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## Animals of Aotearoa: Kaupapa Māori Summaries

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### ABSTRACT

This article summarizes Māori knowledge of a selected range of animals through the literature as a first step in undertaking research into the potential of incorporating Māori concepts into animal ethics topics for senior school and post-school biology education. This article is based on a critical Māori “reading” of existing literature, a writing process that both collects and analyzes data from available records, examined through a Kaupapa Māori (i.e., Māori-centered lens). The scientific category of “animal” does not exist in te ao Māori (the Māori world), so the approach taken below is to give an introductory synopsis of Māori knowledge of a sample of animals of Aotearoa, mindful that Māori “knowledge” includes and embeds a Māori understanding of ethics. This summary of Māori knowledge of animals is presented in six sections: kūrī (dog), kiore (rat), manu (birds), ika (fish), ngārara (reptiles), and aitanga pepeke (insects/invertebrates). Key points emerge about Māori knowledge of animals, including a final point reflecting on the nature and status of a synopsis, a genre of particular relevance to Kaupapa Māori scholars studying Māori knowledge.

### KEYWORDS

Aotearoa; human-animal interaction; Māori knowledge; Mātauranga Māori; Whakapapa

In the pre-European era, the fauna of Aotearoa was known to Māori through specific indigenous frameworks of knowledge, which today are collectively referred to as Mātauranga Māori (Broughton & McBreen, 2015; Hikuroa, 2017). Frameworks of Māori knowledge of the natural world are based on whakapapa, a key concept in Māori thinking (Stewart, 2021). Whakapapa provides a “thick” or ethical account of time and history (Stewart, 2023b); it is used both as a noun and a verb and is a major topic of Māori conversation. Whakapapa thinking, or “whakapapa kōrero” (Smith, 2000), occurs at various levels, from literal to metaphorical. Whakapapa has been described as a mental construct, a mind map, and a cognitive gestalt (Haami & Roberts, 2002; Roberts, 2012; Roberts et al., 2004). Various domains and genres, such as biography or phylogeny, can be considered specialist forms of “whakapapa kōrero.” Whakapapa has been identified as part of a Māori “ethnobiology” as it forms a “traditional system of classification” also known in anthropology as a “folk taxonomy” (Haami & Roberts, 2002, p. 405). Whakapapa is not only key to

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the knowledge of each animal covered below, but it also guides the approach and construction of the synopsis. Relationships between humans and animals, embedded in whakapapa, sit at the base of the more specific observational information and knowledge on each animal outlined below.

This research seeks to capitalize on the productive tension caused by the combination of overlaps and differences between Indigenous and Māori thinking, on one hand, and the criteria of science, on the other (Cheung, 2008). Both “Indigenous” and “Māori” are identity labels that act as umbrella terms for multiple peoples. Māori is a postcolonial pan-tribal identity that arose in response to the rapid influx of British settlers in the late 1800s. This article includes examples of Mātauranga Māori that derive from different iwi in different parts of the country, acknowledging the iwi and places of origin whenever possible. Certain iwi specificities exist in relation to knowledge, as reflected in some of the titles with multiple names for one animal, but for the purposes of this research, traditions from all iwi are canvassed.

As would be expected there is no traditional Māori word for “animal” in its science meaning. Science defines an animal as any organism that is not a plant or a microorganism. In everyday English, however, the word “animal” is conventionally used to refer to a creature such as a dog, lion, or rabbit, rather than a bird, fish, insect, or human being. “Quadruped” is a more technical word for “beasts” or creatures usually considered “animals” in general English. The Māori equivalent for this general use of the animal as quadruped takes the forms “kararehe” or “kīrehe” – both words historically used for dog, pig, cow, or other quadruped species by native Māori speakers totally unfamiliar with animals from beyond Aotearoa. Kiore and kūri are the two key quadrupeds of pre-European Māori culture, purposely brought to Aotearoa aboard the seagoing craft by which Māori ancestors arrived in these lands (Best, 1977b; Roberts, 1993, p. 35). The similarity of these four words – kūri, kiore, kīrehe, and kararehe probably reflects their similar origins and semantics. In this synopsis, kiore and kūri relate most strongly to the animal ethics categories of “laboratory science animal” and tame pets or companion animals. Māori households also kept birds (pet tūī, for example, were used to entice other birds), and there are also records of pet eels, fish, sharks, and whales.

From the earliest contact of colonial scientists with Māori informants in the early 1800s arose a thirst for textual information on all manner of Māori topics, which continues today. Despite the drawbacks of older texts recording Māori knowledge, they capture the knowledge of tūpuna Māori and allow us to pierce the veil that separates us from those worlds and times. In this work, I am capitalizing on a small number of texts written by scholars (Brad Haami, Basil Keane, Margaret Orbell, Murdoch Riley, Mere Roberts, and others) who give fair hearings to both sides of the knowledge debate between science and Mātauranga Māori. What follows leans on their erudite interpretations of primary data on Māori knowledge, recorded by colonial scientists before and just after 1900, including Elsdon Best (1909), William Colenso (1877), and many others.

