 1997; Wakefield, 1845; Young 1998). Wakefield (1845) describes the seasonal, coastal and sea fishing practices of Whanganui tūpuna at the mouth of the Whanganui River, stating:

None of the natives live permanently near the sea-side. Their pā and cultivations are far up the river among the mountainous country, which they consider more fertile as well as more secure from attacks. These sea villages are only used during the season, when the fish abound and the constant fine weather allows the almost daily exit of the canoes. At the end of the summer they return up the river with large stores of dried fish. (Wakefield, 1845, pp. 242-243)

The literature comments on Pākaitore as the common kāinga used by all Whanganui hapū including neighbouring iwi such as, Ngāti Apa, Ngā Rauru Kītahi and Ngāti Tūwharetoa for seasonal fishing during the summer, particularly catching kahawai (Haami et al., 2020; Horwood & Wilson, 2007; Kerins, 1997; Pōtaka, as cited in Waitangi Tribunal, 2007).

The fishery trade is explored in terms of whakapapa, hapū and iwi rights and alliances, which dictate resource use on land and within different parts of the Whanganui River, with one example being Pākaitore (Waitangi Tribunal, 1999; Ministry for Primary Industries, 2009; Horwood & Wilson, 2008). Moreover, literature encompassing the use of common kāinga is examined within the context of land ownership rather than the organisation of trade for Whanganui tūpuna (Waitangi Tribunal, 1999; Ministry for Primary Industries, 2009). Neighbouring iwi conservation methods and protocols prescribing certain seasonal fishing rights also highlighted a reciprocal relationship with Whanganui hapū through whakapapa and whanaungatanga links. This reciprocation was maintained by neighbouring iwi through exchanging the harvest of tūī, kererū and berries from the upper river or outside of the Whanganui area in order to have certain fishing rights during particular season times within areas maintained by Whanganui hapū. Therefore, trading was based on reciprocity (Pōtaka, as cited in Waitangi Tribunal, 2007). Literature has stated that trading was highly organised with fishing being a primary economic and communal activity; however, the literature does not explore the intricacies of fishery enterprise and commerce for Whanganui tūpuna (Kerins, 1997; Ministry for Primary Industries, 2009; Waitangi Tribunal, 1999).

Minimal accounts of trade, coastal and sea fishing techniques could perhaps indicate that the Whanganui River was a primary source of kai for Whanganui hapū, therefore possibly negating the necessity of trading with neighbouring iwi. Moreover, viewing the Whanganui River within this context can further emphasise its significance for Whanganui tūpuna. The literature reinforces this importance through providing an extensive list of names and physical descriptions of diadromous Whanganui fish and eels that were caught along the Whanganui River (Best, 2005; Downes, 1917; Kerins, 1997; Mair, 1879; Paulin & Roberts, 1992;

Pōtaka, as cited in Waitangi Tribunal, 2007; Young, 1998). Diadromous species caught using pā tuna and utu piharau included piharau, tuna, ngaore, toitoi, kōkopu and īnanga. Many different marine species were also caught using these structures as well (Kerins, 1997) (see Figures 16-18).

With regard to pā tuna and utu piharau weirs, the literature gives a comprehensive overview of its structural intricacies, which further consolidates the importance of the Whanganui River as a life source for Whanganui hapū (Best, 2005; Downes, 1917; Pōtaka, as cited in Waitangi Tribunal, 2007; Young, 1998). Young (1998, p. 180) exemplifies this position by stating, “in this case the river is narrative, the flow is tuna; the harvest is understanding.” Along with the complexity of pā tuna and utu piharau structures, comprehensive ecological information of eel species is respectively named according to geographical indicators as well as extensive whakapapa links from each species to certain atua (Best, 2005; Downes, 1917). Furthermore, pā tuna and utu piharau were placed in very specific locations along the Whanganui River that aligned with patterns and seasons to maximise catching rates and understand the behaviours of different eel species whether that be for kai or for ritual (Horwood & Wilson, 2008; Waitangi Tribunal, 1999; Young, 1998) (see Figure 18).