There are many decisions to make in writing about Māori knowledge and few existing publications that re-read Māori knowledge through critical Māori lenses. My experience is that Māori knowledge must be engaged with at specific levels; it cannot be investigated in abstract, generalized terms. A synopsis is a relevant genre for Kaupapa Māori scholars studying Māori knowledge, given the value, despite their flaws, of the archives of colonial

anthropology conducted in Aotearoa-New Zealand, for contemporary Māori generations of students of Mātauranga and the world(s) of their tūpuna. The flaws found in the old scholarship reflect outdated patriarchal, Eurocentric, structuralist academic frameworks.

The following points show how I use Kaupapa Māori principles in writing the summaries of Māori knowledge of animals:

1. Beginning from Māori philosophical concepts and categories in the structure, headings, and content.
2. Attending to language and seeing te reo Māori as the “first language” of Mātauranga Māori, hence normalizing Māori words and texts, and reasoning as much as possible using te reo versions of kupu kōrero (texts and sayings).
3. Attending to power and its creation of social “truths” such as “race” and the truth-myths about Māori invented in the colonial period, understood as managed ignorance or “agnontology” (Stewart, 2023a).
4. Political readings – situated in the context of the time – reading beyond sexism and racism, to rehabilitate older texts for contemporary Māori uses in education and research, and taking particular notice of how Māori views and interests are trumped by Pākehā law backed up by science.

What follows is a taster of Mātauranga Māori about a range of animals known to our tūpuna Māori in six sections containing summaries of basic Māori knowledge of these animals/groups:

1. Kurī
2. Kiore
3. Ngā manu a Tānemahuta (pīwakawaka, tūī, kererū, rūrū, kōtare, titī, toroa)
4. Ngā ika a Tangaroa (makō, tohorā)
5. Ngārara – te aitanga a Punga
6. Te aitanga pepeke.

This list is constructed using Māori categories, which sometimes contravene those of science, such as grouping tohorā (whales) under ika. Kurī and kiore, the Polynesian dog and rat, come first, given their importance as the two quadruped animals purposely brought across the Pacific Ocean to Aotearoa by the voyaging ancestors of Māori. The other categories are based on whakapapa. These six sections cover a range of endemic animals but omit many other animals known to Māori, including the eel, octopus, marine mammals, and shellfish. The intention is to provide a sampling, not a comprehensive encyclopedia of Māori knowledge of animals. These summaries lean on a small corpus of synopses of primary data from Māori perspectives, many of which are published in *Te Ara*, the online encyclopedia of New Zealand ([www.teara.govt.nz](http://www.teara.govt.nz)).

## 1. Kurī

Kurī cohabited with Māori households as pets or companion animals that also provided an important protein food source; additionally, there are Māori accounts of feral kurī

populations (Keane, 2008). Although once given distinct species names, the kurī, as with all Pacific dogs and the dingo, is now included within the universal domestic dog species, *Canis familiaris* (King & Forsyth, 2021). One engaging image of a kurī is shown in an early European drawing of a loaded Māori war canoe off to battle (Luomala, 1962), aboard which everyone, including the kurī, is listening in rapt attention to the speech of the rangatira (leader) – an image showing the bond of a dog to its human and their people (British Museum, 1769).

Early European travelers to Aotearoa noted that kurī howled but did not bark; the lack of other comments on kurī behavior “probably means that they generally behaved like most other domestic dogs” (Clark & Greig, 2021, p. 282). In addition to being a food source, kurī hides, hair, and bones were used to make and decorate clothing, jewelry, and tools. Māori also used kurī as hunting dogs for catching various birds (Keane, 2008).

Kurī were of “traditional, cultural and spiritual significance within te ao Māori” (Cumming, 2021, p. 21), as recorded in narrative traditions. In terms of whakapapa, kurī descend from Irawaru, the brother-in-law of Mauī (Keane, 2008). Kurī were regarded both as ancestors and as kaitiaki or spiritual guardians of particular hapū and kingroups, and these traditions are still passed on today. Traditional stories tell of kurī who guided their waka and people to safe landing, and of supernatural beings taking the form of kurī (University of Auckland News, 2022). Kurī behavior features in various whakataukī (proverbial sayings) about non-desirable personal qualities: idleness – he whiore tahu-tahu, a often-singed tail (from laying near the fire); cowardice – he whiore hume, tail between its legs; or being dominated – he kurī e pōtete ana, like a dog led around on a leash (Keane, 2008).

In the colonial period, introduced dogs rapidly interbred with kurī, and in the late 19th and early 20th centuries, feral dog packs, believed to be kurī-European cross-breeds, were “a great nuisance” and shot on sight by shepherds and settlers (Clark & Greig, 2021, p. 282). Feral dogs were exterminated as settlement proceeded, and pure-bred kurī “disappeared during the second half of the nineteenth century” (p. 283). The Dog Registration Act of 1880 was an official response to the ongoing on-the-ground struggle between Pākehā farmers and Māori dog owners. The dog tax is an inherently anti-Māori law, dating back to colonial times, which contributed to the criminalizing of Māori within New Zealand society (Bull, 2004). The effects of this myth of inherent “Māori criminality” on scientific thinking is still seen in racist belief in a “warrior gene” that predisposes Māori to criminality (Wensley & King, 2008). The Hokianga Dog Tax Rebellion of 1898 was one result of Māori resistance to the imposition of a dog tax (Cumming, 2021). In official accounts, the quashing of the “rebellion” is regarded as confirming the rule of British law over northern Māori. But from a Māori perspective, the dog tax was not only an unfair expense, it also symbolized further Pākehā encroachment on mana Māori and tino rangatiratanga. The dog tax was an early use of financial discipline to enforce the cultural assimilation of Māori to Pākehā-imposed norms. It was early in the construction of official legal frameworks, against which Māori ways of living—in harmony with nature, and with a social structure classified as “communalism” (Firth, 1972)—were invariably found wanting.

## 2. Kiore

Māori knowledge of kiore is relevant to discussions of animal ethics as rodents constitute one of the most important biological models used in laboratory medical science. Other grounds for including kiore in this synopsis are the interesting differences between Māori views of kiore and European views of rats and mice. Kiore is one species (*Rattus exulans*) also known as the “Polynesian rat” (Best, 1977b, p. 353) that originated in South-east Asia and spread throughout the Pacific, as people undertook ocean voyages from island to island. Kiore is the smallest of the *Rattus* genus, and in some early records was “described as mice” (Roberts, 1993, p. 34), such as Elsdon Best misnaming it “*Mus exulans*” (Best, 1977b, p. 353). In terms of phylogeny, both kūri or dogs and “rats, like humans, are mammals” (Roberts, 1993, p. 24), so dogs, rats, and humans are all relatively close in terms of common ancestral species.

In Māori thinking, kiore are not viewed negatively, as in Western cultural tropes of rats and mice as enemies of mankind, carriers of disease and plague, vermin, and pests fit only for extermination (Roberts, 1993). Brad Haami notes that the kiore is seen in Māori thinking “not as a nuisance, or worse, but as a thing of some considerable value” (Haami, 1993, p. 19). Māori views on kiore show how Māori thinking is often the opposite of modern scientific thinking.

Kiore were purposefully transported to Aotearoa by Māori ancestors for nutritional reasons, as an important protein food source. Kiore populations were encouraged in reserves or rāhui kiore managed by Māori settlements and iwi. Not only kiore but also many manu or bird species were taken for food within those rāhui, showing that the frugivorous (fruit-eating) kiore had “little effect on these birds and other animals” (Haami, 1993, p. 8). Kiore were trapped using spring traps placed across their paths, or in pit traps. Kiore were roasted, skinned, and preserved in fat in gourds, in a process (and product) known as “huahua.” Huahua kiore were valuable commodities, used as currency in land exchanges. Kiore pelts were used to make fine cloaks.

In the colonial period starting from the early 1800s, when the British were actively “creating New Zealand in Aotearoa” (Willmott, 1989, p. 2), kiore were rapidly assimilated or replaced whenever European rat species (*Rattus rattus* and *Rattus norvegicus*) took hold, starting from places near human habitation. Among the people of Ngāi Tūhoe, memories remain fresh of the loss of the delicacy of kiore, which were “caught in abundance” in the Huiarau ranges of the Urewera forest, “up to the time of the introduction of the Norwegian rat” (Haami, 1993, p. 8). It is thought that kiore went extinct on the mainland by about 1922 (Roberts, 1993, p. 35). Kiore populations survived for many decades, however, on remote offshore islands; about 40 such populations remained in 1993. But Māori people, who cared about kiore, were frequently oblivious of those surviving kiore populations. As Brad Haami reports:

Most Māori I spoke to in the course of this research [about Māori knowledge of kiore] thought the kiore was extinct, and on learning that it still survived (though only on some offshore islands and in the very remote south-west corner of the South Island), they shed tears of joy, because it carried their thoughts back to the time of their tūpuna. (Haami, 1993, p. 19)

In one simplified whakapapa tradition, kiore are descendants of Hinamoki, a junior sibling/cousin of Tānemahuta, ancestor of mankind and life on land, in the cosmic

whakapapa that structure Māori knowledge of the natural world. Kiore are recorded as running back to their human owner Ruanui, in traditions from the northern iwi of the Mamari waka. The closeness between humans and kiore explains why kiore featured in wharenui carvings and names of people and places. Kiore were also part of everyday Māori customs as shown by references in waiata and haka, and metaphors captured in whakataukī (proverbial sayings) comparing aspects of kiore life with that of humans. A co-traveler with Māori down through the eons of history and pre-history, kiore hold a symbolic meaning for Māori as fellow victims of European colonization, and the forces of assimilation that have seen the demise of the former power of Māori cultural norms to direct Māori lives.

### **3. Ngā manu a Tānemahuta**

Manu, along with trees and mankind, are descendants of Tāne, and therefore related to each other (Orbell, 2003, p. 8). Another group name for manu is “te aitanga kapakapa a Tāne” – the “wing-flapping children of Tāne” and the forest trees are also called the “hua a Tāne” – “hua” meaning both children and the fruits and berries of the trees (Riley, 2001, p. 11). While “manu” is a generic word for “bird” it is also used for other flying things, like bats or kites. In some situations, manu were seen as messengers from spirit worlds, carrying warnings or reassurances either from atua sources or from deceased loved ones.