Whanganui fish species

Te reo Māori	English
<p>Īnanga</p> <ul style="list-style-type: none"> • Atutahi when going to sea • Atutai when matured • Karohi <i>or</i> karohē when ascending rivers 	<p>Diadromous whitebait recorded inhabiting the Whanganui River (Best, 2005; Mair, 1879, as cited in Young, 1998; Downes, 1917). Also called <i>Galaxias maculatus</i> (Kerins, 1997), <i>Galaxias attenuatus</i> and <i>Retropinna richardsoni</i> (Best, 2005). Īnanga are found primarily in the lower parts of the Whanganui River but other upriver sites include Taumarunui, Ōngarue, Waimiha and further down to Pīpīriki. They migrate during late summer and autumn downstream (Pōtaka, as cited in Waitangi Tribunal, 2007).</p>
<p>Kahawai</p>	<p>Inshore marine species primarily and move into river estuaries occasionally. Part of seasonal coastal fishing for Whanganui tūpuna and called <i>arripis trutta</i> (Horwood & Wilson, 2008; Kerins, 1997). There is a significant kahawai fishery at the mouth of the Whanganui River with the seasons between September and November (Pōtaka, as cited in Waitangi Tribunal, 2007).</p>
<p>Kanae (<i>Grey-blue</i>)</p>	<p>Grey-blue mullet that does not travel far inland also called <i>Mugil cephalus</i> (Kerins, 1997). Yellow-eyed mullet common within estuarine waters, also called <i>Aldrichetta forsteri</i> (Kerins, 1997). Kanae migrate upriver from October to February/March and feed on algae, which are on the river stones. Kanae prefer clean water, and were dried, smoked and boiled for eating, as well as used as bait for snapper (Pōtaka, as cite in Waitangi Tribunal, 2007).</p>
<p>Kanae aua (<i>Yellow-eyed</i>)</p>	<p>Yellow-eyed mullet that does not travel far inland also called <i>Mugil cephalus</i> (Kerins, 1997). Yellow-eyed mullet common within estuarine waters, also called <i>Aldrichetta forsteri</i> (Kerins, 1997). Kanae migrate upriver from October to February/March and feed on algae, which are on the river stones. Kanae prefer clean water, and were dried, smoked and boiled for eating, as well as used as bait for snapper (Pōtaka, as cite in Waitangi Tribunal, 2007).</p>
<p>Karohi <i>or</i> koaro</p>	<p>Diadromous species migrating great distances inland including Manganui-o-te-Ao and Retaruke. They are also called <i>Galaxias brevipinnis</i> (Kerins, 1997; Pōtaka, as cited in Waitangi Tribunal, 2007). However, Williams (1957, p. 122) and Best (2005, p. 228) refer to <i>koaro</i> (or <i>kowaro</i>) and <i>Galaxias huttoni</i>, which is a freshwater fish found in Lakes Rotoaira and Rotopounamu. Karohi larvae are washed down river to the sea and at the end of winter, they migrate back into the freshwater of the Whanganui River in mixed species shoals. Karohi prefer clean water and are highly sensitive to environmental conditions, with adult karohi only found in native forest remains (Pōtaka, as cited in Waitangi Tribunal, 2007).</p>
<p>Kokopara</p>	<p>Small, common triple finned fish dwelling in rocky pools and also called <i>Forsterygion lapillum</i> (Best, 2005; Paulin & Roberts, 1992).</p>

Whanganui fish species continued

Te reo Māori	English
Kōkopu (<i>banded</i>)	Diadromous species able to climb steep waterfalls migrating great distances inland and also called <i>Galaxias fasciatus</i> (Kerins, 1997). Rare fish species similar to banded <i>kōkopu</i> varying from olive green to a dull-brown with paler banding on the sides. Also called <i>Galaxias postvectis</i> (Kerins, 1997). <i>Kōkopu</i> can migrate great distances as far inland as the headwaters of Manganui-o-te-Ao. When the larvae hatch, they are washed down river to the sea and after six months they return to freshwater. <i>Kōkopu</i> prefer cold, stable streams and their migration patterns coincide during īnanga (whitebait) fishery times (Pōtaka, as cited in Waitangi Tribunal, 2007).
Kōkopu (<i>Short jawed</i>)	Diadromous species able to climb steep waterfalls migrating great distances inland and also called <i>Galaxias fasciatus</i> (Kerins, 1997). Rare fish species similar to banded <i>kōkopu</i> varying from olive green to a dull-brown with paler banding on the sides. Also called <i>Galaxias postvectis</i> (Kerins, 1997). <i>Kōkopu</i> can migrate great distances as far inland as the headwaters of Manganui-o-te-Ao. When the larvae hatch, they are washed down river to the sea and after six months they return to freshwater. <i>Kōkopu</i> prefer cold, stable streams and their migration patterns coincide during īnanga (whitebait) fishery times (Pōtaka, as cited in Waitangi Tribunal, 2007).
Ngaore	Diadromous smelt, also called <i>Retropinna retropinna</i> (Kerins, 1997), is bright and silver, and a significant part of Whanganui customary fishing. Found throughout the Whanganui River, including Pungarehu, Ātene and Huiarere, as well as far inland at Ōngarue. Hīnaki were used to catch ngaore and they would be dried and boiled for eating. Ngaore migrate upstream during īnanga season (Pōtaka, as cited in Waitangi Tribunal, 2007).
Pāngohengohe	Small, scaleless fish (Best, 2005)
Papanoko or panoko or panuku or panokonoko	Diadromous torrentfish living in rapids where the riverbed is covered in gravel or boulders, inhabiting Manganui-o-te-Ao, Retaruke, Te Maire and the Whakapapa rivers. Also called <i>Cheimarrichthys fosteri</i> (Best, 2005; Downes, 1917; Kerins, 1997; Pōtaka, as cited in Waitangi Tribunal, 2007). Papanoko were an abundant part of upper Whanganui customary fishing (Pōtaka, as cited in Waitangi Tribunal, 2007).
Pātiki (<i>Yellow belly</i>)	Yellow belly flounder living in estuary and lowland reaches of the Whanganui River. Also called <i>Rhombosolea leporina</i> (Kerins, 1997). Black flounder able to enter into true freshwater environments. Also called <i>Rhombosolea retiaria</i> (Kerins, 1997). Yellow pātiki are the species mainly fished for (Pōtaka, as cited in Waitangi Tribunal, 2007).
Pātiki (<i>Black flounder</i>)	Black flounder able to enter into true freshwater environments. Also called <i>Rhombosolea retiaria</i> (Kerins, 1997). Yellow pātiki are the species mainly fished for (Pōtaka, as cited in Waitangi Tribunal, 2007).
Pīharau	Diadromous lamprey beginning in fresh water and also called <i>Geotria australis</i> (Kerins, 1997). Known as a Whanganui delicacy, they used to be located all along the Whanganui River to Maraekōwhai. Pīharau was used as bait for tuna during winter months (Pōtaka, as cited in Waitangi Tribunal, 2007).