Manu were an important source of protein; the kūkūpa/kererū and kākā were the two most important food birds to pre-European Māori, and both were snared and speared. The condition of the manu was always tested before deciding to proceed with a hunt. Manu were also caught using a mōkai – a “tame” or decoy bird – or in fruiting seasons when they became too fat to fly away, or if it rained heavily and they became “grounded” (Riley, 2001, p. 29). Snares, traps, spears, and ladders made for fowling demonstrate Māori craft skills and technologies.

In addition to food, bird feathers were valued items and used for diverse purposes depending on their qualities. Birds taken for feathers rather than food include kōkako, huia, kotare, and kōtuku. Feathers were used to make cloaks, to wear in the hair, and to adorn clothing, weapons, waka, toys, containers, and other objects. Bird feathers and skins were used in dressing wounds and burns or for making fragrant sachets to wear as pendants. Bird oils were used medicinally and in tattooing and to preserve foods in hue (gourds). The bones of larger birds were used to make many items, including needles, fishhooks, kōauau, or earrings (Riley, 2001, p. 47). Māori knowledge of birds extended to the knowledge of bird habits and habitats – all of which was valued knowledge that was carefully taught and passed down from one generation to the next in whānau/kingroup apprenticeships and wānanga.

Manu provide rich sources of Māori symbolism in sayings and metaphors: for example, a good singer or eloquent orator might be called a korimako/kōmako (bellbird), a restless person might be compared to a pīwakawaka/tirairaka (fantail), while a hooting rūrū (morēpork) might be seen as expressing loneliness or lament for a lover’s absence (Orbell, 2003, p. 14). There are traditions of birds with supernatural powers and stories of people riding giant birds, such as the beautiful sisters, Reitū and Reipae, who flew

north from their home in the Waikato on the back of a magic kārearea (falcon) to marry and become important ancestors to the iwi of Te Tai Tokerau.

Some manu, including the first five below – tūī, kererū, pīwakawaka, rūrū, and kōtare – are still fairly commonly seen, as they have managed to adapt (at least to some extent) to urbanized habitats containing indigenous and introduced trees and plants in residential gardens and nature reserves.

### **Tūī/kōkō**

Tūī, also known as kōkō, are famous songbirds; to say of someone “me he korokoro tūī” (a throat like a tūī) is to compliment their good singing. Tūī also have amazing powers of mimicry, readily imitating the songs of other birds or any other sounds they hear. Young male tūī were kept as mōkai or pet birds by Māori, fed on berries and roast kūmara, and taught to speak, some learning to recite 40 words or more. Talking tūī were highly valued by their owners and were listened to with keen interest by the kingroup as they were believed to have oracular powers. There are stories of gifted tūī that could recite incantations and whakapapa, and one tradition tells of a war caused by the theft of a learned tūī. A term of endearment for a pōtiki (youngest child of a family) might be “he kōkō iti” – a little tūī (Orbell, 2003, pp. 67–68). These Māori traditions persisted into the twentieth century. My aunt, my father’s oldest sister (1919–201?) told me about her childhood living with her grandparents in a remote coastal area of Northland. She described their pet tūī kept in a cage and how one of her jobs as a small girl was to feed it with a cooked kumara.

### **Kererū/kūkū/kūkupa**

As is common for birds, these names for the native pigeon are onomatopoeic, imitating their soft cooing of alarm, apart from which they are “placid creatures, easily approached, and usually silent” (Orbell, 2003, p. 74). The kererū is one of the forms adopted by the shapeshifter Māui, so that he could follow his mother Taranga to the underworld and meet his father. The main kererū season was autumn–winter, after they had gorged on miro berries. Many birds were taken while they were fat and preserved as huahua manu for future use.

### **Pīwakawaka/tīrairaka**

This cheeky little fantail follows people and other birds through the bush, snapping up insects disturbed by the movement, taking nearly all of its prey on the wing. It has around 20 different names, most of a “reduplicated structure to mimic [its] repeated actions” (Orbell, 2003, p. 91). The pīwakawaka also features in the Māui narratives, as the manu who foiled Māui’s attempt to conquer death by climbing back up through the body of his ancestress, the guardian of the underworld, Hine-nui-te-pō, by twitting with laughter at the wrong moment. Pīwakawaka woke Hine-nui-te-pō, who “brought her legs together, killing Māui, and death came into the world” (p. 91). Their part in this story may explain why it is a bad omen for a pīwakawaka to enter one’s house.

## **Rūrū/koukou**

Rūrū are nocturnal predators that have also adapted to live in farmland and urban areas. They are often associated with spirits, and many families have a rūrū as a kaitiaki or guardian, conveying messages from atua sources with “the power to protect, warn, and advise” (Orbell, 2003, p. 100). Ngāti Wai at Whāngarū in Te Tai Tokerau (Northland) has a kaitiaki known as Hinerūrū, whose calls and flight behavior can be interpreted as either good or bad news. Watchmen standing guard over a pā at night were likened to rūrū, hooting a warning. People who have lost love might also compare themselves to the mournful sounding rūrū.

## **Kōtare**

Kōtare are highly versatile manu and have survived drastic human environmental changes, living in native and exotic forests, farmlands, lakes and streams, and on tidal mudflats. In the 1870s, the Acclimatisation Society of Whanganui introduced a bounty for killing kōtare because they were attacking the sparrows that the society had recently gone to great efforts to introduce from Europe and Australia (Riley, 2001, p. 132). Thus, the kōtare are part of a larger story about the disastrous Pākehā enthusiasm for importing birds, and all manner of other fauna and flora, and the Māori protest against these actions, which were (of course) ignored.

Māori compared a kōtare to a watchful sentry, and a high lookout platform in a pā was referred to as a “kōtare.” Kōtare squabs (fledglings) were taken and cooked in hāngi, while the brilliant blue feathers were in demand for use to decorate clothing and for fishing lures. The saying “he kōtare koe” is used of a person who turns up and watches others eat in hopes of getting some, a comparison with how a kōtare sits motionless on a branch, its “gimlet eyes” searching out food. Māori children, on seeing a kōtare nest tunnel, would call: “Putaputa kōtare, putaputa kōtare” (come out, kōtare, come out, kōtare) and also sang a rain ditty about the kōtare, seen as an omen of fine weather on the way.

## **Tītī, Ōi**

The name tītī is mostly used for the sooty shearwater, but it is also a generic name for many species of seabirds – shearwaters, petrels, prions, and others – that visit the shores of Aotearoa. Tītī were dubbed “muttonbird” by Pākehā because the fatty meat resembled mutton (Lyver & Newman, 2006). Ōi is the grey-faced petrel found in North Island habitats, but it can also be covered by “muttonbird.” Large breeding colonies of tītī are found on the small offshore islands around Rakiura (Stewart Island). Tītī are an important food source, also used for trading with other iwi, and for their feathers and down. When the squabs become very fat, they are collected from the nests. Later, when fledglings are emerge after sunset to exercise their wings, they are hunted using torches to dazzle them. The manu are plucked, cleaned, boned, and boiled, then preserved in their own fat, traditionally in pōhā, large bags made of kelp (Orbell, 2003, p. 171) but more commonly now in lidded plastic buckets.

One common tauparapara used to begin a mihi starts with the words “ka tangi te tītī ... ka tangi hoki ahau,” showing basic identification of Māori people with this ancestral food source. Another whakataukī is “he manawa tītī” to underline the qualities of a person with great endurance. The harvesting of tītī remains an important cultural and economic activity for Rakiura Māori, and there have been decades of work, both politically to retain access to the resource (Te Rūnanga o Ngāi Tahu, 2023) and in partnership with scientists, to study the manu and ensure its sustainability (University of Otago, 2023). Some whānau also still harvest ūi on the Mokohinau (off Ruakākā) and Aldermen (off Whitianga) islands (Orbell, 2003, p. 172).

### Toroa

The name “toroa” comes from the effortless gliding flight of this manu, which was said to have been brought to Aotearoa from the twelfth heaven by Tāwhaki following his battles with Whiro, and whose white feathers were among the adornments prized by Māori, kept in small carved wooden boxes, as with huia feathers. Toroa feathers were used to make head-dresses worn by rangatira, in making kites, and to decorate cloaks, waka, and the face by being worn through the pierced nose septum. Toroa wing bones were used to make tattooing tools, nose flutes, necklaces, and earrings. A young toroa would be taken from its parents and kept as a pet in a seaside village, sometimes breaking its pinions to prevent it from flying away and to ensure a ready supply of feathers, eggs, and flesh.

Toroa have salt glands and ducts connected to their bills that act as desalination systems, which makes them able to drink seawater. Their salt secretions are commemorated in a distinctive weaving pattern, used in cloaks, mats, and wall panels, called “roimata toroa” – albatross tears. Various stories and whakataukī refer to the seagoing travels of the toroa, its spiritual origins, and its brilliant white plumage. “Me he toroa e tau ana i runga i te au” – like a toroa gliding on the updraft – and “me he toroa ngunungunu” – like a toroa nestling its head under its wing – are both compliments comparing people to the physical grace of the toroa.

Toroa feathers are a symbol of peace for Taranaki iwi. To wear a single white toroa feather in the hair was adopted as a tikanga (custom) by nineteenth-century Taranaki prophets and political leaders, Te Whiti o Rongomai and Tohu Kakahi, as a sign of their movement centered on Parihaka. They led a campaign of peaceful resistance to being unfairly evicted from their homelands to make way for Pākehā settlers.

### 4. Ngā ika a Tangaroa

There are many traditions regarding the whakapapa of fish, but “children of Tangaroa” makes sense since Tangaroa is God of the sea and all that dwell within it. Tangaroa represents fish, and Tangaroa and Rona were the controllers of the tides of the ocean. Hine-moana is the personified form of the ocean, showing how Māori knowledge classifies not only animals and plants but also non-living elements of the natural world using whakapapa (also shown by whakapapa of rocks, etc.). A simple whakapapa of some well-known ika is available in Charles Royal’s contributions to Te Ara, the national online encyclopedia (Royal, 2006).