Whanganui fish species continued

Te reo Māori	English
Tikiheimi or takeke or titiheimi or titihihi ¹¹	Small, scaly smelt with a blue stripe along its sides, sometimes taken with īnanga. Also queried as <i>Retropinna retropinna</i> as an adult form (Best, 2005).
Toitoi <i>(Redfinned, common, upland and cran's bully)</i>	Four species are found within Whanganui catchments called <i>Gobiomorphus breviceps</i> ; <i>Gobiomorphus cotidianus</i> ; <i>Gobiomorphus huttoni</i> ; and <i>Gobiomorphus basalis</i> (Best, 2005; Kerins, 1997; Mair, 1879, as cited in Young, 1998).
Torongū	Small fish (Best, 2005).
Upokororo or pokororo or paneroro or kanae kura	Type of grayling noted as being plentiful within the upper Whanganui River region. Also called <i>Prototroctes oxyrhynchus</i> (Mair, 1879, as cited in Best, 2005).

Table 8. illustrates both te reo Māori and English Whanganui fish species from the literature (Mair, 1879; Best, 2005; Young, 1998; Paulin & Roberts, 1992; Kerins 1997). There are subsidiary names of the fish that change when they mature, migrate or move throughout the river. These name changes are listed underneath their primary name. There are fish species that do not have scientific names as they were not noted; however, the majority of the scientific names are provided above.

11. Best (2005, p. 200) acknowledges titihemi or titihihi as the same species but a variation of the name for the tikiheimi or takeke. However, there is no other record of this name in other accounts.

Whanganui eel species (tuna)

Te reo Māori	English
Arawaru	From Whanganui district (Best, 2005; Downes, 1917).
Hao or puhi	Blue-eyed mud eel from Whanganui district (Best, 2005; Downes, 1917).
Iakaaka or hiakaaka or taiaka	Light green coloured large eel from Whanganui district (Best, 2005; Downes, 1917).
Kōhau	Mud eel found in Whanganui district (Best, 2005).
Kōkopu (kopu, kopakopako, koriwhariwha, ruao, ruwao) or kokopū¹² tuna or pouaru or tuna pouaru	A large eel species. This eel is found within Wairarapa, Whanganui and Waiapu districts (Best, 2005; Downes, 1917).
Kuia	Large eel (Best, 2005; Downes, 1917).
Ngahuru	A Whanganui name and sometimes referenced in tandem with <i>tuna-heke</i> with 'heke' denoting to this eel in migration or descending (Downes, 1917, p. 298).
Opuha	West Coast North Island name for eels (Downes, 1917, p. 305)
Pā or pā tuna or tuna	From Whanganui district (Best, 2005; Downes, 1917). Long finned eel called <i>Anguilla dieffenbachii</i> and short finned eel called <i>Anguilla australis</i> . Long finned is found only in Aotearoa and begin and end their life at sea (Kerins, 1997).
Pango	Silver bellied eel (Best, 2005; Downes, 1917).
Paranui	Black eel from the Whanganui district (Best, 2005).
Pūharakeke	Large eel that is yellow and brown in colour with a large head, small eyes that has a yellow ring surrounding the pupil (Best, 2005; Downes, 1917). Williams (1957, p. 304) describes this as a yellow salt-water eel called <i>Gymnothorax prasinus</i> .
Pūtaiore or tuna rere or tuna riri	Migrating species that is blue and black in colour with large pectoral fins, a flat head, broad tail and blue eyes. These are all Whanganui names (Best, 2005; Downes, 1917, p. 299). The pūtaiore are present in other parts of Aotearoa (Habib, 1989; Phillipps, 1947, Taylor, 1848).
Ringo	Red in colour of a medium size that migrates. Queried as the riri and rere of Whanganui district (Best, 2005).
Riri or rere	A tuna heke that migrates within the Whanganui district (Best, 2005). Named for being angry and wild (Downes, 1917).
Tangaroa	From the Whanganui district (Best, 2005).
Toke or tuna toke	The term for eels that are taken from a bait of toke (earthworms). A Whanganui term and not a term for a particular variety of eel but the technique (Best, 2005; Downes, 1917).