Another well-known story about the value of animals is very old and also found in the Pacific Islands. This story is about Tinirau, who is referred to as “ancestor of all the fish” (Royal, 2006), his favorite whale Tutunui, and an envious, unethical priest named Kae. Kae schemed to steal and slaughter Tutunui, making him into a feast. Tinirau was forced to avenge this wrong by killing Kae.

When the canoe captained by Tamatekapua was voyaging toward New Zealand, it met Te Parata, an ocean creature who almost swallowed the canoe and its crew. They were saved by a shark, in honor of which the crew renamed the canoe and their tribe Te Arawa (a shark name).

Fishing was and is an important food source for Māori and our ancestors caught fish by many methods – spearing, line fishing, trapping, and netting. Net fishing was the main economic business in the thickly populated Bay of Islands at the time of early European arrivals. Māori seine nets made of muka (flax fiber) dwarfed the size of those of the British arrivals, as Joseph Banks recorded in his journal of James Cook’s first voyage in 1769:

The people showed us their plantations ... and after having a little laugh at our seine, a common King’s seine, showed us one of theirs, which was five fathoms deep. Its length we could only guess, as it was not stretched out, but it could not from its bulk be less than four or five hundred fathoms. (Best, 1977a, p. 10)

Making a new fishing net, like all big jobs, was a communal activity, imbued with tapu for the people and place of making. No one was allowed at the scene of operations except those actually engaged in the task. Best records how “inconvenience naturally ensued from the enforcement of such rigorous restrictions” (p. 12) and explains how rigorous the rules were, with severe punishment for trespassing:

This was one of the most inexorable phases of tapu. No fire might be kindled, no food prepared, within the bounds of the forbidden area ... Not until the net was finished and drawn, and the tapu lifted with befitting solemn ceremonial, might people again traverse the closed area. (Best, 1977a, pp. 12–13)

Best comments on tapu in fishing and critiques the view of his colleague, Polack, that tapu was used to induce the workers to “stick to their occupation” and complete the task efficiently (p. 13):

There was no need in former times to resort to strategem in order to get such a communal task completed. All proceedings, and the place of operations, were rendered tapu by what may be termed the presence of the gods. No such undertaking could possibly succeed, in Māori belief, without the assistance of those gods, while their spiritual presence would necessarily bring the restrictions of tapu upon the work and workmen. Such is the explanation given by genuine old Māori experts many years ago. (Best, 1977a, p. 13)

Each type of fish has its own whakapapa, and a simple whakapapa ika is shown in the page titled “fish genealogy” in the online resource Te Ara (Royal, 2006). Value concepts like tapu-noa are associated with objects and places for catching fish. In terms of knowledge of the animals, sharks and whales seem more significant to Māori, and these are explored further below.

## **Makō/mangō**

There are many Māori names for the various types of sharks found in the waters of Aotearoa, but mangō (in the north) and makō (in the south) are among the most well-known. Warriors are compared to sharks, in battle cries such as “Kia mate uruora tātou, kei mate-ā-tarakihi” (let us die like white sharks, not tarakihi). The makō is equated to the tiger shark, blue pointer, dogfish, or gummy shark. Mangō is used as a “generic term for sharks” (Best, 1977a, p. 56).

Ocean taniwha could take the form of sharks, such as Ruamano, a taniwha of iwi in the far north. If a waka capsized, the crew would call upon Ruamano to save them (Hutching, 2006). In such cases, taniwha are also acting as guardian animals – an atua acting through an animal.

Māori knowledge of sharks is discussed by Erik Schwimmer (1963) in his article on Māori guardian animals, based on fieldwork conducted around 1955–1960 among Ngāti Wai people at Whangaruru, northeast of Whangarei in Te Tai Tokerau/Northland. There, guardian animals are called “mana,” equivalent to the Tūhoe usage of “kaitiaki” (Schwimmer, 1963, p. 400). Schwimmer clarifies that mana “connotes a *class* of divine beings” and is “always associated with supernatural power” (p. 398). Guardian animals are “deities who have entered a specific member of an animal species” (p. 399), and the use of mana for these animals expresses the belief that the guardians are the source from which people derive the power of mana.

The fisherman who catches fish has *mana*, because success in fishing is essentially uncertain. The soldier who wins a victory, the witchdoctor who cures a patient are all, in their own spheres, prevailing over a fateful hazard ... a man with great *mana* will succeed whereby human reckoning he ought to fail. (Schwimmer, 1963, p. 398, emphases in original)

One informant said, “Manā are various spirits, a bird, a dog, a shark, and so forth. People also have manā when they have the manā of the tribe visit them and give them the power” (Schwimmer, 1963). Of the six guardian animals known to the people of Whangaruru, there were two sharks, a stingray, a shag, a morepork (Hinerūrū), and a dog (p. 400). They come very close to certain people of their own volition, and their appearance “always has a specific and important meaning” (p. 401) to those they visit.