12. There are conflicting uses of the terms, 'kōkopu' and 'kokopū'. William (1957, p. 138) confirms that 'kōkopu' refers to a large variety of the *Galaxias fasciatus*. However, he cites 'kokopū' as a form of gravel. In other accounts, 'kokopū' denotes native trout (Christchurch City Council, 2019; Te Ao Māori News, 2014). Best (2005, p. 201) and Downes (1917, p. 301) refer to 'kokopu' without macrons placed on either the 'ō' or 'ū' creating differences in usage.



Whanganui eel species (tuna) continued

Te reo Māori	English
Tuhoro or tuoro	Black eel with a large head and a small tail. Best (2005) and Downes (1917) have said that Whanganui tūpuna seldom catch this eel or see it, as it is an omen of evil. Gordon et al (2018) refers to the tuhoro as an eel that was not eaten due to similar reasons within the Manawatū and Wairarapa region.
Tuna heke	Generic term for all eel species (Best, 2005).

Table 9. Te reo Māori and English eel or tuna species distinct to the Whanganui district. This was collated from Best (2005, pp. 95-100), Downes (1917, pp. 298-304) and Kerins (1997, pp. 52-53). There are only a few eel or tuna species that have noted scientific names and they have been provided within the figure. Pōtaka (as cited in Waitangi Tribunal, 2007) notes the migration patterns of tuna; when they return to the sea they do not swim, rather, they go with the current of the river in two waves: the males first and then the females. Whanganui tuna also inhabit neighbouring lakes such as, Kaitoke and Wiritoa.

Miscellaneous Whanganui marine species

Te reo Māori	English
Kākahi	Molluscs or freshwater mussels that have a shell with two equal halves hinged together dorsally. Gathered in small numbers along the Whanganui River and Heao Stream. Also called <i>hyridella menziesi</i> (Kerins, 1997). Large kākahi beds used to be over a mile long at Paetawa and kākahi used to be in high numbers at Kākahi Stream (Pōtaka, as cited in Waitangi Tribunal, 2007).
Kōura	Freshwater crayfish found throughout many Whanganui River tributaries and important within customary fishing. Also called <i>paranephrops planifrons</i> (Kerins, 1997). There used to be large kōura populations within the Whanganui River and they used to be larger. Kōura inhabit cold, clean water and would only be caught if they were an appropriate size on every second year, with the female eggs always placed back. This conservation method would allow kōura to replenish (Pōtaka, as cited in Waitangi Tribunal, 2007).

Table 10. Te reo Māori and English Whanganui marine species from the Whanganui River along with their scientific names, which have been provided above (Kerins, 1997).

Downes (1917) provides various Whanganui accounts of how tuna and piharau are offered to atua, prepared, preserved and cooked. The catch of pā tuna was divided into three sections according to who would be offered the tuna (see Figure 19). Subsequently, each section had specific flax baskets that they were placed in, as well as particular ovens they were cooked in. Horwood and Wilson (2008), and Best (2005) provide descriptions and accompanying photos of dividing the tuna (see Figure 19). Downes (1917) explains that the first (or sometimes third) offering of tuna to atua would coil within the basket and be deposited at an unknown tapu area and only gives the name of the oven for this offering. The third offering was cooked as the second offering was given and eaten by the women. Other delicacies are documented by the literature, which highlight toke or tuna toke being roasted using the rara¹³ method, sun drying preservation techniques on specific species¹⁴ for winter use, as well as boiling and steaming the tuna with potatoes (Best, 2005; Downes, 1917; Pōtaka, as cited in Waitangi Tribunal, 2007).

Section	Offering	Name of flax baskets
1 or 3	Atua	Kono <ul style="list-style-type: none"> To be placed in a separate oven known as umu
2	Women	Tapura or iapora
3	Men	Rourou

Table 11. *The process of dividing the tuna into three sections, depending on who they were offered to, as well as the names of specific baskets and ovens they were placed and cooked in (Downes, 1917, p. 309).*

13. The rara method of cooking is grilling the tuna. Tuna are removed from their baskets, killed by cutting behind the head severing the bone, strung close together on a thin stick through their heads and placed on a grid over a fire of embers (Downes, 1917). Best (2005, pp. 114-119; p. 224) refers to the rara method and process as ahi rara ika and ahi rara tuna. Williams (1957, p. 319; p. 326) notes differences in the meaning stemming from the macron usage on the 'a'. 'Rara' has five meanings, denoting: rara mutu or a short rib; a stage on which kūmara are dried; the shoal of a fish; to be spread out on stage; and lastly, to be thrown broadside or broach to. 'Rārā' has two meanings, referring to a twig or a small branch, as well as exposure to heat through a fire resulting in drying or scorching. It is undetermined whether this term uses a macron. However, the aforementioned meanings indicate relevant definitions for the description of the rara method.

14. Downes (1917) notes that certain tuna, such as the tuna toke, have to be cut (for example, heads cut off, skin spilt open and bone taken out) and sun-dried in order to be preserved for the winter months. However, the riri or rere for example, has been queried for not being able to be preserved using this technique by another iwi, but was preserved by Whanganuiomona.



Figure 10. Pōkiha Peni of Ngāti Pāmoana hapū of Koriniti, distributing the catch of tuna from the hīnaki (Best, 2005; Horwood & Wilson, 2008). Reprinted with permission from: Museum of New Zealand Te Papa Tongarewa: Eel Fiesta at Koriniti, Circa 1920, by James McDonald. Te Papa (MU000523/005/0565).

Interdisciplinary approaches and worldviews of traditional Whanganui fishing

It is important to acknowledge the publications of Best (2005) and Downes (1917), who have provided ethnographic and anthropological work on many aspects of Māori, including fishing methods and devices. Downes (1917) in particular has also contributed to this area of study but concentrated his studies within Whanganui. The writings of Downes (1917) and Best (2005) have become pervasive and problematic in being unexamined and uncontested reference points of traditional Māori lifeways used by later research (Holman, 2007; Renwick, 1999). Particularly with Best (2005), whakapapa links, whakataukī and kōrero pūrākau are examined from the Māori oral tradition of fishing through an ethnographic lens that seeks to estrange his research from colonial missionary perceptions of Māori. However, Best (2005) and Downes (1917) held similar colonialist viewpoints of Māori to the missionaries.

Holman (2007) critiques Best's publications, philosophies, methodologies and colonial viewpoints of Māori. Holman (2007) further argues that under the rubric of primitivism and diffusionism¹⁵, which was commonplace within early settler and colonial anthropological spaces, that Best (2005) viewed Māori within similar ways as missionaries. Therefore Best's (2005) anthropological and ethnographic view, which was resonant of that time, limited whakapapa links, whakataukī and kōrero pūrākau to being preventative of European visions of progress and as unfounded myth.

Best (2005) misunderstood these oral mediums, as it has the ability to represent a multitude of lived experiences intrinsic within the oral tradition. Holman (2007, p. 201) concludes on the historical context for Best's (2005) worldview of Māori by stating:

It was also commonplace of the determinists, that superstition amongst savages prevented them from making intellectual and material advances, unless they first encountered superior ideas and technology introduced by explorers and conquerors from Europe (Holman, 2007, p. 201).

Unlike Best (2005), the research philosophies and methodologies of Downes (1917) has not been comprehensively and critically analysed. However, the colonial perception of Downes (1917) has been mentioned, which is similar to the paternalism indicated by Best (2005). Downes (1917) placed Whanganui iwi within the past tense and thought that they would be eradicated as a race due to colonisation and that all of their knowledge would be lost. Therefore, he sought to retain, record and preserve as much knowledge as he could (Henwick, 1999).

Through acknowledging the worldview of Best (2005) and Downes (1917), their writings can inform understandings of how Whanganui tūpuna might have used these fishing items within isolated capacities. In terms of comprehending structural knowledge of certain fishing devices and tools, Best (2005) and Downes (1917) give observant and beneficial knowledge. However, the disbelief that Whanganui uri would continue as well as their knowledge of the historical and genealogical context of fish, which often utilised the oral tradition, exposes Best's (2005) and Downes' (1917) very problematic worldviews of Māori.

15. Best's (2005) worldview of primitivism and diffusionism stems from cultural evolutionist thinking, which sought to categorise cultures according to different levels of European visions of development and progress. The cultures deemed 'primitive' were then discovered and dominated by 'civilised' cultures. Diffusionism branches from this thinking, where anthropological scholars of this time observing spiritual and religious rituals of different cultures viewed these social events as halting a civilisations progress, as it lacked logic and scientific reasonings founded within the Enlightenment period (Holman, 2007).

Reintegrating traditional fishing knowledge

The implications of problematic colonial worldviews can lead to the dismissal of traditional fishing knowledge and tool design that has pertinence and benefits within contemporary society. A case study of these implications is examined by Paulin (2007), who explores the perspectives of traditional Māori fishing history and techniques. Paulin (2007) analyses how colonial worldviews shaped the decline of matau¹⁶ use as it was deemed ineffective, clumsy and unable to catch anything (Baucke, 1905; Beasley, 1928; Hamilton, 1908; Leach, 1998; Polack, 1838). In lieu of the traditional circle shaped matau, European metal J-shaped hooks were given precedence within both recreational and commercial fishing practices.

However, Cooke and Suski (2004) compared the functionality of J-shaped hooks and circular hooks by undertaking a review of 43 different studies on modern fisheries since 1996. The review found that most commercial fisheries had abandoned J shaped hooks and experimented on circular hooks dependent on various fish species. Furthermore, the studies were summarised by Paulin (2004, p. 28), which highlighted:

... the perceived benefits of jaw hooking, which makes removal easier; reduced gut hooking, resulting in lower mortality; and easy setting of the hook, which is ideal for inexperienced anglers and in deep water commercial long-line situations where passive line-hooking is essential. Other advantages were found to include fewer lost fish, fewer snags and safer handling.

Cooke and Suski (2004) further concluded that while metal J-shaped hooks caught fish more readily, circular hooks were responsible for higher landing rates when the fish were attached. Moreover, the use of matau circular hooks within commercial modern fisheries proved advantageous through retaining live-hooked fish within passive fishing situations, including long-lining. Paulin (2007) argues that this is an example of rediscovery and reintegration of traditional Māori knowledge concerning the matau into contemporary society rather than an advancement in hook design.