Tautahi is the name of the tribal mana, or guardian animal, of the local hapū of Ngāti Tautahi and takes the form of a shark, still seen in the harbor today. Tautahi was once an ancestor with whakapapa back to Rahiri, the common ancestor of all the iwi of Te Tai Tokerau. In tribal discussions, man and shark are completely fused together; in other words, a guardian animal like Tautahi is seen in Māori thinking as “multiform” (p. 410). The people saw nothing “incongruous about calling Tautahi a good *man* and then instantiating not his human but his animal qualities” (Schwimmer, 1963, p. 406, emphasis in original).

## **Tohorā**

Māori traditions include whales in the category of ika, whales being the largest of the children of Tangaroa. Tohorā (or tohoraha) is equated with a generic term for whales, but also

specifically used for the southern right whale, a migratory whale that ranges through all the coastal waters of Aotearoa. Another generic Māori name for whales is “te whānau puha” – the family of animals that expel air (Haami, 2006). An ocean taniwha sometimes takes the form of a whale.

In Māori thinking, a stranded whale is a “gift from the gods [and] a bounteous ‘cut and come again’ dish” (Best, 1977a, p. 58). Before touching a stranded whale, karakia needs to be recited to free it from tapu. Best records this practice as part of “a peculiar feeling of the Māori toward the whale family” (p. 58). Whales are regarded in Māori thought as *both* supernormal *and* subservient, at least to some people, and were relied on as guardians of vessels: rescuers of people in marine mishaps and shipwreck.

Several of the oceangoing waka of migration include stories of being guided and aided by whales (Haami, 2006). Māori traditions include multiple stories of people riding whales, including Paikea, a prominent Ngāti Porou ancestor. Whakataukī about whales compare them with rangatira. “Te kāhui parāoa” – a gathering of sperm whales – indicates a group of chiefs. “He paenga pakake” (beached whales) refers to fallen chiefs on a battlefield (Haami, 2006).

## 5. Ngārara – te aitanga a Punga

Ngārara is used in Māori language education to mean “reptiles,” but its traditional meanings also include insects, demonstrating again how the Māori categories for animals diverge from those of science. In whakapapa terms, ngārara are the progeny of Punga, son of Tangaroa, whose descendants were said to be ugly and repulsive (Haami, 2007a), hence “te aitanga a Punga.” The tuatara is named for its spiny back; lizards (skinks and geckos) are known as mokomoko. Ngārara as a Māori category is also the name of a type of taniwha, a supernatural class of being, which takes the form of a giant mokomoko or tuatara. Traditions tell of cosmic arguments between the descendants of Punga about living on land or in the sea – another example of the Māori trope of wars over binary choices found in the nature narratives of whakapapa.

To see a mokomoko inside one’s house is considered an ill omen; both mokomoko and tuatara were traditionally regarded as bringers of bad luck (spiritual messengers). In other circumstances, ngārara were placed at special sites to live as kaitiaki or guardians. These ngārara traditions invoke atua protection over places such as burial caves, or mauri, which are venerated stones or other totem objects used to guard and ensure the health of particular inhabited places such as gardens or forests (Haami, 2007a).

## 6. Te aitanga pepeke

This group name equates to “the insect world” (Haami, 2007b) and calls to whakapapa, not in the use of a proper noun or deity name, but in the concept of “aitanga,” meaning living creatures descending from the primordial atua who are the supernatural origins of the natural world. In this Māori category, “pepeke” refers both to bent legs and jumping ability. Te aitanga pepeke feature in cosmogenic narratives of conflict between primordial brothers, Tānemahuta and Whiro, who used te aitanga pepeke to form his armies of attack, stinging people, and animals. In other versions of these nature narratives,

Tūmatauenga, the ancestor of humans, killed Namuiria, the primordial sandfly, and in return his tribes of Waeroa (mosquitoes) and Namu (sandflies) attack humans (Haami, 2007b).

Te aitanga pepeke also drives the narrative of Rātā, the canoe maker, who failed to ask permission from the forest before felling a large tree.

The insects and birds were angry, and after Rātā had retired for the day, they raised the tree up again, calling on all the branches and broken pieces to bind together. Twice Rātā felled the tree, and twice the multitude of Hakuturi [Pepeke] raised it up. (Haami, 2007b)

The story goes that eventually Rātā hid instead of leaving the forest and observed the insects and birds raising the tree once again. Dialogue ensued that made Rātā overcome with shame and remorse, for which sign of humility the aitanga pepeke and manu offered to build him a waka, a canoe. The story of Rātā and his canoe is an Indigenous parable about tikanga, the right ways of behaving, and respect for nature.

## Conclusion: Recovering Māori Knowledge of Animals

As indicated in the previous sections, Māori knowledge of animals is vast, an attribute of Mātauranga Māori that convinces many commentators that it warrants being considered a form of science. But this argument is often based on a superficial and incorrect view of “what science is” that omits to account for the centrality of theory in science (Chalmers, 2013). Science is *both* a body of empirical knowledge *and* an underpinning theoretical framework, often referred to as the “laws of nature.” The philosophy of science is incompatible and incommensurable with the philosophy of Mātauranga Māori (Stewart, 2022). For this reason, I argue that Mātauranga Māori can be considered a form of “ethnoscience” but *not* “science” in the contemporary sense, given the clash between the two respective theoretical paradigms.