Summary

This literature review examined the knowledge and methods that were used by Whanganui tūpuna to construct, utilise and preserve items used for fishing. The literature explored four different themes. These four themes included: traditional Whanganui tūpuna fishing items, which included an overview of pā tuna, utu piharau, baskets and other miscellaneous fishing tools; the traditional Whanganui knowledge of fishing, examining Whanganui fish, eels and other marine species; interdisciplinary approaches and worldviews of traditional Whanganui fishing, which critiqued Best (2005) and Downes (1917); and lastly, reintegrating traditional fishing knowledge through exploring a case study of the matau being rediscovered by modern commercial fisheries. The literature review provides historical context surrounding traditional knowledge of fishing that can be implemented within current and future pedagogical methods for Whanganui uri.

16. Matau refers to the traditional and contemporary circular shaped hook (Paulin, 2007). For images refer to Starzecka et al. (2010), Hakiwai & Smith (2008) and Horwood & Wilson (2008).



Glossary

ahi rara ika	process for grilling fish
ahi rara tuna	process for grilling tuna
akatea	white rātā vine (<i>Metrosideros albiflora</i>)
akura	net or funnel shaped entrance for a pā tuna or utu piharau
arawaru	eel from Whanganui district
Ātene	riverside settlement in the lower reaches of the Whanganui River
atua	god/s
atutahi	mature īnanga when migrating to sea; Whanganui kupu for īnanga
atutai	mature īnanga when migrating to sea
auroa	water outside the fences of a pā tuna or utu piharau
Awa	River (Whanganui)
hao; puhi	blue-eyed mud eel from Whanganui district
hapū	cluster of extended families, descended from an eponymous ancestor
Heao Stream	stream, located in Taranaki; contributes to the Whanganui River around the Ohuraīti Stream
hiakaaka; iakaaka; taiaka	light green coloured large eel from Whanganui district
hīnaki	eel basket
hoi	return angle/wing at foot of a pā tuna or utu piharau
huahua	rails of the eel weir fence
huahua kaiwai	heavy bottom tōtara log of a pā tuna or utu piharau
huapae	rango when fastened of a pā tuna or utu piharau
iapora; tapura	flax basket in which tuna are placed and cooked; for consumption by females
iho	talismanic object with relation to pā tuna rituals; kernel or innermost part, made of stone
ihonui	water between fences of a pā tuna or utu piharau
īnanga	diadromous whitebait (<i>Galaxias maculatus</i>)
iwi	tribe, nation
kaharoa	Mānuka handle at side of a hīnaki
kahawai	primarily inshore marine species that occasionally move into river estuaries (<i>Arripis trutta</i>). Part of seasonal coastal fishing for Whanganui tūpuna
kai	food, nourishment
kāinga	temporary, seasonal and or permanent settlement

kaitiaki	custodian, guardian
Kaitoke	small settlement 7km south of Whanganui town centre
kaiwai	intermediate and bottom rails
kākahi	molluscs or freshwater mussels that have a shell with two equal halves hinged together dorsally; gathered in small numbers along the Whanganui River and Heao Stream (<i>Hyridella menziesi</i>)
kanae (grey-blue)	grey-blue mullet that does not travel far inland (<i>Mugil cephalus</i>)
kanae aua (yellow-eyed)	yellow-eyed grey-blue mullet common within estuarine waters (<i>Aldrichetta forsteri</i>)
kanae kura; paneroro; pokororo; upokororo	type of grayling noted as being plentiful within the upper Whanganui River region (<i>Prototroctes oxyrhynchus</i>)
karakia	ritual chants, invocations
karewao; kareao	supplejack (<i>Ripogonum scandens</i>)
karohē	īnanga when ascending rivers – Same definition as ‘Karohi’
karohi	diadromous species migrating great distances inland including Manganui-o-te-Ao and Retaruke (<i>Galaxias maculatus</i>)
kererū	New Zealand pigeon (<i>Hemiphaga novaeseelandiae</i>)
kiekie	thick native vine (<i>Freycinetia banksia</i>)
koaro	diadromous species migrating great distances inland including Manganui-o-te-Ao and Retaruke
kōhau	mud eel found in Whanganui district
kokopara	small, common triple finned fish dwelling in rocky pools (<i>Forsterygion lapillum</i>)
kōkopu; kokopū tuna; kopakopako; kopu; koriwhariwha; pouaru; ruao; ruwao; tuna pouaru	large eel species; this eel is found within Wairarapa, Whanganui and Waiapu districts
kōkopu (banded and short jawed)	diadromous species able to climb steep waterfalls migrating great distances inland (<i>Galaxias fasciatus</i>)
kono	flax basket in which the tuna offering to atua are placed; kono are placed in a separate umu
kōrero pūrākau	ancestral stories
kōpiha/kopiha or tahake; tāheke	Pin for securing lid to a hīnaki
korotete	storage baskets for tuna
kōura	freshwater crayfish found throughout many Whanganui River tributaries (<i>Paranephrops planifron</i>)

kuao	net or funnel shaped entrance for a pā tuna or utu piharau
kuia	large eel
kurī	dog, animal with four legs
manaaki	hospitable, care for, support
Manganui-o-te-Ao	river, located at the eastern side; contributes to the Whanganui River by carrying waters inland from Ruapehu region
manuhiri	visitor, guest
mānuka	tea-tree (<i>Leptospermum scoparium</i>)
Māori	Indigenous inhabitants of Aotearoa
marae	traditional Māori place of gathering
maramataka	lunar cycle dictating fishing, horticultural and agricultural activities as well as energy levels
matau	traditional circular or round fish hook
mātia	kōpuka stakes that are driven into the bed of the river, as part of pā tuna or utu piharau
Māui (tikitiki-a-Taranga)	well-known tupuna who performed a number of amazing feats
Ngā Purua	pā tuna located at Hiruhārama
Ngā Rauru Kītahi	tribe within the South Taranaki area
ngahuru	Whanganui name and sometimes referenced in tandem with tuna-heke with 'heke' denoting this eel in migration or descending
ngakau; ngākau	lower rail of eel weir fence
ngaore	diadromous smelt that is bright and silver usually found around Ongarue as well as the middle reaches of the Whanganui River (<i>Retropinna retropinna</i>)
Ngāti Apa	tribe within the Rangitīkei area
Ngāti Tūwharetoa	tribe within the Taupō area
ngutu	narrow outlet of eel weir
noko	angle stake of a pā tuna; angle brace of a utu piharau; strut on downstream side of eel weir fences
noko panawai	angle log head of pā tuna or utu piharau
Ōhura	river, located at the western side of the Whanganui River; contributes to the Whanganui River by carrying waters inland from Taranaki
opuha	west coast North Island name for eels
pā	village
pā auroa	single fence eel weir distinct to Whanganui
pā kahawai	fish hook used for catching kahawai

pā tuna	eel weirs
pā tauremu	the “VV” shape of a pā tuna
paihau	outside wall of a pā tauremu
Pākaitore	seasonal fishing ground in Whanganui
pango	silver bellied eel
pāngohengohe	small, scaleless fish
panoko; panokonoko; panuku; papanoko	diadromous torrentfish living in rapids where the river bed is covered in gravel or boulders, inhabiting Manganui-o-te-Ao, Retaruke, Te Maire and the Whakapapa Rivers (<i>Cheimarrichthys fosteri</i>)
paranui	black eel from Whanganui district
pātiki (black flounder)	black flounder able to enter into freshwater environments (<i>Rhombosolea retiaria</i>)
pātiki (yellow belly flounder)	yellow belly flounder living in estuaries and lowland reaches of the Whanganui River (<i>Rhombosolea leporina</i>)
patu tuna	used during transference of tuna from hīnaki to korotete, while tuna were divided for either ritual or consumption
pawai; pāwai	blocked part of the fence of a utu piharau
piharau	diadromous lamprey (<i>Geotria australis</i>)
Pīpīriki	Riverside settlement on the banks of the Whanganui River, southern gateway to Whanganui National Park
pōhā; powha	funnel attachment
popoia	Vine handle at the top of a hīnaki
popoki	Pin for securing lid on a hīnaki
porowhita popoki	Outside protecting vines of a hīnaki
porowhita;	outside protecting vines of a hīnaki, and attached to a pā tuna or utu piharau
potaka; pōtaka	individually ribs of a hīnaki, and attached to pā tuna or utu piharau
pou	kōpuka stakes that are driven into the bed of the river, as part of a pā tuna or utu piharau
pou riri; pou turu	side posts of a pā tuna or utu piharau
puhara; pūhara; pūwai	corf basket used to keep eels alive
pūharakeke	large yellow and brown eel, with a large head, small eyes that has a yellow ring surrounding the pupil; yellow salt-water eel (<i>Gymnothorax prasinus</i>)
pūrangi	leading net of a pā tauremu
pūtaiore	migrating eel species that is blue and black in colour with large pectoral fins, a flat head, broad tail and blue eyes
rāhui	temporary ritual prohibition

rangatahi	youth, adolescent
rango	sliding timber of a pā tuna or utu piharau
rara	grilling method of cooking eels
rara mutu	short rib; stage on which kūmara are dried
rārā	twig; small branch
rātā	large forest tree with crimson flowers and red timber (<i>Metrosideros robusta</i>)
rere; riri	a tuna heke that migrates within Whanganui district; named for being angry and wild
Retaruke	river, located at Retaruke; contributes to the Whanganui River just above Wade's Landing, downstream from Taumarunui
ringo	red eel of a medium size that migrates; queried as tuna riri and tuna rere of Whanganui district
rourou	flax basket in which tuna are placed and cooked; for consumption by males
tā	maul used to strike the pou or mātia in pā tuna or utu piharau, made of knotted roots of the maire (<i>Syzygium maire</i>)
tahake; tāheke or kōpiha/kopiha	Pin for securing lid to a hīnaki
takeke; tikihemi; titihemi; titihimi	small, scaly smelt with a blue stripe along its sides, sometimes taken with Ūnanga (<i>Retropinna retropinna</i>)
tamariki	children
Tāngārākau	river, located at the western side of the Whanganui River; contributes to the Whanganui River by carrying waters inland from Taranaki
Tangaroa	eel from the Whanganui district
taonga	ancestral treasures
tapatu	poles holding the floor of a utu piharau
tapangutu	two posts at outlet of pā tauremu
tapu	sacred; restricted
Taranaki	coastal and mountainous region on the western side of Aotearoa's North Island
tarapi	crossed pegs holding poles down of a utu piharau
taupoki	lid of a hīnaki, attached to pā tuna or utu piharau
Te Arero	pā tuna located at Koriniti
Te Ika-a-Māui	the great fish of Māui (the North Island)
Te Rere	pā tuna located at Tawhitinui
Te Ruatangata	pā tuna located at Tawhitinui
Te Ruruanga	pā tuna located at Hiruhārama
te reo Māori	the Māori language