There is general agreement that there are many similarities and overlaps between Mātauranga Māori and science. Tūpuna Māori collected knowledge about the animals of Aotearoa by detailed empirical observation, which is one of science’s trademarks. Of even more interest are ways in which Māori knowledge is different from accepted science. These synopses of Māori knowledge about animals result from reading for difference: noting points where Māori knowledge and science diverge.

Māori knowledge of animals is underpinned by whakapapa, which in some ways works as a Māori alternate to evolutionary theory in biology. Dogs, rats, and humans, for example, are considered to be closely related, not only in terms of phylogeny but also whakapapa. In Māori iconography, whakapapa is represented by the double spiral motif called takarangi, with each generation represented by a notch between the two spiral lines. An icon that mimics the molecular structure of DNA makes a tantalizing connection between whakapapa and genetic inheritance at the heart of evolutionary theory. We literally carry our ancestors in our DNA and our evolutionary links to other animals. Whakapapa in this sense is like an ethically significant Indigenous version of the concept of evolution. While tūpuna Māori fully utilized the animals of Aotearoa to survive and thrive, they did so while remaining cognizant of their relationships with animals through whakapapa.

Whakapapa is the organizing principle of reality in te ao Māori, on which stand the two basic concepts of tapu and mana (Stewart, 2021). Making a new fishing net was declaring a group's intention to harness the power of nature and the gods, hence it was an activity governed by the law of tapu, which dictated how people behaved in relation to that activity. A successful hunter or fisher had mana as they showed their ability to turn that power to their own ends. Mana is related to a person's ability to keep the dipolar cosmic forces in balance (utu).

Māori knowledge of the natural world includes traditional narratives that reinforce the overall structure of the "traditional Māori cosmos" (Salmond, 1978) as based on dualities that operate at many levels, from the cosmic to the psychological. Many traditional stories tell of primal ecological battles – between different factions of the birds, fish, reptiles, insects, etc. – which help explain the natural world of Aotearoa encountered by tūpuna Māori.

Māori attitudes to kiore demonstrate another interesting contrast from dominant Western ideas about rodents. The kiore is a significant animal species in Aotearoa in biological terms as well as in Māori cultural terms. Roberts (1993) shows that national management of remaining kiore populations has been doubly inadequate on both these counts but notes more recent efforts by the Department of Conservation and local iwi to work together better. Despite Māori evidence of negligible ecological impact on other endangered species with which they share their habitats, kiore along with introduced rats have "unofficial 'pest' status in New Zealand" (Roberts, 1993, p. 36). Tragically, this means conservation science aimed to completely eradicate all remaining island populations of kiore, in the name of protecting endemic ecologies. This apparent lapse in scientific judgement is an example of "ignorance" in science that points to:

the importance not only of an adequate scientific basis for decision making, but also of the need for the inclusion of traditional knowledge and the cultural perspectives of indigenous people, particularly when dealing with those species regarded by them to be of historical importance. (Roberts, 1993, p. 40)

In the story of Rātā and his canoe, the prow and ornamental stern were carved by pūngāwerewere, spiders (Haami, 2007b), an example of how Māori nature narratives and traditions acknowledge other-than-human inspiration for human arts and icons. In this and other ways, Māori knowledge of animals aligns with post-humanist thinking. To attribute the origins of a complex, important icon to a pūngāwerewere is an act of ontological humility toward nature of a kind that became increasingly difficult in official accounts of science once post-Enlightenment science took off in western Europe.

Finally, it is worth returning to the meta-question of the nature of a synopsis, which is a relevant genre for scholars of Māori knowledge, given the importance of re-reading old scholarship. Science journals make a standard distinction between "research" and "review" article submissions, suggesting a residual influence of empiricism by implying that only "empirical data" qualifies the submission to claim the status of "research" and hence of "science." To see a "review" as a neutral, inert process and product falls prey to empiricism, the myth of scientific method, and the bifurcation of the world of writing into "science" and "literature" (Richardson, 1990).

Before tackling an embedded question such as Māori concepts for animal ethics, it is important to understand basic Māori knowledge of animals. This article is a first step in examining how Māori concepts can be useful in the teaching and learning of animal ethics for students of biology in senior school and tertiary programs. A process of "synopsis" is central to the production of pedagogical materials including textbooks. While any researcher can "read" the extant literature on Māori knowledge of animals, a "Kaupapa Māori reading" of that literature requires a Kaupapa Māori scholar who is also literate in science. This research puts Māori philosophy to work, recycling outdated scholarship into useful resources for contemporary Indigenous purposes.

Whakataukī: Te manu e kai i te miro, nōna te ngāhere

Te manu e kai i te mātauranga, nōna anō te ao.

(*Proverbial saying: The bird that eats of the miro tree owns the forest*

*The bird that eats of knowledge owns the world.*)

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