te ure	net or funnel shaped entrance for a pā tuna or utu piharau
tikanga	Māori practices and protocols
toitoi	red-finned, common, upland and cran's bully; these four species are found within Whanganui catchments (<i>Gobiomorphus breviceps</i> , <i>Gobiomorphus cotidianus</i> , <i>Gobiomorphus huttoni</i> , and <i>Gobiomorphus basalis</i>)
toke	term for eels that are taken from a bait of toke (glow worm – <i>Arachnocampa luminosa</i>); a Whanganui term and not a term for a particular variety of eel but the technique
toroaka	Vine hinge on a hīnaki
torongū	small fish
tuhoro; tuoro	black eel with a large head and small tail
tūi	parson bird (<i>Prosthemadera novaeseelandiae</i>)
tuki	the central “V” shaped fences of an eel weir
tuna	eel; long finned eel (<i>Anguilla dieffenbachii</i>) and short finned eel (<i>Anguilla australis</i>)
tuna heke	generic term for all eel species migrating to sea
tūpuna	ancestors
tūwatawata	Main fence of a pā, stockade, fortification
uri	descendants
utu piharau	lamprey (<i>Geotria australis</i>) weirs
waha	large opening of a pā tauremu
wānanga	traditional form of learning
whakataukī	proverbial saying, author unknown
whakapapa	genealogy; genealogical table; lineage; descent
whakaparu piharau	form of weir composed of stones lined with fern and grass for taking lampreys
whakarau	fern floor, laid down on a river-bed for a pā tuna or utu piharau
whakareinga; whakatakapa; whāriki	scour mat laid on a river bed, as part of a pā tauremu
whānau	extended family
whanaungatanga	familial connections and relationships between and across whānau
Whangamomona	river, located at the western side of the Whanganui River; contributes to the Whanganui River by carrying waters inland from Taranaki
Whanganui	river, town and area on the west coast of the North Island of Aotearoa
whāriki	fern floor, laid down on a river-bed for a utu piharau
whatu	Two ply twists following round the ribs of a hīnaki
whenu	ribs continuing in spiral formation of hīnaki, and attached to pā tuna or utu piharau
Wīritoā	Is one of three coastal dune lakes a few minutes south of Whanganui

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Conceptual design

Examining the fishing knowledge and methods used by Whanganui tūpuna, this literature review and indeed the Whakarauora Research Project seeks to explore how our tūpuna constructed, utilised and preserved those items used for fishing along the Whanganui River – Te Awa Tupua. Thus, the conceptual design for this publication is inspired by this knowledge and incorporates a hīnaki weave recreated by Matthew McIntyre-Wilson (Taranaki Iwi, Ngā Māhanga, Titahi). Matthew has been involved in wānanga of Te Morehu Whenua (see below), where he has facilitated workshops on harvesting traditional materials for hīnaki making. Matthew also holds (2020-2021) a Ngā Pae o te Māramatanga Internship with Te Atawhai o Te Ao, focused on researching Whanganui weaving structures and traditional materials, locating and resourcing traditional materials, and practising Whanganui hīnaki weaving structures.

The photograph on the cover of this literature review was taken by William Partington, and features Wī Pauro Tūtāwhā (of Ngāti Tamarua and Ngāti Rangipoutaka), together with his wife, Te Paea (of Ngā Paerangi), and their whāngai daughter, Miriama Te Paea (Sophie) Tawaroa. They are sitting in front of their whare, with their two kurī and a hīnaki, made of traditional materials. Wī Pauro Tūtāwhā is the tupuna of Cruz and Connor Pauro, both of whom are involved as wānanga participants and rōpū facilitators with Te Morehu Whenua.

Tamariki and rangatahi who appear in the photographs within this literature review, affiliate to Rānana Marae, and are members of Te Morehu Whenua, an environmental group endorsed by Ngāti Ruaka and Ngāti Hine hapū of Rānana. The group regularly hold wānanga on reintegrating traditional hapū fishing methods, which is a critical component of the Whakarauora Research Project. The colour palette for this publication is drawn from Te Awa Tupua, and reflects green and brown tones as observed in the Awa and its environs. As referenced throughout this publication, Te Awa Tupua (incorporating the Whanganui River and its many tributaries) was and continues to be a vital source of physical and spiritual sustenance for Whanganui hapū, including native freshwater species that are discussed throughout this literature review.

